

# *GREEN CURRICULUM*

Ensuring Safe Working for Mariners

A Nautical Institute perspective



## **POSITION PAPER – A NAUTICAL INSTITUTE PERSPECTIVE (revised Jan 23)**

### **Executive Summary – Recap**

The world's targets for decarbonisation cannot be reached without a huge effort from the shipping community and the delivery of the 4<sup>th</sup> propulsion revolution, which, inter alia, involves making use of greener fuels. New technologies will power this transformation, but it is the people working at sea and ashore who will make it a reality.

To ensure the safety of our seafarers, standards need to be set and curricula developed that will provide them with the knowledge and skills they need to operate safely.

With an ultimate target for decarbonisation by 2050 as well as nearer term 2030 targets that must be met, action is needed now to ensure that training can be developed and deployed in good time. A working group has been established with representation from the International Chamber of Shipping (ICS), International Transport Workers Federation (ITF), Institute of Marine Engineers Science and Technology (IMarEST), The Nautical Institute (NI), and Ocean Technologies Group (OTG). The objective is to consider the knowledge and skills required and how they might be assessed and accredited to a universally accepted standard.

This revised paper (Jan 23) sets out findings and current thinking of The Nautical Institute and identifies a pathway to re-affirm our commitment to seafarer safety.

### **Update on activities**

To date, the work of the Green Curriculum Group has largely centred around opinion gathering. We have held informal consultations with a wide spectrum of industry members, either in open meetings or in one to one conversation. Our stakeholders have canvassed opinion from ship owners and managers of various sizes, regulators in flag and port States, trade associations, P&I, Original Equipment Manufacturers (OEM), simulation vendors and members of the Maritime Education and Training Institute (METI) community.

Wherever possible we have attempted to engage on a global basis and have gathered opinions from representatives from across Europe and in the Far East. Not least, we have spoken to serving seafarers for whose safety this group is primarily concerned.

The group has watched with interest a number of parallel developments and initiatives including the development of Just Transition Task Force, of which ICS is a founder, and the emergence of Ocean Technologies Group as project supporter of the Peer Learning Group. Along the same lines, we have discussed initiatives by some national administrations in skills development to meet the needs for green skills development.

There is a clear need to avoid unhelpful duplication of effort. Where we have become aware of complementary workstreams such as the DNV [Seafarer training and skills for decarbonized shipping](#) study, we have waited for these groups to publish their conclusions, leading to adjustments in our own timeline.

## **Research and findings**

We have found almost universal support for the Green Curriculum initiative, with everyone being in agreement that the move to these new fuels creates multiple new risks to those onboard, port, terminals and coastal communities that will need to be mitigated.

We have also seen opportunities to learn from early adopters that have experience of moving from HFO to LNG, LPG and Methanol as fuel.

From these discussions three firm themes have emerged:

1. Where there is experience of working with the fuel as cargo, the transition to use as a fuel is significantly eased. For example, an LNG cargo vessel switching to LNG as fuel provides a much smaller challenge than the same transition on a vessel carrying a different fuel, as the crew already have an understanding of LNG and are already operating to that risk profile.
2. There is a high demand for those seafarers with experience of new fuels, which means that very few of them have filtered into maritime education and training positions. This is most keenly felt in the biggest seafarer supply countries. With green energy skills and knowledge in such demand for seagoing positions it is highly unlikely that this will ease.
3. In the absence of global standards on the use of some new fuels, different port regimes are implementing their own requirements on port entry and cargo operations. This fragmentation is placing significant additional burden on the crew.

## **Determining the scope**

One of the significant topics of discussion has been an attempt to identify the extent of the training that will be required and at what level. The DNV report commissioned by the Just Transition Taskforce has been particularly helpful (*Insights into Seafarer Training and Skills Needed to Support a Decarbonised Shipping Industry*, Nov 22.) It considers a number of scenarios, allowing for some shift in global ambitions to decarbonise, and concludes that the number of seafarers that will require training to be in the region of 800,000 .

A second report by the Just Transition Task Force, also published in November 22, sets out a ten point action plan to achieving this transition (Mapping a Maritime Just Transition for Seafarers), highlighting the need to strengthen global training standards. This report focusses on the already much needed revision to STCW. It also acknowledges the need for interim standards and the potential for standards that seek to go above the minimum.

## Establishing standards

Within their conclusions [ref 2.2 General Conclusions, Conclusion 2] the Just Transition Taskforce make reference to the IGF Code.<sup>1</sup>

Whilst The Nautical Institute recognises that existing standards for gas as a fuel, in particular the IGF Code, will provide a great starting place, we need to ensure that it is the basis from which to ask whether they go far enough, particularly for the more hazardous new fuels.

There are currently 2 STCW IGF courses that are available relating to personnel serving on ships using fuels covered by the IGF Code:

- Certificate of Basic Training for Service on Ships Using Fuels Covered Within the IGF Code (2 days)
- Certificate of Proficiency in Advanced Training for Service on Ships Subject to the IGF Code (5 days)

A review of the current syllabus modules confirms that the courses broadly cover preconceptions of what is required of those serving on such vessels. However, the hazardous nature of the proposed “alternative fuels” is such that it is our contention these courses must be tailored to be specific to individual fuels. Ammonia and methanol, for example, have widely differing properties and resultant health and safety issues.

The framework for the subject matter exists and we consider that it is feasible to adapt such courses to specific fuels. In the case of methanol, which is classed as a chemical, there is currently no associated chemical fuel course, but the rudiments are covered in the STCW courses for chemical and LNG tanker endorsements. Once again, there is a 2 day and 5 day course and they are generic in content.

The skills and knowledge to deal with these fuels currently tend to be the responsibility of specialist Deck Officers who perform these tasks as part of the carriage of cargo. As “alternative fuels,” however, they will most likely become the primary responsibility of the engineering department, most of whom will have had little exposure to such requirements. Concerns include the use of specialist PPE, fire-fighting, health hazards (including the effects of long term exposure) and fuel maintenance requirements, including leak detection, routine and emergency system maintenance, fuel leak detection and specific tank entry requirements.

---

<sup>1</sup> **“Conclusion 2:** Guidelines for alternative fuel technologies are already under development by the International Maritime Organization (IMO). Once developed, the model for IGF Code compliance, consisting of basic and advanced model courses at an approved training facility, plus minimum seagoing experience (including familiarization), could be adapted by the IMO for training on alternative fuel technologies. This would serve as a minimum training framework. Training requirements for seafarers with regard to LNG/LPG have already been set out in the STCW International Code of Safety for Ships using Gases or other Low-flashpoint Fuels (IGF Code). “

Some of the responsibilities, such as emergency response, will require the participation of the entire crew, many of whom will be entirely lacking in this specialist knowledge and experience.

### **Proposed competencies:**

The industry intends to introduce fuels that are extremely hazardous and thus it is incumbent upon the industry to ensure that any risks are As Low As Reasonably Practicable and that all seafarers are properly trained in all aspects concerning these fuels.

Our industry consultation suggests the necessary upskilling should include at a minimum:

- PPE – specific types, use, maintenance, requirements, training and quantity, disposal of contaminated PPE, personal survival PPE such as EEBD
- Fuel system maintenance and anticipated associated issues – valve corrosion, bunkering, leak detection, engine, pipeline and tank maintenance, disposal of waste product, spares to be carried – specific to manufacturer’s requirements
- Tank maintenance – safe entry requirements, associated equipment, tank rescue, gas testing equipment and maintenance, crew training
- Medical – what medical provision is required to deal with an incident and to what standard?
- Fire-fighting – what medium is required to fight a fire? How to fight a fire? How to abandon ship? What is the lifeboat procedure in the event of a loss of containment?
- The wider emergency response

### **Conclusion**

Achieving a “Just transition” requires all of the crews to be trained. That means every mariner on any ship using next generation fuels.

There are approximately 55,000 IMO registered vessels over 500gt and 130,000 vessels over 100 gt with 1.89 million merchant seafarers (excluding the global fishing fleet of some 4.5 million fishing vessels and 30 million fishers).

The process of reviewing STCW is underway, but it is openly acknowledged that the IMO will not be able to keep pace with the introduction of these new fuels. It is therefore vital that The Nautical Institute remains engaged and seeks to influence in an advisory capacity so that guidelines are developed that form the basis of professional knowledge for all seafarers.

### **Next Steps**

In order to develop this process further, The Nautical Institute offers the following proposals:

- Engage with wider expertise to include engine manufacturers / shipowners - for their specific advice on handling fuel maintenance systems.

- Engage with stakeholders such as Maersk Mc-Kinney Moller Centre for Zero Carbon Shipping
- Joint working with Class NK as part of their involvement in the Maritime Technologies Forum (MTF) and the STCW revision process.
- Use the existing framework of IGF and chemical tanker endorsement courses in order to structure specific STCW course syllabus and set a standard.
- Open dialogue with METI bodies as to the feasibility of adapting existing courses.
- Work with stakeholders to identify the most effective and appropriate training delivery solutions for different levels of authority and responsibility on board the ship and counterparts on shore
- Consider the security aspect of these fuels and the potential for State intervention to set localised acceptable standards
- Consider the influence of vessel charterers on the implementation of standards
- Monitor emerging detail of the next-generation fuels to ensure that the specific needs for future training are identified and addressed as they become apparent.

Whilst it is recognised that STCW is the IMO qualitative standard to which the industry complies, it is the application and subsequent enforcement of the standard that is the variable.