THE CHALLENGES TO MET QUALITY AS A RESULT OF THE STCW MANILA AMENDMENTS

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ABSTRACT

One of the most striking changes to the STCW convention and its associated code as a result of the 2010 Manila amendments was the mandating of leadership and teamwork training. Perhaps this is a reflection of the complexion of the industry which was traditionally manned and managed under Western-centric values, since the demographic of the industry workforce was largely from the Western hemisphere. This is no longer the case. One might ask why this non-technical training is now a mandatory requirement when it was not in the past. Is there an implication that the cultures and values embedded in STCW are changing from Western to Eastern now the demographic of seafarers is changing? This paper endeavours to discuss what has promoted the call for such changes and the challenges for MET to address them.

Key words: *MET, culture, quality*

1. INTRODUCTION

One of the most striking changes to the STCW convention and its associated code as a result of the 2010 Manila amendments was the introduction of leadership and teamwork training. More specifically, terms used within the code include effective communication, decisions reflecting consideration of team experiences, assertiveness, leadership, motivation, situational awareness and evaluation of outcome effectiveness. It was a major change since most training mandated prior to this related only to technical training and qualifications. Personal qualities such as social responsibility, crisis management and human behaviour were previously hinted at by certain specialised training for certain positions on merchant vessels. Bridge Team Management courses had been common in the industry but by no means mandatory. Yet, these are arguably the only courses that implied a requirement to demonstrate non-technical skills. The Manila amendments mark a major step forward in mandating further non-technical skills training. Perhaps there has been a reason why this has taken so long. After all, the provision, application and assessment of technical training are much easier by comparison. Either a candidate is competent to operate a piece of machinery or they are not. Of course, the training and competence assessment is not limited to turning the thing on and off, but additionally involves engaging with the output of information from the equipment and applying that data or information. An obvious comparison would be ECDIS equipment training, which coincidentally is also featured in the STCW Manila amendments. The navigator has to apply the information displayed with regard to the navigation of their vessel. There are many options open to the navigator in terms of how the information is applied to the situation and that is down to the judgement of the navigator. That judgement call leads into another matter entirely and not within the scope of this paper.

So perhaps the reason that amendments of this nature have taken so long to appear is that training and assessment of such non-technical skills as the new convention mentions, are not so straightforward. How can you train someone to be a good leader or team player? These are instinctive qualities which are nurtured over a longer time than a mere apprenticeship. These are personal traits which are developed from a very early age and it is very difficult for a training or educational regime to change these characteristics, once they start a maritime career. The instincts of the candidates will likely have been entrenched long before hand, largely formed by the cultural background of each individual, so trying to change them will be a formidable task. Yet, it would seem that this is exactly what the Manila amendments are mandating.

A casual glance at any shipping incident investigation report will provide compelling evidence as to why this ambitious task is not an ill-informed aspiration. Rightly, in my humble opinion, it has become clear that many shipping accidents have not occurred purely because of technical issues but have involved several non-technical elements. A perfect example of this is the USCG investigation into the explosion and sinking of the chemical tanker Bow Mariner in February 2004. Whilst there were most certainly breaches of technical tank cleaning and ventilating operations, the back drop to the incident was an outrageously slack on-board management system and an absolute failure to take into account cultural factors of the staff involved in the operation, as previously cited by Cox (2008). For example one of many recommendations to come out of the report suggested that owners 'review their internal policies and procedures concerning *workforce interaction* and *co-operation*, including but not limited to delegation of appropriate duties to qualified officers'. (USCG 2005)

Wisely, these very considerations have also been taken into account in many subsequent investigation reports. It

has become abundantly clear that addressing human factors, the so called non-technical factors, as well as the technical ones, will yield a much greater understanding of the sequence of events and contributory factors to the cause of shipping incidents.

The ultimate objective of any investigation will be for lessons to be learned in order to prevent similar future occurrences. However, the industry doesn't have to wait for severe incidents to occur in the future in order to put these lessons into effect. The industry legislation has not waited so long for management procedures to be mandated, since we can look at the implementation of the ISM Code in the 1990s as an example. However, good management and an understanding of human factors do not just lead to the prevention of accidents but can lead to a more productive workforce, who is happier in their work and being part of a team. These more abstract human factors are being addressed by the training espoused by the 2010 Manila amendments to STCW.

2. COMPARISON WITH OTHER INDUSTRY

This apparent brain wave to address human factors in the name of incident reduction has not come as an entirely spontaneous initiative. There are many parallels in other high risk industries and it has been an awareness of the development of this kind of training in alternative industries which has led to its introduction in the maritime industry. As cited earlier, we can perhaps examine existing mandatory non-technical training in the shipping industry and analyse what has evolved out of them. Social responsibility, crisis management and human behaviours certainly led the way in terms of mandatory human factor training. Perhaps an earlier example, though largely optional, is that of Bridge Team Management (BMT) training. Current practitioners of resource management training, of which more later, tend to look at BTM training as being too equipment oriented, though there was certainly a strong element of team work, as the title suggests.

Yet, resource management training, as it is generally cited currently, has taken off in several other industries so therefore it has been a not unnatural or unpredictable migration into maritime training and education. Helmreich et al (1999) describes Resource Management as "The utilisation of all human, informational and equipment resources toward the goal of safe and efficient operations".

So which are the industries already choosing to initiate resource management training? They include aviation (O'Conner et al 2008), the military (Cohen et al 1998), medical (including surgery and anaesthetics) (Sutton 2009), the offshore oil and gas industries (Flin 1997), the nuclear industry (Flin 2008) and rail transport (Tsang et al 1999). To be more precise about exactly what is covered in resource management training, let us examine what relevant literature evidences. The resource management training that has been carried out hitherto

has included such sub-topics as leadership and teamwork (Spain 2006); decision making (Barnett 2006); assertiveness (Flin 2008); motivation and prioritisation (Guerlain 2007); situational awareness (Kearns 2011); task and workload management (France 2008); culture perception (Al-Lamky 2005); and attitudes and behaviour recognition (Salas 2001).

A 2006 paper by Salas et al., assessed the widespread application of CRM, particularly in the United States. They identified that CRM training had become mandatory in the US military in 1990 but not until 1998 had it become so in commercial aviation. Whatever had caused scepticism of the value of CRM training, it is clear that its credibility had grown significantly during that period. It is also clear that the idea of this kind of training is not especially new. If it has enjoyed mandatory status for over 30 years in the US military then one can argue that its benefits might be worth investigating for application into other industries. The preceding paragraphs of this paper have indicated that's exactly what has taken place. A more current assessment reveals resource management training in the shipping industry grew in popularity even before it became mandatory. In the shipping industry, resource management training has been delivered as Bridge Resource Management (BRM), Engine Room Resource Management (ERM) and for combined disciplines, in the form of Crew Resource Management training (CRM). Many maritime institutions have run such courses voluntarily for years, including Warsash Maritime Academy and South Tyneside College in the UK, Maritime Professional Training in Florida, US and Wavelink in Singapore. In November 2012 the Swedish Club Academy listed over 80 CRM training providers in 35 different countries.

At this stage it is perhaps worth asking why so many institutions across so many countries and in so many industries have found CRM training to be so useful and what has led to its mandating in several of these industries. As suggested earlier, the ultimate aim is to reduce accident statistics by reducing the risk of accidents. By establishing an environment conducive to awareness of safe practice for both the individual and fellow team members, a more productive culture is arguably likely to prevail. So, if managed carefully, the culture and environment promoted by CRM training may very well yield a more productive as well as a safer working platform. Cynics may point out that safety and commercial success are mutually exclusive and one can only be achieved at the expense of another. Yet, the more commercially successful operators in any of the industries mentioned were amongst the first to embrace the benefits of CRM training. It is inappropriate for me, as a MET practitioner, to reveal which commercial employers have chosen to train their staff in CRM techniques in the past, yet there is a close correlation between those employers and their commercial success. If one thinks of the nature of dry and liquid cargo trade, charterers usually have a significant input into the

commercial conduct of a ship owner, by means of charter party clauses and requirements. If these include favouring ship owners whose staff has received specialist non-mandatory training, then it follows that those ship owners are likely to enjoy a more lucrative trade.

What evidence is there that other industries have benefitted from CRM training? A few examples of research in a variety of industries tell us.

"Given that more than 50% of naval aviation mishaps have been attributed to CRM failures (Wiegmann & Shappell, 1999), a robust, scientifically-driven, CRM training program is an important mechanism for addressing the human component of aviation mishaps in the U.S. Navy".

Halbesleben, J. R., Cox, K. R., & Hall, L. (2011), "Transfer of crew resource management training: A qualitative study of communication and decision making in two intensive care units", *Leadership in Health Services*, 24(1), 19-28.

Design/methodology/approach – Employees in two intensive care units at a US academic medical centre, one with high training penetration (67 percent trained) and one with low penetration (27 percent), were observed and interviewed about CRM principles and teamwork.

Findings – The paper found differences between the units in communication and decision making; it argues that these processes are mediating processes necessary for the effective transfer of CRM training to improvement of safety outcomes.

This is typical of several examples of CR training in industries other than shipping. Another reflects on CRM training in the aviation industry. O'Connor et al (2008) declare that "The findings from the meta-analysis are encouraging for the effectiveness of CRM training".

Burke et al., in their 2004 paper, stated: "Over the past 20 years the military and aviation communities have made a large investment in understanding teams and their requisite training requirements. There are many lessons that can be learned from these communities to accelerate the impact of team training within the medical community".

Sneddon et al., in their 2012 paper, state: "Drilling for oil and gas on offshore installations is a hazardous occupation, and requires personnel to maintain high levels of work situation awareness (WSA)".
They conclude that "Situational Awareness (SA), fatigue and stress management should be key

components of CRM for drill crews".
Tsang et al (2009) apply similar research in their own part of the world. "In aviation, Crew Resource

Management (CRM) was developed to address safety issues derived from accident and incident investigations. As CRM has proven its effectiveness by improving teamwork, communication and staff responses to operational hazards, there have been many attempts to expand this concept into other high-risk sectors such as medical, nuclear, or military. Although some work was also conducted to modify CRM for the railway industry, no such experiences yet existed in China or Hong Kong".

3.   CULTURAL ISSUES

So there can be little doubt as to the credibility of CRM training. It is not such a surprise therefore, that CRM is taking an increasingly significant role in the maritime industry. No doubt research will continue to establish which elements of the training are most effective and which are most difficult to implement. These points have not been ignored by current research, part of which has focussed on cultural awareness. This topic is a major feature of CRM training, as cited, so it is worth examining further. The point should not be lost that since shipping is a global industry, then all manner of cultures will be involved in its practice. Neither would it be amiss to suggest that the balance of power, if that is an appropriate phrase, has changed. Maybe power is not the correct analogy but the stakeholders involved have changed, with oriental cultures playing a much greater role in the industry than in the past. This fact has not been overlooked by researchers. Seva et al (2007) state clearly that "However, the large power gap in the Filipino culture seems to hinder open communication with superiors".

With regard to national cultural issues, the paper by Seva et al (2007) asserts, with reference to Jing, Lu, Yong, & Wang (2002), that culture significantly affects the behaviour of pilots in the cockpit. Seva goes on to explain that national culture will have the strongest influence toward attitude and behaviour, compared to professional and organisational cultures, since the individuals will have been influenced by their national culture for a longer time.

Wrigley (2012) is even more explicit in his observation that "The problem is the lack of data regarding ethnicity, and the impact on effective communication in the cockpit", with respect to the application of CRM in the aviation industry. If the shipping industry has followed other high risk industries in mandating CRM training, then it is more than likely it will follow the same industries in having difficulty in implementing the training. Therefore, it is of the utmost importance that observers from the shipping industry follow fellow high risk industry developments and note

the outcomes of their associated research.

Much competency-based training as prescribed by STCW legislation appears to be based on western-centric values (Emad and Wroth, 2008, Huanxin, 2010). Yet,

statistically, an increasing proportion of seafarers are being taken from the Asian sub-continent and further to the east, according to International Shipping Federation figures (ISF 2009). It is not only the supply of seafarers that have increased from oriental cultures, such as from the Philippines, China but now increasingly from Vietnam and Indonesia (Helmsman 2013). Ship ownership and management is no longer the exclusive domain of the Western hemisphere and China's interest and indeed assets on an international stage are considerable, stretching to involvement in the management of the Panama Canal. National cultural divides are consistently cited as a factor of CRM training (Wrigley 2012, Strauch 2010, Sava et al 2007). Hofstede's D*imensions of Culture* is repeatedly quoted despite some scepticism of its value (McSweeny 2002). Even Trompenaars and Hampden-Turners 1993 alternative, *Seven Dimensions of Culture*, refers to universalism / particularism and individualism / collectivism, which are not remote from Hofstede's original dimensions. So with this apparent shift of focus from west to east, perhaps cultures, whose values are more entrenched in harmony and co-operation, rather than competition and productivity, are prevailing when it comes to the natural evolution of international maritime legislation.

4. CONCLUSIONS

Casualties within the shipping industry continue to occur and it would perhaps be naïve to think an absolute blemish free industry could evolve. That does not, however, mean that any slack in the pursuit of an accident free industry should be permitted. Practitioners, observers, managers and even academics still have a duty to the industry to at very least minimise such loss of life or equipment. The continuing occurrence of incidents within the maritime domain demonstrates beyond all doubt that the risks inherent within this industry are similar to those in other high risk industries. It behoves us to learn all we possibly can from observers of those industries and apply the lessons learned to our own. It is perhaps this approach which has yielded the mandating of human factor focussed legislation in the STCW code and convention. Leaving the matter alone at that will not suffice. We should continue to monitor these industries as well as our own and put into effect findings of academic research as vigorously as if they were from our own industry. The embracing of CRM training is only the start of the pursuit. Efficient and effective implementation will be required to benefit from the amendments and this will not be understood unless the implementation of the training is monitored.

5. REFERENCES

[1] AL-LAMKY, A., MOIDEEN KUTTY, M., *Motivational Issues and Safety Regulations in Arabia: A Case Study in a Multinational Oil Compan*, Journal of the International Academy for Case Studies; 2005, 11, 6, ABI/INFORM Global, pg. 51.

[2] BARNETT, M., GATFIELD, D., PEKCAN, C., *Non-Technical Skills. The vital ingredient in World Maritime Technology*, Proceedings of the International Conference on World Maritime Technology, London: Institute of Marine Engineering, Science and Technology, 2006.

[3] BURKE, C.S., SALAS, E., WILSON-DONNELLY, K., PRIEST, H., *How to turn a team of experts into an expert medical team: guidance from the aviation and military communities*, Quality and Safety in Health Care, 13 (suppl. 1), i96-i104.

[4] COHEN, M., THOMPSON, B., *Training teams to take initiative: critical thinking in novel situations*, Advances in human performance and cognitive engineering research, Vol. 1, pages 251-292, 2001.

[5] COX, Q., *The Application of Human factors in Maritime Education and Training*, 16th International Maritime Lecturers Association Conference, Izmir, Turkey, October 2008.

[6] EMAD, G., ROTH, W.M., *Contradictions in the practices of training for and assessment of competency: A case study from the maritime domain*, Education and Training, 50(3), 260-272, 2008.

[7] FLIN, R., O'CONNER, P., CRICHTON, M., *Safety at the Sharp End: a guide to non-technical skills,* Farnham: Ashgate, 2008.

[8] FRANCE, D.J., LEMING-LEE, E.S., JACKSON, T., FEISTRITZER, N.R., HIGGINS, M.S., *An observational analysis of surgical team compliance with perioperative safety practices after crew resource management training*, The American Journal of Surgery, 195 (2008), 546–553, Doi:10.1016/j.amjsurg.2007.04.012.

[9] GUERLAIN, S., TURRENTINE, F.E., BAUER, D.T., FORREST CALLAND, J., ADAMS, R., *Crew Resource management for*

Surgeons; feasibility and impact, Cogn Tech Work, 2008, 10:255–264, Doi: 10.1007/s10111-007-0091-y.

[10] INTERNATIONAL SHIPPING FEDERATION, *Shipping and World Trade. Numbers and nationality of world's seafarers,* 2010.

[11]http://www.marisec.org/shippingfacts/worldtrade/world-seafarers.php [Accessed 31st March 2013].

[12] HALBESLEBEN, J.R., COX, K.R., HALL, L., *Transfer of crew resource management training: A qualitative study of communication and decision making in two intensive care units*, Leadership in Health Services, 24(1), 19-28, 2011.

[13] HELMREICH, R., KLINECT, J., WILHELM, J., *Models of threat, error and CRM in flight operations,* Proceedings of the 10th International Symposium on Aviation Psychology, Columbus: Ohio State University, pp. 677–682, 1999.

[14] HELMSMAN, *Local seafarers opt for work overseas*, Fadli, The Jakarta Post, Batam Archipelago, Thu, March 07, 2013,

[15]http://www.thejakartapost.com/news/2013/03/07/local-seafarers-opt-work-overseas.html [Accessed 31st March 2013].

[16] HUANXIN, W., *The feasibility of Instructional Assistant System in maritime universities under the semi-military management*, Proceedings of the 18th Conference of International Maritime Lecturers' Association, Shanghai, China, 20-23 October, 2010.

[17]HOFSTED, G., *Culture's Consequences: International differences in work-related value*, Beverly Hills, Cal and London Sage, 1980.

[18] JING, H.S., LU, P.J., YONG, K., WANG, H.C., *The dragon in the cockpit: the faces of Chinese authoritarianism*, Human Factors and Aerospace Safety, 2(3), 257-275, 2002.

[19] KEARNS, S., *Online Single-Pilot Resource Management: Assessing the Feasibility of Computer-Based Safety Training*, The International Journal of Aviation Psychology, 21:2, 175-190, 2011.

[20] McSWEENEY, B., *Hofstede's model of national cultural differences and their consequences: A triumph of faith - a failure of analysis*, Human Relations, Jan 2002, 55, 1, ABI/INFORM Global, pg. 89, 2002.

[21] O'CONNOR, P., HAHN, R., SALAS, E., *The US Navy's Crew Resource Management Program: The past, present, and recommendations for the future*, Human Performance Enhancements in High-Risk Environments: Insights Developments and Future Directions from Military Research, 90-105, 2010.

[22] O'CONNOR, P., CAMPBELL, J., NEWON, J., MELTON, J., SALS, E., WILSON, K., *Crew Resource Management Training Effectiveness: A Meta-Analysis and Some Critical Needs*, International Journal of Aviation Psychology, Vol. 18, no. 4, pp. 353-368, Oct.-Dec., 2008.

[23] SALAS, E., BOWERS, C., EDENS, E., *Improving Teamwork in Organisations: applications of resource management training*, Lawrence Erlbaum, 2001.

[24] SEVA, R.R., MARIA, A., GUTIERREZ, J.A., BEEN, H., DUH, L., CHONG, J., *An Evaluation of CRM Attitudes of Filipino Pilots in Four Philippine Aviation Companies*, The International Journal of Aviation Psychology, 17:3, 285-298, 2007.

[25] SPAIN, M., *Adopting a learning management system: issues related to supporting program development in petroleum industry training*, Postgraduate Dissertation, Royal Roads University, 2006.

[26] SNEDDON, A., MEARNS, K., FLIN, R., *Stress, fatigue, situation awareness and safety in offshore drilling crews*, Safety Science, 2012.

[27] STRAUCH, B., *Human Factors: The Journal of the Human Factors and Ergonomics Society*, Vol. 52, no. 2, 246-263, April 2010, published online before print April 5, 2010, Doi: 10.1177/0018720810362238.

[28] SUTTON, G., *Evaluating multidisciplinary health care teams: taking the crisis out of CRM*, Australian Health Review, 33(3), p 445, ABI/INFORM Global, Aug 2009.

[29] TSANG, M.T.S., HOERMANN, H.J., *Adaptation of CRM for the Railway Industry. Operational Safety benefits*, 15th International Symposium of Aviation Psychology, Drayton Ohio, April 27-30, 2009.

[30] TROMPENAARS, F., *Riding the waves of culture: Understanding cultural diversity in business*, Economist Books, London, 1993.

[31] USCG, *Investigation into the explosion and sinking of the chemical tanker Bow Mariner*, US Department of Homeland Security, 2005.

[32] WIEGMANN, D.A., SHAPPELL, S.A., *Human error and crew resource management failures in Naval aviation mishaps: a review of US Naval Safety Center data, 1990-96*, Aviation, Space, and Environmental Medicine, 70(12), 1147, 2005.

[33] WRIGLEY, J.T., *Recognizing differences in ethnicities and increasing effective communication*, Department of Aviation, University of Central Missouri, November, 2011.