The Seaworthiness Board: reflections

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The Defence Seaworthiness Board is a relatively-recent addition to Defence’s arsenal of review options. It was initiated by the Chief of Navy in June 2009 to aid risk assurance and contribute to risk control for Defence maritime mission systems. The initial focus was on safety management accountabilities but this was later expanded to include operational effectiveness and environmental protection compliance.

Board members are appointed by and directly responsible to the Defence Seaworthiness Authority (the Chief of Navy). They are former full-time officers now serving in the Active Reserve, mainly at the two- and one-star rank. They work in tight teams comprising operational and technical members, with additional specialist members appointed where necessary, for example, for reviews of submarine, diving, and Army watercraft.

Over several years, we have sat on numerous Defence Seaworthiness Board reviews spanning the spectrum of ADF maritime capabilities, including Navy and Army forces, recently extending to maritime support infrastructure ashore. Our commitments have enabled us to become intimately involved in assisting the evolution and implementation of seaworthiness conceptually and practically, as well as developing the Defence Seaworthiness Board and its processes. These are our personal reflections.

We consider it an honour to have been invited to contribute in such a constructive way at this late stage of our professional careers. Serving for extended periods on Seaworthiness Boards has provided rare strategic perspectives of specific Defence capabilities and afforded privileged insights into the functioning of the Defence Seaworthiness management system. We have been able to step back from the day-to-day, all-consuming challenges of senior line management and responsibility, with the freedom to take a ‘helicopter view’ and a clear mandate to ‘call it as we see it’. We have provided our observations and recommendations without fear or favour. The genuine independence of the Board has been central to its effectiveness.

Perhaps the most rewarding aspect of the role has been the opportunity to engage with Defence people across multiple agencies. While the challenges evolve and technology advances over time, the need for highly-capable and dedicated professionals, Service and civilian, remains undiminished. Defence and its supporting agencies continue to benefit from high-calibre, highly-qualified and well-motivated individuals who work very hard and want to make positive contributions to the ADF team effort.

Genesis of the Defence Seaworthiness Board

As Chief of Navy from 2008-11, Vice Admiral Crane determined that he needed additional risk controls over the significant safety hazards inherent in the operation of maritime mission systems. In mid-2009, he approved the implementation of two concept demonstrator Seaworthiness Boards, based on the extant Airworthiness Board concept, and appointed Rear Admiral Trevor Ruting and Commodore Keith Eames as the inaugural Board members to implement the concept.

Fortunately, Commodore Eames had considerable experience with the conduct of ADF Airworthiness Boards and the core principles of airworthiness management. His experience and knowledge directly facilitated the development of the inaugural Seaworthiness Requirement Set of questions used to probe safety management of the subject mission system/ship class. The
Seaworthiness Requirement Set was developed from first principles as there was no extant seaworthiness policy or guidelines.

Cognisant of the environmental and operational risks inherent in their operation, the two concept demonstrator Seaworthiness Boards were the Collins class submarines (2009) and ADF diving (2010). After review of the concept demonstrators by the Chief of Navy's Senior Advisory Committee, Chief of Navy approved the implementation of a continued program of seaworthiness reviews of these plus all other Navy operational mission systems/classes.

The standard list of Seaworthiness questions used for the concept demonstrator Seaworthiness Boards was expanded after promulgation of the review by Justice Charles Haddon-Cave of a UK RAF Nimrod crash that identified a long list of hazards potentially applicable to older RAN ships. The system boundary for the mission system under review was also confirmed as including all class-specific training and related facilities, and all aspects of mission system safety in the intended operational environment.

Subsequent Seaworthiness Boards in 2010-11 included the LPA [amphibious transport ships], ANZAC frigates and Armidale class patrol boats, and the second review of Collins class submarines (including submarine escape and rescue). The significant findings of the LPA Seaworthiness Board (with 19 corrective action requirements identified) precipitated reconsideration of their operational service and the subsequent independent review of support ship maintenance management by Paul Rizzo in 2011.

The outcomes of the Rizzo Review provided focus, impetus and, importantly, additional resources to assist in rapidly improving Navy seaworthiness. The genesis of the Navy’s comprehensive approach to seaworthiness was significantly aided by the implementation of regular review by Seaworthiness Boards that subsequently morphed into the Defence Seaworthiness Board. Both were a clear demonstration of Navy proactively taking control of its own destiny.

**Emphasising risk-based approaches**

Risk consideration was essential to every written Seaworthiness question and response, and behind many questions asked on Board day. Board members drove risk considerations hard and with intent. Defining questions, often overtly and vigorously pursued, included:

- Were risks fully comprehended;
- Did people at all levels understand risk concepts—and the specific risks associated with their activities;
- How were risks being managed, were they at ALARP/SOFARP [as low as reasonably possible/so far as reasonably possible] and what did this mean in effect;
- Were risk treatment or mitigation processes and plans robust and likely to be effective;
- Were risks acknowledged and accepted by authorities at appropriate levels with appropriate authorisations and accountabilities;
- What were the impacts of aggregated and accumulated risks—were they understood and how were they being managed;
- How do technical, operational, safety, environmental and other risks interact; and
- How did specific local risks interface with systemic risks and engage with or affect enterprise risks?

better in some communities than others: the naval aviation community was probably ahead of the rest, closely followed by our submariners. A positive sea change has been evident.

While still a work-in-progress, the overall approach to managing risks has improved greatly across the seaworthiness management system. Understanding risks has been synonymous with better understanding our business—what are the critical factors in delivering capability outcomes and how can they be managed? What are our key uncertainties and what can we do about them? The upside of understanding risks has been that it has assisted in revealing opportunities and encouraging innovation and proactive leadership rather than reactive crisis management.

A related area of seaworthiness response that has gradually improved over time has been the commander or manager’s strategic assessment of a situation. Earlier responses to those types of questions from the Defence Seaworthiness Board were often sparse and unsatisfactory. Considerable improvement has been evident although this has been patchy. The quality of strategic assessments is a strong indicator of management effectiveness and performance of the seaworthiness system in specific circumstances. Key questions include: how thoroughly does senior management understand systemic uncertainties (that is, risks) and what strategies are in place to effectively manage them now, and will they likely be appropriately managed into the future?

**Communication**

One of the most positive outcomes of the Defence Seaworthiness Board process, clearly evident during successive reviews, has been greatly enhanced communication between the many agencies involved in delivering Defence maritime capabilities. During early Boards, poor communication, cooperation and coordination were often obvious. We chaired meetings where managers from different areas appeared to be meeting each other for the first time; or at least the first time that all the major participants in that mission system/class ‘enterprise’ had focused on the core issues in the same room.

There were many instances of misunderstanding and misperception between members of the same enterprise, and teamwork was demonstrably lacking. There was a great deal of frustration, waste of energy and resources, lack of focus, and lack of access to or understanding of others’ perspectives, challenges and priorities. Poor communication posed a good deal of risk at operational and enterprise levels. The seaworthiness review process helped to engender a realisation that the overwhelming majority of people from all agencies are dedicated, working hard and want to do a good job.

Although perhaps not a core intent, the requirement to periodically appear before a Defence Seaworthiness Board has, of itself, acted as a considerable catalyst to improved communication. The reviews have helped expose many systemic gaps and dysfunctionalities where multiple agencies need to work more closely together: to understand and respect each other’s contributions and challenges. Importantly, the review process has highlighted and heightened the need for agencies and people to engage frequently and effectively and work together toward common purposes.

**Seaworthiness policy and scope**

As indicated earlier, the implementation of seaworthiness reviews started as a risk control mechanism directly for the Chief of Navy but, initially, in a ‘policy vacuum’. There was a significant policy lag as the ‘running system’ learned about and developed its understanding of and the parameters around implementing seaworthiness concepts. While drawing on airworthiness experiences provided a very useful start, they were not always directly transferable to maritime systems that presented unique complexities and operating environments. An evolutionary approach was necessary and entirely reasonable as Navy/Defence were breaking new ground.
As is often the case when major change is rapidly introduced, defining the necessary policy guidance and repeatable processes will never happen quickly enough. A classic ‘cart and horse’ dilemma became apparent. The Seaworthiness Requirement Set, as a primary seaworthiness system review tool, was devised and amended by panel members based on the best advice available, in consultation with Defence senior leaders, and by applying a good deal of common sense, experience and judgment. Proactive line managers, who understood the benefits of and were eager to embrace the seaworthiness approach, used standard Seaworthiness Board questions to guide organisational and process changes, in the absence of other guidance.

This circumstance has improved since the mid-2012 formal implementation of Navy’s seaworthiness program that included post-Rizzo Review outcomes. The advent of strategic policy guidance on the Defence seaworthiness system in Defence Instruction (General) ADMIN 10-10, published in 2014, has meshed with operational policy and doctrine. Navy and Army Strategic Commands, Fleet Command, Army Forces Command, and Special Forces Command have developed guidance, including improved ongoing internal review and auditing mechanisms in the ‘running system’. This has also helped support agencies to be better informed about the requirements and expectations of an effectively functioning seaworthiness management system. A largely consistent approach to seaworthiness is now evident, while the system and its related policies and processes continue to evolve with the benefit of experience.

A major aspect of the evolving concept of seaworthiness included broadening the definition of seaworthiness and therefore the scope of Defence Seaworthiness Board reviews to encompass operational effectiveness and environmental protection compliance, in addition to safety management. The inclusion of operational effectiveness, in particular, provided significant challenges for Defence Seaworthiness Board reviewers and respondents, as the intent and scope was initially unclear. However, the boundaries of Defence Seaworthiness Board review are now reasonably clear as operational level seaworthiness development and internal review processes mature in the ‘running system’.

**Carpe diem: seaworthiness in Fleet Command**

The closer one gets to the waterfront, the greater the appreciation of the need for an effective seaworthiness system that will produce consistently high outcomes. However, there will always be some who resist change, even when the benefits are apparent. Initially, the significant workload required to respond to the demands of Defence Seaworthiness Board review—and implement comprehensive seaworthiness across the Fleet—was seen by some as an unwelcome burden. Strong, thoughtful and consistent leadership in Fleet has been necessary and clearly evident. Across Fleet Command, negative attitudes became the exception as the vast majority of senior and middle leaders and managers appeared to appreciate the multiple opportunities for improvement that seaworthiness approaches offered.

Overall, Fleet Command has been observed to take a proactive approach to seaworthiness, with Defence Seaworthiness Board reviews generally seen as a necessary intervention—even though significant time and resources accrue. Seaworthiness has been embraced within Fleet as it has across the Navy and Defence agencies that support the Fleet. Notable outcomes have included significant improvement in seaworthiness practices, especially assurance processes for post-refit preps/readiness for sea trials and return to unit readiness. Better understanding of core Navy business to essentially raise, train and sustain operational forces has resulted from improved communication and more effective application of resources. A key outcome is a Fleet that has a better foundation to acquit operational missions, including achieving warfighting readiness when necessary.

There have been numerous ‘success’ stories arising from the intensive scrutiny of Defence Seaworthiness Board review; one notable example being HMAS Success. The Board was helpful in identifying significant seaworthiness challenges that required attention and resulted in necessary resources being applied. Fleet Command devised a comprehensive process and action plan that would ensure that risks were appropriately managed to bring Success to an acceptable operational standard. After considerable effort and investment, HMAS Success was able to
effectively complete an operational deployment to the Middle East, and be awarded the Duke of Gloucester Cup for the most efficient ship in the Fleet.

**Army embraces seaworthiness**

As part of the ADF diving community, elements of Army and Special Forces have been involved since the early days of the Defence Seaworthiness Board. Extension to broader areas of Army to include Forces Command and Special Operations Command marine elements began with a successful trial demonstrator review of Army watercraft, mainly those supported from Ross Island Barracks, Townsville. Subsequently, the Defence Seaworthiness Authority and Army agreed the benefits of bringing Army watercraft into the seaworthiness fold. This was perceived by Defence Seaworthiness Board members as being particularly apposite during creation of the Amphibious Ready Element and associated aspects of ADF amphibious capability, operational and doctrinal development. A consistent approach to safety management, operational effectiveness and environmental protection in the shared maritime operational context made perfect sense.

Seaworthiness was enthusiastically and professionally embraced by Army, and opportunities for shared learnings between Navy and Army were presented that offered mutual benefits. Army Strategic Command produced timely, clear and effective guidance on seaworthiness management in the form of a Chief of Army Directive, which set the direction and tone. Army rapidly developed processes and doctrine, and the eagerness of Army marine and combat engineers to apply seaworthiness concepts was particularly impressive. The operational environment and culture of Special Forces present some unique challenges to implementing seaworthiness to the watercraft they operate, which is being addressed by Army. Overall, the advent of seaworthiness can be seen as a positive influence on developing an enhanced, joint ADF approach in the maritime context.

**Submarines and ADF diving**

From the outset, it has been obvious that the submarine community had a particularly robust, though not exhaustive, safety hazard management system through its SUBSAFE program, and many good processes to support it. There remains much that major surface ship communities could learn from our aviation and submarine communities. However, various Defence Seaworthiness Board reviews have continued to identify a range of safety (for example, hyperbaric aspects of rescue systems), training and operational effectiveness ‘opportunities for improvement’—a number of which have been enunciated and addressed through John Coles’ sustainment reviews.

ADF diving presented much more of a challenge to the implementation of seaworthiness reviews, as it is not a mission system like an aircraft or ship and, in the case of Special Forces, is merely a means of covert transport. The standard Seaworthiness questions had to be adapted to reflect the quite different application but the core principles of seaworthiness remain unchanged and have assisted the RAN Diving Force to better define its various operational outcomes.

**Extending seaworthiness review to shore infrastructure**

The Defence Seaworthiness Authority decided to extend seaworthiness reviews to selected Navy shore infrastructure, consistent with the airworthiness approach, and a pilot demonstrator Defence Seaworthiness Board of the HMAS *Coonawarra* waterfront maritime support system was convened in February 2016. The review was confined to the ability of the shore system to support the seaworthiness of operational mission systems; in the *Coonawarra* case, this principally meant the Armidale class patrol boats. The standard Seaworthiness Requirement Set was largely applied although, as expected, it proved deficient in some respects for a shore-side review and will require amendment.

The review involved Defence agencies, primarily Estate and Infrastructure Group and Commander Shore in Fleet Command, along with a prime contractor that had hitherto little or no
involvement with the Defence Seaworthiness Board. Not surprisingly, similar communication problems were observed between Navy/Estate and Infrastructure Group/prime contractors to those between the various agencies involved in the early Navy and Army operational mission system boards. Many good people in all agencies, wanting to do a good job, were being frustrated by dysfunctional processes, lack of boundary clarity and poor communication.

While it remains to be seen, it is likely that the Defence Seaworthiness Board will again prove to be a catalyst for significant improvements to not only seaworthiness outcomes but also overall relationships and effective management. The inaugural, trial infrastructure Defence Seaworthiness Board identified numerous significant risks and, importantly, listened to concerns with a balanced and unbiased approach. Improved communication, understanding and respect between agencies for what they contribute, and associated teamwork should follow.

**Seaworthiness and people**

Much positive comment has already been made in these ‘old sailors’ reflections about the fine leadership, enthusiasm, commitment and teamwork displayed by many people within the seaworthiness management system. Seaworthiness must, of course, involve a ‘whole of system approach’ that includes materiel, technical and operational systems and, vitally, people. People are not only essential assets within the seaworthiness system but the ‘oil and glue’ that make the system work and hold it together.

Although these statements are self-evident, it has taken some time and effort to have people factors fully considered in Defence Seaworthiness Board reviews—but we are getting there. Like all aspects, there is room for improvement so that personnel factors can be effectively reviewed to ensure that processes are well aligned to and supportive of the requirements for high-performing seaworthiness outcomes.

**Seaworthiness and Seaworthiness Boards – an impost?**

During early Defence Seaworthiness Boards, the word ‘impost’ was heard muttered by some managers at all levels. Implementing seaworthiness processes and responding to the requirements of a Defence Seaworthiness Board review certainly introduce a great deal of work. Seaworthiness brought a change in focus, practice and repeatable processes, especially independent assurance systems that had deteriorated over time.

Among other important outcomes, such processes and evidence were essential in Defence’s response to the new *Workplace Health and Safety Act*. Interestingly, the Submarine community has consistently identified the benefits of Defence Seaworthiness Board reviews despite the additional work. Early Defence Seaworthiness Boards identified a number of major systemic shortcomings in configuration management, certification, and technical integrity management that have subsequently helped inform the design of the new Defence Seaworthiness management system.

A widespread awakening has been evident: the realisation that seaworthiness should be a normal and regular way of doing business along with the need to develop systems and processes that deliver good seaworthiness outcomes as a matter of course. Once a mature and operationally effective seaworthiness management system is in place, with ongoing internal audit and review processes, responding to a Defence Seaworthiness Board review should not take a great deal of extra effort.

Most thinking people see the Defence Seaworthiness Board as a positive opportunity that can lead to solving problems and getting resources. The word ‘impost’ is now infrequently murmured—at least within earshot of Board members; thankfully, as we can be a sensitive lot!
Some overall perceptions to ponder

The commitment to achieving positive seaworthiness outcomes from Defence leaders has been impressive. That is not to understate the challenges inherent so far and to be faced in the future. One area of ongoing challenge is the systemic role dichotomy that two key leaders in the seaworthiness management system constantly face and must reconcile: the Chief of Navy as the Navy Capability Manager responsible for Navy’s outcomes on the one hand, and the Defence Seaworthiness Authority, with his regulatory remit on the other; and Head Navy Engineering, with line responsibilities for seaworthiness support while also being the single Seaworthiness Regulator.

In the civilian world, the role of regulatory authority is usually performed by an independent agency, for example the Australian Maritime Safety Authority or Civil Aviation Safety Authority. There will inevitably be conflicts and contradictions that Chief of Navy and Head Navy Engineering will have to deal with in discharging these large responsibilities. The role of independent Defence Seaworthiness Boards, comprised of capable and experienced officers with a mandate to provide fearless and constructive recommendations, assumes heightened relevance and importance in this regulatory/management construct.

Our experience in interacting with senior Defence leaders has been, without exception, very good. Relationships have been respectful and supportive. We have served three Chiefs of Navy and all have been unequivocal in their commitment to seaworthiness and the role of the Defence Seaworthiness Board. They have also, with rare exceptions involving some necessary modification, accepted and directed implementation of the recommendations arising from Defence Seaworthiness Board reviews.

We believe that Navy and Army maritime capabilities are now in a much stronger position to acquit operating intent and meet operational commitments than prior to the implementation of the Defence Seaworthiness management system. There is a much better understanding by all involved in Defence maritime enterprises of risks, processes and resources required to deliver outcomes required by government and for the nation. The Defence Seaworthiness Board is being used effectively to inform improved outcomes: to force compliance when necessary, identify change that may be required, guide resource allocation and priorities, and above all enhance safety for Defence people and materiel.

Seaworthiness and the Defence Seaworthiness Board are proving to be effective mechanisms for enhancing our maritime capability outcomes; they represent exemplars of Navy (and Army) proactively taking control of its own destiny. There is an abiding need to guard against complacency and recidivism. The ‘nay-sayers’ need to be constantly challenged, the independence of Defence Seaworthiness Board reviews as high-level risk assurance must be maintained, and the necessary resources to conduct effective reviews need to be found.

If Defence Seaworthiness Boards decline in frequency and coverage or are drawn into the ‘running system’, there will be a gradual and inexorable atrophy back to the ‘bad old days’ as epitomised by the LPA debacle. As an aside, it is notable that Airworthiness Board processes appear to have become increasingly routinised and process oriented; the special and flexible role of Defence Seaworthiness Board review needs to be preserved.

We have both enjoyed worthwhile Defence Seaworthiness Board experiences and believe we have made useful contributions. Navy and Defence more broadly is in much better shape as a result of embracing seaworthiness. We are fortunate to have been allowed to contribute in this way at this stage of our careers and we hope that our reflections will be of interest and may even cause some others to reflect.
Rear Admiral Trevor Ruting, AM, CSC, RANR was a Technical Member of the Defence Seaworthiness Board and Panel Coordinator from its outset in June 2009. His almost 40-year permanent naval career as a naval architect and marine engineer culminated in four years as Head Maritime Systems in Defence Materiel Organization.

Commodore Lee Cordner, AM, RANR was an Operational Member of the Defence Seaworthiness Board from November 2010. His 33 years’ permanent naval service included several sea commands. He was the founding CEO of Future Directions International and is an academic researcher focused on Indo-Pacific maritime security and strategic risk.

Notes


