Implementing Safety Management Systems for Passenger Vessels

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"The world hates change and yet it is the only thing that has brought progress" – *Charles Kettering.*

INTRODUCTION

All too often, major accidents are the catalyst for change in the maritime industry. Evidence of this is seen in the development and implementation of maritime conventions and codes in existence today. The International Safety Management (ISM) Code, the result of such a catalyst, was meant to change this reactive nature. The ISM Code intended to promote a safety culture wherein risks are properly considered, work is effectively planned, personal accountability is enhanced, and operations are continually improved.

Unfortunately, this target was missed in many cases and a pervasive by-product called compliance culture set in, wherein the system achieves the minimum and only to satisfy regulators. The maritime industry and regulators learned much from this experience. We know now that if the true value of safety management systems (SMS) is not realized, further implementation efforts become self-defeating. This leads to even more than normal resistance from many who have seen colleagues, shipmates and competitors negatively impacted. A carefully planned implementation strategy expanding the use of safety management systems (SMS) to domestic passenger vessels should therefore be executed to avoid these pitfalls. As Safety Management Systems for domestic passenger vessels are intended in the same way as those for SOLAS[1] vessels, we must apply lessons that have been learned from similar regulatory efforts.

In this paper, recommendations are made for implementing SMSs for domestic passenger vessels (PV) based on the concepts of **incentives, scalability, and collective use of resources**. When implemented in the right way and for the right reasons, the value that SMSs offer passenger vessel owner/operators is maximized, while the cost of implementation is minimized.

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[1] SOLAS – The International Convention of Safety of Life at Sea (SOLAS) that mandates requirements for categories of vessels on international passages

BACKGROUND - RESISTANCE TO CHANGE

Looking at the data from the 1980's to date, one would expect to see a decline in marine casualties starting in 1998 when the ISM code's first compliance deadline came into effect. Initially the data shows a downward trend for a few years and then a spike starting in 2001. Those resisting change brought about by the ISM code would argue that the code had not delivered any improvements. However, the upward trend peaked in 2008 and has since seen a decline.

When a new management system is put in place, irrespective of industry, the first sign of success albeit non-intuitive, is a spike in accidents, incidents and hazardous occurrences. This leading indicator should be accepted as a positive as it demonstrates that the personnel within the system have started reporting non-conformities that went unreported before. This reporting enables corrective action to be taken in a systematic manner to prevent a similar non-conformity from occurring again.

In the domestic passenger vessel industry, those against regulations for SMSs will claim that there have only been a few major incidents and therefore not everyone should suffer from more regulation. These few major incidents were identified because they were too large to be missed. Many leading indicators of passenger vessel risk are undetected or unreported (including near misses). As seen with data related to the ISM code, the eventual decline in major occurrences was a result of the sharing of

> "I will say that I cannot imagine any condition which could cause a ship to founder. I cannot conceive of any vital disaster happening to this vessel."
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> - Captain of the MV Titanic

information across companies and countries to improve the maritime transportation system and industry. The corrective actions implemented have led to improved and streamlined inspection regimes, better construction requirements and standardized competency criteria.

Naysayers of the ISM Code and Safety Management Systems will also say the Code has only created unnecessary bureaucracy and paperwork. Those familiar with the 12-page ISM Code know that the code does not prescribe this at all. If unnecessary bureaucracy and paperwork are produced, it is likely a function of poor system design, poor implementation, or other external drivers, not the prescription of the Code.

Another common criticism of implementing SMSs is assumed costs. Implementing a SMS, however, need not be expensive. As regulated vessels, domestic passenger vessels already have many relevant safety standards and best practices implemented through industry association recommendations or through compliance with regulations in 46 CFR Subchapter T and K. In the case of passenger vessels, the complexity in implementing the SMS (and therefore the related costs) will depend on the size and structure of the organization, the number of vessels it operates, and the number of employees engaged on each vessel. Smaller companies with a fewer number of vessels (less than five) should be able to implement a SMS within a relatively short period of three to five months, especially with external technical assistance or through the expert advice provided by consultants specializing in the industry.

THE OBJECTIVE – SAFETY CULTURE

The development of safety standards has unequivocally changed the trajectory of maritime safety dating back to the implementation of SOLAS in 1914 after the sinking of the MV Titanic. Since then, it has been in the best interest of the maritime industry to develop regulations to address a particular safety hazard. Looking into the future however, these prescriptive standards and compliance once thought synonymous with maritime safety, are not enough and need changes incorporating greater involvement of the management and employees apart from the statutory bodies.

With advances in technology, changes in risk profiles, increased operational complexity, and heightened environmental expectations, what may be safe in today's operating environment is increasingly not safe tomorrow. Compliance with prescriptive safety standards only "gets you to safe" for a certain time, a certain operation, a certain crew, under certain conditions, and likely is determined by a few, not the many. Even the nature of standards themselves are changing to be more non-prescriptive such that owners/operators must assess their own risk and plan how those risks are mitigated. This industry knows that because the maritime operating environment is uncertain, complex and ever changing, it takes a healthy safety culture among all involved, not just a static compliance with prescriptive regulations, to stay safe. A Safety Management System is a significant ingredient to producing a healthy safety culture. Implementing maritime safety is not a paper exercise, it is motivating all involved in creating an environment for safety.

The objective of the ISM Code when implemented in 1998 and mentioned now again in the U.S. Coast Guard's Advance Notice of Rulemaking for SMS, is to promote safety culture. Plenty has been written about safety culture in the past two decades, and many

prolific accidents have pointed to lack of safety culture to explain why and how these disasters occurred. Even regulators themselves are not immune to safety culture deficiencies.

Safety Culture is discussed in depth in "Strengthening the Safety Culture of the Offshore Oil and Gas Industry" produced by the Transportation Research Board in 2016. Therein, safety culture is characterized by "all leaders' commitment to safety, actions that reflect broad personal accountability for safety, consistent safety communication, an attitude of inquiry throughout the organization, diligent hazard identification and swift management of identified hazards, and a respectful work environment that encourages raising concerns and addressing unsafe conditions." (Committee on Offshore Oil and Gas Safety Culture, 2016)

Leadership Commitment

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Employee Engagement

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SMS Success

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Safety Culture

As an implementation strategy for Passenger Vessels is formulated, the objective to promote safety culture should be kept in mind. An ill-conceived plan using a heavy hand to implement Safety Management Systems can easily work against the intended outcome: a safety culture that includes owners/operators' commitment to safety, crew accountability for safety, and onboard hazard identification, to name a few. The long-held view that you can't inspect quality into a product holds true for safety as well. If we truly want safety, we all have to invest in the process of developing safety culture through Safety Management Systems on domestic passenger vessels. A Safety Management System and a safety culture will not only produce compliance with regulations, but also many other tangible benefits including reduced deficiencies, reduce marine casualties, and therefore reducing overall operating costs.

EXECUTION - IMPLEMENTATION FOR SMALL PASSENGER VESSELS

As stated in the U.S. Coast Guard's Advance Notice of Public Rulemaking, for two decades the National Transportation Safety Board (NTSB) has identified issues with failed safety management as a probable cause or contributing factor in several very serious casualties involving passenger vessels including the latest: the loss of the *Conception* Dive boat with 34 lives in September 2019. The U.S. Coast Guard developing and enforcing more safety standards is no longer enough to prevent similar casualties. It the time to implement

Safety Management Systems for all passenger vessels in such a way that owners, operators and crews own their safety system, assess and address risks, monitor and control their processes, engage and communicate with on safety matters, and continually improve.

How it is implemented matters; it has to be more than just compliance. In true management system fashion, if the objective is to promote safety culture, both the product and the process of implementing SMS matters. The key to successfully implementing SMS on passenger vessels hinges on three key concepts: **incentives, scalability and collective use of resources**. These concepts aim to address long held and perhaps valid criticism of SMSs including the lack of tangible value/return on investment (*incentives*), unnecessary administrative burden (*scalability*), and high cost/lack of resources (*collective use of resources*.)

> "Hazards are ever-present. They must be identified, analyzed, evaluated and controlled or rationally accepted."
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> - Jerome F. Lederer

INCENTIVES TO IMPLEMENT AN SMS

Requiring and enforcing domestic passenger vessels to implement Safety Management Systems alone will not achieve the desired outcome of safety culture as stated above but likely only the minimum implementation to satisfy regulators. The best approach is to incentivize Safety Management Systems such that owner/operators will realize the business case for the positive return on investment. There are of course inherent financial and operational advantages beyond safety for vessel owners/operators to implement Safety Management Systems including better support for their vessel, reduction in costly accidents, reduced operating costs, and improved maintenance, all leading to reduction in overall cost of ownership. Unfortunately, the resistance to change in the marine industry is a strong force that prevents these advantages from being realized.

As the regulator too stands to benefit from the implementation of SMSs in terms of less enforcement resources, this value should be passed back to the vessel operators in terms of direct incentives to counterbalance any initial reluctance by vessel owner/operators. Specifically, design *simplicity, reduced regulatory inspections and fees, flexibility* for compliance verification, and *recognition* should be offered.

Humans resist change and thus keeping implementation simple will oil the process for acceptance of change. Regulators need to make implementation, compliance and verification of SMSs easy. This does not mean the regulator should do it for them by providing fill-in-the-blank management system manuals or similar services, but quite the opposite. Education on simplifying implementation by using a concise set of passenger vessel safety management requirements is needed. Many owner/operators already have a management system; it may only need a few enhancements to meet the proposed safety management system requirements.

As has already been offered to owner/operators during recent times to account for limited inspection resources, but should be solidified in regulations, the U.S. Coast Guard should offer reduced inspections and associated fees as a result of the new requirement to implement Safety Management Systems. One can even argue that limits on U.S. Coast Guard resources are a good thing, since as mentioned, you cannot inspect quality (safety) into the product and, as it turns out the more the U.S. Coast Guard checks on compliance, the more responsibility is taken away from owner/operators to actually be in compliance. Hand in hand with offering reduced inspections should come the flexibility on how and when compliance verifications actually take place. Many of these ideas have been utilized including use of Third Parties, internal surveys and audits, as well as remote verification activities.[2]The reliance on Third Parties also allows the U.S. Coast Guard to take on more of an oversight role as a regulator.

Lastly, a simple yet effective incentive especially in the passenger vessel industry is recognition. Passenger vessel operators who interface directly with the public stand to benefit greatly by being recognized by the U.S. Coast Guard for their implementation of a Safety Management System. This has many times over proven to be a win-win with passenger vessel operators. It is cheap for U.S. Coast Guard to execute, and valuable for the Passenger Vessel owner/operator to achieve. Should there be fear that all owner/operators will want to achieve this designation or certificate for this accomplishment, consider that this is exactly the behavior desired. An assessment program similar to *Qualship 21* could be considered, where good implementation of the SMS would allow owners certain benefits such as reduced inspections.

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[2] QMII is a SME in process-based management systems. This explanation is offered to distinguish, the product from the operations. The state of the vessel in materiel terms and how the vessel is operated are mutually exclusive and yet interconnected. Both the state of the vessel and the way it is operated are important. USCG is the best judge on required inspections and surveys. QMII strongly recommends the implementation of SMS as a tried tool to manage the PV operations in a systematic manner.

SMS SCALABILITY

Despite the naysayers, a SMS does not have to be overly bureaucratic and administratively burdensome. We should all realize that the safety needs of the passenger vessel operator vary by degree not kind. The small charter boat operator needs the same kind of risk assessment and continual improvement process as a large cruise ship, but obviously the degree of detail needed for a cruise ship will be much higher. Interpretation of safety management requirements and scaled solutions are needed to fit small passenger vessel operators.[3]

While SMSs can be scaled for even the smallest small vessel operator, it is recognized that alternative ways to demonstrate safe operation and compliance should be offered. Regulations can be constructed such that functional requirements of safety management are mandatory, are monitored, and periodically audited to the extent necessary. The functional requirements of safety management system for towing vessels for example, are in 46 CFR 138.215 and include items such as:

(1) Defined levels of authority between shoreside and vessel personnel.
(2) Procedures for internal surveys.
(3) Procedures for reporting accidents and non-conformities; and
(4) Procedures to prepare for emergencies.

Such functional requirements should be constructed in such a way to allow the vessel owner/operator to tailor the SMS to meet the intent of the requirements.

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[3] A vessel owner may say "I only operate one boat and I am the owner too. Why do I need an SMS?" A SMS is needed to work in a systematic manner for even a smaller vessel. The extent of the SMS details could be as needed. After all, an over documented SMS has never been the recommendation of the regulators. Documented to the extent necessary is an ownership decision. Demonstrating that the risks have been considered, preventative maintenance is performed, non-conformities are identified and corrected, and safety is continually improved would be part of the SMS.

While compliance is a byproduct, the purpose of SMS is not actually compliance, but rather instilling a safety culture on board and creating a safe work environment for all. The commitment to the safety culture starts at the top. Leadership's commitment only needs to be communicated such that checks, and balances can be established to hold them accountable to it. Competent and engaged employees working in a congenial safety environment is best able to implement an effective management system.

For those owner/operators choosing to implement a SMS, regulators should provide guidance for scalable options to vessel owner/operators, with flexibility offered for the agreed manner in which the compliance and verification will be determined based on the operator's risk profile and capabilities. In this way, the regulatory approach needs to shift from focusing on compliance and policing to serving as a safety resource that works with industry to improve their practices. (Committee on Offshore Oil and Gas Safety Culture, 2016) These agreed practices would then be required to be captured in their SMS. For example, while some owner/operators may have an electronic preventative maintenance system, others may choose to track preventative maintenance in a less expensive but still verifiable manner.[4]

COLLECTIVE USE OF RESOURCES

Implementation and operational costs can be minimized if approached collectively by regulators, industry associations, and owner/operators. The U.S. Coast Guard has already invested significant resources in creating a Third-Party Organization (TPO) regime to assist with survey, audit and certification of towing vessels as an alternative to traditional U.S. Coast Guard inspection. It makes sense that this system, including lessons learned from its design and implementation, will be leveraged for passenger vessel safety in a similar fashion. While one may look at utilization of Third Parties as an unnecessary cost; however, their benefits and flexibility should be considered. Third Parties should be viewed as privatized collective industry resources, offered as choice, not a requirement. Savings to U.S. Coast Guard resources that would have been spent performing, training and administering traditional inspections should be passed back to the industry for their use in employing Third Parties.

Safety Management Systems have also proven to be a good mechanism to capture, implement and share industry best practices via industry associations and industry segments at large. The wider existence of safety management systems in the passenger vessel industry provides a welcome home for these services to be utilized by their membership, making their services more valuable. In turn, once SMSs become well established, industry associations play a key role in making SMSs more valuable. For

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[4] Flexibility for verifying compliance should be extended to allow a range of methods. The obvious example is the use of approved Third Parties to perform audits and surveys, but verification of compliance can be extended to other methods such as providing diagnostic records and other innovative solutions if agreed and captured in a vessel's SMS.

example, the collection and analysis of near miss data collected from the passenger vessel industry at large can be fed back to members so that SMSs can be continually improved.

Industry Associations also have a key role to play in preparing for the implementation of SMSs. The introduction, familiarization, training and initial implementation of voluntary SMSs before regulatory implementation deadlines stand to greatly reduce startup cost for vessel owner/operators, and in many cases together with scaled options mentioned above, may result in costs not being felt significantly.

CONCLUSION

The U.S. Coast Guard is an agency, globally respected for providing and verifying that requirements are met for maritime safety, security and prevention of pollution. The vital role of the statutory body, however well intended, should not replace the inescapable responsibility for the vessel owner/operator to be complying and operate safely.

The U.S. Coast Guard should therefore consider **not** being an alternate option to a TPO. Rather, it is recommended that the U.S. Coast Guard focus on being a safety resource and providing oversight of Third Parties, including:

1. Retain and build the expertise and make it available by providing correct requirements and industry outreach.
2. To provide the correct objective inputs to Congress and Executive for funding, resourcing and legislation/ rulemaking.
3. Ensuring TPOs and nominated bodies perform their services meeting the highest expectations of the U.S. Coast Guard and ensuring safety in vessel operations in the domestic waters.
4. Provide regular feedback to TPOs on their performance measured against requirements and actual casualty-free performance of the industry.
5. PVs SMS implementation assessment to also be part of TPOs charter.

Considering the tragedies that necessitated the need for Safety Management Systems, it is essential that domestic passenger vessel owners/ operators are stakeholders in implementation. That they would voluntarily implement SMSs without statutory requirements is unlikely. Our maritime history from Titanic through sinking of the Herald of Free Enterprise to the ISM Code, and on to towing vessels regulated under Subchapter M is example enough to demonstrate this point. Our present-day challenge is to apply the lessons we have learned to implement this rulemaking effectively. The solutions lie in how

the U.S. Coast Guard, along with industry partners, design a strategy to incentivize, scale and use their collective resources. That safety culture is needed is hardly debatable and water under the bridge.

REFERENCES

Committee on Offshore Oil and Gas Safety Culture. (2016). *Strenghthening the Safety Culture of the Offshore Oil and Gas Industry.* Washington, DC: Transportation Research Board.