From Cost to Profit: A Fresh Look at Safety Management

Rajesh J-Purkar, (Product Manager, BASS AS)

This paper addresses how ship owners can profit from improving safety in ship operations. The author argues that shipowners and ship operators with access to effective reporting and safety information systems can significantly improve both safety performance and their financial results.

INTRODUCTION

Despite a growing body of evidence proving the relationship between improved safety performance and positive financial results, many shipowners continue to embrace old ways of thinking about safety and risk management.

Traditionally, shipowners have looked at safety management as a cost issue; costs related to accidents, such as repairs, compensation and medical treatment, costs associated with prevention, such as purchasing safety equipment and investing in crew training, and costs connected to maritime legislation, compliance and intrusive inspections by international and regional authorities. In addition, many shipowners, including those who invest significant time and resources into prevention, continue to view accidents as unavoidable acts of fate.

But in the past years, a new understanding of safety management has emerged. The industry has recognised that the costs associated with accidents far exceeds costs related to prevention and that a structured safety management strategy can yield substantial returns. For the first time, the industry is beginning to understand that there is no contradiction between safe operations and efficient, profitable fleet management; the two goals are compatible and interlinked. And by committing resources towards safe operations and efficient fleet management simultaneously; shipowners can increase their chances for success.

This paper explores how shipping companies can improve profits if they address and manage safety in a systematically. Outmoded paper-based systems, or the use of stand-alone data systems are helpful, but cannot achieve real results across the organisation. Such systems often reduce safety managers to "bookkeepers" rather than "drivers" of fleet-wide improvements and knowledge-sharing. While such simple systems may give executives a false sense of control, they remain dependent on an individual to track a lot of detailed safety information on a full-time basis. Such an organisation model often creates an environment where "islands of information" become scattered throughout the organisation, thus being of little use.

Safety managers with access to all the important information need the tools and systems to improve processing and analysis. They will also benefit from systems which allow them to disseminate their findings to the right people so actions can be taken to improve operations across the fleet and the organisation. Without involving the organisation itself into the process of performance measurement, improvement planning, and execution and follow up, it is difficult to imagine how "bookkeeper" safety managers can achieve safe operations.

This paper addresses:–

1. Why accidents happen and how these relate to other factors influencing operational performance
2. Why so many accidents, near-accidents and non-conformities are not reported
3. What the real costs of accidents are, how they affect the company's bottom line
4. How to identify and prioritize improvement actions to achieve the highest returns
5. How to establish company-wide improvement plans

The conclusion is that ship owners and ship operators can significantly improve both safety performance and financial results if they utilise effective systems for the reporting- and management of safety information, and take a holistic approach to ensure "lessons learned" are applied across the whole organisation.

Accidents and Loss

Over the last five years, the shipping industry is using the word "accident" to describe a broad range of events. Previously, accidents were defined by number of categories, including "injury", "death", "collision", "grounding", "fire", "explosion", etc. Today, an accident is more generally considered to be an undesired event which results in a "***loss***". Loss can be used to describe the following:

1. Harm to ***personnel*** (e.g. injury, death)
2. Harm to ***property*** (e.g. any damage to material such as the ship, equipment, third party, etc.)
3. Harm to ***process*** (e.g. any downtime or interruption to operational processes and service)
4. Harm to ***the environment*** (e.g. marine-, air-, coastal landscape)

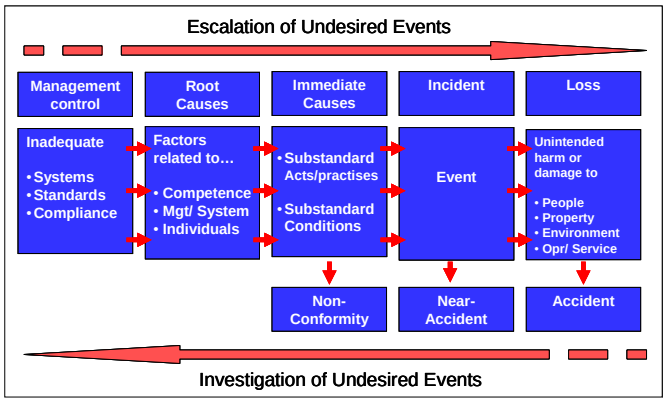
As such, a ship's detention by Port State Control is an interruption to the ship's operations, resulting in loss of time

which may impair the vessel's ability to trade. This is definitely a "***loss***" to the company.

Likewise, unexpected rejection of the ship by a potential charterer (on the grounds of sub-standard conditions or – practices) is also a loss to the shipowner, often with significant negative monetary consequences. Oil spill incidents, damages to third party property or own, or injury to personnel are other ***loss-resulting events,*** ranging from managing grief to direct costs, loss of time and goodwill to the extra effort management must devote to correcting restoring the situation.

If we look at the factors that cause loss, there is a strong relation between the "management of safety" and how well the company is managed for efficient operational performance. Peter Drucker, the well-known management guru, said: *"The first duty of business is to survive and the guiding principle of business economics is not the maximization of profit – it is the avoidance of loss."*

To take this concept from theory to practice, it is necessary for any company to establish a common and practical model across its organistation for defining and understanding "loss, cause and effect". One such well-defined and logical Loss Causation Model is suggested below, inspired by the model of DNV/ the International Loss Control Institute (ILCI)[1].



Using loss causation models like this, the fleet and the organisation ashore are able to understand why accidents happen, agree on how to measure loss in a consistent manner and to follow a logical sequence from the actual loss (or incident) backwards to the causes of the loss and eventually, all the way back to the factors in the company's management control system that need to be improved.

By strengthening management reporting, improvement planning and actions around a loss causation model, shipowners and ship operators will find it easier to identify improvements that should be prioritized in the company's action plan for the next 6-12 months. A systematic way to handle this process helps management to allocate resources to those initiatives that will have most impact on safety and operational performance across the fleet. Without any such system, it is likely that safety management systems will have less effect on the actual operations of the fleet, or worse, may allow such issues to be treated haphazardly.

The Challenge of Getting Incidents Reported

Before one can systematically analyse and take action to improve safety, shipowners must gather information (facts) about the accidents, near-accidents and non-conformities across the fleet. In all companies of size and operations, there are a fair number of such incidents in a year. Many of these are reported, but a large number are not reported at all.

Thanks in part to a focus on safety issues from regulatory bodies, enforcers, charterers and the public, knowledge and awareness of safety is gradually improving in the shipping industry. But quite certainly, there is still reluctance in shipping to report events. Seven years ago (in 2000), the Nautical Institute (UK, London) conducted a survey where 3,000 participants were asked "why so many events go un-reported". The results were not very encouraging. The three most cited reasons were:

1. Not enough time/ resources
2. Fear of adverse effect on career
3. Fear of losing job

After examining the issue more closely, I believe these reasons can be attributed to typical challenges companies face in handling incident reporting in a systematic and constructive manner. The following experiences are common:

a) A lengthy internal process for registration of events and duplication of entries prevails.
b) Poor understanding of "loss control principles" and the nature of accidents.
c) Delayed- or lack of feedback (or negative feedback) from office to the one who reported the event.
d) Almost non-existent Experience Transfer ("Lesson Learnt") to the other ships in the fleet.

Therefore, it is no surprise that the Nautical Institute recommended that ship owners should do what they could to ease the making-, sending- and analysing of reports. And, they should ensure rapid, useful, accessible and intelligible feedback to the reporting community (the fleet).

Cost of Accidents

The costs of accidents can be quite significant, and often involves cost-elements that one does not initially think about. Marine insurance usually covers direct costs, but the deductibles ("own risk"), management time, decreased productivity, loss of goodwill and loss of potential new business as well as other factors - eat into company profits.

[1] *"Practical Loss Control Leadership"* by Frank E. Bird, Jr. and George L. Germain, published by Institute Publishing, ISBN-0-88061-054-9

To expedite insurance settlements, it is necessary to keep good track of the costs of damages and undesired events. In most companies, this is regarded as an accounting/ insurance issue and the information is not linked with other safety information or used as basis to prioritize safety improvement initiatives. One such example is given below where various events have caused the loss of USD 975k. 515k is reimbursed from the insurance while 460k is classified as "extraordinary expenses" that directly affect the bottom line result of the company ("expensed out").

Table 1. Fleet Budget Follow Up 3Q – Claims

Fleet Budget Follow Up 3Q - Claims				
Events (damage/ loss)	**Expenses**	**Deductible**	**Reimbursed**	**Expensed out**
Fuel oil heater casualty	105 916	75 000	30 916	75 000
Ship's service generator engine	161 029	75 000	86 029	75 000
Damage to ship's 22 ton deck lifter	13 153	10 000	3 153	10 000
Propeller damage	115 112	50 000	65 112	50 000
Boiler tube failure	146 246	50 000	96 246	50 000
Contact with pier/ dock in Rotterdam	187 565	100 000	87 565	100 000
Cargo: Delayed discharge in Rotterdam	245 780	100 000	145 780	100 000
Sub Totals (USD)	**974 801**	**460 000**	**514 801**	**460 000**

Bottom line results are affected by the costs of undesired events. To put it in perspective, it is useful to compare how much revenue one has to generate to compensate for the loss. Suppose a company operate around a profit margin of 20%, they would need to make ***2.0 million USD in charter income*** to cover the loss of 400,000 USD in undesired events. This is quite significant and usually something that would draw the attention of any top management as it ***equals 80 days of trading*** at USD 25,000 per day.

Table 2. Yearly Costs of Undesired Events

What accidents really costs...			
Yearly costs of undesired events - (loss that is not reimbursed by insurance)	**If the average profit margin of your business is...**		
	10%	**20%**	**30%**
USD 100 000	1 000 000	500 000	333 333
USD 200 000	2 000 000	1 000 000	666 667
USD 300 000	3 000 000	1 500 000	1 000 000
USD 400 000	4 000 000	2 000 000	1 333 333
	This is the charter income (revenue) required to cover the yearly costs of undesired events		

In essence, when accidents occur – the company pays a price ("the costs of the accident"). The only thing it gets in return is the information about the accident and the events which lead to the event – information that can be used to prevent similar accidents in the future. It is up to the management to use that information and to decide whether to act on it or not.

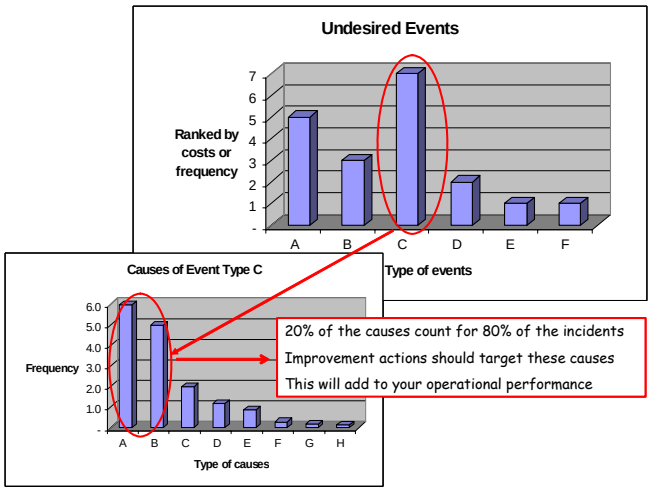
Prioritise Improvement Actions with Highest Returns

There are two ways for organisations to learn from accidents. One is the methodical investigation and careful review of each incident using the Loss Causation Model to diagnose what immediate causes and root causes that allowed the incident to occur. Most shipping companies take this seriously - and for major incidents in their fleet, they devote significant time and resources into analysing all the information that is available.

Another way to get information out of accidents is to analyse the data to look for trends. For example, trend analysis can show that a large number of incidents involve the use of certain equipment or materials, involve people with inadequate levels of experience or occur in certain type of operations, time of the day, or similar. Again – the Loss Causation Model is essential in order to ensure systematic encoding of the information and enabling ship operators to track the incidents from "loss" to necessary improvements in the "management control system", and use the data in a logical and meaningful manner.

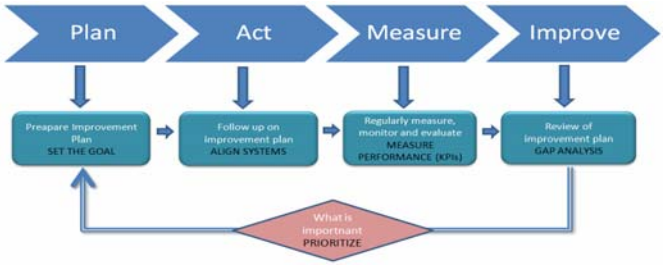
It is my view that shipowners should learn to put a price on accidents and measure them in "dollars & cents". This is not to suggest that shipowners should apply cost models on accidents which result in personal injury or death – there can be no measure of grief. But by being able to measure and visualize the costs of accidents, it is possible for safety manager to get the necessary top management attention and consequently get the resources and backing to implement company-wide and fleet-wide safety improvements.

If we consider the Pareto Principle (20% of the incidents count for 80% of the loss), it makes sense for shipowners to assist safety managers to focus company initiatives, action plans and resources on the areas where the efforts will have largest impact for its safety performance. A safe operation is an efficient and cost effective operation – and this will render good results on the company's bottom line.



Company-wide Plans for Continuous Improvement

Once accidents are reported, analysed and appropriate actions are planned for, a new challenge arises: Implementation. Naturally, the required actions will most often involve personnel and organisational units outside the direct influence of the safety manager. To achieve implementation, "top management support" alone will not suffice. Safety managers also need a practical way to establish action plans, where responsibilities and timelines are assigned to the right people. The action plan can be merged into the company's "annual operating plan" or be included in the "portfolio of company projects" or be separately managed. In any case, it is essential that this is taken beyond the planning stage by insisting that those responsible for actions, sub-actions, status reviews, etc. issue regular progress reports and remain committed to measuring of safety performance.



Significant gains can be achieved in company performance and financial results if safety is managed across the fleet and in shore-based organisation in more a systematic manner. If such proposals are put on the agenda in management meetings, safety managers will soon get a wider role to drive continuous improvements across the fleet and the company rather than being reduced to mere custodians of safety information and audit/ inspection results.

But, shipowners have larger challenges in achieving these improvements results than conventional land based industries. They recruit from different geographical locations, often have high turn-over rates and their organisational units (the ships) are constantly on the move and difficult to reach.

The industry faces significant challenges in improving safety, and these challenges demand a much more systematic and holistic approach than before. At present, is it difficult to imagine how these demands can be met without more investment into IT solutions. Robust software systems are required onboard and ashore – systems which enable synchronised data so that shipowners can have access to efficient reporting, the capability to analyse data for trends in a logical manner and the tools to plan and follow actions for improvements and submit experience transfer to the entire fleet. This will render improvement in safety- and operational performance, facilitate knowledge sharing across the organisation, and in time, create a safer, more profitable industry.

About BASS

BASS is a maritime software company providing ship management software to ship owners and ship managers world-wide. With the mission to "*streamline maritime operations*", it is an independent company - not being part of or affiliated to any ship owner, ship management company or shipping group.

Since 1997, BASS has developed and delivered software products and services to ship owners, ship managers, crew managers and offshore companies world-wide. Allocating 25 per cent of the company's annual costs to product innovation ensure that BASSnet™ Fleet Management Systems are simple, effective, and future proof – an easy to use software tool meeting the demands of maritime companies, today and tomorrow. The integrated suite is designed to optimize fleet administration and operations, planned maintenance, inventory control, purchasing, safety-, quality-, risk- and environmental management, document management, crew/ HR management and payroll, and accounting/finance.

The systems supports a wide range of marine standards including TMSA, ISM Code, SOLAS, ISPS Code, Marpol 73/78, STCW, the IBC Code, and more general standards such as ISO9001, ISO14001, etc.

For more information, please send an email to contact@BASSnet.no or visit BASS website: www.bassnet.no