

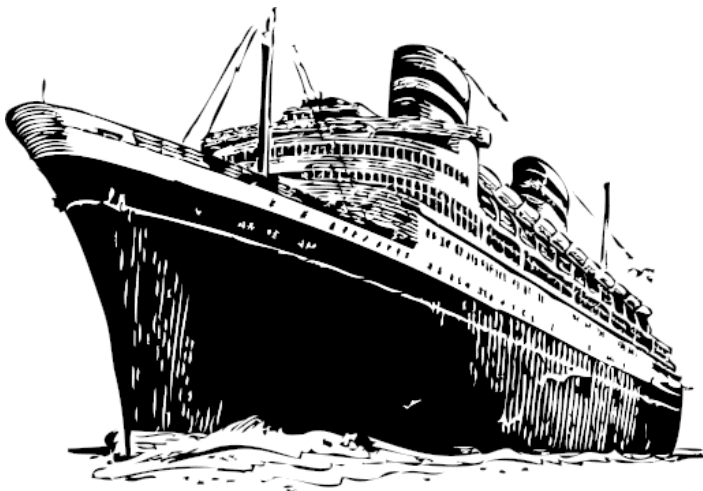
# MASSA Outreach

December 2016

*“You must not lose faith in humanity. Humanity is like an **ocean**; if few drops of the **ocean** are dirty, the **ocean** does not become dirty” - Mahatma Gandhi*

**Merry Christmas**





**Capt Shiv Halbe**

Dear friends,

With only 10 days left to ring in 2017, I am reflecting on 2016, the year that has been.

Indian sport seems to be on a high, with our Junior men's hockey team beating the Belgians to lift the Junior World cup after 15 long years. Our cricket seems to be on a roll; this time dominating our past colonial masters, with ruthlessness- Virat Kohli with a double century, and young Karun Nair outshining his illustrious skipper with a triple hundred!

The tone was set during the Olympics. When far more illustrious contenders fell by the wayside, PV Sindhu got the entire nation on its feet, by surprising everyone to reach the Badminton finals, and while Deepa Karmakar vaulted into the hearts of the nation, little Sakshi had the nation on the mat, quite literally!

In our field, Capt.Radhika Menon became the first Indian to receive the coveted IMO Bravery at Sea award at a glittering ceremony at the headquarters in London, thereby entering the record books! Woman power at its peak! Way to go!

As the nation recovers from a surgical strike of another kind- that of demonetisation, the shipping industry seems to be taking its time to shake off

its lethargy. The pundits believe that all the right ingredients for a recovery are there: Baltic Dry Index has recovered from a low of 290 in Feb 2016 to 980 in Dec 2016, bunker prices have gone up from USD 161/mt in Feb 2016 to USD 298/mt in Dec 2016, benchmark Brent Crude has gone up from USD 30 per bbl in Feb 2016 to USD 55.21 per bbl in Dec 2016; yet there does not seem any optimism in the shipping markets.

There is absolute mayhem in the container segment, large names having gone belly up- Hanjin in particular, others like Hamburg Sud having found suitors to survive, and 3 Japanese majors pooling operations to reduce competition. Thus, consolidation seems to be the name of the game.

In Ship management circles: V Ships Group acquired Bibby Ship management and then the local Ship management giant, Selandia; consolidation being the key to survival.

Things have been hyperactive at IMO too, with the Container weight rule kicking in, Ballast Water Convention being ratified, and emission control norms being brought forward from 2025 to 2020. Some pundits believe that some of these changes may give the impetus to the shipping industry (read freight markets) to come out of its slumber, as more than expected tonnage might

head for the breakers due to high cost of meeting the new convention requirements. This, then, will reduce the available tonnage, thereby 'jollyng up' the freight rates!

However, the labour supply market in the maritime sector seems to have come off second best, with many labour supply countries appealing to IMO to delay the implementation of STCW 2010 amendments by 6 months- i.e. upto 30th June 2017. This does not augur well for the 'manning industry', as the labour supply countries participated in formulating the changes, then they had a 5 year transition period to bring about the changes, at the end of which they are pleading for additional time! One wonders if the tall claims made by the powers that be, like- 'seafarers are the backbone of our trade', 'seafarers are the pride of our nation', etc., are more for the galleries!

Indian seafarers seem to be at the receiving end on more fronts than one- be it the revenue authorities or be it lack of shore leave in Indian ports! We seem to have mastered the art of harassment!

Meanwhile, our competitors across the South China Sea have proudly stated that as on 1st Jan 2015, they had 401,826 shipboard berths, more than 3500 cadets being inducted on board, the remittances by seafarers being USD 5.5 billion and systems firmly in place to increase their global share, not just consolidate their existing position! When can we expect such statistics to be made available by our authorities? We cannot market unless we know what we have achieved! Unless we dazzle, no one will give a 2nd look!

On this sombre note, let me wish all readers a Very Happy and Prosperous New Year!

Hope 2017 brings in more cheer!



**MARITIME ASSOCIATION OF SHIPOWNERS SHIPMANAGERS & AGENTS**

*The association that marches on...*

**MASSA is actively involved in:**

- **Facilitating, Promoting and Protection the business activities of member lines.**
- **Liaising with national, international, governmental and non-governmental organisation as well as seafarers recognized unions on behalf of members lines.**
- **Supporting the welfare activities to benefit employees or ex employees of the maritime (Seafaring) fraternity or their spouse, dependant and/or their next of kin as applicable**

**MASSA, endeavours to be a leading Association, to:**

- **Augment and safeguard business interest of memberlines primarily related to recruitment and placement services.**
- **Assist in development of infrastructure which helps business interest of memberlines, primarily related to employment of seafarers onboard ships.**
- **Liaise with National and International organizations to support the supply and demand of quality seafarers and recruitment and placement services in India**
- **Share information and knowledge on various issues so that Member lines and Maritime authorities can make appropriate discussions.**

Dear friends,

The year 2016 is coming to a close and I take this opportunity to thank all our MASSA friends and associates for their support during the year and also to wish all a bright and prosperous new year 2017.

Shipping has commercially transited a difficult period and now we begin to see light at the end of the tunnel. It is distant but encouraging. MASSA is very bullish about the growth of the Maritime sector especially the Indian Maritime Human Resource Development.

A ship and a maritime company is only as good as its human assets. Therefore, MASSA focuses and concentrates on continuously improving the quality along with quantity of our human resources development in the Indian Maritime scenario.

Presently, there are approximately 1.30 lakhs Indian seafarers who serve aboard cargo ships across the globe. MASSA is eager to increase the number of Indian seafarers worldwide.

Seafarers are one of the most important assets for growth of the maritime sector. For India to grow in this sector we need to enhance Young Human Resource Development in the maritime field. This becomes even more significant when viewed in the



**Capt Clarence Athaide**

context of a fast ageing population in the developed nations of the world. It is estimated that by 2020, an average Indian is expected to be only 29 years old against 37 years in China and the USA, 45 years in West Europe and 48 years in Japan. By 2020, the young population (15-30 years of age) in India is estimated to rise. MASSA is hence very keen to promote the career opportunities offered by merchant navy amongst Indian youth.

Wishing all readers a Happy new year

**Capt Clarence P Athaide**  
Editor, MASSA Outreach

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**A pioneering initiative in the country. Launch and release of an international peer-reviewed high quality maritime research journal, at the hands of Director General of Shipping and hand over of first copy to FOSMA, INSA and MASSA. The journal is edited by Principal, MASSA Maritime Academy, Chennai.**

The IIRE Journal of Maritime Research and Development is conceived to provide a means of publishing and disseminating the results of academic research and scholarship. In doing so it is aimed to serve the following purposes:

1. To provide a stamp of quality and be indicative of the fact that the article is worth reading. The blind peer review process by researchers active in the field while being judgmental on quality and standing at one level, is also developmental and provides feedback and advice to authors.
2. To partner with the research community and through its selected papers both on empirical and theoretical findings, stimulate debate about particular topics and issues.
3. To provide for the indexing and cataloguing of articles for its wider access and use.
4. To provide a means of managing intellectual property rights and permissions.

It is widely said that tomorrow's world belongs to those who create, nurture and own intellectual property. Such an asset though intangible, forms a superior basis for sustaining growth over the long run. This journal aims to be such a repertoire for the international maritime industry.

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## IDLING BOX FLEET SOARS

The idle container ship fleet has soared to 1.7 million twenty-foot-equivalent units this year, driven up by the bankruptcy of Hanjin Shipping and from container lines withdrawing ships from service at a rapid rate in an attempt to limit the impact of chronic overcapacity and weak demand.

The number of idle ships has increased from 238 vessels in November 2015, with a combined capacity of about 900,000 twenty-foot-equivalent units, to 435 ships aggregating 1.7 million TEUs in early November of this year, according to industry analyst Drewry.

At the beginning of 2015, idle container ships comprised just 2.5 percent of the global fleet, and ships laid up in quiet waterways around the world now account for 9 percent of the global fleet.

The growth of the idle fleet may have been rapid, but of the 1.7 million idle TEUs, Hanjin Shipping generated 36 percent of that capacity during the last quarter when it collapsed. Drewry said the former Hanjin-operated fleet accounted for 622,958 TEUs, and of this, about 200,000 TEUs was for ships of more than 10,000 TEUs.

“We infer from these changes that, as Hanjin was forced to pull ships from the east-west routes, the other carriers were able to increase the utilization of their existing vessels, as they did not add much replacement capacity. The Hanjin bankruptcy may have created an artificial jump in the idle fleet, until some former Hanjin-operated ships are transferred to operators,” Drewry noted.

Around 600,000 TEUs of capacity have been scrapped this year, without which the idle fleet would have been pushed up even higher. Yet such is the surplus vessel overhang that even with around 13 percent of the global fleet now scrapped or idling, the rebalancing of supply and demand remains elusive.

Maersk China Chairman Tim Smith said overcapacity was one of the greatest problems facing the container shipping industry, but there



**Capt Kamal Chadha**  
MD, Marex Media

have been some good signs for the industry this year.

“There has been unprecedented scrapping, the youngest-ever ship has been scrapped at 10 years, the most scrapping ever this year, at more than 600,000 TEUs and an almost complete absence of new orders,” he said at the Asian Logistics and Maritime Conference in Hong Kong.

“Only 200,000 TEUs of new orders have been made this year compared to 2.3 million TEUs ordered in 2015. The big new ships will come and we will see the older, medium-size, inefficient, and non-operating vessels will become redundant and more of them will need to be scrapped, and that will eat away at the overhang in the next year or two.”

This was backed up by Drewry’s analysis, which found that more than 1.1 million TEUs of the idle fleet, or 65 percent of the total, was owned by non-operating owners.

“This is not an accident and tells us something about the current oversupplied market and who bears an increasing burden from overcapacity today. Operators, or charterers, tend to off-charter vessels first and keep their owned vessels active. Many ships, which were previously chartered at relatively high rates, are not chartered again and join the idle fleet.”

The analyst said the idle fleet was far from being just old chartered vessels, with more than 60 percent of the capacity from ships that are less than 10 years old.

# MASSA ANNUAL SOCIAL DINNER 2016 IN MUMBAI



The Maritime Association of Shipowners, Shipmanagers and Agents (MASSA) held their Annual Social Dinner on October 14 at the Ballroom of the Hotel ITC Grand Central. MASSA is a non-profit

association with Indian manning and are identified employers of Indian officers and ratings.

Chairman Captain SM Halbe welcomed the gathering and said that "the focus of the meeting was for the improvement of the maritime community." He announced that two candidates from MASSA- Sachin Basant Chavan and Malav Aniket Avinash had achieved the Most Meritorious Candidate Award in the competency exams conducted by the Director General of Shipping.



**Captain Vinod Chandra**, one of the attendees of the dinner, said, "MASSA is a wonderful Association that has worked long for the common good of all seafarers."

making body of ship owners, ship managers and agents and is registered as a section 25 company under the Companies Act, 1956. Members include companies that have a long

Capt. Halbe also presented a memento to Mr. Deepak Shetty, Director General of Shipping and commended him for his contributions to the maritime sector. Employees of MASSA who have completed ten years and





more with the organisation were given silver salvers and appreciated for their sincere work.

George Hoy, International Maritime Organization Ambassador, spoke on the occasion and told the audience about the progress that has been made for the betterment of seafarers. A maritime journal by Dr Suresh Bhardwaj, Director of the MASSA Academy in Chennai, was released by Mr. Deepak Shetty, who said that it was an honour to release the journal amongst 'such an August gathering'.



The origin of MASSA dates back to 1947, when it was established under the name 'Owners Agents Committee'. It has, since its inception, played a pivotal



**Captain Vinay Singh-** past Chairman MASSA and present Director- said, "This is a celebration of the success of the organisation formed during British times. It is now spreading more awareness about shipping with offices in Navi Mumbai and Chennai. It is also the largest group, with thirty two companies and more than forty per cent of seafarers registered with the Association."

role in formulating a unified policy regarding the employment of Indian seamen; MASSA members have extensive shipping interests in India.



MASSA provides a forum for member lines- Indian and Foreign- and their local agents & ship managers to interact with the Government and Unions in all matters relating to the employment, training and welfare of seamen.



Members used the occasion for some networking and light hearted banter before moving on to the much-awaited dinner. A dance troupe enlivened the atmosphere by performing to South Indian and Punjabi songs.

The pics alongside depict a much wider view of the evening.





# Malini Shankar, IAS, appointed Director General of Shipping, Government of India



**M**s. Malini Shankar, an IAS Officer of 1984 batch from the Maharashtra state cadre, has been appointed Director General of Shipping of India. She will be succeeding Mr. Deepak Shetty, IRS, who retired on November 30 this year.

Prior to this appointment, Ms Shankar was Additional Chief Secretary, Government of Maharashtra, Department of Environment, from May 2015–May 2016 in Mumbai. She holds the degree of Doctor of Philosophy (Ph.D.), Public Policy - Institutional Economics 2005 – 2012 from the prestigious IIT Chennai.

Ms Shankar has handled many diversified portfolios in her illustrious career including disaster management, relief and rehabilitation, revenue, registration of documents, and stamp duty collection.

The new appointee is expected to take up her position as DG during the latter part of this month.

## Cabinet nod for introduction of the Merchant Shipping Bill 2016

**I**n order to simplify the law governing the vessel movement in India, the union cabinet has last week approved introduction of the Merchant Shipping Bill 2016 in Parliament, said a statement by the government-owned Press Information Bureau.

The Merchant Shipping Bill, 2016 is a revamped version of the Merchant Shipping Act, 1958 and hence the age old act of 1958 shall be repealed along with the coastal vessels act, 1838, the statement said.

The new bill will dispense certain provisions redundant while the rest will stand consolidated and simplified so as to promote the ease of doing business, transparency, and effective delivery of services.

Besides, the provisions for survey, inspection and certification of vessels which were scattered in various Parts of the existing Act are placed together to provide for a simplified regime for convenience of the Indian shipping industry.

Similarly, The Coasting Vessels Act, 1838, which is an archaic legislation of the British era providing for registration of non-mechanically propelled vessels to a limited jurisdiction of Saurashtra and Kutch, is proposed to be repealed since in the Merchant Shipping Bill 2016 provisions have been introduced for registration of all

vessels for the whole of India, the statement said.

From a seafarer's perspective, the new bill has introduced welfare measures for seafarers including wages to be paid to them till they reach home back safely in case they are held hostage by pirates. The new bill has also ensured that owners of vessels will have to compulsorily take insurance of crew engaged on vessels including fishing, sailing without mechanical means of propulsion, and whose net tonnage is less than 15.

Doing away with the age old practice, the crew will also no longer have to sign the articles of agreement before the shipping master, as per the provisions of the new bill.

From a shipping perspective, the new bill on enactment will boost tonnage augmentation through Bare Boat-cum-demise charter by Indians to be registered as Indian flag vessels. The new bill will also do away with the requirement for issuing of licences to Indian flag vessels for coastal operations and for port clearance by the customs authorities.

The new bill shall also incorporate all conventions and protocols prescribed by the International Maritime Organisation.

### What's MASSA's focus in the near future to bolster the growth of Indian maritime sector?

MASSA is very keen to train the requisite maritime workforce for India as well as the global maritime industry through skilling initiatives in association with the Ministry of Shipping, Govt. of India. It is our concern that India is losing out to Philippines in the market for mariners (seafarers) for the global shipping industry both at the ratings and senior officer levels, particularly in the category of large tankers, bulk carriers, etc.

### Could you share some statistics and figures on the current global share of Indian seafarers?

India with 12% of the world's population has just 7% of the seafarers market whilst Philippines with just 2% of the world's population has grabbed 20% global share. There are approximately 1.3 lakh Indian seafarers who serve aboard cargo ships across the globe currently.

### So you feel a dire need for skilling Indian seafarers is to increase their global share?

Yes, certainly. The shipping industry which has been down for a few years is witnessing a turnaround and when this happens, there will be a quantum jump in the need for quality ratings and officers. India will be unprepared for this as there is shortage of trained senior officers since there is little upgrade from ratings to officers. Fortunately; MASSA's maritime training institutes in Mumbai and Chennai, operated on no-profit-no-loss basis, are contributing a lot to the skilling of Indian maritime workforce.

### What about adequate training infrastructure to groom the maritime workforce across India?

India does not have the marine academic infrastructure for training quality people like the Philippines has with tremendous government support. You will be surprised to note that even Europeans and Scandinavians

have set up the training institutes in Philippines. As growth of coastal shipping and inland water waterways is also the prime focus of the Indian government, there exists a dire need to create adequate marine training infrastructure of world-class quality in India. Ministry of Shipping could engage with marine trade bodies like MASSA to meet such academic challenges.

### Are young Indian students attracted to joining the Merchant Navy?

We at MASSA are very bullish about the growth of the Indian maritime sector. This is why we feel the need to impart maritime skilling to the young work force of India. Youth power is believed to be one of the most important assets for the economic growth. This becomes even more significant when viewed in the context of a fast ageing population in the

The Maritime Association of Ship-owners, Ship managers and Agents (MASSA) is a non-profit making body of Ship-owners, Ship managers and their Agents based in Mumbai registered as a Section 8 company, under the Companies Act, 2013. Members include companies which have a long association with Indian seafarers who are recruited and placed on board ships in the international merchant fleet. MASSA enjoys an excellent rapport with the Government of India Ministry of Shipping & Director General of Shipping, Indian Ship-owners and allied shipping interests. MASSA is headquartered in Mumbai and is represented in various statutory bodies in the shipping industry. The prime aim of MASSA is to spread maritime awareness and promote maritime education in India.

In conversation with Dominic Rebello, MASSA's Chief Operating Officer Capt Clarence P. Athaide reveals the growing opportunities in the industry and how the organisation plans to Skill Indian Seafarers

**Capt Clarence P. Athaide,**  
Chief Operating  
Officer, MASSA



# Skilling Indian Seafarers

developed nations of the world. It is estimated that by 2020, an average Indian is expected to be only 29 years old against 37 years in China and the USA, 45 years in West Europe and 48 years in Japan. By 2020, the young population (15-30 years of age) in India is estimated to rise at 450 million. MASSA is hence very keen to promote the career opportunities offered by merchant navy amongst Indian youth. As India's GDP is expected to grow around 7% in the future, the employment for Indian students in merchant navy are expected to rise phenomenally in the years to come.

### So, MASSA's vision too is aligned with Indian Ministry of Shipping's, 'Maritime Agenda 2020'?

Yes. Indian Government's 'Maritime Agenda 2020' clearly indicates a thrust on increasing

the globe share of Indian seafarers and continuous improvement of maritime training infrastructure in India. MASSA is in regular touch with the Ministry of Shipping, National Maritime Board, Directorate General of Shipping and various stakeholders to make 'Maritime Agenda 2020' vision a grand success.

### Please elaborate on the current state of Indian maritime sector and its future.

Indian maritime sector is growing at an exponential pace currently. According to the Ministry of Shipping, around 95% of India's trading by volume and 70% by value is done through maritime transport currently.

India has 12 major and 187 non-major ports. Cargo traffic, which recorded 1,052 Million Metric Tonnes (MMT) in 2015, is expected to reach 1,758 MMT by 2017. The

Indian ports and shipping industry plays a vital role in sustaining growth in the country's trade and commerce. India is the sixteenth largest maritime country in the world, with a coastline of about 7,517 km. The Indian Government plays an important role in supporting the ports sector. It has allowed Foreign Direct Investment (FDI) of up to 100% under the automatic route for port and harbour construction and maintenance projects. It has also facilitated a 10-year tax holiday to enterprises that develop, maintain and operate ports, inland waterways and inland ports.

The Department of Industrial Policy and Promotion (DIPP), Ministry of Commerce and Industry, reported that the Indian ports sector received FDI worth US\$ 1.64 billion between April 2000 and March 2016.

The Maritime India Summit 2016, which was held in Mumbai attracted investments worth Rs 82,905 crore

(US\$ 12.29 billion) across 141 Memorandum of Understanding (MOU) and business agreements, which were signed by various players in the maritime sector. Increasing investments and cargo traffic point towards a healthy outlook for the Indian ports sector. Providers of services such as operation and maintenance (O&M), pilotage and harbouring and marine assets such as barges and dredgers are benefiting from these investments. The Planning Commission of India forecasts an investment of Rs 180,626 crore (US\$ 26.78 billion) for this industry in its 12th Five Year Plan. In Addition, through The Maritime Agenda 2010-2020, the Ministry of Shipping has set a target capacity of over 3,130 MMT by 2020, which would be driven by participation from the private sector. Non-major ports are expected to generate over 50% of this capacity.

## Merchant navy unions to challenge income tax tribunal ruling in court

The Maritime Union of India (MUI) and the National Union of Seafarers of India (NUSI) have jointly decided to challenge a recent ruling of an income tax tribunal in the Kolkata High Court next week.

A judgment delivered recently by the Kolkata income tax tribunal has mandated Indian merchant navy workforce to pay taxes in India, which according to the Merchant Navy officers has shattered the workforce of the maritime industry in the country. 1.3 lakh affected

With the effect of the tribunal's judgment, around 1.3 lakh Indian seafarers, who were so far exempted from paying taxes in India, will be affected.

Amar Thakur, General Secretary, MUI, the only union representing Indian Merchant Navy officers since 1939 said, "We have hired eminent lawyers and

tax consultants to oppose the Kolkata Income Tax tribunal's verdict in the Kolkata High Court. We will approach the court early next week and challenge the tribunal's order in the interest of the Indian maritime industry."

Indian seafarers sailing offshore on ships for more than 182 days a year so far enjoyed the benefits conferred to Non-Resident Indians and hence were exempted from paying income tax in India for their income earned overseas.

NUSI, India's oldest maritime trade union, and MUI have also sought the Centre's immediate intervention in the matter.

(This article was published by India's leading news agency, Press Trust of India on August 19, 2016)

# News from MMA – Chennai



(1) Mr Philip Wake, CEO of Nautical Institute, UK visited MMA – Chennai on 26th September 2016

(2) Dr (Capt) S Bhardwaj, Resident Director & Principal, invited to be on the Advisory Board of Experts of Svedborg International Maritime Academy (SIMAC) of Denmark.

(3) Dr (Capt) S Bhardwaj, Resident Director & Principal, invited to be the Editor of IIRE Journal of Maritime Research and Development – a high level international journal promoting research in maritime field. Only research based articles are accepted after blind peer review.



The e-journal is available on the link: <http://iire.in/ojs/index.php/IJMRD/issue/view/43>



IIRE JOURNAL OF MARITIME RESEARCH AND DEVELOPMENT (IJMRD)



(4) Mariem Ghaoui, Director of Admissions & Felicia de Jong, Asst Program Manager Erasmus University, Rotterdam visited MMA(Chennai)



# Resilience Engineering & The Fifth age of Safety

Dr (Capt) Suresh Bhardwaj, fics,fni,fcmmi  
Resident Director & Principal, MASSA Maritime Academy, Chennai.

*The increasing complexity in highly technological systems such as aviation, maritime, air traffic control, telecommunications, nuclear power plants, space missions, chemical and petroleum industry, and healthcare and patient safety is leading to potentially disastrous failure modes and new kinds of safety issues. Traditional accident modelling approaches are not adequate to analyse accidents that occur in modern socio-technical systems, where accident causation is not the result of an individual component failure or human error.” (Qureshi, 2007).*



Safety science today views serious accidents not as the result of individual acts of carelessness or mistakes; rather they result from a confluence of influences that emerge over time to combine in unexpected combinations enabling dangerous alignments sometimes catastrophically (Turner and Pidgeon, 1997).

The accidents that stimulated the new safety science are now indelibly etched in the history of safety: Challenger and Columbia, Three Mile Island, Chernobyl, Bophal, Davis Besse, Piper-Alpha, Texas City, and Deepwater Horizon. The list is long. These accidents have introduced new concepts and new vocabulary: normal accidents, systems accidents, practical drift, normal deviance, latent pathogens, organizational factors, and safety culture. As explained by Roger Boisjoly in an article after the 1986 Challenger accident: “It is no longer the individual that is the locus of power and responsibility, but public and private institutions. Thus, it would seem, it is no longer the character and virtues of individuals that determine the standards of moral conduct, it is the policies and structures of the institutional settings within which they live and work.” (Ermann and Lundman, 2002).

## **Systemic Accident Models**

New approaches to accident modelling adopt a systemic view which considers the performance of the system as a whole. In systemic models, an accident occurs when several causal factors (such as human, technical and environmental) exist coincidentally in a specific time and space (Hollnagel 2004). Systemic models view accidents as emergent phenomena, which arises due to the complex interactions between system

components that may lead to degradation of system performance, or result in an accident.

Systemic models have their roots in systems theory. In a systems theory approach to modelling, systems are considered as comprising interacting components which maintain equilibrium through feedback loops of information and control. A system is not regarded as a static design, but as a dynamic process that is continually adapting to achieve its objectives and react to changes in itself and its environment. The system design should enforce constraints on its behaviour for safe operation, and must adapt to dynamic changes to maintain safety. Accidents are treated as the result of flawed processes involving interactions among people, social and organizational structures, engineering activities, and physical and software system components (Leveson 2004).

## **The perspective of Resilience Engineering**

This perspective counters the historical deterministic view that safety is an inherent property of well-designed technology and reveals how technology is nested in complex interrelationships of social, organizational, and human factors. Viewing safety through the lens of complexity theory illuminates an understanding that it is the ability of people in organizations to adapt to the unexpected that produces resilient

systems, systems in which safety is continually created by human expertise and innovation under circumstances not foreseen or foreseeable by technology designers.

Resilience Engineering is defined as ‘The intrinsic ability of a system to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under expected and unexpected conditions.’

For Resilience Engineering, ‘failure’ is the result of the adaptations necessary to cope with the complexity of the real world, rather than a breakdown or malfunction. The performance of individuals and organizations must continually adjust to current conditions and, because resources and time are finite, such adjustments are always approximate. This definitive new approach explores this groundbreaking new development in safety and risk management, where ‘success’ is based on the ability of organizations, groups and individuals to anticipate the changing shape of risk before failures and harm occur.

Erik Hollnagel, a pioneer of the Resilience Engineering perspective, has explained that accident investigation and risk assessment models focus on what goes wrong and the elimination of “error.” While this principle may work with machines, it does not work with humans.

Variability in human performance is inevitable, even in the same tasks we repeat every day.

According to Hollnagel, our need to identify a cause for any accident has coloured all risk assessment thinking. Only simple technology and simple accidents may be said to be “caused.” For complex systems and complex accidents we don’t “find” causes; we “create” them. This is a social process which changes over time just as thinking and society change.

Hollnagel and other resilience thinking proponents see the challenge not as finding cause. The challenge is to explain why most of the time we do things right and to use this knowledge to shift accident investigation and prevention thinking away from cause identification to focus on understanding and supporting human creativity and learning and performance variability. In other words, understanding how we succeed gains us more than striving to recreate an unknowable

history and prescribing fixes to only partially understood failures (Hollnagel, Woods and Leveson, 2006).

It has been suggested that we are living in the fifth age of safety. The first was a technical age, the second a systems age, and the third a culture age. Metaphorically, the first may be characterized by engineering, the second by cybernetics and systems thinking, and the third by psychology and sociology. The fourth age, the “integration age,” builds on the first three ages not abandoning them but blending them into a trans-disciplinary socio-technical paradigm, thus prompting more complex perspectives to develop and evolve. The fifth age is an “adaptive age.” It does not displace the former, but rather transcends the other ages by introducing the notion of complex adaptive systems in which the roles of expertise, professional practice, and naturalistic observation attain primacy in resolving the duality of “work-as-imagined” versus “work as done.” (Borys, Else & Leggett, 2009)

The adaptive age embraces adaptive cultures and resilience engineering and requires a change in perspective from human variability as a liability and in need of control, to human variability as an asset and important for safety. Embracing variability as an asset challenges the comfort of management. However, the gap between work as imagined and work as performed and the failure of OHS management systems and safety rules to adequately control risk mean that a new perspective is required.

At present, we see mere glimpses of the implications of the adaptive age on how we think about “accident investigation.” How we may view accidents through fourth Age lens is somewhat clearer. Though still myopic, we do have examples of fourth age investigation reports beginning with the Challenger Accident. Dianne Vaughn wrote, “The Challenger disaster was an accident, the result of a mistake. What is important to remember from this case is not that individuals in organizations make mistakes, but that mistakes themselves are socially organized and systematically produced. Contradicting the rational choice theory behind the hypothesis of managers as amoral calculators, the tragedy had systemic origins that transcended individuals, organization, time and geography. Its

sources were neither extraordinary nor necessary peculiar to NASA, as the amoral calculator hypothesis would lead us to believe. Instead, its origins were in routine and taken for granted aspects of organizational life that created a way of seeing that was simultaneously a way of not seeing.” (Vaughan, 1996).

The U.S. Chemical Safety Board enhanced our fourth age vision by several diopters in its report on the British Petroleum Texas City Refinery accident. Organizational factors, human factors and safety culture were integrated to suggest new relationships that contributed to the nation’s most serious refinery accident. More recent investigations of the Deepwater Horizon catastrophe was similarly inspired by the BP Texas City investigation.

This latest versions of approach to accident investigation and organizational learning is by no means presented as an exemplar of fifth nor even fourth age safety theory. But it is developed with awareness of the lessons of recent major accident investigations and what has been learned in safety science since the early 1990s. Still grounded in the fundamentals of sound engineering and technical knowledge, this version does follow the fundamental recognition that technical factors alone explain little about accidents. While full understanding of the technology as designed is necessary, understanding the deterministic behaviour of technology failure offers little to no understanding about the probabilistic, even chaotic interrelationships of people, organization and social environmental factors.

Classic investigation tools and enhanced versions of tools would be of use to investigators in making sense of the events and factors. However, further tools in the Resilience Engineering framework may be used to explore unexpected occurrences, so called “information rich, low consequence, no consequence events”, to perform organizational diagnostics to better understand the “work-as-imagined” versus “work-as-performed” dichotomy and thus maintain reliable and resilient operations (Johnson, 1973).

The most important contribution of this new version is the reminder that tools are only

mechanisms for collecting and organizing data. More important is the framework; the theory derived from research and practice, that is used for interpreting the data.

This version thus challenges future investigators to apply analytical tools and sound technical judgment within a framework of contemporary safety science and organizational theory.

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# Cabinet gives nod to new port bill replacing the age-old Major Port Trust Act



In a bid to empower the major ports in the country with full autonomy in decision making, the Union Cabinet of India has approved the proposal to replace the Major Port Trust Act, 1963 by Major Port Authorities Bill, 2016.

Not only will it enable greater efficiency at these ports, but it will also modernize their institutional structure, said a release by the Government-owned Press Information Bureau.

Apart from bringing in transparency in port operations, the Bill is aimed at reorienting the governance model in central Ports to landlord port model in line with the successful global practice. The bill has eliminated overlapping and obsolete section by reducing this number to 65 from 134 in the prevalent bill so far. In the present Major Port Trust Act, 1963 prior approval of the Central Government was required in 22 cases.

It has proposed a simplified composition of the Board of Port Authority which will comprise of 11 members from the present 17 to 19 Members representing various interests.

Redefining the prevailing role of Tariff Authority of Major Ports, the bill has now given the port authority the power to fix tariff as also for other port services and assets. The tariff fixed will act as a reference tariff for purposes of bidding for PPP projects, though PPP operators will be free to fix tariff based on market conditions.

An independent Review Board has been proposed to be created to carry out the residual function of the erstwhile TAMP for Major Ports, to look into disputes between ports and PPP concessionaires.

As per the new bill, the board is empowered to lease land for Port related use for upto 40 years and for any purpose other than the purposes specified in section 22 for up to 20 years beyond which the approval of the Central Government is required. It empowers the Board to make its own Master Plan in respect of the area within the port limits and to construct within port limits Pipelines, Telephones, Communication towers, electricity supply or transmission equipment.



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