Maritime

Compliance Isn’t the Same as Safety: P.K Mishra IRClass

Regulatory compliance is often mistaken for safety in shipping. Yet vessels can meet all statutory requirements while still facing serious operational risks. As fleets age and trading patterns change, true safety demands a deeper, risk-based assessment beyond certificates.

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5 days ago

In today’s highly regulated maritime sector, it is easy to equate regulatory compliance with safety. Vessels that hold valid certificates, maintain updated log books ,record books and clear flag state inspections / port state control (PSC) inspections are often considered “safe.”

Yet, incident investigations repeatedly show that ships can be fully compliant on paper while still harbouring serious underlying risks. Compliance and safety, although related, are not identical. Compliance reflects adherence to minimum regulatory requirements, while safety demands a deeper, more holistic assessment of a vessel’s actual condition, operation and risk profile.

For shipowners and operators, understanding the difference is becoming increasingly important as vessels age, trading patterns evolve and inspections become more standardised.

Minimum Standards vs. Real-World Risks

Regulations are designed to set a universal baseline for maritime safety. But a baseline is only the starting point. Compliance can show that a vessel meets a certain threshold, but it does not guarantee that its equipment, systems or operations are performing at a level that prevents failure in real-world conditions.

For example, a propulsion system may pass all statutory checks yet still be vulnerable due to age-related wear, intermittent sensor faults or overlooked maintenance trends. A fire-detection system may be technically compliant but ineffective if crew procedures, training quality or maintenance routines are weak.

Safety is dynamic, shaped by how the ship is operated by the crew’s competence, the ship’s maintenance culture, past modifications, environmental exposure and emerging risks that regulations have not yet caught up with. Compliance, on the other hand, tends to be static and document-driven.

Ageing Ships: Compliant but More Vulnerable

A significant portion of the world fleet is now operating beyond 15–20 years of service. As ships age, the gap between compliance and genuine safety widens. Regulations require periodic surveys and maintenance, but ageing introduces subtle and cumulative deterioration that cannot be fully captured through standard inspections.

Corrosion, fatigue, outdated control systems, worn valves, degraded insulation and emergency equipment past its optimal lifespan can exist undetected beneath the surface. Even when these do not yet amount to formal non-compliance, they represent elevated operational risk.

Ageing also increases the likelihood of unpredictable failures—especially in machinery that was not originally designed for today’s operating patterns. Many older vessels have been upgraded “piece by piece,” creating complex interactions between old hardware, new digital components and evolving operational requirements.

In such cases, compliance offers reassurance but not certainty. True safety requires enhanced surveys, greater data-driven monitoring and proactive maintenance practices that go beyond regulatory minimums.

Changing Trading Patterns Introduce New Stressors

Modern commercial realities mean that vessels often shift between regions, climates, ports and cargo types more frequently than before. These changes can expose ships to new operational stressors that their original design or maintenance strategies did not anticipate.

A ship designed for temperate climates may now operate in tropical humidity; a tanker originally built for short regional voyages may be deployed on extended deep-sea routes. Variations in loading cycles, port conditions and environmental exposure all influence wear and performance.

Even when documentation and certificates remain intact, real-world operational risks may increase. Compliance frameworks typically do not account for the full complexity of these dynamic deployment patterns, leaving a potential blind spot between what the rules require and what safety demands.

Standardised Inspections: Useful but Limited

Standardisation in PSC, vetting and internal inspections has improved consistency globally. However, it can also lead to unintended rigidity. Inspectors increasingly operate with structured checklists, focusing on observable compliance markers rather than emerging, system-level or context-specific risks.

This can inadvertently create a “checklist mindset,” where the goal becomes passing the inspection rather than understanding risk. Ship staff may also prioritise preparing for expected audit items instead of addressing deeper technical or operational issues.

Meanwhile, vulnerabilities such as outdated software, untrained crew on new systems, inconsistent calibration practices, or cumulative wear may not appear in inspection checklists—even though they significantly affect safety.

Human and Organisational Factors Matter More Than Ever

Safety on board is fundamentally influenced by people—how they operate equipment, follow procedures, identify hazards and respond to emergencies. Even fully compliant ships can be unsafe if:

- the crew is inadequately trained on new systems
- safety culture is weak or task-driven rather than risk-driven
- procedures exist on paper but are not truly understood

- reporting mechanisms are discouraged or ineffective

Digitalisation has added another layer of complexity. Modern ships rely on integrated systems, sensors, software, and remote monitoring tools. These bring major benefits, but also new vulnerabilities—cyber risks, configuration errors, data integrity issues, or overreliance on automation. These issues rarely feature in traditional compliance frameworks.

A Holistic, Risk-Based Approach Is Needed

The maritime industry is gradually shifting from compliance-focused to risk-based thinking—supported by classification societies through enhanced surveys, condition-based monitoring, data analytics and predictive maintenance. This approach looks beyond certificates to examine actual condition, historical performance trends and operational context.

Fleet managers and owners who embrace this philosophy achieve greater long-term reliability, reduced downtime, fewer detentions and improved operational efficiency.

Moving From “Prove Compliance” to “Demonstrate Safety”

Compliance remains essential—it protects the baseline. But safety requires going further.

For the industry to achieve meaningful improvements, operators must adopt a mindset where statutory requirements are the floor, not the ceiling. A vessel may be compliant today, yet unsafe tomorrow if maintenance lags, operations change or ageing systems deteriorate.

By integrating real-world operational insights, enhanced assessments and a proactive safety culture, the maritime sector can bridge the gap between what the rules require and what safe operations truly demand.

About Shahjahan Ahmed

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