



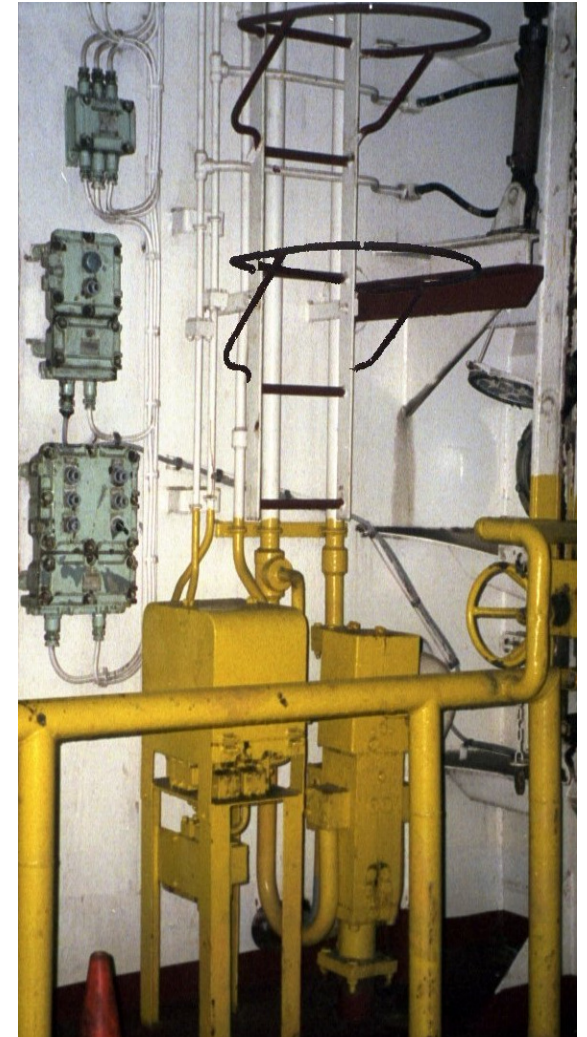
ABS Project on Mariner Personal Safety – Part of ABS' Mariner Safety Research Initiative



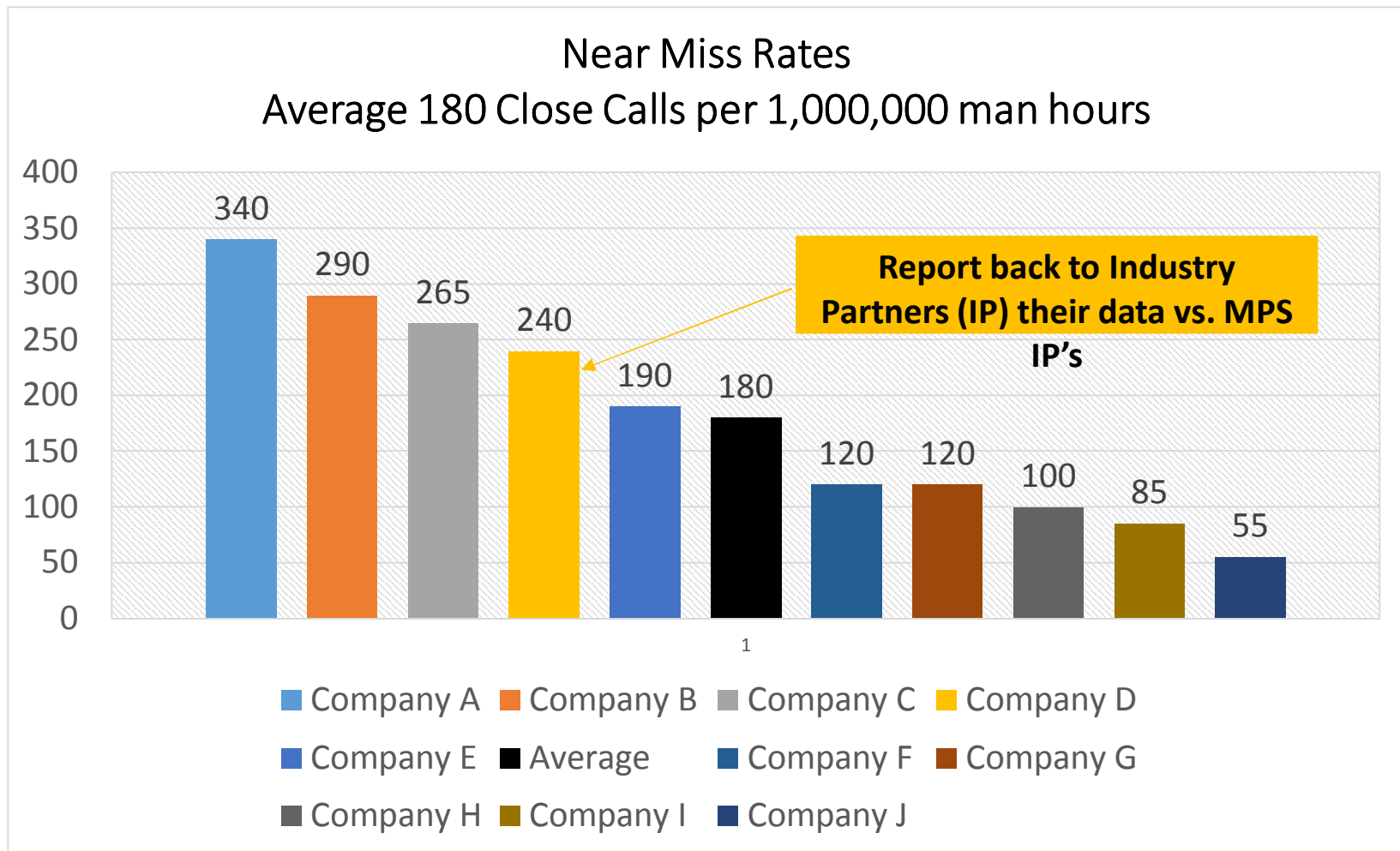
© 2017 American Bureau of Shipping. All rights reserved

Mariner Personal Safety (MPS) Project Overview

- Objective: Obtain and review incident and near miss reports
- Collected approximately ~ 150,000 records (injuries and near miss)
- Database represents more than 2,100 vessels and 50,000 mariners
- Constructed a database to:
 - Identify trends
 - Create benchmarking statistics
 - Identify potential corrective actions
 - Identify potential lessons learned
- Develop and share results

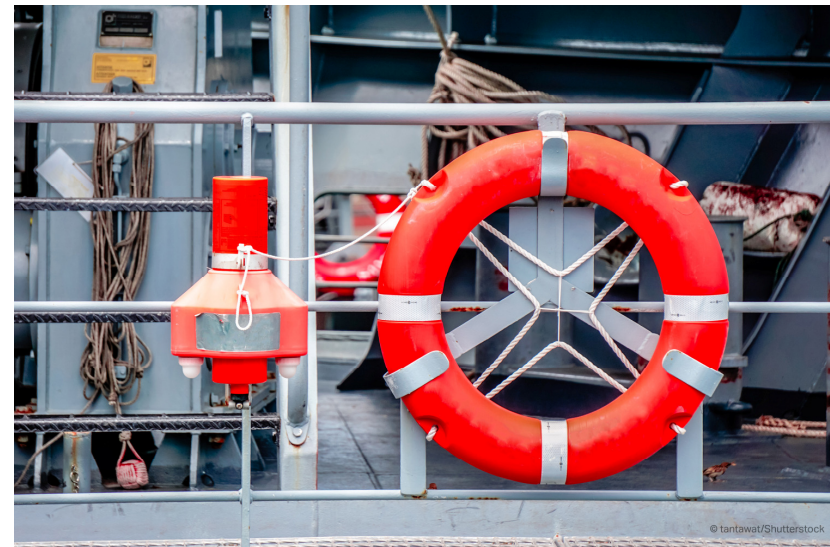


Near Miss Rates for Industry Partners



Industry Partner Uses for Project Results

- Directing safety auditing efforts and new design efforts:
 - Identify potential hazards for specific spaces on board (e.g., work and accommodation areas)
 - Identify potential hazards related to crew activities (e.g., line handling to food preparation)
- Help direct safety intervention, prioritization and resource allocation
- Input to safety measurements (metrics) – benchmarking
- Tool Box Talks and additional safety material for the crew
- Support corporate safety management system



Near Miss Reporting

- Investigation of MPS near misses demonstrated
 - No consistent definition of a near miss
 - No consistent data being captured for incident reports
- A possible consensus definition is:
 - A commonly accepted (but not universally) definition is “a sequence of events and/or conditions that could have resulted in a loss”
- A good starting point for data reporting include:
 - Who and what was involved?
 - What happened, where, when and in what sequence?
 - What were the potential losses and their severity?
 - What was the likelihood of a loss being realized?
 - What is the likelihood of a recurrence?



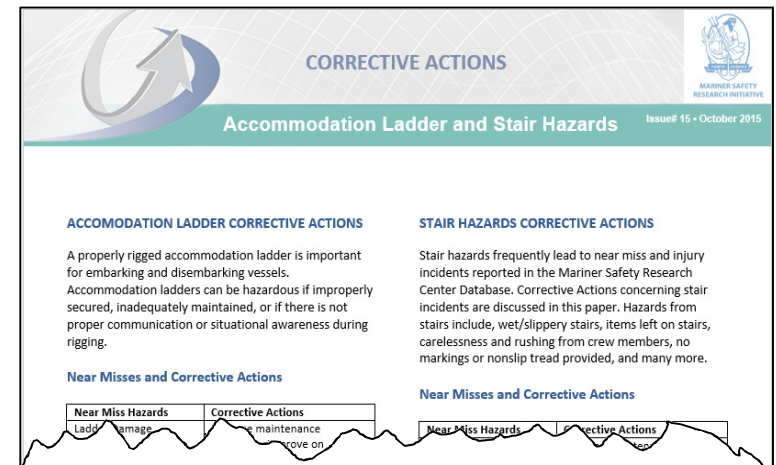
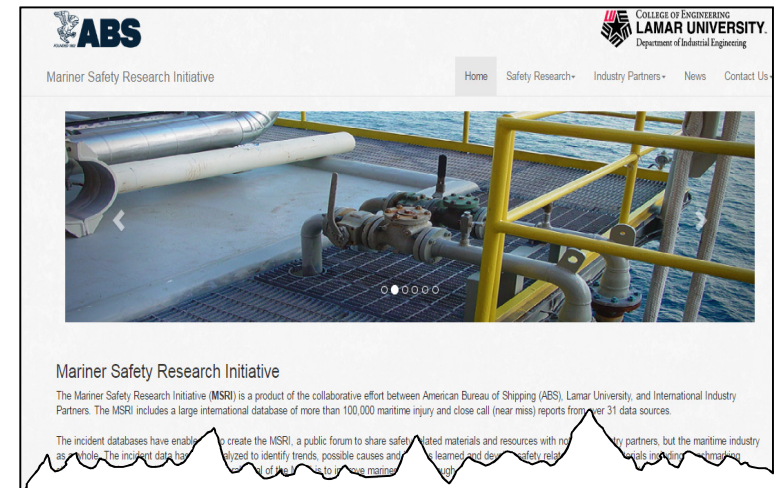
Work with Industry / SOCP

- The US Ship Operations Cooperative Program (SOCP) asked us (ABS & LU) to draft documents for near miss & injury reporting and recording
- US Maritime Administration (MARAD) key sponsor
- Goals Include:
 - Standardized terminology
 - Standardized reporting practices
 - Development of industry benchmarking
 - Development of industry trending data
- Deliverables – Draft ASTM Best Practices for MARAD to submit to ASTM for publication



Mariner Safety Research Initiative Public Website

- The Mariner Safety Research Initiative has officially launched a public website which contains maritime safety related documents and resources
- Some of the products available on the website include:
 - Toolbox Talks, safety spotlights, lessons learned, corrective actions, ergonomic and safety discussion papers, related websites, and information on how to get involved
- Visit the website here:
<http://maritime.lamar.edu/>



Incident Data – a Second Look...

- Identify those factors associated with human error
- Identify those factors associated with the incident that can be corrected and/or improved
- Support the planning and guiding of pragmatic guidance
- Possible development of human factors / ergonomics methodologies to:
 - Collect incident data
 - Identify human-error-related causes

Analyses Based on ABS/Industry Data

- The ABS Mariner Safety Research Initiative (MSRI)
- The Australian Transportation Safety Board (ATSB)
- The Marine Accident Investigation Board (MAIB, United Kingdom)
- Transportation Safety Board – Canada (TSB-Canada)
- The Nautical Institute’s Marine Accident Reporting Scheme (MARS)
- The United States Coast Guard (USCG)

ABS – Always Be Safe



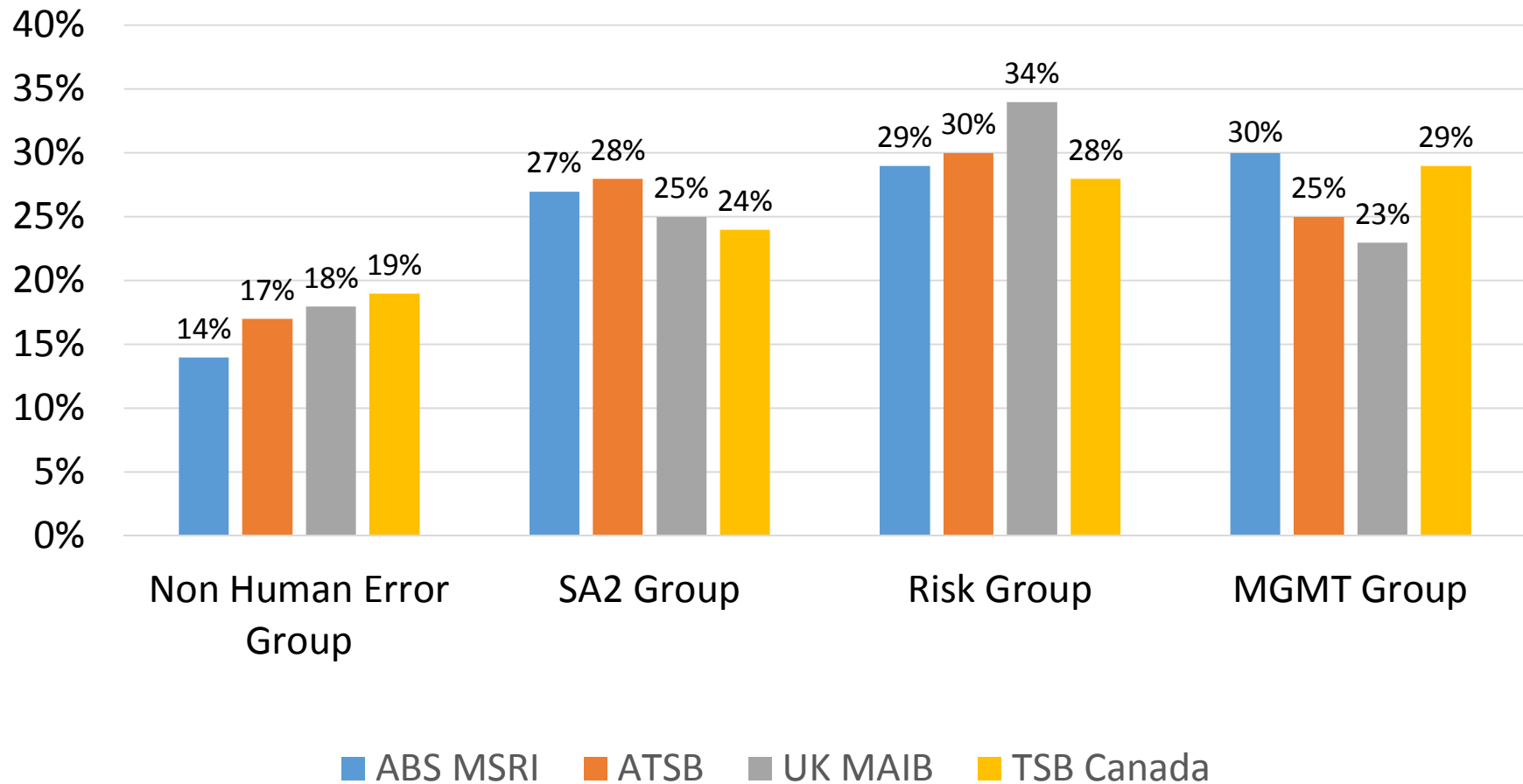
**MARINER SAFETY
RESEARCH INITIATIVE**

Qualitative Grouping of Causes

- SA² (Situation Assessment and Situational Awareness)
 - Knowledge, skills, and abilities, and improper task commission / task omission
- Management Group
 - Fatigue, communications, BRM, procedures, manning levels
- Risk Group
 - Risk tolerance/risk taking, navigation vigilance, complacency, task omission (deliberate), lookout failures
- Non-Human Error Group
 - Uncharted hazard to navigation, material failure, unknown cause

Qualitative Grouping of Causes

Comparison of Incident Data Sets



Database Review - Observations

- Ineffective watch-keeping
- Inappropriate SA² (situational assessment / situational awareness)
- Preoccupation with administrative tasks
- Failure to communicate intentions (officer/master/pilot)
- Communication / language difficulties
- Lack of assertiveness – failure to challenge decisions (perceived to be incorrect) with officers/pilot
- Failure to comply with procedures / regulations
- Lack of training

Why Procedures are not Followed

- Inadequate knowledge and skill related to the procedure
- Experience and complacency
 - Perceived relevancy, learning that some areas of compliance afford no apparent benefit
 - Low frequency conditions influences risk perception
- Workload, fatigue and time constraints
- Individual characteristics – FFD, risk perception error, high risk tolerance, risk taking tolerance
- Lack of oversight, no accountability/traceability
- Unwieldy procedure design
- Quality system failure, to include MoC
- Law of least effort (energy conservation)

Example Observations

- Failure to follow the Rules-of-the Road
 - Lack of knowledge, experience, understanding, or training
 - A quote from an incident report says - “It is sadly obvious that half the world's shipping is wandering around expecting the other half to keep out of their way”
- Lookouts
 - Lack of a proper lookout is common, including no apparent look out
 - Undo reliance on electronic navigational aids
 - A quote from an incident report - “The initiating cause of the collision was . . . [Vessel A] chief officer was unaware of the approach of his ship to [vessel B], and [vessel B] bridge team was unaware of the approach of [vessel A].”
 - Basically, this quote says that the collision was a surprise on both bridges

Summarizing . . .

- Several incident databases and archives were reviewed / analyzed
- Approximately 85% of incidents appear associated with human error
- SA² highly indictable in many human errors
- There are implications to better address “human element” issues such as
 - Safety Culture
 - MoC
 - BRM, SA², communications, procedure design, etc....
 - Human (crew member) machine interface designs
 - Habitability (fatigue recovery, ambient environment, etc...)

In a Nutshell.....

- A good safety culture and strong safety management system (including BRM) are crucial to safer vessel operations
- Make an individual's compliance expectations consistent with management's
 - Management consistently communicates compliance expectations
 - Full compliance is expected as a matter of habit and culture
- Compliance is simply a part of the organization's safety culture
- Maintain readiness of individuals
 - Fatigue, training, workload....
- Emphasize observable management oversight, and that non-compliances will be noted and evaluated





Thank You

www.eagle.org