



**National  
Transportation  
Safety Board**

# Implementation of Safety Management Systems Through Collaboration

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# Outline

- NTSB Basics
- What is a Safety Management System
- Successful Example
- How to Implement
- Conclusion

# NTSB 101

- Independent federal agency, investigate transportation mishaps, all modes
- Determine probable cause(s) and make recommendations to prevent recurrences
- Primary product: Safety recommendations
  - More than 80% favorably received, even though implementation is not mandatory
- ***SINGLE FOCUS IS SAFETY***

# What is a Safety Management System?

A systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures.

An effective safety management system program can help companies reduce and prevent accidents and accident-related loss of lives, time, and resources.

From NTSB report on 2009 CN derailment in Cherry Valley, Illinois (p. 83)

# The Four SMS Components

## Safety Policy

Establishes senior management's commitment to continually improve safety; defines the methods, processes, and organizational structure needed to meet safety goals

## Safety Assurance

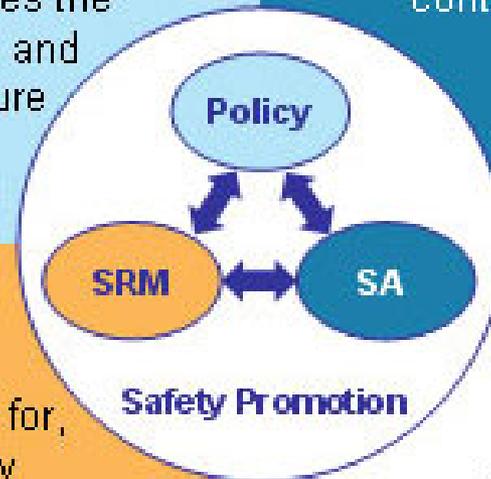
Evaluates the continued effectiveness of implemented risk control strategies; supports the identification of new hazards

## Safety Risk Management

Determines the need for, and adequacy of, new or revised risk controls based on the assessment of acceptable risk

## Safety Promotion

Includes training, communication, and other actions to create a positive safety culture within all levels of the workforce



# A System, Not a Box to Check

- Compare to other operational systems
  - Financial management system
  - Quality control system
  - Production management system

# SMS Can Be Deceptively Simple...

- The components of an SMS might already be present in an organization
- SMS is a structured business approach to managing safety – held together with an effective safety culture of continuous improvement

# SMS Can Also Be Challenging

Because of the inherent  
importance of  
“Safety Culture”

# Safety Culture

Safety culture is the core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment.

Source: U.S. Nuclear Regulatory Commission

# When Safety Culture is Inadequate

The NTSB has on a number of occasions recognized the lack of an organizational culture of safety within a transportation agency as having contributed to an accident.

From NTSB report on 2009 WMATA Fort Totten accident (p. 98)

# NTSB Recommendations to FAA

- Require that all Part 121 operators establish Safety Management System programs. (A-07-10)
- Require helicopter EMS operators to implement a SMA program that includes sound risk management practices (A-08-89)



# SMS for General Aviation

Develop a safety alert for operators encouraging all Part 91 business operators to adopt Safety Management System programs that include sound risk management practices. (A-09-16)



# NTSB Recommendations re SMS in Other Transportation Modes

- Railroads
- Maritime
- Pipelines

# Successful Implementation

- Aviation example: Collaboration by the Commercial Aviation Safety Team (CAST)
- The CAST collaboration is industry-wide, but it is transferable to the company level, for both process safety and workplace safety

# Applications of SMS

- Process: Minimizing errors, and mishaps from those errors, in flight operations, maintenance, manufacturing, and design
- Workplace safety: Minimizing slips, trips, and falls

# Collaboration Is . . .

Bringing all parts of a complex system together to

- Identify potential issues
- *PRIORITIZE* the issues
- Develop solutions for the prioritized issues
- Evaluate whether the solutions are
  - Accomplishing the desired result, and
  - Not creating unintended consequences

# Collaboration Can Accomplish “System Think”

Understanding how a change in one subsystem of a complex system may affect other subsystems within that system

# CAST Success Story

- After declining accident rate had become stuck on a plateau in the early 1990's, 83% decrease in only 10 years (1998 – 2007)
  - Largely because of System Think fueled by Proactive Safety Information Programs

# Moral of the Story

Anyone who is involved in the *problem* should be involved in the *solution*

# Suggested Beta Test

- Select troublesome area
  - Nagging problem for many years
  - Many interventions have been tried, not successful
  - Likelihood that problems are systemic, not just people
  - Collaboration as effort to address the system problems
  - Less defensiveness because not focused on single event
- Select collaborative corrective action group
  - All who have a role in the process
  - Manufacturers?
  - Operators?
  - Regulators?
  - Others?

# Getting Started: Management Must

- Demonstrate commitment to safety (but not “No errors on my watch!”)
- Include everyone who has a “dog in the fight”
  - Labor
  - Manufacturers
  - Regulators
  - Other?
- Encourage and facilitate reporting by front-line employees of potential safety concerns
  - Clarify protections for information providers
  - Follow through with corrective action on the reports

# Elements of Safety Culture Inherent in Collaboration

- Management commitment and emphasis
- Personal accountability and empowerment
- Culture of compliance
- Continuous learning and risk awareness
- “Just Culture”
- Questioning attitude



# Conclusions

- A safety management system is critical to the continuous improvement of safety
- Collaboration can be a way to implement SMS
- Implementation of SMS must be both top-down and bottom-up

# Thank You!!



## Questions?



# National Transportation Safety Board