NTSB National Transportation Safety Board

Industry Safety Culture: The Regulator's Role

Presentation to:

TRB Marine Board Spring Meeting

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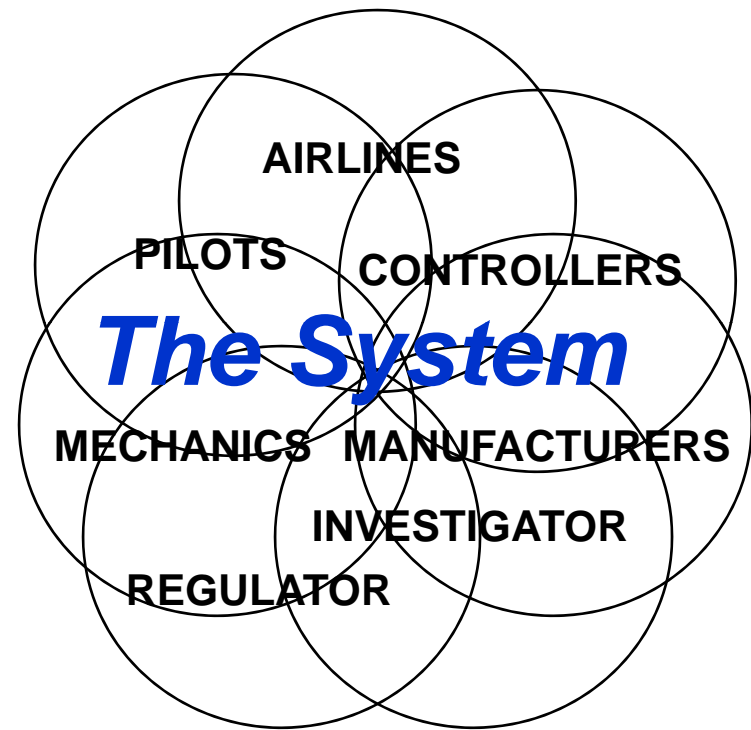Date: April 10, 2013

The Context: Increasing Complexity

- **More System** *Interdependencies*
  - Large, complex, interactive system
  - Often tightly coupled
  - Hi-tech components
  - Continuous innovation
  - Ongoing evolution

- **Safety Issues Are More Likely to Involve** *Interactions Between Parts of the System*

The System

AIRLINES

PILOTS   CONTROLLERS

MECHANICS   MANUFACTURERS

INVESTIGATOR

REGULATOR

Effects of Increasing Complexity:

More "Human Error" Because

- **System More Likely to be Error Prone**

- **Operators More Likely to Encounter Unanticipated Situations**

- **Operators More Likely to Encounter Situations in Which "By the Book" May Not Be Optimal ("workarounds")**

The Result:

Front-Line Staff Who Are
- **Highly Trained**
- **Competent**
- **Experienced,**
- **Trying to Do the Right Thing, and**
- **Proud of Doing It Well**

. . . Yet They Still Commit

Inadvertent
Human Errors

A Solution: System Think

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

"System Think" via Collaboration

Bringing all parts of a complex system together to collaboratively

- 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

Major Paradigm Shift

How It Is Now . . .

You are highly trained

and

If you did as trained, you would not make mistakes

so

You weren't careful enough

so

You should be PUNISHED!

How It Should Be . . .

You are human

and

Humans make mistakes

so

Let's *also* explore why the system allowed, or failed to accommodate, your mistake

and

Let's IMPROVE THE SYSTEM!

Objectives:

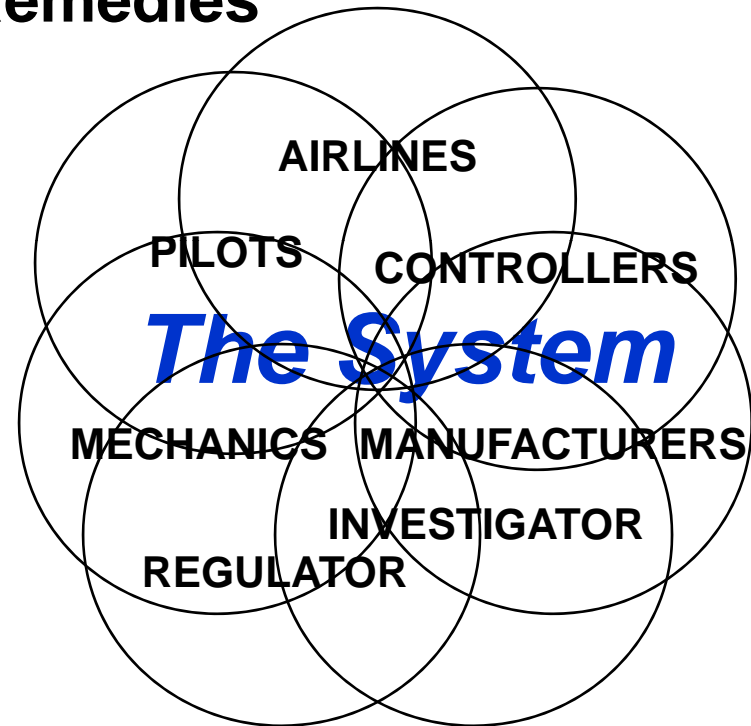**Make the System**

**(a) Less
Error Prone**

and

**(b) More
Error Tolerant**

Commercial Aviation Safety Team (CAST)

Engage *All* Participants In Identifying Problems and Developing and Evaluating Remedies

- **Airlines**

- **Manufacturers**
  - *With the systemwide effort*
  - *With their own end users*

- **Air Traffic Organizations**

- **Labor**
  - *Pilots*
  - *Mechanics*
  - *Air traffic controllers*

- **Regulator**

Collaboration Success Story

65% Decrease in Fatal Accident Rate,
1997 - 2007

largely because of
System Think

fueled by
Proactive Safety
Information Programs

P.S. While safety was improved, *productivity was also improved!*

P.P.S. This process *did not generate a single new regulation!*

Another Paradigm Shift

- **Old: The regulator identifies a problem, develops solutions**
  - Industry skeptical of regulator's understanding of the problem
  - Industry fights regulator's solution and/or implements it begrudgingly

- **New: Collaborative "System Think"**
  - Industry involved in identifying problem
  - Industry "buy-in" re solution because everyone had input, everyone's interests considered
  - Prompt and willing implementation . . . *and tweaking*
  - Solution probably more effective and efficient
  - Unintended consequences much less likely
  - May not necessitate new regulations

Challenges of Collaboration

- **Human nature: "I'm doing great . . . *the problem is everyone else*"**

- **Participants may have competing interests, e.g.,**
  - Labor/management issues
  - May be potential co-defendants

- **Regulator probably not welcome**

- **Not a democracy**
  - Regulator must regulate

- **Requires all to be willing, *in their enlightened self-interest,* to leave their "comfort zone" and think of the System**

Regulator Challenge No. 1

Recognize that

compliance **is very important,**

but the regulator's objective should be

reducing systemic risk

Regulator Challenge No. 2

Emphasize the importance

of System issues

in addition to ***(not instead of)***

worker issues

Encourage and participate

in industry-wide

"System Think"

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Regulator Challenge No. 3

Facilitate better collection and analysis of information by:

- **Establishing clear policies**
  re protecting information
  and those who provide it

- **Encouraging other industry participants**
  to do the same

Thank You!!!

Questions?