ACI World Safety Seminar 2008
Human factors in safety: Understanding the complexities of human involvement

Developing A Safety Culture
OUTLINE OF PRESENTATION

- INTRODUCTION
- SAFETY TRENDS
- DEFINITION
- LEARNING MORE ABOUT SAFETY CULTURE
- CASE STUDY - RUNWAY RESURFACING
- CONCLUSION
INTRODUCTION

- **Airports - Safety Policies & Procedures**

- **Written Laws - Not Contributing to less accidents**

- **Truly Effective Safety Culture?**
INTRODUCTION

- Statistics - 80% accidents due to unsafe acts
- Proactive vs Reactive
- “Safety Culture” - Integration into Normal Operation practices
Over the last 60 years or so, industry first reduced accident rates by improving:

- hardware (effective guards, safer equipment); then

- improved employee performance (selection and training, incentives and reward schemes) and, then

- changed the way they manage and organise, especially by introducing safety management systems
SAFETY TRENDS

From the safety trends since 1940s, each improvement reduced accidents down to a ‘plateau’ level where further improvement seemed impossible.

What’s Next?

“SAFETY CULTURE”

1940s-60s  1960s-80s  1980s-90s

Accidents/10,000 population

Hardware

Employees

Organisation

Murphy Margin
SAFETY TRENDS

Now, most accidents stem from employee errors or violations.

The Next BIG step = Developing Good Safety Cultures positively influence human behaviour at work to reduce errors & violations.
What is “Safety Culture”? According to The Confederation of British Industry:

“Culture” = The mix of **Shared** values, **Attitudes** and **Patterns of Behaviour** that give the organisation its particular **Character**
DEFINITION

- What is “Safety Culture”?  
  - The Confederation of British Industry further suggested that:
    “Safety Culture” = Described as the *Ideas* and *Beliefs* that *All* members of the organisation *Share* about Risk, Accidents and Health
Safety Culture = Difficult Idea?

Concepts are Trust, Values & Attitudes

What are the factors contributing to a Good safety culture?
A healthy safety culture is one where there is...

- Commitment to safety by management
- Workforce Participation & Ownership
- Trust
- Good Communications
- Competent Workforce
LEARNING ABOUT SAFETY CULTURE

- **Commitment to safety by management**
  
  This is shown when management...
  
  - Make regular site visits
  - Discuss safety with frontline staff
  - Time & Money on Safety
  - Actively “brainstorm” solutions
LEARNING ABOUT SAFETY CULTURE

- **Workforce Participation & Ownership**
  
  This is shown when management...
  
  - Seeks workforce participation in Safety Policies and Objectives
  - Consults all levels on Safety matters
  - Comply more than minimum
LEARNING ABOUT SAFETY CULTURE

- Trust Between Working Levels & Management
  
  This is shown when management...

  - Treats the workforce with respect
  - Relationship & high morale
  - Job satisfaction
LEARNING ABOUT SAFETY CULTURE

- **Good Communications**
  - This is shown when management...
    - Provides good written materials
    - Provides good daily briefings
    - Encourage Feedback & Listening
LEARNING ABOUT SAFETY CULTURE

- **A Competent Workforce**
  - This is shown when management...
    - Ensure Good Competence Assurance System
    - Provide Competence Trainings
    - Confirm Effectiveness of Trainings
Case Study: RUNWAY RESURFACING PROJECT "SAFETY CULTURE"

- Changi Airport Singapore
- Runways 1 & 2
- Length 4km 60 metres wide for each runway
- Duration: 9 months
- Contract Sum: S$26 million
Case Study: RUNWAY RESURFACING PROJECT 2007 (Layout)
Case Study: RUNWAY RESURFACING PROJECT 2007 (Scope of Work)

Surface Course

- 150mm
- 50mm SMAC
- 50mm HMAC

Base Course

- 150mm
- 50mm HMAC
- 50mm HMAC

Day 4

Day 3

Day 2

50mx60m

W4
RUNWAY RESURFACING PROJECT - Resources
RUNWAY RESURFACING PROJECT - Resources
RUNWAY RESURFACING PROJECT
- Resources

Vehicle Movement on Closed Runway during Full Closure

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RUNWAY RESURFACING PROJECT - Development of a Safety Culture

- Commitment To Safety By Management
- Work Force Participation & Ownership
- Good Communications
- Competent Workforce
COMMITMENT TO SAFETY BY MANAGEMENT

- Contractor’s Project Director and Manager to submit Safety Assessment

- Monthly CAAS Safety Action Group (SAG) Meeting chaired by the Director of Engineering (CAAS) for “Brainstorming”
COMMITMENT TO SAFETY BY MANAGEMENT

- Regular Visits to Site
- Discuss Safety Matters with Frontline Staff
COMMITMENT TO SAFETY BY MANAGEMENT

- Commitment & Concern for Wider Issues
- Time & Money
  - Four Flood Light with 4 spot-lights at 3.8m height to illuminate a 60x60 m work section
  - The Flood Lights are distanced 5m away from edge of M&P to avoid clashing with any traffic or roller during milling and paving operation.
WORKFORCE PARTICIPATION & OWNERSHIP OF SAFETY PROBLEMS

- Initiatives From Workforce
WORKFORCE PARTICIPATION & OWNERSHIP OF SAFETY PROBLEMS

- Lighted Cross
WORKFORCE PARTICIPATION & OWNERSHIP OF SAFETY PROBLEMS

- Provide Methods To Encourage Participation
GOOD COMMUNICATIONS

- Daily Briefings @ Runway Entry/Exit Point
GOOD COMMUNICATIONS

- Control Briefings @ Runway Entry/Exit Point

Holding Area ➔ Exit

1 2 3 4 5 6
GOOD COMMUNICATIONS

- Using Photographs To Illustrate

**TIRE FOD**

**BIRD STRIKES**

Bird Populations are increasing
GOOD COMMUNICATIONS

- Good Training Materials

**FIGURE 1: MARKING AND LIGHTING OF TALL CONSTRUCTION EQUIPMENT**

- 200m
- 250m
GOOD COMMUNICATIONS

- Good Training Materials
GOOD COMMUNICATIONS

- Informal Safety Meetings, Listening and Feedback – Encourage Open Communication
A COMPETENT WORKFORCE

- Pre-Training for All (from Top Management to Workers)
A COMPETENT WORKFORCE

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- Pre-Training for All (from Top Management to Workers)
A COMPETENT WORKFORCE

- Continuous Classroom Training for All (from Top Management to Workers)
CHECKLIST FOR SAFETY CULTURE

- **C**ommitment: By Management
- **O**wnership: Safety Problems and Solutions
- **D**evelopment: Competent Workforce
- **E**ngagement: Good Communications

**C O D E**: To SAFETY CULTURE
CONCLUSION

In the development of a Safety Culture, an organisation can expect to realise:

- Reducing workplace accidents and their associated costs, including decreased productivity, employee morale, and increased hiring and training costs
CONCLUSION

- As with all safety programs, a visible commitment by senior management to the program is key to its success.

- Finally, this commitment must be communicated throughout every level of the organisation.
HAVE FUN WITH SAFETY CULTURE
THANK YOU