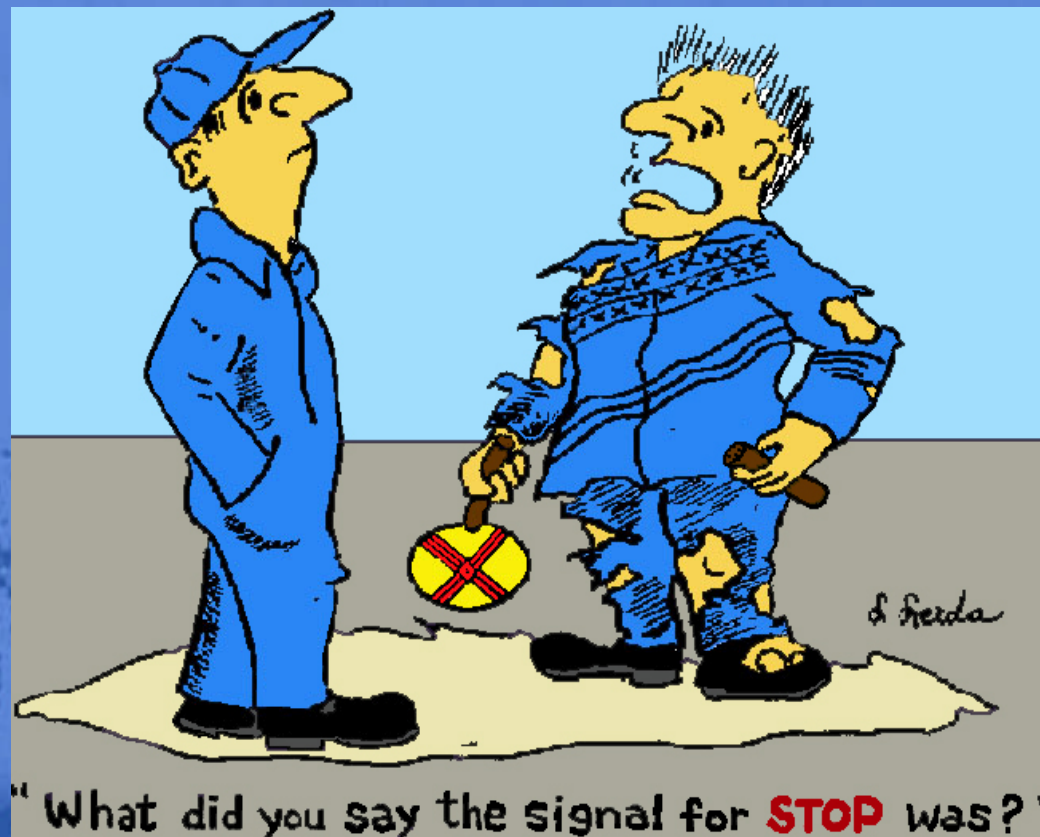


# Human Factors Training for Ground Crew

They're  
Human  
Too

Presented  
For  
ARTEX  
Chicago, Illinois  
June 2010



Train the  
Person to  
Avoid the  
Error  
They Never  
Intend to  
Make

Presented by  
Renee  
Dupont-Adam





**Flight Safety Foundation**  
Suite 300, 601 Madison Street  
Alexandria, VA 22314 U.S.  
Telephone: +1 (703) 739-6700  
Fax: +1 (703) 739-6708

# NEWS

Release Date: March 16, 2005

05-09

Contact: Robert Vandel, executive vice president (extension 110)  
Roger Rozelle, director of publications (extension 116)

## Airline CEOs Can Save Billions of Dollars by Preventing Ground Accidents at Airports, FSF Official Says

"Equipment damage and human errors are the top two causes of ground accidents by the world's airlines," Robert Vandel, executive vice president of Flight Safety Foundation, said during the European Aviation Safety Seminar presented by the Foundation with the European Regions Airline Association in Warsaw, Poland, March 15-16, 2005. (IATA 2010)

**Cost \$12 B if death & injury included (IATA - Flight Bag April 2010)**

Vandel said that the Foundation has created the Ground Accident Prevention (GAP) program to collect data and analysis to determine the best practices to prevent airport ground accidents that often involve airport employees, airlines or ground vehicles, along with drivers, baggage handlers, maintenance technicians or other airport workers. "The data suggest that fatalities are not common, human errors are the primary cause of damage, injuries and job-related illness among airport workers."

**92% of ramp damage is human error (IATA)**

"Thirty billion dollars has been lost by the world airline industry since 2001," said Vandel. "Ground accidents are preventable; if effective preventive programs had been in place, nearly half of the industry's losses since 2001 might have been eliminated."

**Ramp damage - 1 in 1,000 departures**

"The chief executive officer of the affected organization is responsible for establishing a safety culture that prevents such unnecessary losses."

**Ramp Injuries - 1 in 100 departures**

**Flight International Magazine Nov. 2005**

Research indicates that workers in the airline industry report the highest number of workdays lost because of injuries/illness when compared to other industries — 400 for lumberjacks, long known to be engaged in high-risk work, and 100 in other industries.

**Heathrow - 2 damaged aircraft**

"Data support that aviation is the safest form of mass transportation in the world," Vandel said. "The airline industry suffered 10 lost workdays per 100 workers," Vandel said.

He said that a recent analysis of 274 ground accidents showed that the average event involving a jet transport cost \$250,000.

**PER DAY (FIM)**

**13.6 (Dupont 2005)**

**1X.1 per 100**

**US Industry Ave 2.8 (Dept. Labor Statistics)**

"When the insurance deductibles were compared to the cost of each accident, we found that 273 of them were below the deductible limit," said Vandel. "This suggests that many airport ground accidents are self-insured, so the costs are deducted directly from the industry's bottom line."



WB 1







**This also happens all too often**

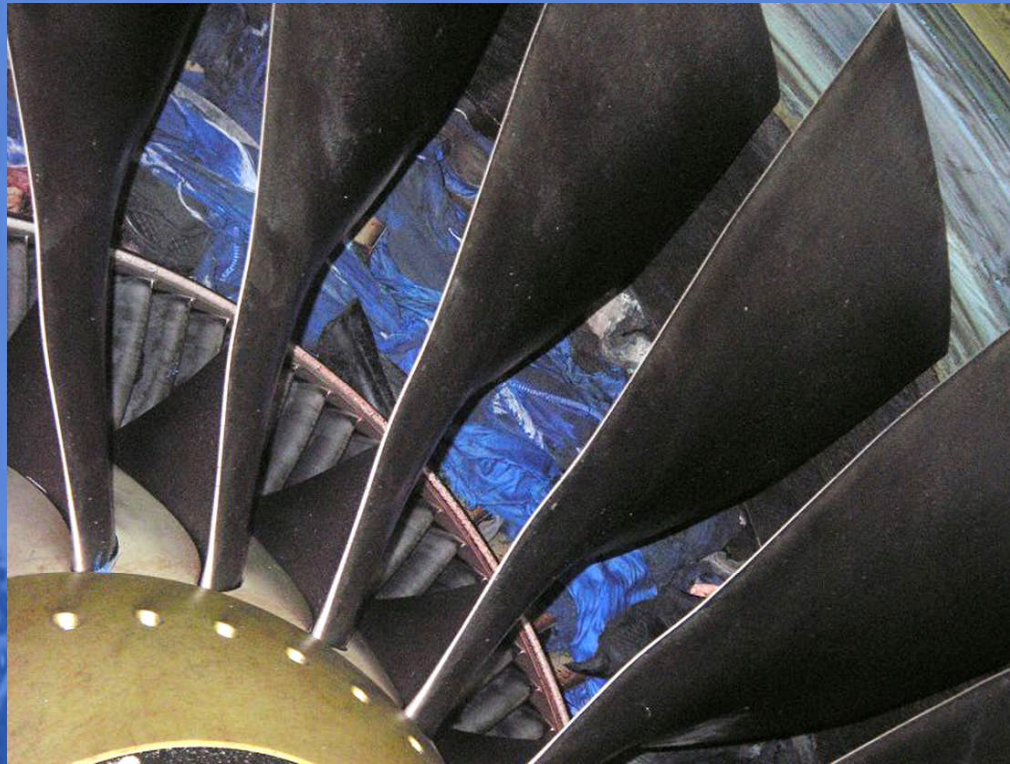
A ramp worker lost his life while preparing to push back this DC-9

Not in WB





# To Reduce These Costs



We must train the person on how to avoid  
the error they never intend to make  
With **HUMAN FACTORS** training

Not in WB



# **We Humans Have Been Making Human Errors For a Very long Time**



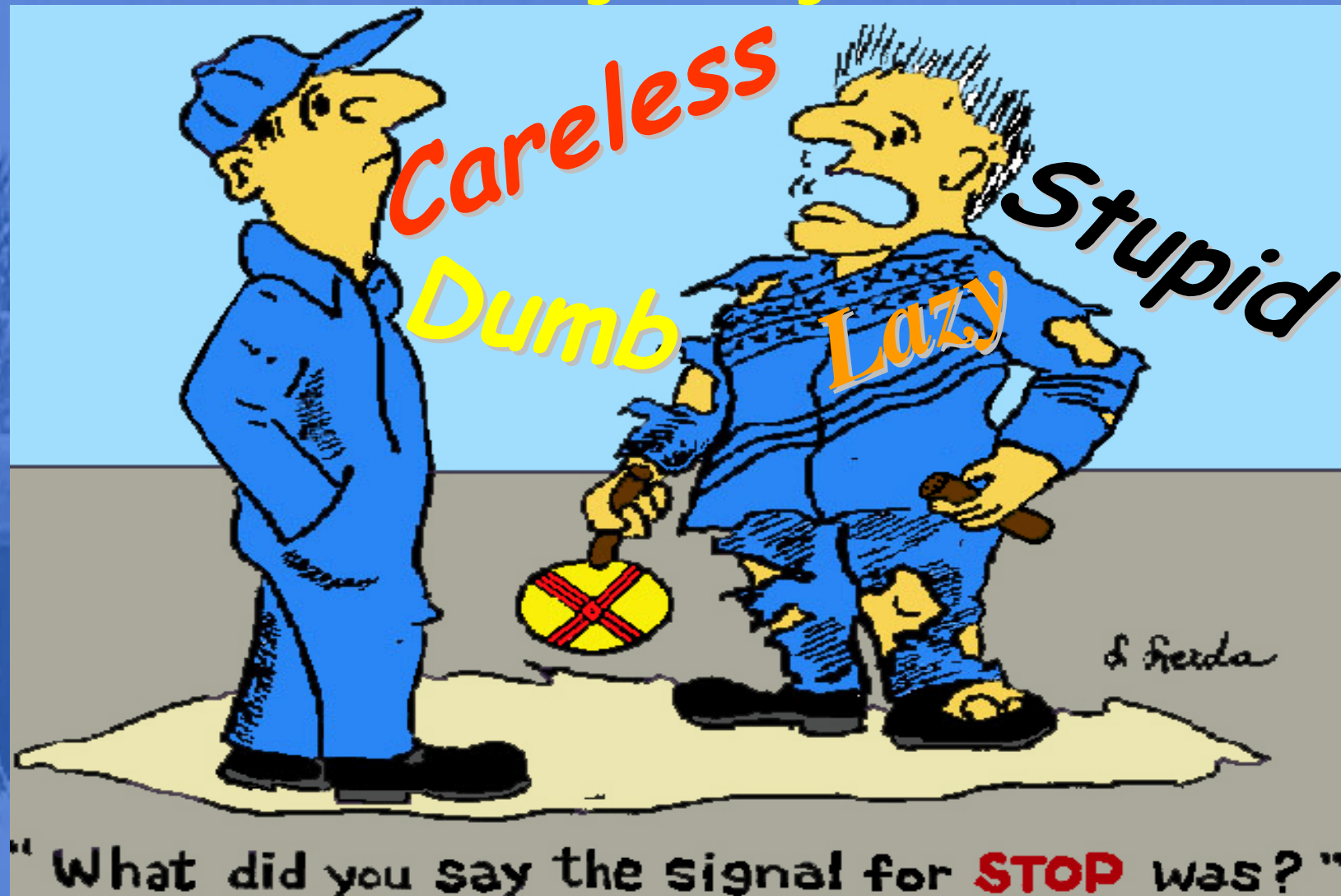
"That No Apple Policy doesn't  
apply to us"

Not  
in WB

## **And, Sadly, Will Continue To Do So For a Very Long Time**



# And When These Errors Occur We Say They Were:



Not in WB



# **We know:**

**Over 80% (plus) of our accidents are due to Human Error**

**These Human Errors are not made on purpose**

**Many of these errors are made by some of the best and most conscious employees**

**Thus something must have interfered with that “person’s” performance and/or judgment in order for the error to occur**

**Not in WB**





**[Ground Crew] errors**  
are not the cause of accidents.  
The causes are to be found in whatever  
it was that interfered with the  
**[guilty party's]**  
**{performance/judgment}** at a critical  
moment  
the outcome (result) of which is a  
**[Ground Crew] error**

WB 2

Jerome Lederer  
Flight Safety Foundation  
Adapted by G. Dupont





# Where Was Their Common Sense?



**Common Sense is Not That Common  
And Has Nothing To Do With  
Human Factors Training**

Not in WB



$$A + B = C$$

**A. The Human is responsible for most of our accidents**

**+**

**B. He/she had no intention of making the error, then**

**=**

---

**C. It makes economic (and common) sense to train that person in how to avoid that error**



# So Why Don't We Train Everyone in Human Factors?

**"They" don't want it**

**"We" can't afford it**



**AND**



**The Real Reason Bull Pucky**  
**No one has mandated it yet**

WB 2





# They Don't Want It

What we don't understand, we avoid

But they will want it if:

- ✓ a) The material is deemed to be useful

## CHAPTER 4

### Aviation Medicine – Health and Hygiene

## Useful?

Introduction .....	4-1
Joint Aviation Requirements .....	4-1
JAR-FCL and ICAO Annex 1 .....	4-1
Medical Fitness .....	4-1
Requirement for Medical Certificate .....	4-2
Aeromedical Disposition .....	4-2
Decrease in Medical Fitness .....	4-2
Fitness to Fly .....	4-3
Blood Pressure .....	4-3
Hypertension .....	4-4
Orthostatic Hypotension .....	4-4
Causes of Orthostatic Hypotension .....	4-4
The Effect of G Forces on Blood Pressure .....	4-5
Donating Blood .....	4-5
Coronary Heart Disease .....	4-5
Atherosclerosis .....	4-6
Risk Factors for Coronary Heart Disease .....	4-6
Reducing the Risk of Coronary Heart Disease .....	4-7
Detection and Treatment of CHD .....	4-7
Stroke .....	4-7
Anaemia .....	4-7
Obesity .....	4-7
Body Mass Index .....	4-8
Effects of Obesity .....	4-8
Exercise .....	4-9
Hypoglycaemia .....	4-9
Tropical Diseases .....	4-9
Diarrhoea .....	4-9
Cholera .....	4-10
Typhoid Fever .....	4-10
Amoebic Dysentery (Amoebiasis) .....	4-10
Diseases Transmitted by Insects .....	4-11
Insects and Insect Vectors .....	4-11
Mosquito-Borne Diseases .....	4-11
Malaria .....	4-11
Dengue Fever .....	4-11
Diseases Transmitted by Flies .....	4-12
viii	

## JAA ATPL Training Requirements

**1. Separate Health & Safety from Human Factors**

**2. Train ONLY What They Can Use in Their Work to Avoid Making a Human Error**

Not in WB







# They Don't Want It

What we don't understand, we avoid

But they will want it if:

- ✓ a) The material is deemed to be useful
- ✓ b) The material has examples that relate to their work
- ✓ c) The facilitator believes and is passionate about the material
- ✓ d) The material is interesting
- ✓ e) The material has some Fun in it



For Example

WB 3





# They Will Accept And Use The Training IF

- ✓ f) It is based on PBL (Problem Based Learning) to the maximum extent possible
- ✓ g) It has follow up to help maintain awareness that the training will provide

Follow up can be the following

1. Yearly ongoing workshops that build on the previous material as well as review
2. Weekly HF news short stories are useful
3. A company newsletter devoted to HF
4. Daily/weekly tailgate sessions

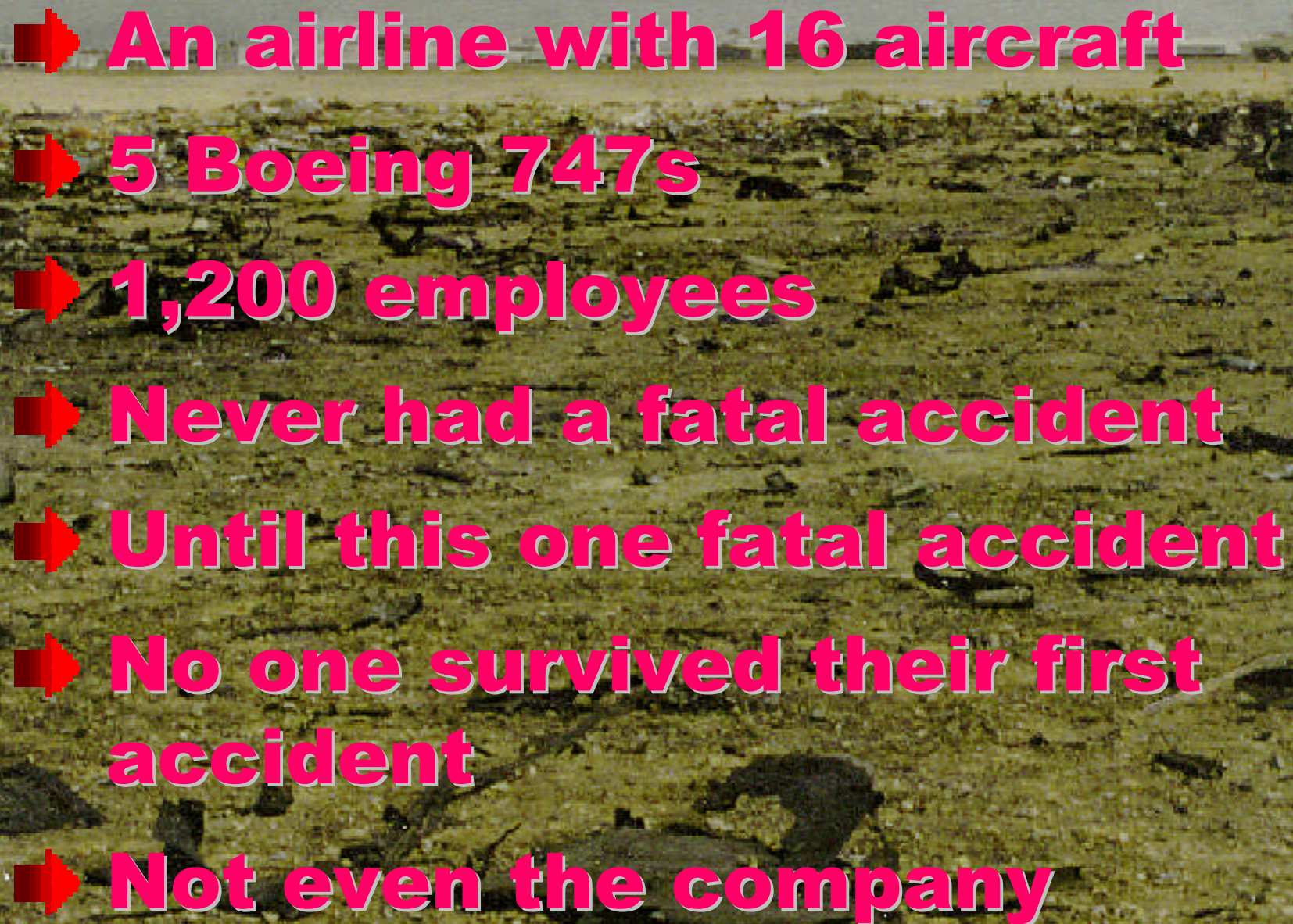




# We Can't Afford It

- You can't afford NOT to do everything you can to avoid an error that could result in the end of your company
- It only takes ONE human error
- For example:



- 
- **An airline with 16 aircraft**
  - **5 Boeing 747s**
  - **1,200 employees**
  - **Never had a fatal accident**
  - **Until this one fatal accident**
  - **No one survived their first accident**
  - **Not even the company**



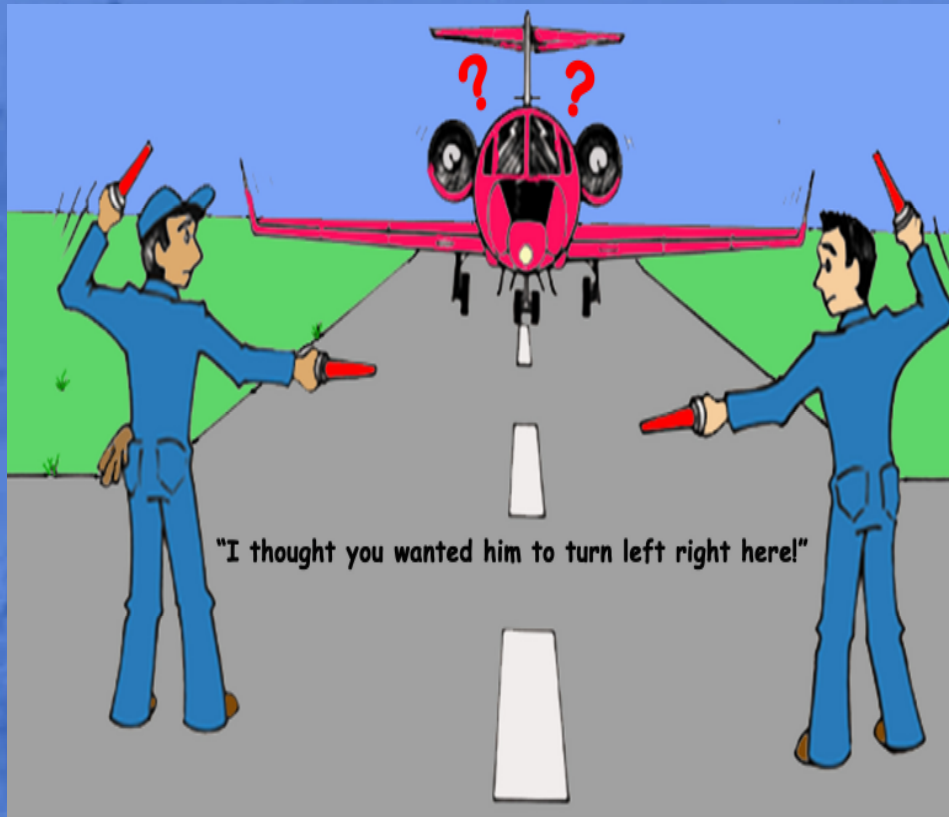
# The Test Run - August 1995

- A two day “**Human Performance for Ground Crew Part 1**” workshop was held
- Based on the maintenance HPIM workshop but modified for Ground Crew
- Invigilators from five major airlines, the military, a union, an airport authority and a training school, participated (24 total)
- Overall final results of all modules were

	<b>4</b>	<b>49</b>	<b>148</b>	<b>69</b>
• 1	2	3	4	5
Poor	Fair	Good	Very Good	Excellent

# Ground Crew Workshop Contents

## Chapter 1 – Workshop Outline and Objective



- ✓ The icebreaker chapter
- ✓ This is also the motivator chapter
- ✓ Or why you should stay awake
- ✓ The objective is:

*To examine the human role in ground crew operations that cause an aviation occurrence and develop ways to prevent or lessen the seriousness of the occurrence*

1

2

3

4

4

11

5

3

WB 4



# Ground Crew Workshop Contents

## Chapter 2 –

### What Interferes With Our Performance/judgment?



- ✓ Enables the participants to understand why they make mistakes
- ✓ Uses a simple model based on transactional analysis (TA)
- ✓ Is not psycho-babble
- ✓ Can and is often used outside the work environment
- ✓ Many say that it has changed their lives
- ✓ Have trained over 8,000 persons and no one has yet to say it was a waste of their time

1

2

3

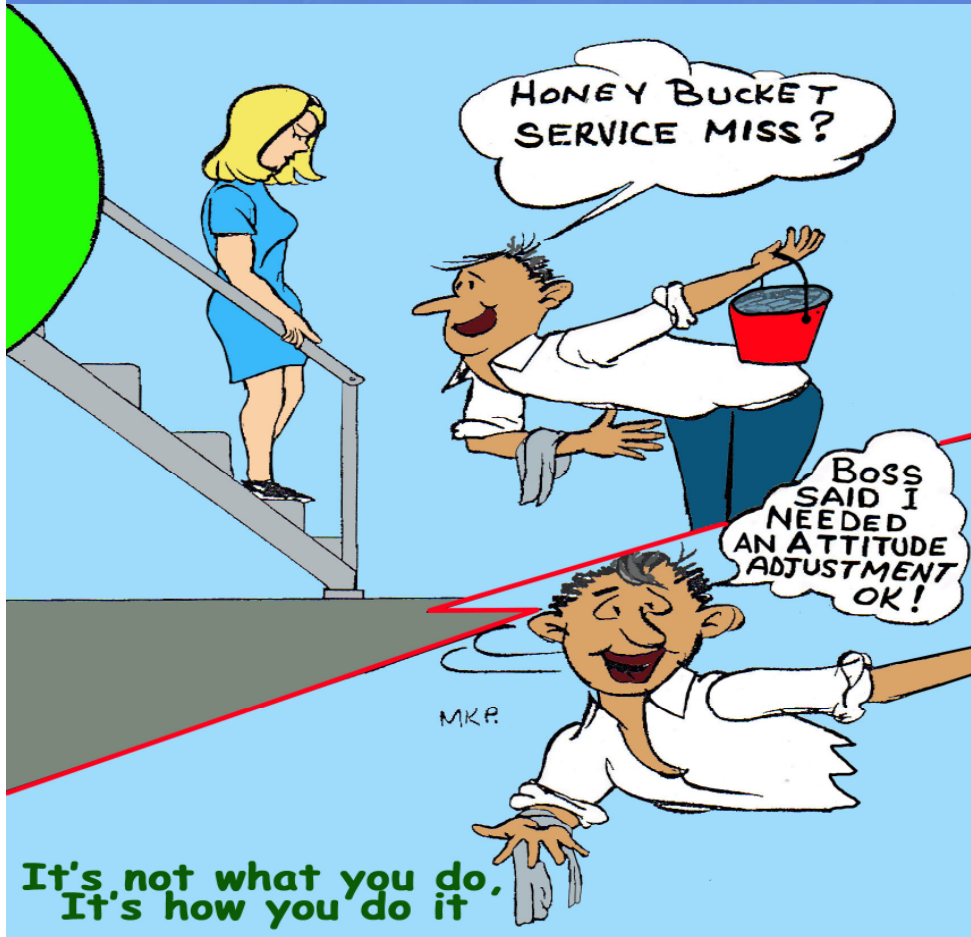
12  
4

6  
5

WB 5

# Ground Crew Workshop Contents

## Chapter 3 – Behavioural Analysis



- ✓ A simple 20 question quiz with questions that relate to their work environment
- ✓ Uses the categories of Caring, Assertive, Loner and Aggressive
- ✓ Many persons find this the most valued part of the workshop
- ✓ They are able to see their strengths and areas for improvement
- ✓ It also helps them understand other workers behaviour as well

1 2 3 4 5

WB 5



# Ground Crew Workshop Contents

## Chapter 4 – Behavioural Styles - Assertiveness



- ✓ Explains the Dirty Dozen contributing factor, Lack of Assertiveness
- ✓ Develops Safety Nets to avoid errors due to Lack of Assertiveness
- ✓ Builds on the previous chapter Behavioural Analysis
- ✓ Enables the participants to see the balance between Passive and Aggressive

1

2

3

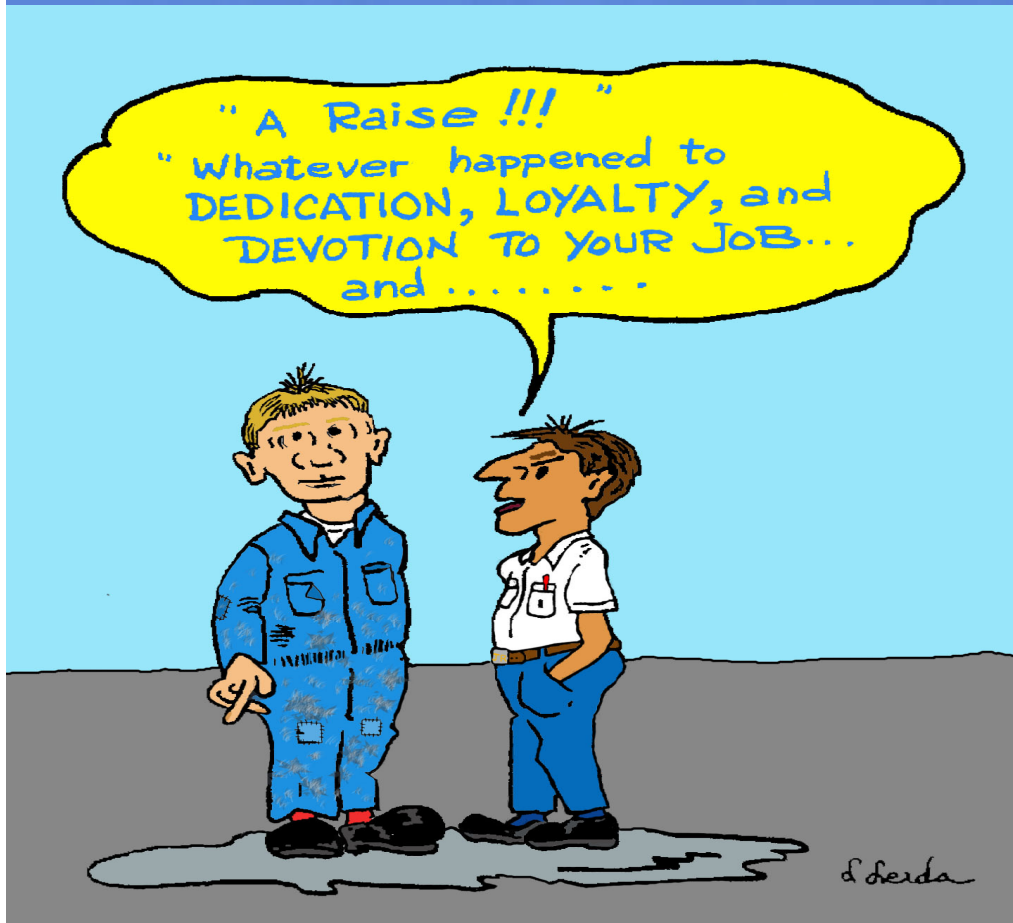
13  
4

6  
5

WB 6

# Ground Crew Workshop Contents

## Chapter 5 – Characteristics of a Ground Crew



- ✓ List developed by a psychologist familiar with the industry and industry leaders
- ✓ Can promote lively discussion
- ✓ Can be removed if time is short

1

2

11  
3

9  
4

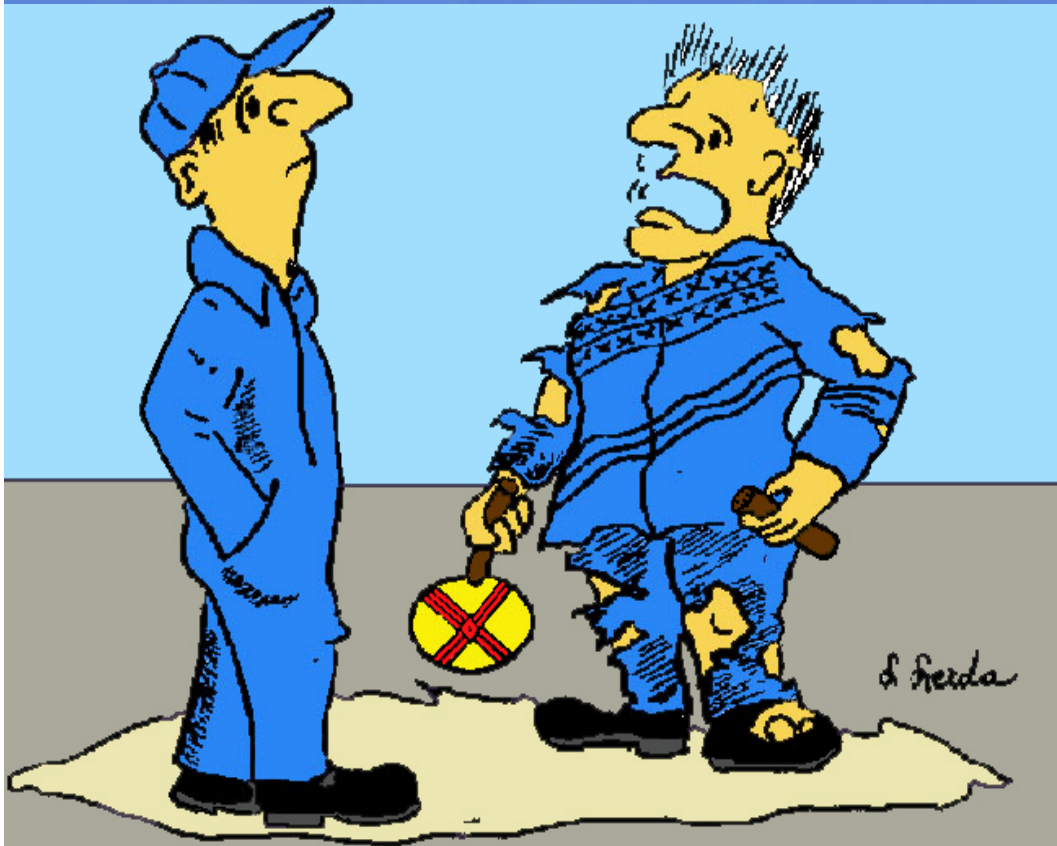
3  
5

WB 6



# Ground Crew Workshop Contents

## Chapter 6 – Human Factor Errors



"What did you say the signal for **STOP** was?"

- ✓ Covers the Dirty Dozen contributing factors leaving the big four for the second day
- ✓ All include Safety Nets to avoid making the error
- ✓ Other Safety Nets catch the error before it results in an accident
- ✓ The end of day one includes "homework"

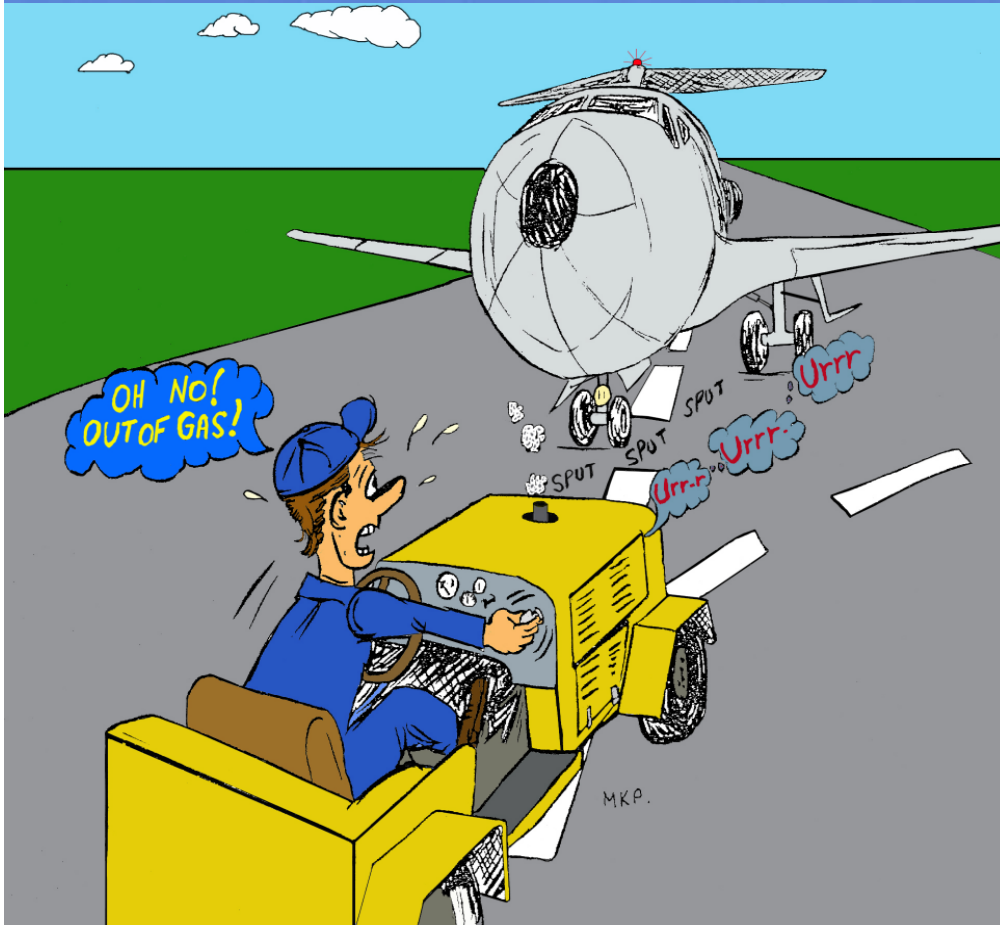
1 2 3 4 5

1 2 3 4 5

WB 7

# Ground Crew Workshop Contents

## Chapter 7 – Stress Management



- ✓ One of the big four
- ✓ Is often indicated as having the most value by a participant
- ✓ Often assists them with their personal problems
- ✓ Ties in with Pressure which is simply Stress at work

1

2

3

4

5

WB 7



# Ground Crew Workshop Contents

## Chapter 8 – Fatigue



**“Only one more 37 to unload and  
your 12 hr shift will be over”**

- ✓ The number one contributing factor to human error
- ✓ Has the most time of all the Dirty Dozen spend on understanding it and how to deal with it
- ✓ Includes contributors to Fatigue like dehydration, low blood sugar, etc

1

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5  
3

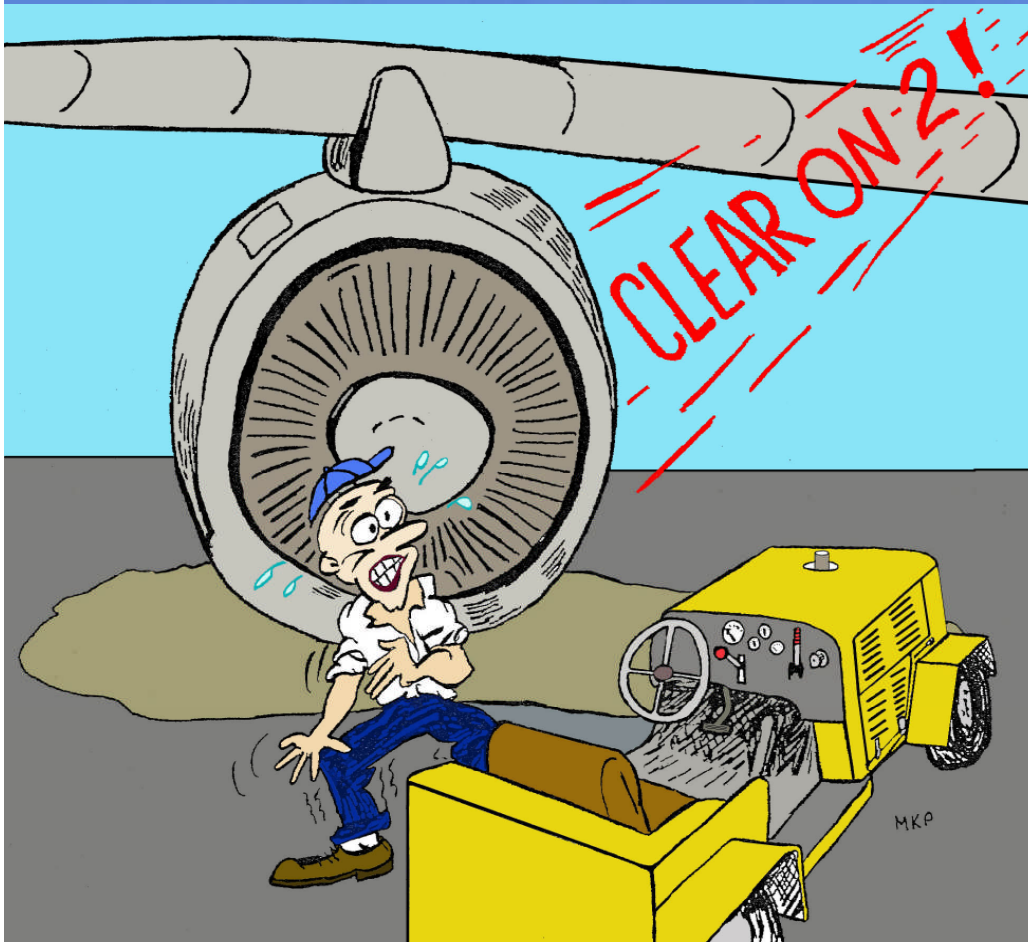
14  
4

5  
5

WB 8

# Ground Crew Workshop Contents

## Chapter 9 – Lack of Communication



- ✓ Another of the big four
- ✓ Uses a very simple “*Mental Pictures must Match*” model
- ✓ Provides Safety Nets to ensure that the message did get through

1 2 3 4 5

WB 8



# Ground Crew Workshop Contents

## Chapter 10 – Lack of Teamwork



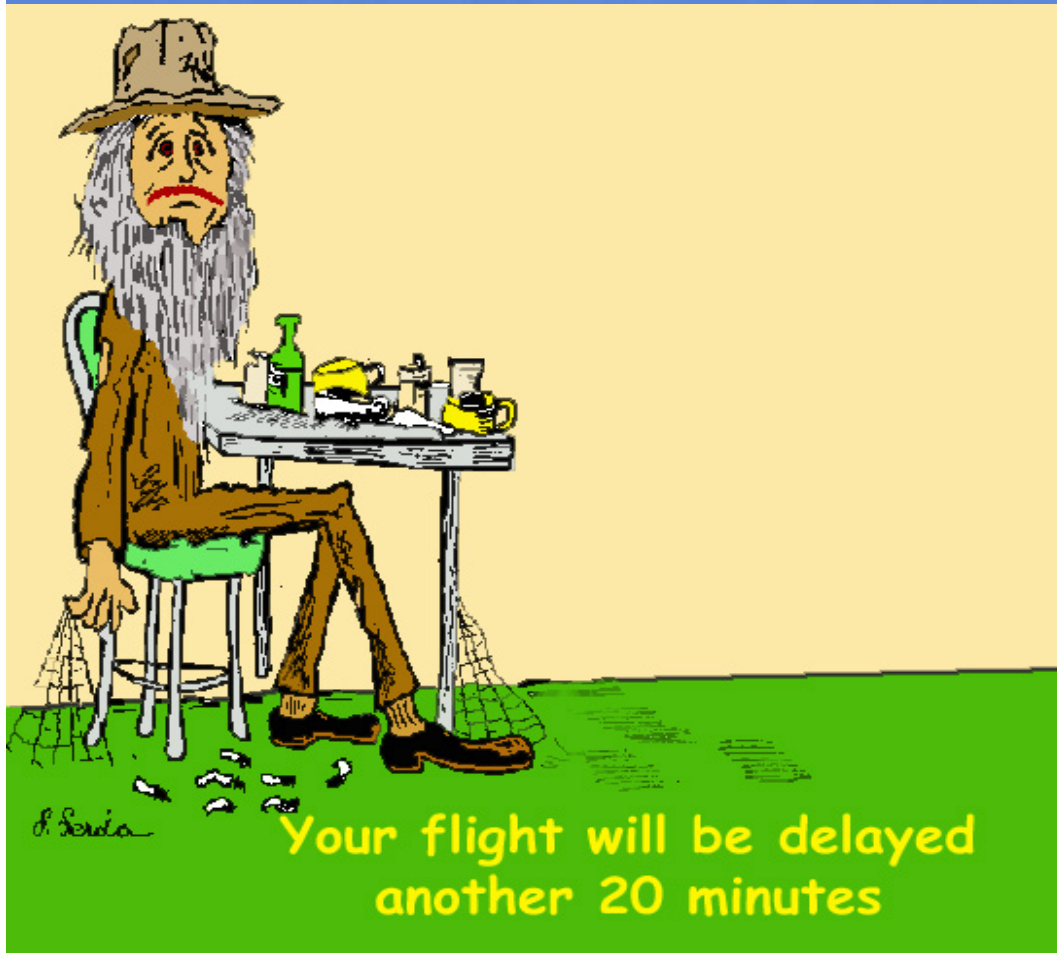
- ✓ Last of the big four but vital to reduce errors
- ✓ Uses a survival exercise to illustrate the value of teamwork
- ✓ The participants are already in teams
- ✓ The results surprise a lot of participants and many label this as the most value
- ✓ It's a lot of fun also

**The following is an example of Great teamwork with a successful outcome**

**WB 9**

# Ground Crew Workshop Contents

## Chapter 10 – Lack of Teamwork



- ✓ Last of the big four but vital to reduce errors
- ✓ Uses a survival exercise to illustrate the value of teamwork
- ✓ The participants are already in teams
- ✓ The results surprise a lot of participants and many label this as the most value
- ✓ It's a lot of fun also



# Ground Crew Workshop Contents

## Case Studies



- ✓ Reinforce lessons learned
- ✓ Are “Problem Based Learning” (PBL) at its best
- ✓ Are always popular with the participants
- ✓ Are an effective way of ensuring that the material presented is understood

1

2

1

3

16

4

5

5

WB 9

# The Evaluation



- ✓ Tells you if the training was deemed worthwhile by the participants
- ✓ Question 1 –Scale 1 to 10 rate usefulness of workshop
- ✓ Did it meet the objective?
- ✓ What was of the most value to you?
- ✓ What was of the least value?
- ✓ What should be added?
- ✓ What should be deleted?





# Follow Ups – Maintaining the Awareness

## Six month letter to self brings the awareness back up

It takes Motivation to get you going and  
Habit to keep you going.

Date \_\_\_\_\_

Dear \_\_\_\_\_

*Having just completed the Human Performance for Ground Crew workshop and realizing now that I am the key to safety, I am going to...*

*(Suggestions - Do my homework (talk to my Child every morning), review my work-book,*

*.....*

*In six months when I receive this letter back, I will do a self audit and see just how well I have succeeded and where I should try harder.*

*If I have any thoughts or ideas, which on looking back would have been of help to me if it had been included in the workshop I will communicate with Gordon Dupont Phone/Fax 604 526-3993 Email: dupontg@system-safety.com.*

*What to h... I'm a better communicator now so I'll give him a call or Email and let him know how I'm doing and that I'm doing my home-work.*

*Mine very sincerely*

\_\_\_\_\_  
*Your signature here*

WB 10





# Follow Ups – Maintaining the Awareness

Follow up “Dirty Dozen” Safety posters are  
put up one at a time and changed monthly

**RAMP SAFETY POSTERS**  
**The Dirty Dozen**

1. Lack of Communication
2. Complacency
3. Lack of Knowledge
4. Distraction
5. Lack of Teamwork
6. Fatigue
7. Lack of Resources
8. Pressure
9. Lack of Assertiveness
10. Stress
11. Lack of Awareness
12. Norms

Total cost: \$750,000

“The rest of the crew will be here soon, I’ll bring this one in myself.”

**Safety Nets**

- “Reconfirm duties among team members.”
- “Communicate!”
- “Team tasks require a full team.”
- “FOLLOW THE CORRECT PROCEDURES.”

In the interest of Aviation Safety, the following companies have generously provided funding to make this poster possible:

**To Be Updated**

WB 10







# Follow Ups – Maintaining the Awareness

Use of decals and reminder cards help keep the awareness level high




**MOM'S ADVICE**

**STOP LOOK** → Assess the situation.  
→ Rationally not Emotionally.  
→ Look at reality  
→ What's the worst that'll happen?  
→ Can I change the situation?  
→ How can I best cope?


**LISTEN** → To your Rational Mind.  
→ Has this happened before?  
→ What is the best Rational plan?

**ACT** → NOW!  
Repeat advise as necessary



**DAD'S ADVICE**


→ Think positive and positive things will happen to you.  
→ If you want perfection, die and go to heaven but that doesn't mean you can't strive for it.  
→ Anyone can make a mistake but only a fool makes it twice.  
→ Anything worth doing is worth doing right.  
→ Remember when you don't have time to fix it, you will when it fails.  
→ Change what you can for the better and cope with the rest.



**Just For Today**  
**Zero Error**



**ATTITUDE HELPERS**

→ Know your *child*  
→ Control your *child*  
→ Recognize the *child* in others  
→ Develop an empathy for their *child*  
→ Talk to your *child*



**NORMS**

→ Identify *pos* from *neg*  
→ Accentuate the *pos* & eliminate the *neg*  
→ Discuss and influence the group to change  
→ Maintain your standard as a *professional*





**MOM'S ADVICE**

**STOP LOOK** → Assess the situation.  
→ Rationally not Emotionally.  
→ Look at reality.  
→ What's the Risk in what I am doing?  
→ Can I change the situation?  
→ How can I lower the Risk?

**LISTEN** → To your Rational Mind.  
→ Has this happened before?  
→ What is the best Rational plan?

**ACT** → NOW!  
Repeat advice as necessary

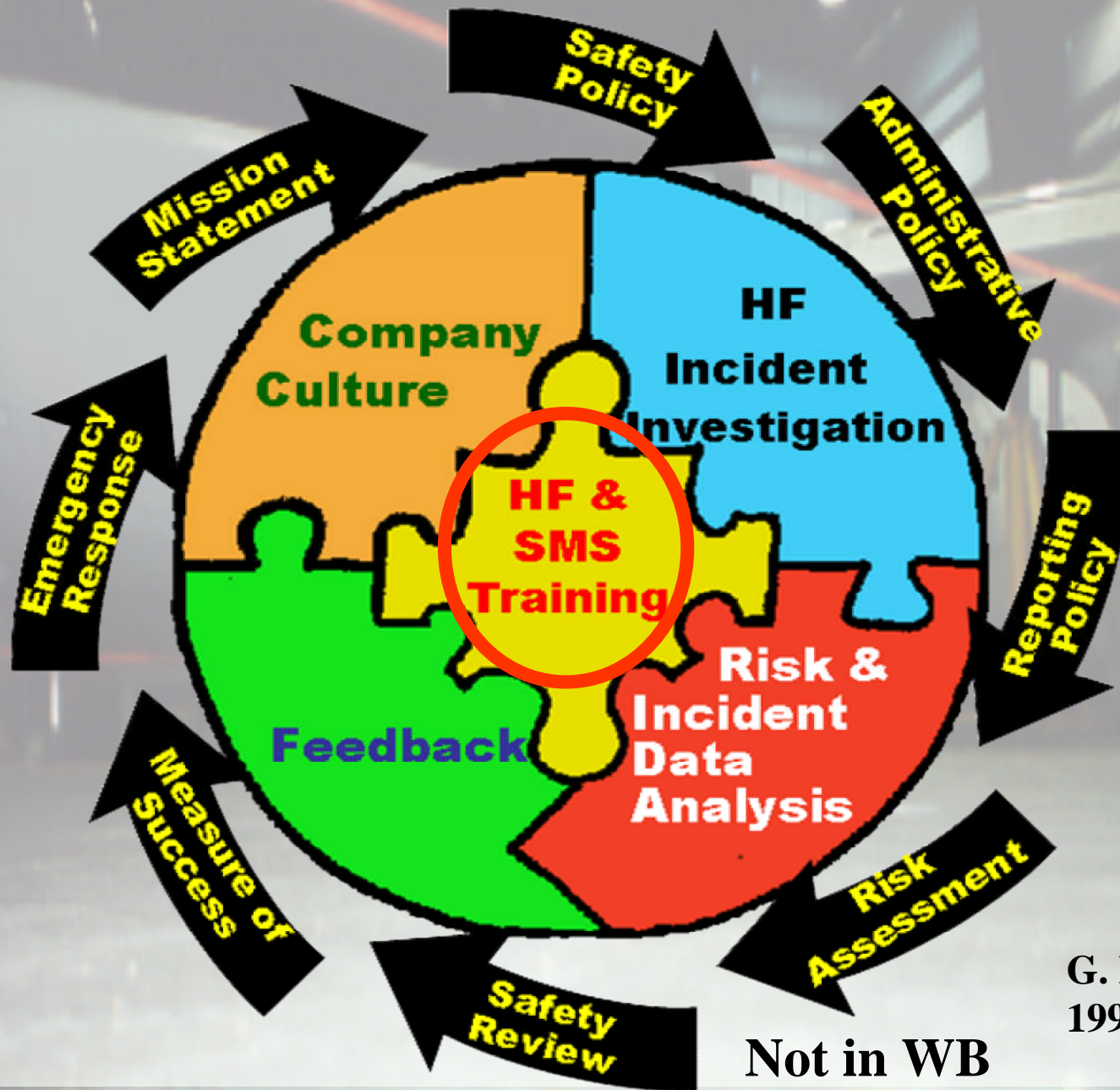


**Risk Management**

- IDENTIFY** We first have to be Aware
- ASSESS** We must analyze the risk  
Frequency X Severity - Benefit = Risk Quotient
- CONTROL** Eliminate or Mitigate the Risk
- IMPLEMENT** Someone has to do it
- REVIEW** Monitor and improve if necessary or possible



# The Big Picture SMS



G. Dupont  
1995

Not in WB



# Ground Crew Are Human Too

- And are expected to have high qualifications

## EMPLOYMENT OPPORTUNITIES

### Ramp Attendant/Refuelers

- *Is the customer #1 with you?* ----- That's the person whose bag you are throwing
- *Are you a positive, up-beat person?* ----- Specially when the rain is running down your neck
- *Do you have an inner need to do things right in a timely manner?* ----- But do it fast before the next aircraft
- *Do you insist on working safely and efficiently?* ----- While the company insists that you work faster
- *Are you known for your reliability and dependability?* ----- Or your pay will be docked
- *Do you enjoy working outside?* ----- Refer back to #2

Air believes in providing the highest level of customer service in the industry. Air is seeking talented line service technicians who believe in providing value-added benefits to our customers and excellent service to our pilots and their aircraft.

Please fax your résumé to schedule a confidential interview with our selection consultants.

They forgot to mention just how much they were willing to pay for this “talented line service technician”

Not in WB



# Ground Crew Are Human Too

- For which they are amply rewarded

**1240** **General Employment**

**POSITIONS AVAILABLE**

has

**Baggage Handlers**

positions available.

All jobs are part time and pay **\$8.84/h.**

Must hold valid Class 5 or 7 Drivers Licence.

Please fax resume to

**Attn.**

No phone calls please

**EMPLOYMENT OPPORTUNITIES**

**POSITIONS AVAILABLE**

Permanent P/T has

**BAGGAGE HANDLER**

positions available.

Wage **\$9.10/hr.**

Medical & Flight Benefits. Must hold valid Class 5 or 7N Drivers Licence.

Please fax or e-mail resume to

**Attn.**

**Ramp**

No phone calls please

Not in WB



# Ground Crew Are Human Too

- They often work in difficult conditions



Not in WB

# Ground Crew Are Human Too

- They work with expensive equipment loading and unloading very expensive aircraft



Not in WB



# Ground Crew Are Human Too

- They are expected to never make a mistake



Not in WB

# Ground Crew Are Human Too

- But we've never trained him/her how to avoid making an error



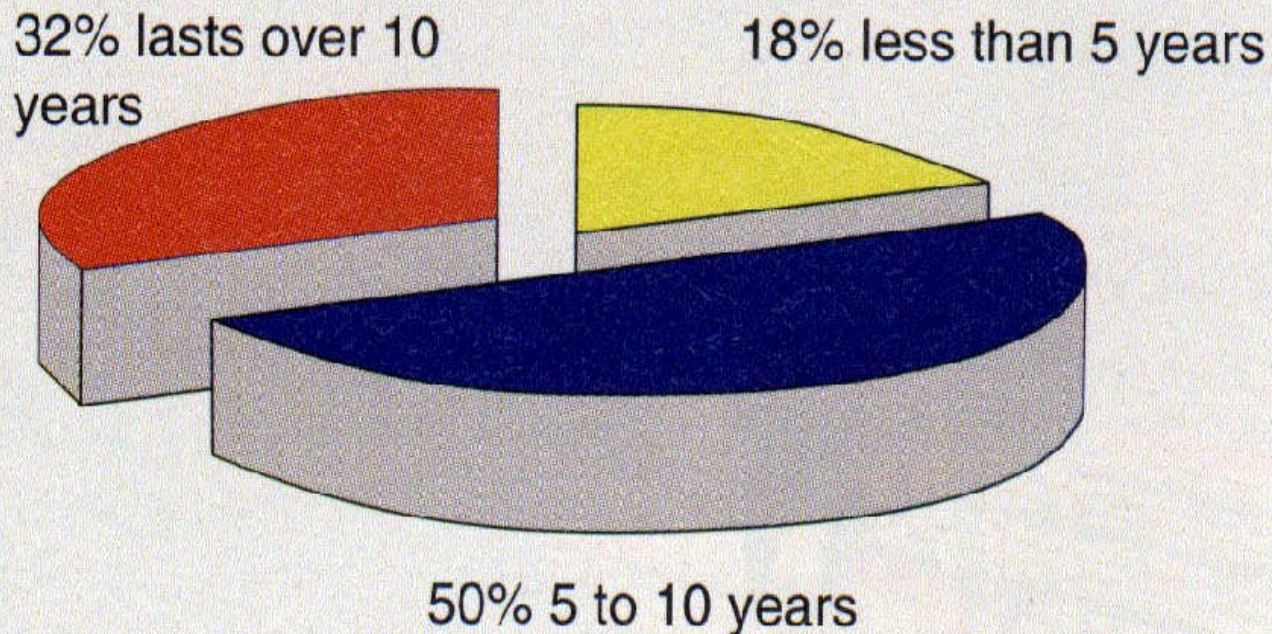
**Its about time we did**

Not in WB



# Why Experienced Well Trained Ground Crew Pays Off

Length of time equipment lasts when operated by employees who remain with the company  
**< than 1 year**



**George Prill Chairman – Feb. 1999**

**Ground Support Equipment Today**

**WB 11**

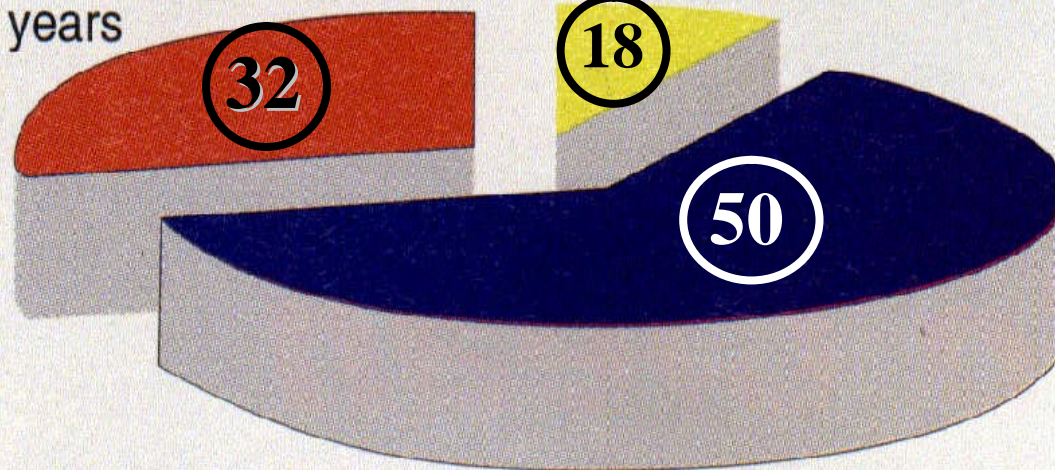


# Why Experienced Well Trained Ground Crew Pays Off

Length of time equipment lasts when operated by employees who remain with the company between 1 and 2 years

31% lasts over 10 years

6% less than 5 years



Less than 5 yrs ↘ **12%**

5 to 10 years ↗ **13%**

Over 10 years ↘ **1%**

George Prill Chairman – Feb. 1999

Ground Support Equipment Today

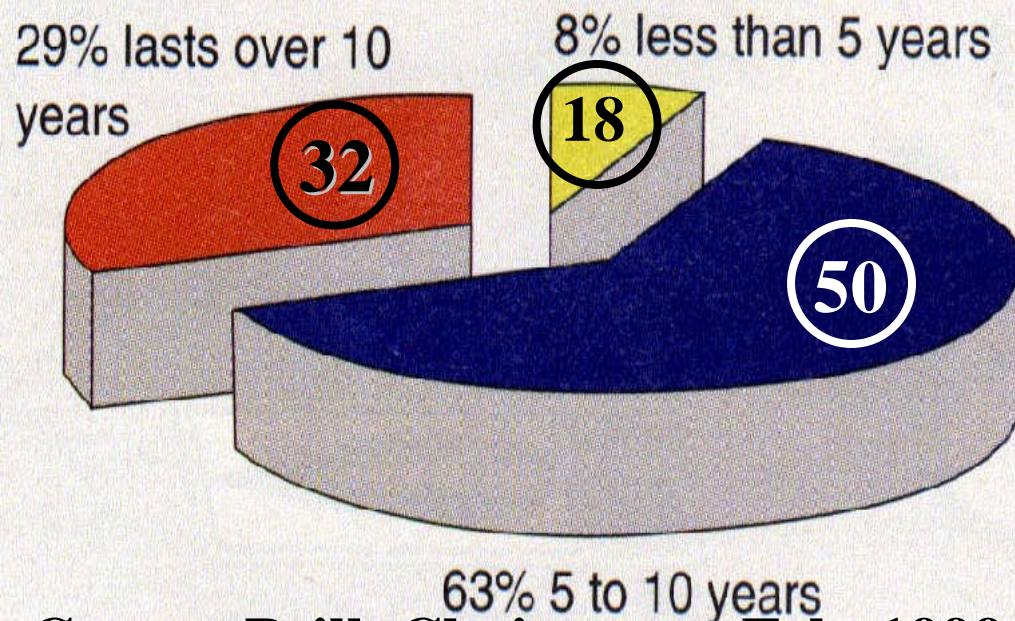
WB 11





# Why Experienced Well Trained Ground Crew Pays Off

Length of time equipment lasts when operated by employees who remain with the company between 3 and 5 years



Less than 5 yrs ↗ **10%**

5 to 10 years ↗ **13%**

Over 10 years ↘ **3%**

**George Prill Chairman – Feb. 1999**  
**Ground Support Equipment Today**

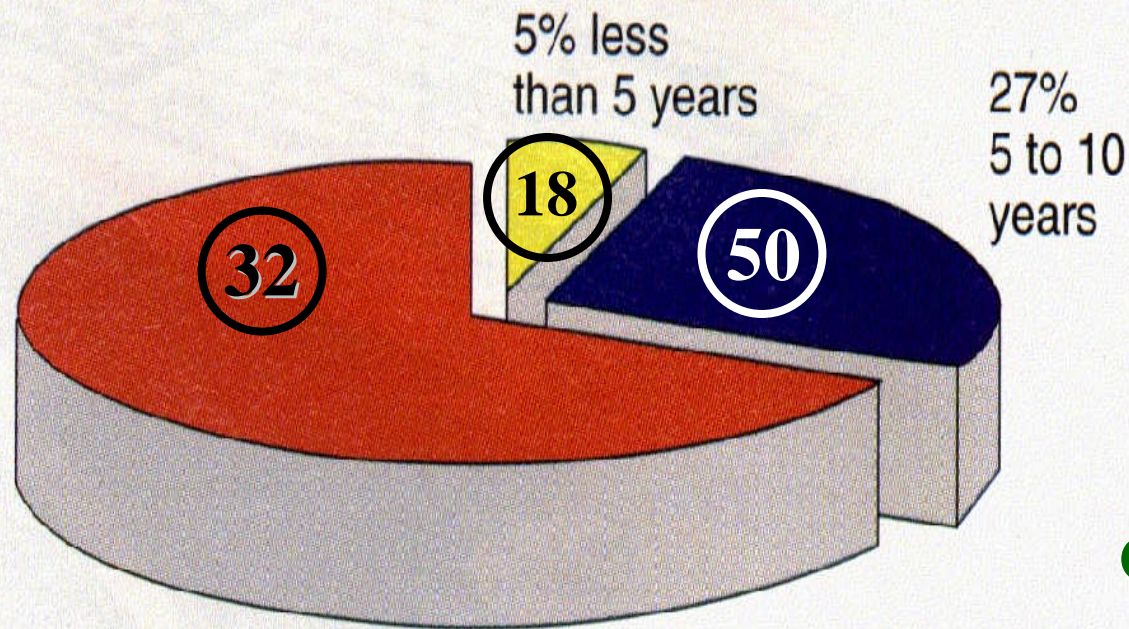
**WB 11**





# Why Experienced Well Trained Ground Crew Pays Off

Length of time equipment lasts when operated by employees who remain with the company  
> than 5 years



Less than 5 yrs ↘ **13%**

5 to 10 years ↘ **23%**

Over 10 years ↗ **36%**

68% lasts over 10 years

**George Prill Chairman – Feb. 1999**

**Ground Support Equipment Today**

**WB 11**



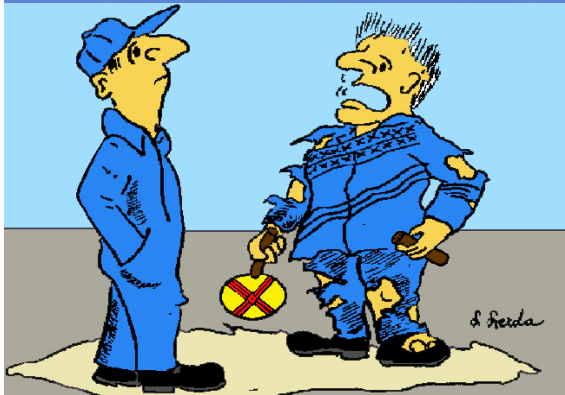


# Why Experienced Well Trained Ground Crew Pays Off

- ✓ Equipment lasts longer
- ✓ Less money is spent on hiring and training new personnel
- ✓ Productivity is improved with experienced personnel
- ✓ **LESS HUMAN ERRORS ARE MADE**

Not in WB

# For Those Who Don't Know What the Signal For **STOP** is



"What did you say the signal for **STOP** was?"

## Here It Is



Not in WB



# Thank You For Your Time

# Any Questions?



***No matter how right you are or hard you work,  
sometimes the Human Error Dragon still wins!***

Renee Dupont-Adam  
System Safety Services

