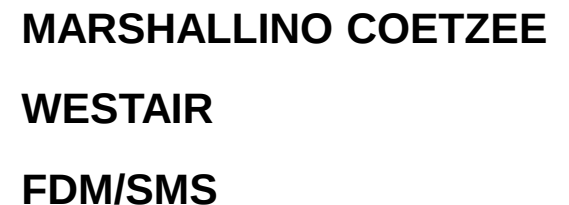


12 Precursors to Human Factor Errors

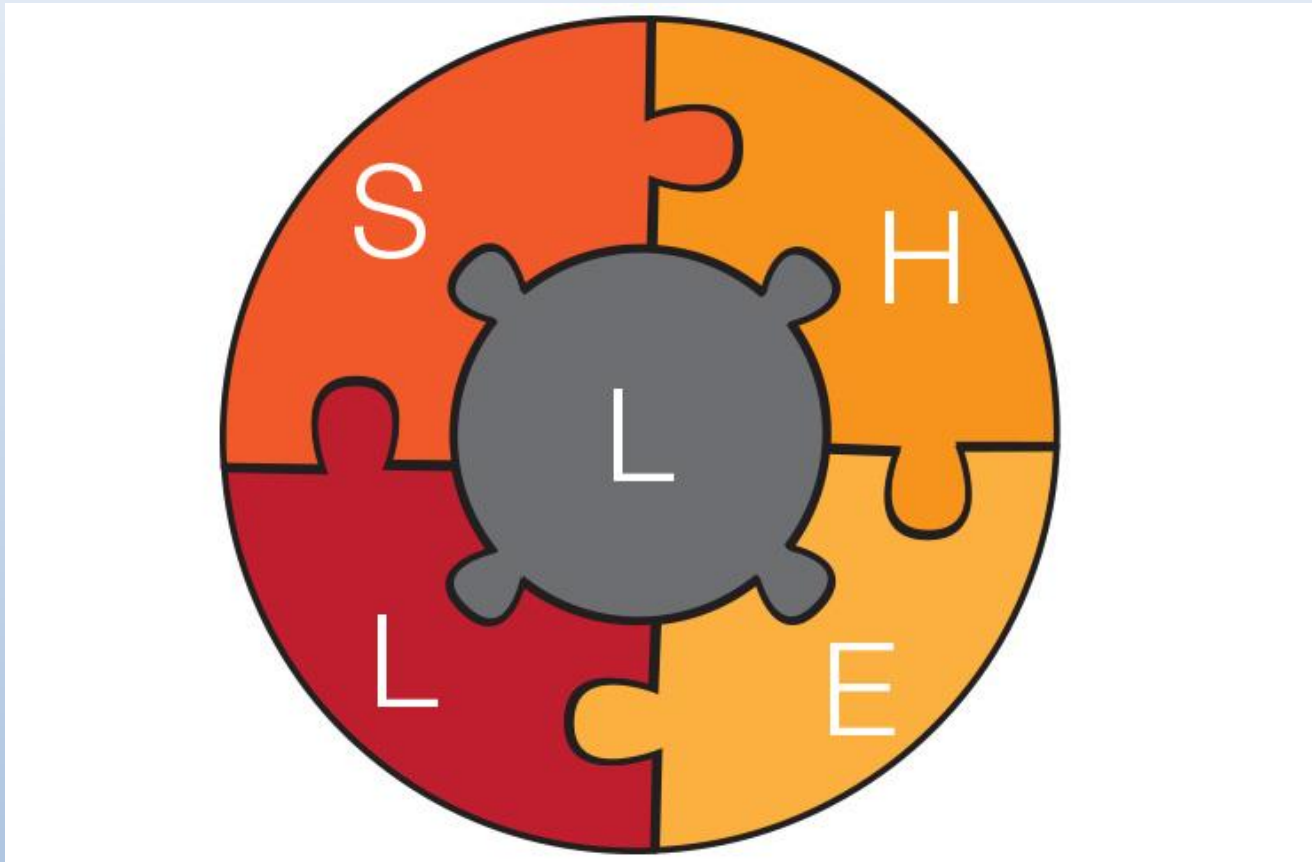


Recap

- **Over 80% of aviation accidents are due to Human Error**
- **Humans do not make these errors on purpose**
- **Training the person on how to avoid the error, they don't intend to make, will lower the number of errors**
- **The “Dirty Dozen” are the contributing factors or preconditions to that Human Error**

Train the person to recognize and understand the “Dirty Dozen” and there will be less errors

Recap - Shell



- Shapes how individuals behave
- A breakdown or mismatch between two or more components can lead to human performance problems

Recap – Root Cause Analysis

- **It's an in-depth process or technique to identify the most basic factor(s) which cause a variation in the performance (problem)**
- **Focus is on systems and processes**
- **Focus is not on individuals**

The Dirty Dozen

Let's look at the contributing factors that can cause us to make the error we do NOT want to make

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

Safety Nets



- A Safety Net is a Regulation, Program, Policy or Procedure which, if in place might break a link or prevent a link in the chain of events
- The regulatory body controls the regulations
- The company controls the programs & policies
- The individual has control over the procedures

1

Lack of Communication

- Failure to exchange information
- Seek first to understand, then be understood
- (*Learn to listen*)

"The Dirty Dozen"

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



Safety Nets

-  Use logbooks, worksheets etc. to communicate and remove Doubt.
-  Discuss work to be done or what has been completed.
-  Never assume anything.

In the interest of Aviation Safety, the following have generously provided funding to make these posters possible

SPONSORING COMPANIES COLOUR LOGOS

Complacency

- Overconfidence resulting in a loss of awareness of the dangers
- The greater the competency of the person, the more common this contributing factor is
- The person will begin to see and hear what he/she expects to see and hear

Flight Crew Dirty Dozen

- | | |
|--------------------------|--------------------------|
| 1. Lack of Communication | 7. Lack of Resources |
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Self-satisfaction resulting in a loss of awareness of the dangers



Complacency Safety Nets

Train yourself to be
"Mentally Prepared"
for the unexpected

Always follow the
checklists and SOPs

Learn from the mistakes
of others

Maintain your awareness
of possible dangers

Play the "What if" game
& mentally brief yourself

Remember YET. If
you're human -
You're Eligible Too

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COMPLAC

Just because things are going v
mean they can't suddenly go



COMPLACENCY

3

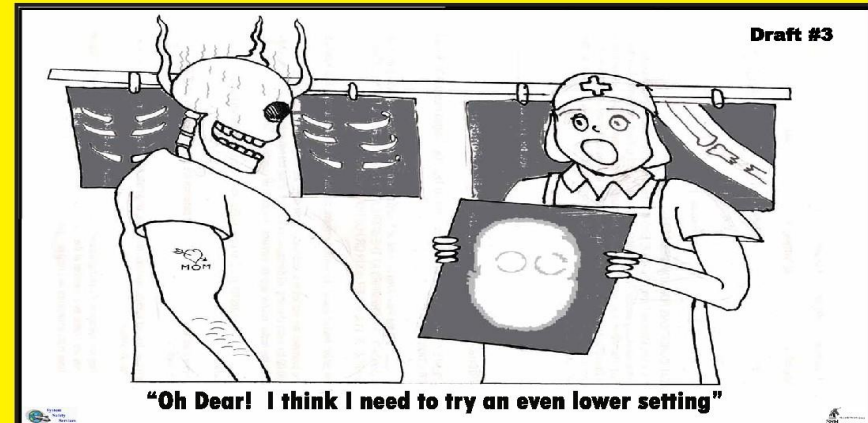
Lack of Knowledge

- A lack of understanding or experience for the task at hand
- Can occur at any stage of your work career with constant changes
- Training is always a Safety net and a good investment

Medical Dirty Dozen

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

A lack of understanding or experience for the task at hand



Lack of Knowledge Safety Nets

Go over the procedure
before starting

Take any training
opportunities available

When in doubt - Find out

A professional becomes
one by continuous study

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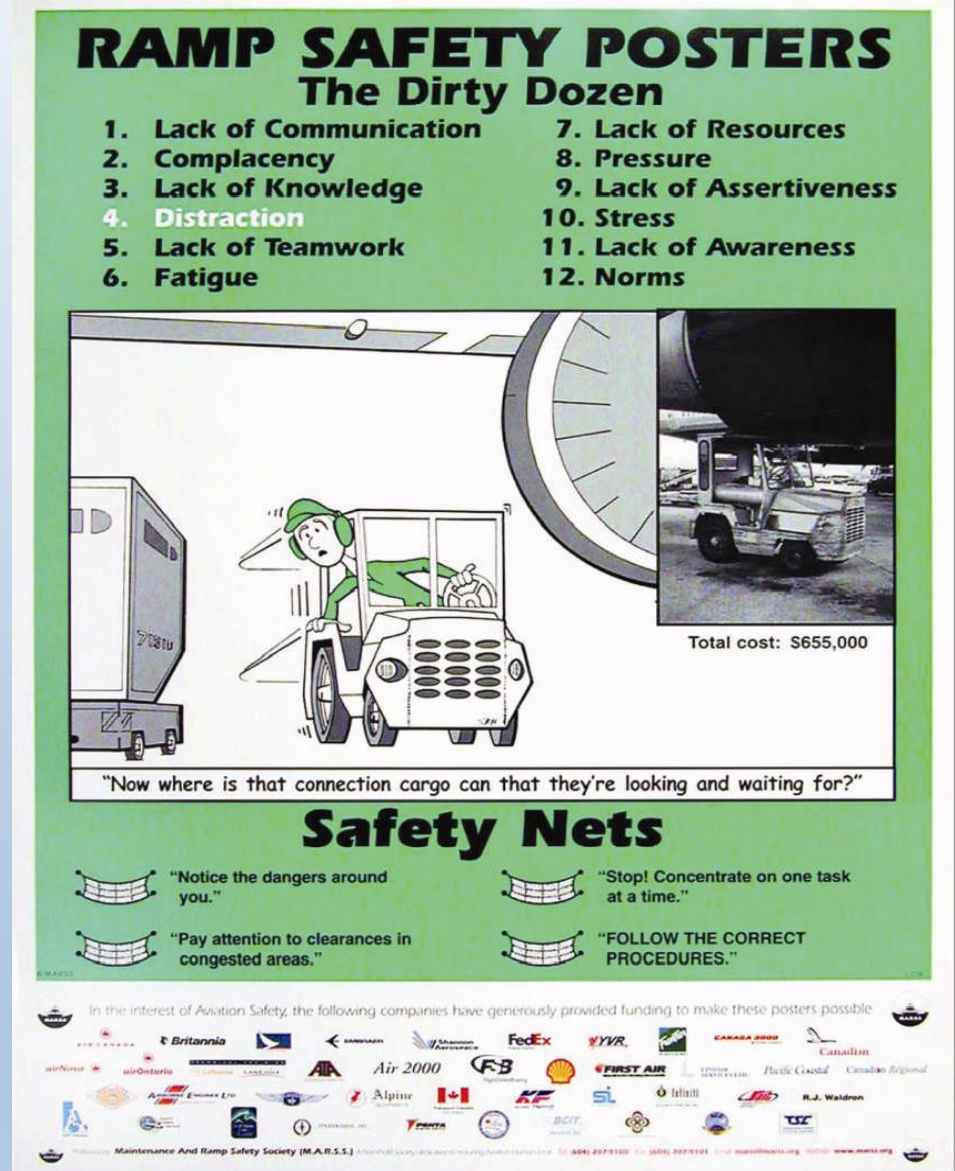
DRAFT #2

Lack of Knowledge



4

- **Anything that takes your mind off the job at hand**
- **Responsible for 15% of all human error**
- **Number one cause of forgetting**
- **Our mind can work faster than our hands**



5

Lack of Teamwork

- A failure to seek and consider the input of others
- Becomes more common as a company grows
- Calls for trust, a common goal and communication
- Is a must for any SMS to succeed

Maintenance Dirty Dozen

- | | |
|----------------------------|--------------------------|
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| 5. Lack of Teamwork | 11. Lack of Awareness |
| 6. Fatigue | 12. Norms |

A failure to seek and consider the input of others

Among the many contributing factors was the lack of teamwork between the persons doing the work and the person signing for it who did not know that a tire was very low on pressure



261 Fatalities



Lack of Teamwork Safety Nets

Calls for Common Goal, Communication & Trust

Where there is trust there will be respect

Recognize a common goal and all work towards it

Ensure that everyone has the same "Mental Picture" by discussing the job to be done

TEAM - Together Everyone Accomplishes More

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Final Draft #5

6

Fatigue

- Loss of alertness and a feeling of tiredness that eventually ends in sleep
- The #1 contributor to error
- We (*the industry*) tend to underestimate the problem
- We (*the individual*) tend to overestimate our ability to deal with it

Flight Crew 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

A loss of alertness and a feeling of tiredness that eventually ends in sleep



Fatigue Safety Nets

Develop a routine for enough sleep & exercise

Know the symptoms & look for them in yourself & others

Use coffee or tea 30 minutes before needed

Conduct some type of check every 15 minutes or less

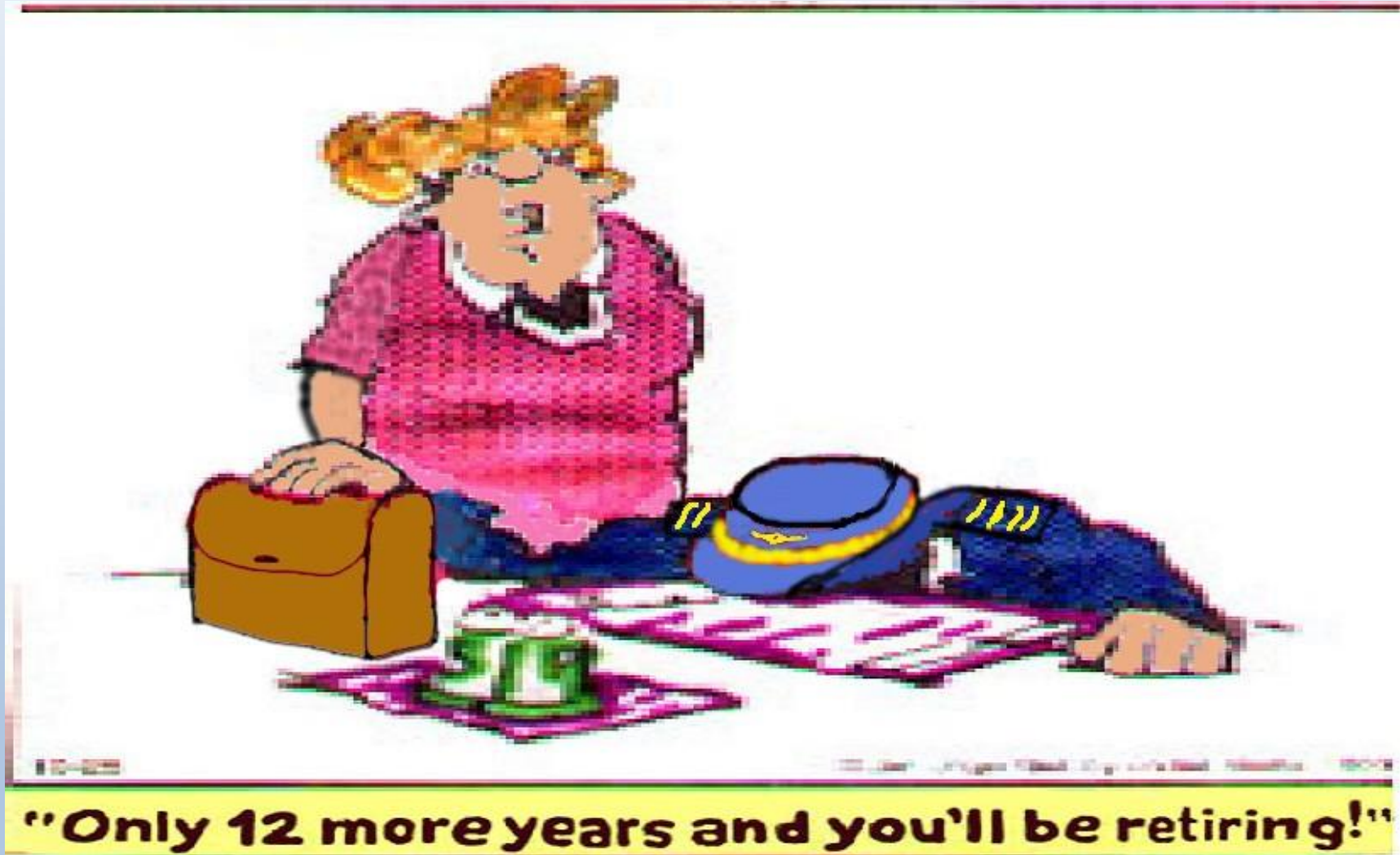
Schedule a NASA Nap when not in control

Drink lots of water

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Fatigue?



Fatigue?



7

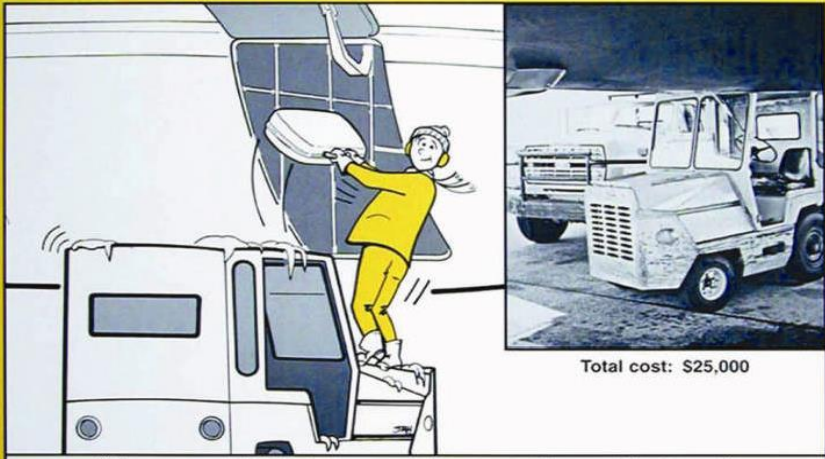
Lack of Resources

- A lack of material or support to Safely carry out the task at hand
- It is not uncommon, when times get tough for persons to be expected to do more with less
- One has to learn when to say NO if it affects Safety

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: \$25,000

"There are no beltloaders around, I can get this on without one."

Safety Nets

- "Plan ahead and organize your equipment."
- "Don't improvise. Use the equipment designed for the job."
- "Hold on to your equipment until the task is completed."
- "FOLLOW THE CORRECT PROCEDURES."

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



Produced by: Maintenance And Ramp Safety Society (M.A.R.S.S.) a not-for-profit society devoted to reducing accidents on the ramp. Tel: 800-255-0100

8

Pressure

- The urgency of matters requiring immediate attention
- Most pressure is self pressure, but the person fails to realize it
- Training must provide a model to help them recognize the true source of pressure

Flight Crew Dirty Dozen

- | | |
|--------------------------|--------------------------|
| 1. Lack of Communication | 7. Lack of Resources |
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The urgency of matters requiring immediate attention



Pressure Safety Nets

Know where the pressure is actually coming from & that it's not self-induced

Stop & look at the situation rationally before acting

Clearly state your case until there is a safe resolution

Keep in mind who will be the "fall guy" if there is an accident

Saying NO for Safety is always an option

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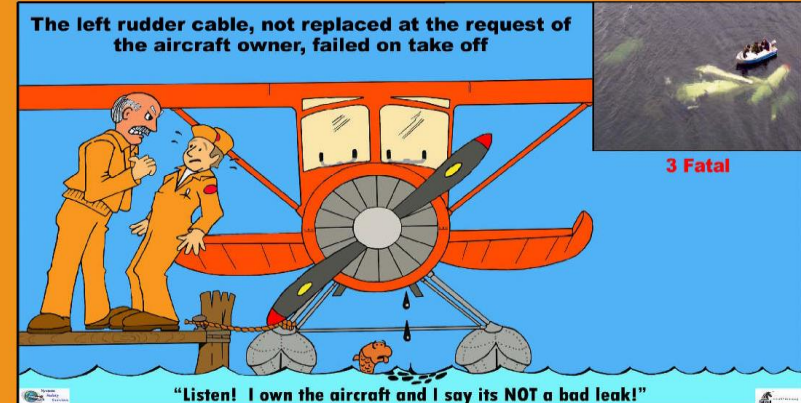
Lack of Assertiveness

- Failing to act in a bold and confident manner on Safety concerns
- Has caused many accidents where one person had knowledge but failed to share it
- Can be difficult to achieve in some cultures

Maintenance Dirty Dozen

- | | |
|--------------------------|--------------------------|
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Failing to act in a bold and confident manner on Safety concerns



Lack of Assertiveness Safety Nets

Know the standard and refuse to let circumstances compromise it

Calmly state your firm position on matters of Safety

If it compromises Safety, you must say NO

It's YOUR duty, your decision and your future

Remember - No one will thank you if you are responsible for an accident

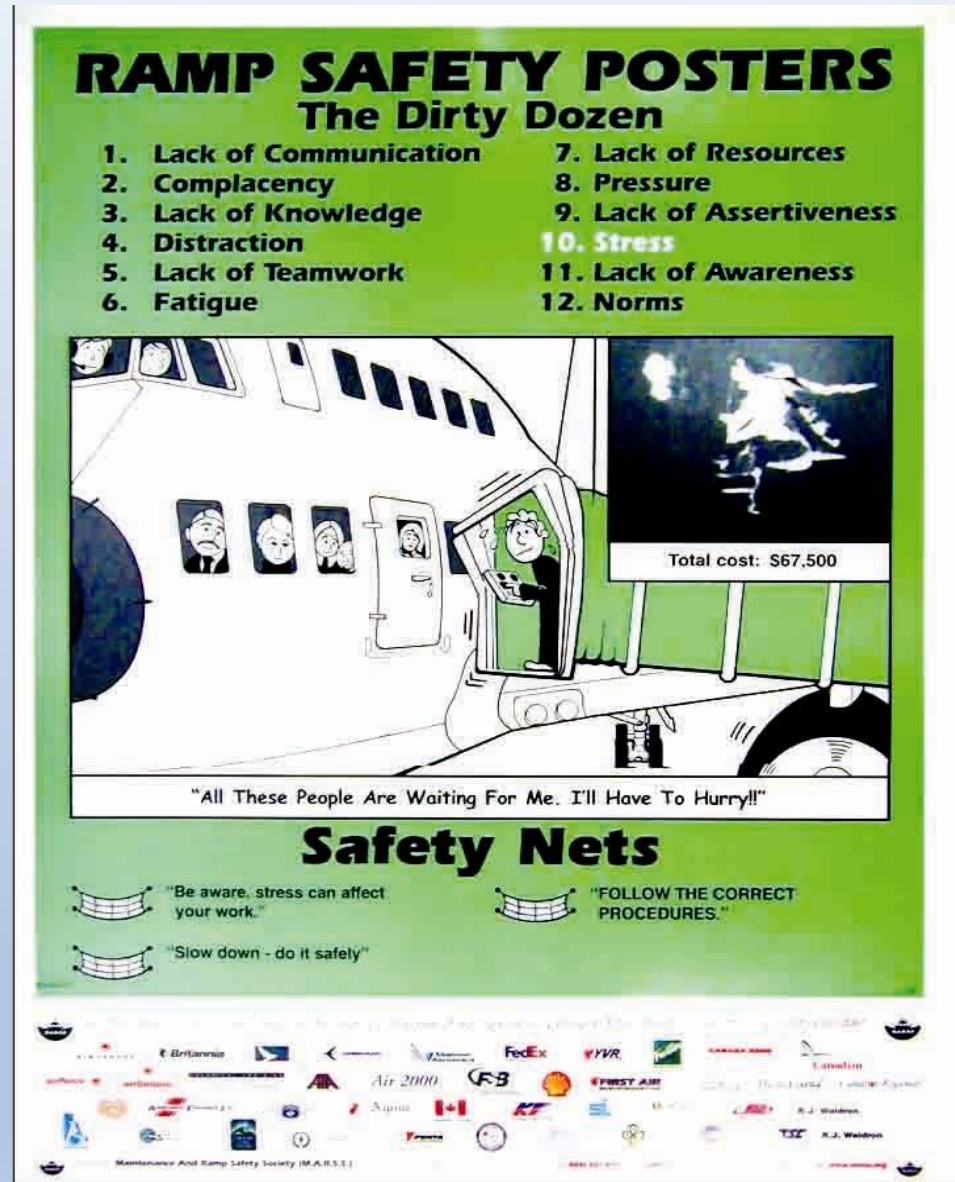
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10

Stress

- **The subconscious response to the demands placed on a person**
- **The person often brings the stressor to work with them**
- **Their mind is never fully on the job**



Lack of Awareness

- A lack of alertness and vigilance in observing
- Usually occurs to the very experienced
- Believe they are doing the right thing but have not thought it through
- Needs to ask more “What ifs”

MRO Dirty Dozen

- | | |
|--------------------------|------------------------------|
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A lack of alertness and vigilance in observing



Lack of Awareness Safety Nets

Just because the manual does not specify that you can't do something does NOT mean that you can

Ask yourself: What could go wrong with what I'm doing?

Ask others if they see any problem with the work

System knowledge promotes awareness

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Draft #4

Lack of Awareness ???



Lack of
awareness
of danger

Norms

- **Unwritten rules dictated and followed by the majority of the group**
- **Peer pressure and the desire to “fit in” are major influencers**
- **Not all norms are negative**

Maintenance 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

Unwritten rules that are dictated and followed by the majority of a group



Norms Safety Nets

- Identify the negative norms** (they detract from an established Safety Standard)

- Work to eliminate negative norms
- Refuse to participate in negative norms

- Always follow manufacturers procedures or have the procedures changed**

- ## A professional doesn't take shortcuts

- ## Accentuate the positive norms

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Produced and distributed by  System Safety Services Web: www.system-safety.com Email: dupontg@system-safety.com Phone/Fax: 604 526-3993

**Thank you for the opportunity
to speak to you today**

Questions?