

**Factual Report – Attachment 23**  
**Trans-Pacific CRM Training**

**OPERATIONAL FACTORS**

CEN17MA183



# Crew Resource Management

# CRM Markers

- TPAC CRM markers are:
  - Communication Processes & Decision Behavior
  - Building & Maintaining a Team
  - Workload Management & Situational Awareness

# Communication

- Communication:
  - Briefings should be concise but carry sufficient detail to avoid confusion.
  - Communication is critical not just between flight crew members, but also other individuals:
    - Dispatch
    - ATC
    - Cabin Crew
    - Maintenance Control
    - ARFF
    - Stations
    - Passengers



# Communication

- Difficulties in effective communication:
  - Failure during transmitting process.
    - Sending unclear or ambiguous messages.
    - Language difficulties.
  - Difficulties caused by the medium of transmission.
    - Background noise.
    - Distortion of the information.

# Communication

- Difficulties in effective communication:
  - Failures during receiving.
    - The expectation of another message.
    - The wrong interpretation of the arriving message or even disregarding the message.
  - Physical problems in listening or speaking.
    - Impaired hearing.
    - Wearing an oxygen mask without using the intercom.

# Communication

- Inquiry
  - The act of raising your level of situational awareness.
- Advocacy
  - The act of raising someone else's level of situational awareness.
- Assertion
  - The act of assertively raising someone else's level of situational awareness.

# Decision Making

- **P** – Pool the facts.
- **I** – Identify the problem.
- **L** – Look for solutions.
- **O** – Operate (Execute the decision).
- **T** – Take stock (assess results).



# Team Building

- Leadership

- A leader's actions and ideas influence the thoughts and behavior of others.
- Leadership is acquired, authority is assigned.
- A leader can be either crew member and must know how to effectively communicate ideas and observations.

- Followership

- A follower must understand what is being communicated to them and efficiently carry out necessary tasks.
- Good followership skills allow for the follower to step up to leader when necessary.

# Team Building

- Fatigue
  - Fatigue can be either physiological or subjective.
  - When a crew suffers from fatigue it becomes difficult for them to effectively work together.
  - Other problems with fatigue can exacerbate existing rifts in CRM.
  - Synergy breaks down as crew member fatigue increases.

# Team Building

- Stress

- Stress can be defined as a physical, psychological or social pressure on a crew.
- It often results from the imposition of any demand or set of demands which require a crew to react.
- A certain level of stress can improve CRM, however when stress becomes overwhelming it degrades CRM significantly.
- Some stresses can result from personal life and may not necessarily be associated with flight operations.

# Team Building

- Crew Coordination

- Crew coordination is based on the attitudes, motivation and training of a crew.
- Under excessive stress (physical, emotional or managerial) there is a high risk that coordination may break down.
- Some signs of a breakdown in crew coordination are:
  - Reduced communication.
  - Increased errors and error margins.
  - Delayed correction of errors.
  - Emotional outbursts.
  - Deviations from standard operating procedures.

# Workload Management

- Determining Workload
  - Workload is subjective and often the routine tasks of operating an aircraft follow a set rhythm as defined by SOPs.
  - Workload is a subjective term and the most effective means of determining workload is to evaluate:
    - The nature of the task (such as the demand it presents).
    - The circumstances under which the task is performed (such as the time to complete the task, level of precision required, or environmental factors).
    - The person and his/her state (such as skills, experience, health and emotional state).



# Workload Management

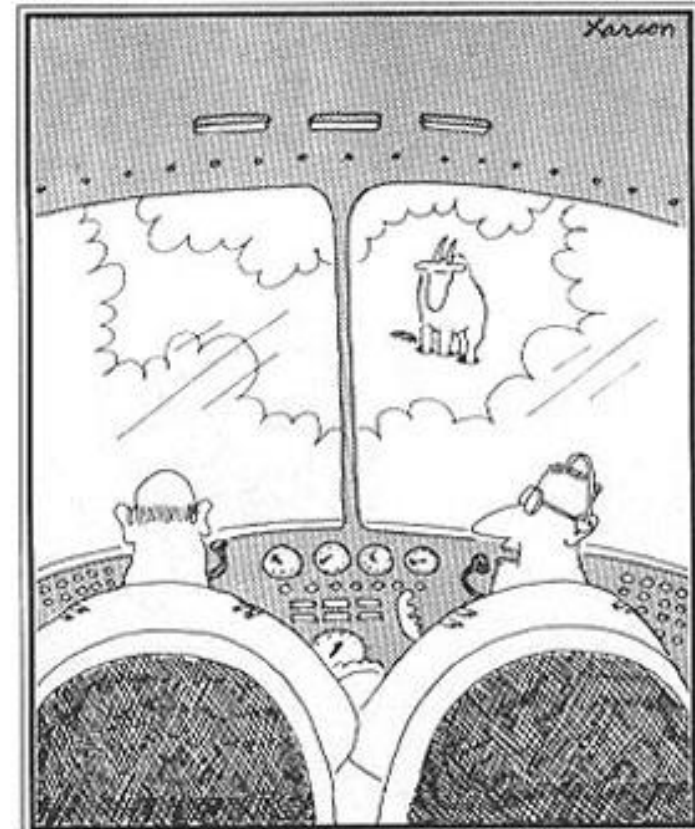
- Overload
  - Occurs at very high levels of workload, when the individual's workload exceeds the ability to effectively cope.
  - Forces an individual to shed tasks and focus on key information (tunnel vision).
  - May occur suddenly or gradually.
  - Can be mitigated through use of effective crew coordination.

# Workload Management

- Underload
  - Occurs during phases of low workload.
  - Can result from tasks a pilot finds boring or simply from a lack of tasks.
  - Can be mitigated through performance of tasks during periods of low workload.

# Situational Awareness

- Situational awareness is based on several key elements:
  - Geographical SA: Aircraft position in relation to terrain, navigation aids and other aircraft.
  - Spatial SA: Aircraft attitude, altitude and flight path versus desired attitude, altitude and flight path.
  - System SA: System status and current inputs into automatic flight systems.
  - Environmental SA: Weather, time of day, pilot fatigue, airport conditions.



"Say . . . What's a mountain goat doing way up here in a cloud bank?"



# American Airlines 1420

- As you watch the following dramatization try to keep the CRM markers in mind. We will use these markers to facilitate the conversation after the video.