Factual Report – Addendum 3

Trans-Pacific CRM Training (Full Version)

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.

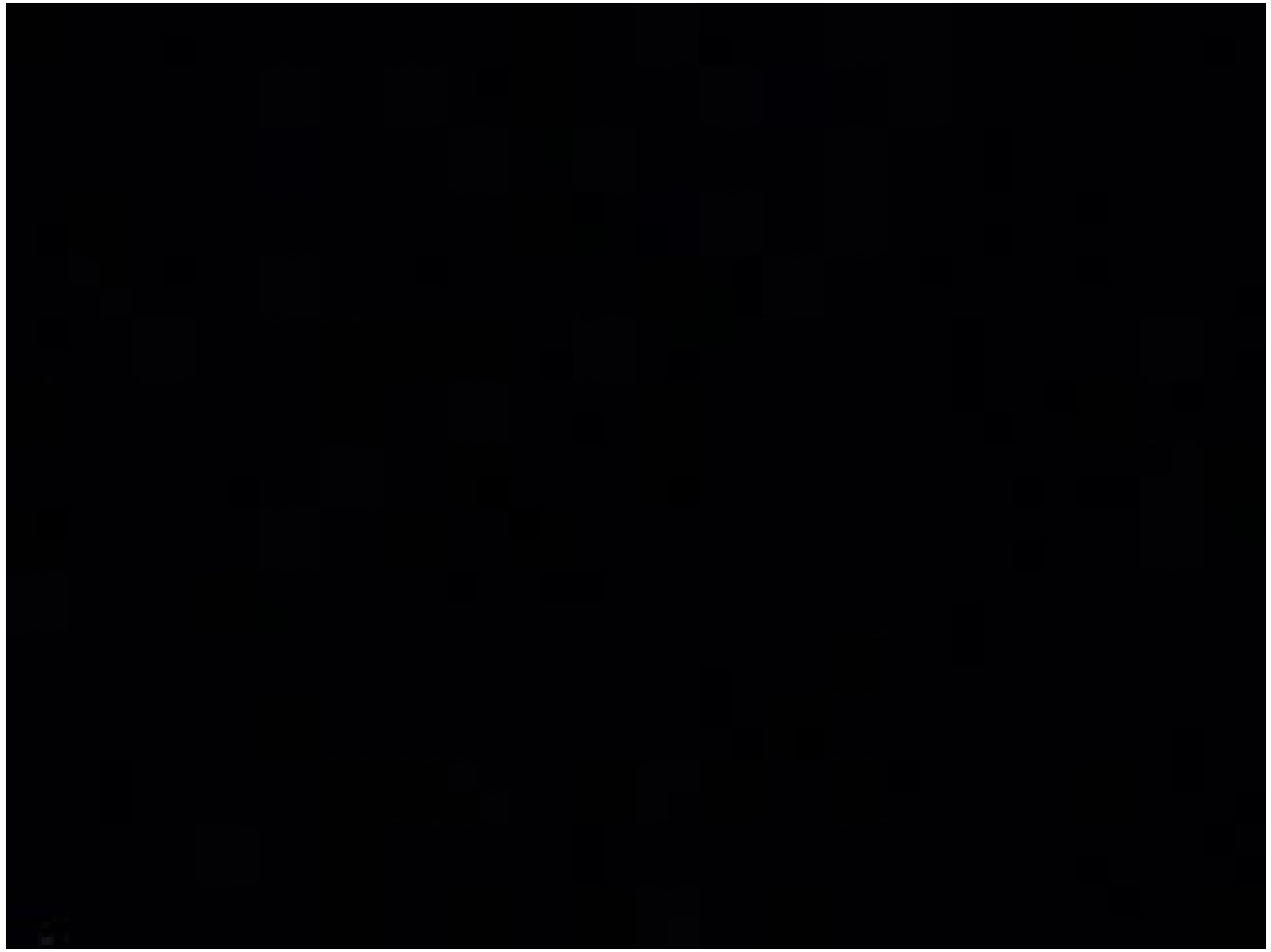
Communication

- 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).

Advocacy



*TPAC Airlines does not endorse slapping as a valid form of CRM.

CRM Scenario

- En route to SYD the crew is informed that due to gusting winds the airport is only landing Runway 25.
- SYD ATIS: 250/22G38 10KM SKC 22/01 2999 ILS 25 in use.
- Since single-runway operations are in effect the crew is issued holding instructions at MONDO as published with an EFC in 60 minutes.
- The filed alternate for SYD is BNE.
- Due to the hold the crew observes that their landing fuel at BNE will be sufficient for 15 minutes of flying.

CRM Scenario

- What considerations should be paid to this situation?
- What actions should the crew consider in this situation?
- What options exist to remedy the situation?

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

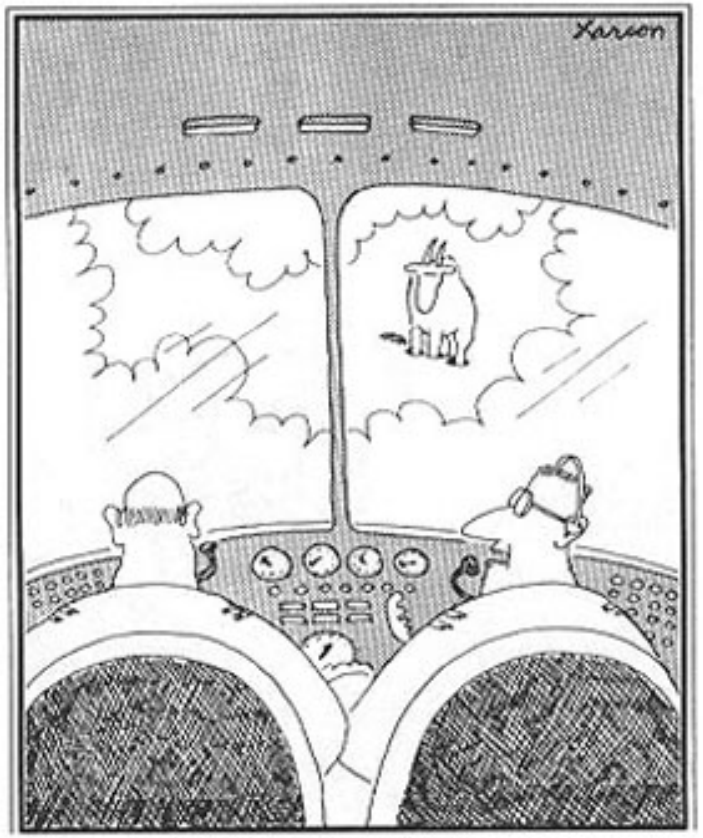
- Overload
  - Occurs at very high levels of workload, when the individual's workload exceeds the ability to effectively cope.
  - Forces an individual to shed tasks and focus on key information (tunnel vision).
  - May occur suddenly or gradually.
  - Can be mitigated through use of effective crew coordination.

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 o 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?"

CRM Scenario

- On arrival into OGG, approaching HARPO, the crew is informed that an aircraft is disabled on Runway 02.
- The airport is closed for an indefinite period.
- VMC is prevalent throughout the State of Hawaii and no alternate has been filed for the flight.

CRM Scenario

- Given the choice, what airport is optimal and why?
- Which crew members should perform which duties in this scenario?
- How should the diversion be coordinated between dispatch, ATC, the stations and the flight crew?

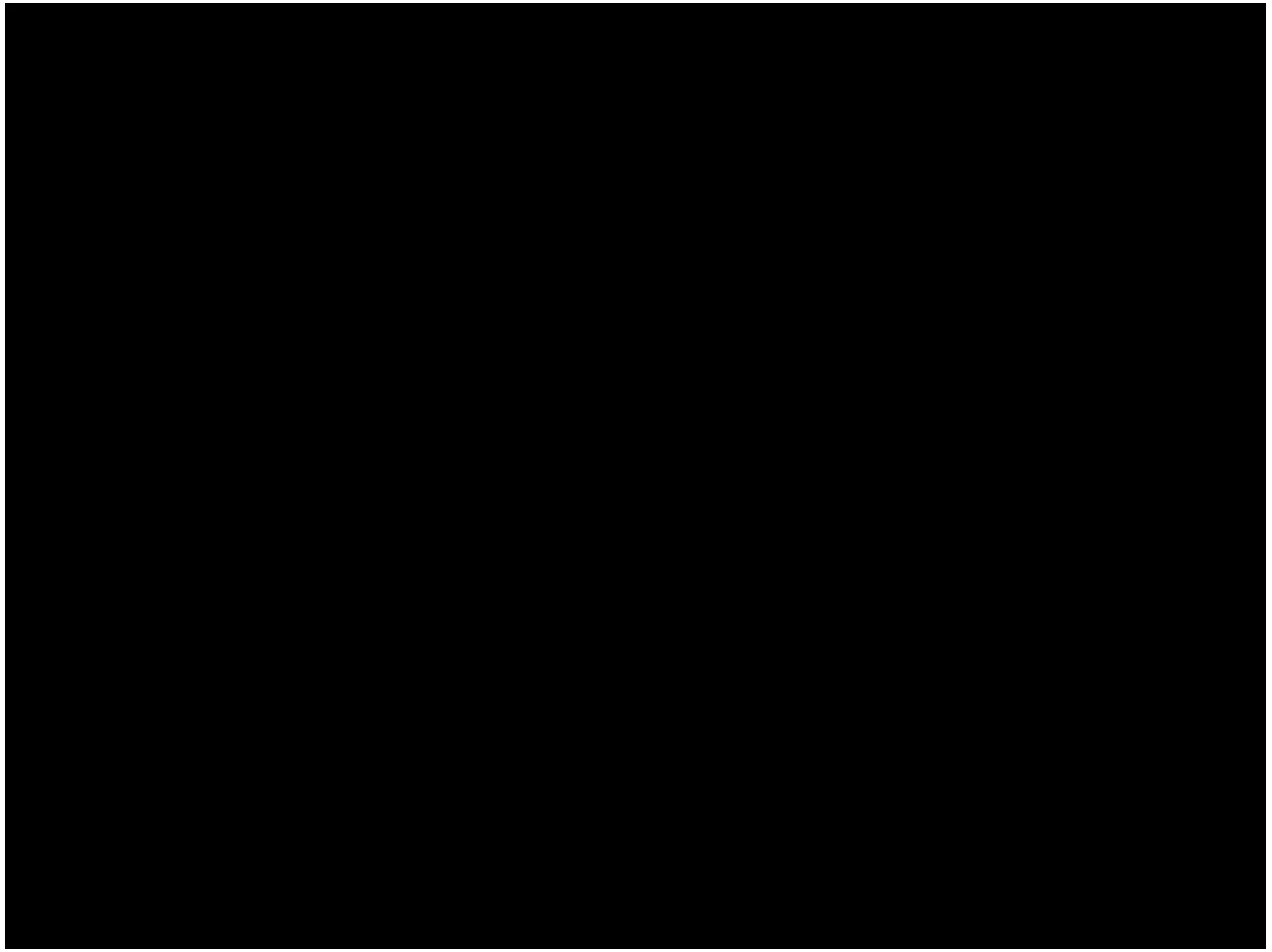
CRM Scenario

- OGG ATIS: 200/15 1SM OVC004 25/03 2987 LOC/DME BC 20 in use.
- On departure from OGG the aircraft suffers a generator failure and cannot proceed to its destination.

CRM Scenario

- Should an emergency be declared?
- How will this situation be coordinated between Dispatch, ATC and the flight crew?
- How will this be communicated to the cabin crew?
- How will this be communicated to the passengers?

SA Video



CRM Scenario

- Due to a natural disaster in the area around SFO it and all surrounding airports have been closed indefinitely. The nearest alternate airport for use is RNO.
- Poor weather and moderate snowfall exists at RNO and the controllers are struggling to sequence the flights for the ILS 34L approach.
- Several aircraft are held at points along the approach while snow removal takes place on the runway.

- The crew is cleared to an altitude of 9400 feet and assigned a holding pattern at WAGGE.
- During the hold the crew receives an RA forcing them to descend to 9100 feet.
- As a result of the heavy traffic along the approach corridor the flight is assigned to proceed direct SWR and given further holding instructions.

CRM Scenario

- During the RA what factors should be considered by the crew?
- Is this situation acceptable to the flight crew?
- What tools exist to assist the crew in maintaining Situational Awareness?
- What actions should the crew take in response to a potentially dangerous situation?

ILS or LOC/DME RWY 34L

RENO/TAHOE INTL (RNO)

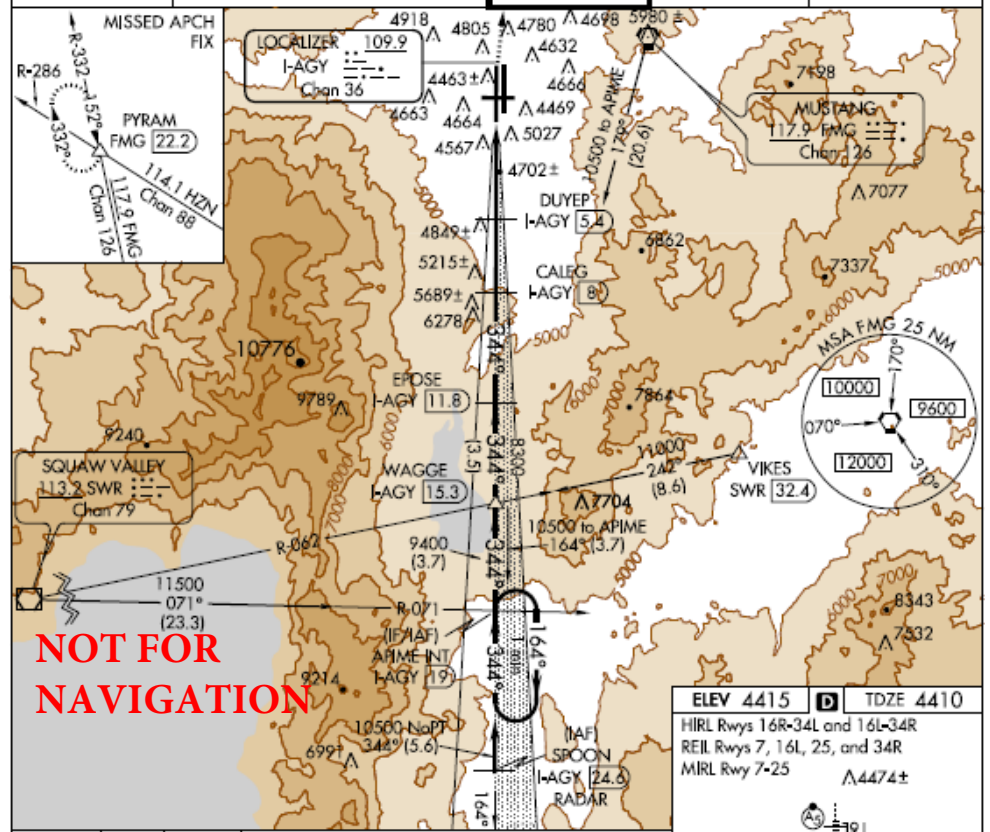
LOC/DME I-AGY	APP CRS	Rwy Idg	10012
109.9	344°	TDZE	4410
Chan 36		Apt Elev	4415

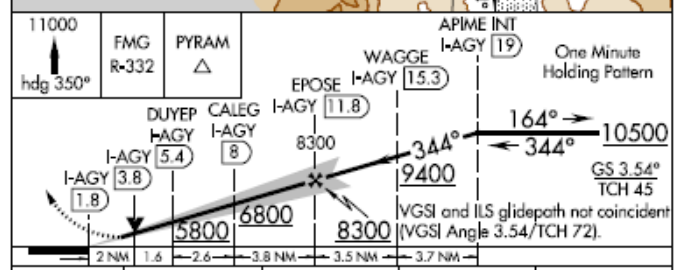
Inoperative table does not apply.
If local altimeter setting not received, procedure NA.

MALSR

MISSED APPROACH: Climb to 11000 via heading 350° and FMG VORTAC R-332 to PYRAM INT/FMG 22.2 DME and hold, continue climb-in-hold to 11000.

ATIS	NORCAL APP CON	RENO TOWER	GND CON	CLNC DEL
135.8 363.0	119.2 279.55 126.3 353.9	118.7 257.8	121.9 348.6	124.9 370.85

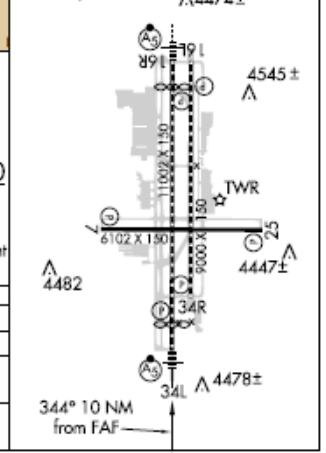




CATEGORY	A	B	C	D
S-ILS 34L	4946-1½ 536 (600-1½)			NA
S-LOC 34L	5120-1 710 (800-1)		5120-2 710 (800-2)	NA
CIRCLING	5340-1¼ 925 (1000-1¼)		5340-2¾ 925 (1000-2¾)	NA

ELEV 4415 D TDZE 4410

HIRL Rwys 16R-34L and 16L-34R
REIL Rwys 7, 16L, 25, and 34R
MIRL Rwy 7-25



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.