CREW
Resource Management

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Crew Resource Management (CRM) is a tool created to optimize human performance by reducing the effect of human error through the use of all resources.

CRM focuses on interpersonal communication, leadership, and decision making.
The history of Crew Resource Management began upon the aviation industry's surrender to 2 fundamental and incontrovertible realities:

1) Human beings are fallible and will inevitably make mistakes

2) Human beings are individuals, with a rich diversity of personalities, cultural backgrounds, talents and skills.
Aviation accidents

- Found to have common causes
  - 70% of accidents caused by human error
    - Preoccupation with minor mechanical problems
    - Inadequate leadership
    - Failure
      - To delegate tasks and assign responsibilities
      - To set priorities
      - To utilize available data
      - To communicate intent and plans
Resource Management on the Flight Deck

- Identified the human error aspects of the majority of aircraft crashes at that time

- Failures of:
  - Interpersonal communication
  - Decision making
  - Leadership

- New term
  - Cockpit Resource Management (CRM)
    - Applied to process of training crews to reduce “pilot error” through better use of human resources on the flightdeck
CRM Evolution

• Generations
  
  – 1st generation
    
    ▪ Introduced by United Airlines
      – Geared towards diagnosing personal managerial styles
    
    ▪ Emphasized
      – Changing individual styles & correcting deficiencies in behavior
        » Lack of assertiveness by junior officers
        » Authoritarian behavior by senior officers (Captains)
      – Sr pilots deemed training as “Charm School”
    
    ▪ National Transportation Safety Board (NTSB)
      – Singled out lack of assertiveness
        » From Copilot
        » Flight Engineer
CRM Evolution

• 2nd generation
  ▪ 2nd workshop
  ▪ More airlines started CRM programs
  ▪ Training to become part of flight training, continuous career training
  – Name change
    ▪ Crew Resource Management
    ▪ Focuses on cockpit group dynamics

• 3rd generation
  ▪ Program now includes recognition and assessment of human factors issues
CRM Evolution

• Generations
  – 4th generation
    ▪ Developed to solve human error problems
  – 5th generation
    ▪ CRM seen as set of error countermeasures with 3 lines of defense
      – 1. Avoid error
      – 2. Trap emerging errors before they are committed
      – 3. Mitigate consequences of error that weren't trapped
• **Current uses of CRM**
  
  – **Aviation**
    
    ▪ **Part of core training for entire career**
      
      – Attitudes changed towards
        
        » Junior crew members
        » All crew members have equal say
        » “Flight attendants prepare for takeoff and cross check”
          
          » Captain has final say

  – **Military**
    
    – Annual training / career training
      
      ▪ CRM flight (simulator)
        
        • Problems are introduced to see how the crew interacts to solve problems
        • Each crew member has right to challenge a decision
        • TIME OUT – KNOCK IT OFF
        • Pilot has the final say
• **Current uses of CRM**

  – **Medical**

    - **CRM = Crisis Resource Management**
      - Primarily used in high-acuity environments
        - Operating rooms, intensive care units, emergency rooms

    - **Roles**
      - Leader/Event manager
      - Members/Followers
        - Communication
          - SBAR
        - Global Assessment
        - Resources and support structures

  – “In those medical facilities that have embraced CRM, there has been reported a tenfold reduction in wrong site surgeries as well as very significant reductions in other patient care errors”. Solosky, K.
1st Responders

- Current uses of CRM
  - 1st Responders (Fire)
    - CRM = Crisis Resource Management
      - Used in all tasks
        » Fires, Natural Disasters, Floods, etc...
    - Teamwork / Roles
      - Leader
      - Follower
    - Decision making
      - Traditional
      - Fire Service
      - “If we continue on the current LODD/injury path, the fire service will experience 1000 fatalities and 100,000 injuries in the next ten years”.
**5 Step process**

Todd Bishop 5 step assertive statement process

- **1. Opening or attention getter - Address the individual**
  - "Hey Chief," or "Captain Smith," or "Bob," or whatever name or title will get the person's attention.

- **2. State your concern –**
  - Express your analysis of the situation in a direct manner while owning your emotions about it.
    - "I'm concerned that we may not have enough fuel to fly around this storm system," or "I'm worried that the roof might collapse."
5 Step process

• 3. State the problem as you see it —
   - "We're only showing 40 minutes of fuel left," or "This building has a lightweight steel truss roof, and we may have fire extension into the roof structure."

• 4. State a solution —
   - "Let's divert to another airport and refuel," or "I think we should pull some tiles and take a look with the thermal imaging camera before we commit crews inside."
5 Step process

• 5. Obtain agreement (or buy-in) –
  – "Does that sound good to you, Captain?"

• These are often difficult skills to master, as they may require significant changes in personal habits, interpersonal dynamics, and organizational culture.
Case study
Airblue Flight 202

• Airbus 321-231 narrow body aircraft
  – Operated by a Pakistani crew
  – Aircraft crashed in the mountains approximately 8 nmi (15 km) north of the airport
  – Deadliest aviation accident in Pakistan to date (2010)
  – 152 deceased

• Crew
  – Pilot- 62, very experienced, 35 yrs flying, over 25,000 hrs
  – Copilot, former F-16 pilot, 1 yr experience on Airbus
Case study
Airblue Flight 202

• Investigation
  – The report issued by Pakistan's Civil Aviation Authority cited **a lack of professionalism in the cockpit crew** along with poor weather as primary factors in the crash.
  – The report noted that the captain ignored or did not properly respond to a multitude of Air Traffic Control directives and automated cabin warning systems.
  – The report also claimed that **the first officer passively accepted the captain's actions, after the captain on multiple occasions took a "harsh, snobbish and contrary" tone with the first officer and "berated" him.**
CRM
Future uses (Electric Industry)

• Transmission Operations
  – Shift Supervisor / RC
    ▪ Leader
      – Authority
      – Mentoring
      – Conflict Resolution
  – Desk qualified Operators
    ▪ Followers
      – Respect Authority
      – Ego in check
      – Assertiveness/Authority
  – Situational leadership
References


