Pilot Decision Making

- Module 3 -

Human Performance Factors
Outline

• Physical
• Physiological
• Psychological
• Organizational
• Cultural
• Communication
• Judgment
• Countermeasures
• Case study
Physical

• Definition:
  – What the body is subject to
  – External influences
Physical (cont’d)

- Environment
- Climate
- Temperature
- Time
- Air quality
- Noise
- Vibration
- Turbulence
- Ergonomics
Physiological

• Definition:
  – Study of how living organisms function
Physiological Factors

- Hypoxia
- Carbon Monoxide
- Fatigue
- Diet
- Stimulants
- Exercise
Physiological

Hypoxia

• Hypoxic hypoxia
  – effects of altitude

• Anemic hypoxia
  – overabundance of carbon monoxide in hemoglobin

• Stagnant hypoxia
  – brain deprived of blood

• Histotoxic hypoxia
  – chemical poisoning or
  – high blood alcohol
Physiological Hypoxia (cont’d)

• Time of Useful Consciousness (TUC)
  – Time one can function without oxygen
  – TUC decreases with altitude
  – TUC shorter for smokers or when active

• Use of supplemental oxygen required
Physiological
Carbon Monoxide

- Colorless
- Odorless
- Combustion of fuels with insufficient air
- Incomplete combustion
Physiological Fatigue

• Acute
• Chronic – sleep deficit

• Do not fly when fatigued
• Get sleep
Physiological Hypoglycemia

- Shakiness
- Sweatiness
- Irritability/anxiety
- Difficulty in speaking
- Headache
- Weakness

- Numbness/tingling in lips
- Inability to think straight
- Palpitations
- Hunger
Physiological Hypoglycemia (cont’d)

- Could result in:
  - Incapacitation
  - Fainting
  - Seizure
  - Coma

- Prevention:
  - Do not skip meals
  - Eat at normal times
  - Eat enough
  - If active, eat more
Physiological Hyperglycemia

- Tiredness/fatigue
- Increased appetite
- Increased thirst
- Frequent urination
- Dry itchy skin

- Poor healing of wounds
- Flu-like aches
- Headaches
- Blurred vision
- Nausea
Physiological Hyperglycemia (cont’d)

• Prevention:
  – Follow meal plan
  – Drink plenty of fluids
  – Stick to regular exercise plan
  – Try to decrease stress
Physiological Stimulants

• Sugar
• Caffeine
• Alcohol
• Nicotine
• Drugs
Psychological

• Definition:
  – Influencing or tending to influence the mind or emotions

• Perceptual processes
  – Senses
  – Capabilities and limitations

• Stress
Psychological Factors Affecting Vision

Physical effects
- Empty-field myopia
- Dirty windshields
- Low light
- Night vision
- Hypoxia
- Air quality
- Blind spots

Psychological effects
- Expectancy
Psychological Factors Affecting Hearing

• Auditory processing serves 2 purposes:
  – Hearing
  – Balance

• Psychological effects
  – Hearing - aural expectancy
  – Balance – opposite turning and pitch-up/pitch-down illusions
Psychological Stress

• Acute
  – Short periods of time – unusual daily event

• Chronic
  – Accumulated stress – lifestyle + daily events
Organizational

• Definition:
  – structure through which a related group of people work together toward a common goal
Organizational (cont’d)

• Organizational issues affecting decision making:
  – Conflicting goals (safety v bottom line)
  – Conflicting and/or inadequate or poor policies and/or procedures
  – Lack of or inadequate resources (equipment, training, etc.)
  – Commercial pressures
Communication

• Effective communication – able to communicate your thoughts and feelings in such a way that the other person shares the same meaning
Communication (cont’d)

• Four elements in communication process:
  – The sender
  – The message
  – The receiver
  – The feedback

• Sender/receiver are affected:
  – Perceptions, attitudes, values, knowledge, expectations language skills, experience and relationships
Communication (cont’d)

• Barriers to communication:
  – Reluctance to question
  – Failure to state your case clearly
  – The influence of authority
  – Being ignored
  – Difficulty listening
Communication (cont’d)

Countermeasures to the barriers

• Reluctance to question
  – Preface your request with statement of your context

• Failure to state your case clearly
  – Choose words carefully, state, restate, stare

• The influence of authority
  – Forcefully state reasons for reluctance
Communication (cont’d)

Countermeasures to the barriers

• Being ignored
  – Ascertain whether you are heard, as why, Is there a problem that you are not being heard or understood

• Difficulty listening
  – Practice, be patient, ask questions, paraphrase, be supportive
Communication (cont’d)

Essential Verbal Skills

• Seeking information
• Stating your position
• Listening
• Resolving differences
• Providing feedback
Communication (cont’d)

Stating your position

• Get person’s attention
• State your concern clearly
• State then problem clearly
• Offer suggestion
• Work to reach agreement
Communication (cont’d)

Indicators of Bad Listening

• Interrupting
• Diverting
• Debating
• Tuning out
• Dismissing
Communication (cont’d)

Improving your listening Skills

- Be patient
- Question
- Observe
- Paraphrase
- Be supportive
Communication (cont’d)

Resolving Differences

• Listen well
• Keep to the issue
• Bring out the differences
• Acknowledge feelings
• Build respect
Communication (cont’d)

Providing Feedback

• Create a climate for feedback
• Ask for it
• Ask to give it
• Give feedback to help, not pout down.
Cultural

• Definition:
  – A shared set of beliefs, values, assumptions, rituals, symbols, and behaviours that define a group
Cultural (cont’d)

• Norms and values
  – Norm – a customary behaviour, an unwritten rule followed by most in the group
  – Value – what is and is not important to us

• Organizational Culture
  – Norms and values of the organization

• Professional Culture
  – Norms and values of a particular group or sub-group or workers

• National Culture
Judgment

• Definition:
  – Process of choosing which alternative will give the safest outcome in a situation
Judgment

- Factors affecting good judgment:
  - Lack of vigilance
  - Distraction
  - Peer pressure
  - Insufficient or incorrect knowledge
  - Unawareness of consequences
  - Forgetfulness of consequences
  - Ignoring consequences
  - Overconfidence
## Countermeasures

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<td>• Evaluate options</td>
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<td>• Implement and monitor</td>
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