

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

<u>Step in PDM</u>	<u>Factors</u>	<u>Countermeasures</u>
<ul style="list-style-type: none">• Situational Awareness• Evaluate options• Choose option• Implement and monitor	Physical Physiological Psychological Organizational Communication Cultural Judgment	1. 2. 3. Etc.