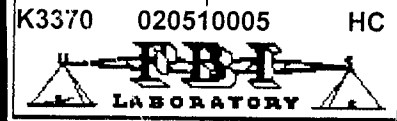


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GOVERNMENT
EXHIBIT

ka
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120 SHEETS
WIDE RULED
10½x8in / 26.6x20.3cm
3 SUBJECT NOTEBOOK

Spiral

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Chapter 9 Navigation, Reliance and Dead Reckoning

Reliance is flying by reference to landmarks.

Sectional charts provide the largest scale and most detailed representation of visual landmarks for most cross country flight.

The best checkpoint are those that cannot be mistaken for any other nearby features.

Select checkpoint that present a number of features to create a unique combination or distinctive pattern.

Highlighting your course line on the chart will make it easier to follow.

Maintaining a constant awareness of your position will reduce your chance of becoming lost.

Dead reckoning is navigating by time, speed, distance and direction calculations without reference to visual landmarks.

Anavigation platter contains a protractor, straightedge and distance scale, for various charts.

Navigation logs help keep track of heading, time distances, and fuel consumption during dead reckoning flights.

The true course must be corrected for magnetic variation, wind drift and compass deviation to arrive at the compass heading.

The VFR ceiling altitude rule dictates, ceiling altitude above 3000 feet AGL.

Required VFR fuel reserves are 30 minutes for daytime flight and 45 minutes for night time.

A VFR flight plan is a request that a search be started if your flight does not arrive at your stated destination.

If you become lost, climb, communicate, confer, comply and conserve.

Key Terms

Line of Position (LOP)

Fix

Reckoning

Checkpoint

Dead Reckoning

Navigation Plotter

True Course

Navigation Log

Leg

True Heading

Drift Line

Magnetic Course

Compass Heading

VFR Cruising Altitude

Fuel Reserve

Flight Plan

Chapter 9. Navigation. VOR Navigation Section B.

VORs only provide course guidance while VOR/DME and VORTACs also provide distance information.

There are 3 classes of VOR, with different coverage areas - Terminal, Low altitude and High altitude.

VOR radials and courses derived from radials are subjected to magnetic north and also depend on magnet aeronautical chart using magnetic north.

Before using a VOR for navigation, always identify the station using the Morse code or voice identifier.

To determine your location after tuning and identifying a VOR station, turn the course selector or OBS knob until the CDI needle centers with a full FROM indication and read the radial next to course index. To determine your course to a VOR station, turn the selector or OBS knob until the CDI needle centers with a TO indication and read the magnetic course on the course index.

The indication of a VOR receiver is not directly affected by aircraft heading. To avoid receiver sensing, always set the VOR indicator to generally agree with your intended course.

Teaching involves flying a desired course to or from a station using a sufficient signal correction, if necessary.

Bracketing is the process of determining and applying a wind correction which keeps you on course with the CDI needle outboard.

You can determine your position by cross checking between 2 VORs.

You can check VOR receiver accuracy using ground and airborne check point or by using a VOT.

An HSI is a VOR indicator combined with a heading indicator.

DME automatically displays your slant range distance to a suitable equipped VOR ground station. Slant range error is

greatest when your aircraft is directly over the transmitting station.

Key Terms

Voice High Frequency Omnidirectional Range (VOR)

VOR/DME

VORTAC

Terminal VOR (TVOR)

Low Altitude VOR (LVOR)

High Altitude VOR (HVOR)

Radial

Compass Rose

Omni-bearing Selector

Course Deviation Indicator (CDI)

TO - FROM indicator

Reverse Sensing

Course of confusion

Tracking

Horizontal Situation Indicator

Bracketing

(HSI)

Transponder Distance Measuring Equipment

VOR Presentation (DME)

VOR Checkpoint & Slant Range Distance

VOR Test Facilities (VOT)

Chapt 9. Navigation - ADF Navigation Section C.

An ADF receiver, low and medium frequency transmitting stations including NDBs (190-535 kHz) and AM Broadcast stations (535-1605 kHz).

An ADF utilizes a directional antenna and a sense antenna which are often combined into a single antenna mounted on the bottom of the fuselage.

The head of the ADF indicator needle points to the station relative to the nose of the airplane.

A fixed card ADF indicator always displays 0° at the top of the azimuth card and the needle points to the relative bearing to the station.

When a fixed card magnetic heading scale is used, the top index of a movable card indicator the head of the ADF needle directly indicates magnetic bearing to the station.

Magnetic heading plus relative bearing equals magnetic bearing to the station, $(MH + RB = MB)$

7/20/15

To fly to an NDB using the bearing procedure
simply turn towards the ADF needle, then keep
the head of the ADF needle on the aircraft nose
(0° on fixed card indicators).

A radio magnetic indicator (RMI) combines
bearing indicator with two bearing indicator needles,
provide VOR and ADF indicators.

The low and medium frequency radio waves
used by ADF can be adversely affected by a
number of factors including the ionospheric
conditions and shorelines.

Key Terms

Automatic Direction Finder (ADF)

Non-directional Radio Beacon (NDB)

Directional Antenna Sense Antenna

Bearing Fixed Card Bearing Indicator

Movable Card Bearing Indicator Night Effect

Radio Magnetic Indicator (RMI)

Thunderstorm Effect Relative Bearing

Interception Static Magnetic

Hemisphere Shoreline effect

Chapter 9 Navigation Advanced Navigation Section D

Area navigation equipment is designed to allow you to fly any desired course within the coverage of a navigaid signal or within the limit of a self contained system.

VORTAC based area navigation system allow you to create waypoints at any location within the reception range of the VORTAC or VOR/DME station.

The long range navigation (LORAN) computer determines your location by measuring the time difference between the reception of a master station's signal and that of two secondary stations.

The intersection of the two associated LOP's marks your position.

An inertial navigation system (INS) computer uses initial data and information it receives from accelerometers to calculate altitude, velocity, and heading.

The global positioning system consists of space centered and user segments.

Signal collected by a GPS receiver from 3 satellites can produce a two dimensional position. When a fourth satellite is added a 3 dimensional fix can be determined.

Even with the effect of selective availability GPS can accurately calculate position to within 100 meters 95% of the time and within 300 meters 99% of the time.

Key Terms

- Area Navigation (RNAV)
- Long Range Navigation (LORAN)
- Time Difference (TD)
- Inertial Navigation System (INS)
- Global Positioning System (GPS)
- Selective Availability (SA)

Chapter 10. Applying Human Factors principle - Aviation physiology SA

Cones function well in bright light, are sensitive to colors and allow you to see fine detail. Cones are concentrated in the center of the retina in a slight depression known as the fovea.

The rods are your primary receptors for useful vision and also are responsible for much of your peripheral vision.

While scanning for traffic at night, you should use off-center viewing to focus objects on the rods rather than on the foveal blind spot.

As a general principle is formed the rods can take up to 30 minutes to fully adapt to the dark.

At night, interpreting the position light of other aircraft can help you determine their direction of movement in

Autokinetic is the false perception of movement after staring at a single point of light against a dark background for more than a few seconds.

The false horizon illusion occurs when the natural horizon is obscured and a readily apparent

clouding illusion can be caused by a wide variety of factors including cumulus clouds, rising sunsets, and terrain and weather conditions which reduce visibility.

Disorientation is an incorrect mental image of your position, attitude or movement in relation to what is actually happening to you or around you.

Kinesthetic sense is the brain's need to determine an awareness of position obtained from the nerves in your skin, joints and muscles.

Spatial disorientation occurs when there is a conflict between the information relayed by your central vision and your peripheral vision.

The utricle and saccule organs within the vestibular system are responsible for the perception of gravity and linear acceleration.

17/12

The 3 semicircular canals, which are oriented in three planes perpendicular to each other, sense angular acceleration such as roll, pitch and yaw.

When subjected to the different forces of flight the vestibular system can send messages according to the brain resulting in vestibular decompensation.

Hyperoxic Hypoxia is due to a lack of available oxygen molecules at sufficient pressures for the body to use.

Hypoxic Hypoxia occurs when your blood is not able to carry a sufficient amount of oxygen to the cell in your body.

Since it attaches itself to the hemoglobin about 200 times more easily than does oxygen, carbon monoxide (CO) prevents hemoglobin from carrying oxygen to the body's cell.

Stagnant Hypoxia is an oxygen deficiency in the body due to inadequate circulation of the blood.

11/13

The inability of the cell to effectively use oxygen is defined as histotoxic hypoxia

Not FAR Most 91 lets supplemental oxygen requirement for flight at cabin pressure altitude above 12,500 feet MSL.

Hyperventilation occurs when rapid and deep breathing removes too much carbon dioxide from the blood, it usually results from emotional stress, fear or pain.

Key Terms

Retina	Semicircular Canals
Caries	Vestibular Neuromatation
hads	Respiration
Visual Acuity	Hypoxia
Aerobiosis	Hypoxic Hypoxia
False Horizons	Tone of cerebral consciousness
Coloring Illusion	Hypemic Hypoxia
Fluctuating Vertigo	Carbon Monoxide Poisoning
Neurotation	Stagnant Hypoxia
Kinesthetic Sense	Histotoxic Hypoxia
Visual Sense	Supplemental Oxygen
Spatial Neuromatation	Decompression
Vestibular System	Decompression
101	Hyperventilation

[E] During night flight, the most effective method of looking for other aircraft is to scan small sectors slowly and to use off-center viewing.

[F] To adapt the eyes for night flying, avoid bright white light at least 30 minutes before your flight.

[G] Interpreting the position light of other aircraft can help you determine their direction of movement. For example, if you see a red position light to the right of a green, the aircraft is flying toward you. A steady green and flashing red light indicate the aircraft is crossing to your left and a steady left continuous and flashing red light indicate an aircraft flying away from you.

[H] Your landing approach at night should be made the same as during the daytime to reduce the effects of landing illusions.

[I] A state of temporary confusion resulting from misleading information being sent to the brain by various sensory organs is defined as disorientation.

Relying on the instrument and believing the or indications, regardless of how good they feel are the key to maintaining orientation during flight at night or in marginal weather conditions.

☐ You are more susceptible to disorientation if you are badly equal to interpret flight altitude.

☐ Hypoxia is a state of oxygen deficiency in the body.

☐ Large accumulation of CO in the body can result in symptoms such as a loss of muscular power.

☐ Between cabin pressure altitude of 12500 feet MSL and 14000 MSL the flight crew is required to use supplemental oxygen after 30 minutes. Above 14000 feet MSL the crew is required to use supplemental oxygen for the entire duration of the flight and above 15000 feet MSL each aircraft occupant must be provided with it.

☐ Hyperventilation is rapid or deep breathing which can be caused by emotional tension, anxiety or fear. Hyperventilation can occur while breathing supplemental oxygen.

You should be able to overcome the symptoms or avoid the occurrence of hyperventilation by slowing the breathing rate, breathing into a bag or talking aloud.

- Common symptoms of Hyperventilation: headache, decreased reaction time, impaired judgment, euphoria, visual impairment, decreased light-headed or dizzy sensation, tingling in fingers and toes, numbness, pale clammy appearance, muscle spasms.

Hyperventilation may produce a pale clammy appearance and muscle spasms compared to the cyanosis and limp muscles associated with asphyxia.

Chapter 10. Applying Human Factors Principles. Aeron-Nav-Hab 518

The decision making process involves an evaluation of the pilot in command, the aircraft, the environment and the operation to achieve an accurate perception of flight situations.

As a flight progresses, you need to continue to examine the outcome of previous decisions made earlier to ensure they are producing the desired results.

The National Transportation Safety Board (NTSB) is an independent Federal agency responsible for investigating every US civil aviation accident and issuing safety recommendations aimed at preventing future accidents.

The process judgement chain is a term used to describe the concept of contributing factors in a human factors related accident.

NTSB accident and incident reports and other aviation safety research can provide information which allows you to assess risk more effectively.

Your ability to make effective decisions, decreasing flight can be impaired by physical, physiological and psychological stresses.

To prevent a hazard due to stress from impairing effective decision making, it is important to recognize the attitude, correctly label the thought and then say to out loud to yourself.

Factors to listen effectively can disturb the communication process. Feedback conferences can ensure that an accurate exchange of info has taken place.

Barriers to effective communication can include a lack of a common code of experience between the communicator and receiver, misuse of terminology and an overuse of abstraction.

Accidents often occur when flying task requirements exceed pilot capabilities. The difference between these two factors is called margin of safety.

Fatigue stress work overload, distraction and complacency can all contribute to a loss of situational awareness.

17/28

Key Terms

Decision Making Process

7 Risk element

6 Accident

6 Incident

National Transportation Safety Board (NTSB)

1 Poor Judgment Chair

6 Stressors

4 Personal Checklist

4 Timely Checklist

Hazardous attitudes

7 Feedback

1 Internal Resources

6 External Resources

17/10/20

Key Terms

Flight Planning Process

Aircraft Maintenance Certificate

[3] An aircraft maintenance certificate is not valid unless the aircraft is maintained according to FAR.

[3] The owner or operator is primarily responsible for maintaining an aircraft in an airworthy condition.

[3] During the preflight inspection the pilot in command is responsible for determining that the aircraft is safe for flight.