



Fixed-Wing Pilots PROGRAM

FIXED-WING PILOT PROGRAM

TrainingPort provides **customized and comprehensive programs** that meet your needs. A Training Needs Assessment assists in determining requirements that, until recently, have been seen as optional in business aviation.

TOPICS OFFERED (TOPICS AND NUMBER OF LESSONS SUBJECT TO CHANGE)

The TrainingPort.net model is to find the premier expert in a particular subject and arrange for them to be our Content Expert. If a Subject Matter Expert cannot be identified, we create lessons using research and information known to be superior, such as the Flight Safety Foundation's CFIT package or the NASA/Canadian National Research Council icing research and training material.

OPERATIONAL TOPICS

ACAS/TCAS – 4 lessons

This topic reviews the Airborne Collision Avoidance System (ACAS), which alerts the crew of possible conflicts with traffic by interrogating transponders in nearby aircraft. ACAS predicts the flight paths of potential intruders and future aircraft positions for advisory and resolution guidance.

Topic Outline

- ACAS/TCAS terms and concepts
- Equipment requirements
- ACAS surveillance thresholds and limitations
- Conditions where the system is inhibited
- ACAS cockpit controls
- Display options and interpretations
- Level off and reversal logic
- ACAS failure procedures

Airborne Icing – 4 lessons

Our review of airborne icing takes an operational focus, providing fixed wing pilots with tools they can use when confronted with in-flight icing. Emphasis is on avoidance, detection and exit, as well as the effects of ice accretion on performance and handling. We also discuss Supercooled Large Droplet (SLD) icing, and provide general guidance on recovering from icing-induced conditions, such as tailplane stalls. Throughout the lesson, imagery, videos, and interactive graphics provide pilots with visual information that will aid in their identification of different kinds of icing and accretion levels.

Topic Outline

- Basic icing physics
- Icing definitions and terminology
- Aerodynamic effects of airborne icing
- Airborne icing weather patterns
- Flight planning and in-flight icing information
- Operation of de- and anti-ice equipment

Aircraft Critical Surface Contamination – 4 lessons

Our lessons on aircraft critical surface contamination discuss the problems caused by ground icing, when you are likely to encounter ground icing, the basics of aircraft de/anti-icing fluids, and how to de-ice and anti-ice to ensure a clean aircraft. Background is provided through a discussion of the aerodynamic effects of surface contamination on critical surfaces, types of surface contamination, and how to identify weather conditions conducive to surface contamination. We also consider real-life accident and incident case studies that involved surface contamination. Course content is tailored to fixed wing pilots.

Topic Outline

- Weather conducive to ice, frost and snow contamination
- Types of contamination

- Inspection before flight and removal of contamination
- Hazards related to critical surface contamination
- The effects of contamination
- Aircraft de-icing/anti-icing procedures
- Aircraft inspection and reporting procedures
- The use of holdover timetables

Canadian-US Differences – 3 lessons

This series of lessons examines the main operational differences between Canada and the United States when pilots of either State traverse into the other's airspace.

Topic Outline

- Airspace overview and classifications
- Special use airspace
- TCAS requirements
- Flight planning
- Departure, arrival, and approach procedures

Category II & III (CDN) – 3 lessons

This series of lessons reviews Category II & III approaches from a Canadian perspective.

Topic Outline

- Certifications needed for CAT II/III approaches and their operating limitations
- Runway visual range (RVR), its equipment, and its uses and limitations
- Approach bans for each type of approach and correct decision heights per approach type
- Visual aids and cues, along with when to initiate a missed approach

Constant Descent Angle Approach (CDAA) Review – 1 lesson

This topic consists of a review of the certification, qualification, and operational requirements for Constant Descent Angle Approaches (CDAA). The lesson describes the advantages of flying a constant descent angle during a non-precision approach and the role it plays in reducing the risk of CFIT accidents. It discusses the importance of crew coordination and the criteria the CDAA procedure needs to meet. Finally, the requirements to commence various operations and approaches are explained, with a note to review SOPs with respect to CDAA procedures.

Topic Outline

- Factors that affect altitude loss during the initiation of a missed approach
- The conditions and requirements to commence a missed approach
- Crew coordination
- Computer-generated approach slope systems or other methods of computing stable approach paths
- Temperature effects and considerations
- SOP review respecting CDAA procedures

Controlled Flight Into Terrain (CFIT) Prevention – 5 lessons

Our lessons on controlled flight into terrain (CFIT) explain the problem and raise awareness of the risk of such accidents. We also introduce countermeasures and strategies to aid in the prevention of CFIT accidents. The operational characteristics, capabilities and limitations of GPWS are explained in relation to CFIT prevention. We describe the different escape manoeuvre techniques that may be used to prevent CFIT accidents and incidents, as well as how to respond to TAWS warnings in the absence of standard operating procedures.

Topic Outline

- Factors that may lead to CFIT accidents and incidents
- Methods of improving situational awareness
- CFIT accident/incident prevention strategies
- Operational characteristics, capabilities, and limitations of GPWS
- Escape manoeuvre techniques and profiles

Crew Resource Management (CRM) – 8 lessons

Our CRM topic explores the effective use of all resources available to individual flight department roles to improve safety and efficiency. An emphasis is placed on case studies, communication, operational risk, and crew coordination. Threat and error management and human factors are also key components of this topic.

Topic Outline

- Threat and error management
- Communication
- Situational awareness
- Pressure and stress
- Fatigue
- Workload management
- Decision making
- Leadership and team building
- Automation and technology management
- “Surprise and Startle” effect and its mitigation strategies
- Resilience development

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- Resilience development
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- Current safety trends template (TC AC 700-042 only)
- Evacuation drills template (TC AC 700-042 only)

CVR/FDR Data Preservation – 1 lesson

This topic helps to ensure the preservation of data on cockpit voice recorders and flight data recorders following an accident or incident. It discusses the importance and benefits of preserving CVR/FDR data, as well as various provisions requiring the preservation of these data. The consequences of incorrectly disabling a CVR or FDR are explained, and there is a reminder to review the current manufacturer’s instructions for specific CVR/FDR installed in the aircraft.

Topic Outline

- Training that addresses the importance and advantages of preserving information held on a CVR and/or FDR
- National and international provisions requiring data preservation
- Awareness of the consequences of incorrectly disabling a CVR and/or FDR following an incident or accident

Electronic Flight Bag – 1 lesson

This topic reviews the purpose, capabilities, and components of an Electronic Flight Bag.

Topic Outline

- Hardware and software classification
- Administrator responsibilities
- Documentation
- Operational procedures
- Associated human factors
- Abnormal scenarios
- Cautions and procedures when using an EFB with lithium batteries
- EFB own-ship position on EFB applications

Emergency Procedures Training – 3 lessons

This topic provides trainees with a comprehensive review of general emergency procedures, including fire safety, emergency evacuation and pilot incapacitation. It provides a practical training checklist that prompts a review of aircraft-specific emergency procedures and equipment. The different components and classes of a fire are explained, as well as the operations and procedures crew members must follow when an emergency or accident occurs. Content is tailored to fixed wing pilots.

Topic Outline

- Use of fire extinguishers
- Operation and use of emergency exits
- Emergency evacuation procedures and preparations
- Storage and use of life preservers and rafts
- Proper use of crew and passenger oxygen
- Procedures in case of pilot incapacitation

Fatigue Management – 3 lessons

Fatigue is an important safety issue for aviation. Numerous incident and accident investigations have cited fatigue as a contributing factor. It is important for all personnel to learn how to recognize the signs of fatigue, understand reporting procedures, and learn preventative and mitigation strategies.

Topic Outline

- Physiology
- Operational issues
- Causal and contributing factors
- Sleep requirements
- Circadian rhythms
- Strategic caffeine use
- Effective napping
- Environments conducive to sleep
- Sedatives
- Diet and exercise
- Light exposure and jet lag
- Controlled rest on the flight deck
- Fatigue Risk Management Systems (FRMS)

High Altitude Physiology and Effects – 1 lesson

This topic reviews the associated risks and effects of high altitude flight operations. It covers subjects like respiration and hypoxia. Rapid decompression is discussed, as well as the physiological effects that occur at high altitudes without supplemental oxygen. This topic also highlights the importance of supplemental oxygen requirements, and informing passengers of the location of oxygen supply equipment.

Topic Outline

- Respiration
- Hypoxia and its effects
- Time of consciousness at altitude without supplemental oxygen
- The effects of trapped or dissolved gas
- Causes and effects of rapid decompression
- Procedures in the event of rapid decompression

High Speed and High Altitude Aerodynamics – 1 lesson

This topic reviews mach effects, swept wing characteristics, and speed stability in high performance airfoils and at high altitude. It explains key aerodynamic concepts for high speed and high altitude flight, including maneuvering stability, mach tuck, and L/D max. The lesson considers terms and situations needed to prevent upset conditions in high altitude operations.

Topic Outline

- Lift/Drag max
- Airspeed decay
- Slower cruising speeds
- Different altitudes
- Climb speed deviations
- Thrust limited condition and recovery
- Maneuvering stability
- Mach tuck and mach buffet

Human Factors for Pilots – 4 lessons

Intended for pilots conducting Elementary Maintenance, these Human Factors lessons consider how the maintenance “Dirty Dozen” human factors affect the outcome of aircraft maintenance procedures. The focus is on developing the skills to effectively analyze and learn from accidents and incidents, several of which are reviewed to illustrate the factors of these incidents. The lessons explain how human error is still prevalent to this day, and they discuss how to identify the factors that contribute to these errors as well as how to prevent them from happening.

Topic Outline

- Root causes of accidents and incidents, including how to identify them
- Human error
- Chain of events resulting into accidents
- The Dirty Dozen, and safety nets that prevent the Dirty Dozen from contributing to an incident or accident
- Error management, including error prevention and error containment

ILS/PRM and SOIA Procedures – 2 lessons

This topic ensures that pilots are familiar with ILS/PRM and SOIA procedures. It reviews training requirements, as well as the approach charts and Attention All Users Page (AAUP) for both procedures. The lessons discuss communication procedures, TCAS, and SOIA geometry. Through the effective combination of visual information and text, trainees receive comprehensive lessons on the ILS/PRM and SOIA approaches.

Topic Outline

- Training requirements
- Overview of ILS/PRM
- Approach charts and AAUP for ILS/PRM
- Communication procedures
- No transgression zone
- Breakout instructions and preparation
- SOIA approach and geometry

Low Energy Awareness Theory – 1 lesson

Our Low Energy Awareness topic reviews the potential hazards associated with a balked landing or go-around while the aircraft is configured in a low-energy landing regime. The low energy regime and balked landing is contrasted with energy management in the wind shear and CFIT escape maneuvers. The aircraft certification process is explained as well, rounding the topic up into a short but comprehensive lesson.

Topic Outline

- Hazard awareness
- Low-energy landing regime
- Aircraft and engine handling and performance characteristics in the low-energy regime
- Aircraft balked landing procedures

Low Visibility Takeoff Operations – 1 lesson

This topic reviews aircraft, qualification, operational and performance requirements with respect to Low Visibility Takeoff Operations. Lessons include information on takeoff alternate considerations, airport markings, and lighting and control systems. We provide different versions of this topic to meet various regulatory operating environments.

Topic Outline

- Takeoff alternate requirements
- Experience requirements
- Responsibility for visibility and obstacle clearance requirements
- Aircraft and runway equipment requirements
- Procedures to ensure compliance with performance limitations
- Aerodrome level of service
- Surface movement guidance and control systems

Marshalling – 1 lesson

In this topic, we review aircraft marshalling information and procedures (fixed wing and rotary wing).

Topic Outline

- The importance of marshalling
- Preparation and safety
- Hand signals for arrivals and departures

Meteorology Review – 7 lessons

Our meteorology lessons review severe weather, including wind shear, clear air turbulence, high altitude and frontal weather, and the risks these phenomena pose to flight. The lessons discuss the formation of these phenomena, as well as their different types and effects. Instructions on how to prepare, avoid, or, if absolutely necessary, fly through these phenomena are explained. Content is tailored to fixed wing pilots.

Topic Outline

- How to anticipate, expect, and prepare for wind shear
- Formation of thunderstorms and convective turbulence

- Frontal weather and the jet stream
- Mid-latitude cyclones
- Mountain waves and their formation
- High altitude weather
- Properties and formation of fog
- Ice crystals

Minimum Equipment List Update – 1 lesson

The Minimum Equipment List Update features instruction on the use of an MEL, including deferral procedures. It explains operator/company MEL procedures and it provides a clear description of the MEL format.

Topic Outline

- Instruction on the purpose and use of an MEL
- Air operator/company MEL procedures
- Responsibility of the pilot in command
- Recurrent training to refresh procedural knowledge

No Alternate IFR

Part of our Operations Manual, Regulations and Standards Review course (Canadian operators only).

No-Carry Operator Dangerous Goods Training – 2 lessons

This topic is for operators who are not authorized to carry dangerous goods but must learn to identify their presence to prevent unintentional carriage. These lessons focus on education and awareness concerning hidden, unidentified, and misdeclared articles and/or substances that may be dangerous goods. Emergency procedures and operator training requirements related to dangerous goods are also discussed.

Topic Outline

- General philosophy
- Limitations
- List of dangerous goods
- Labelling and marking
- Recognition of undeclared dangerous goods
- Provisions for passengers and crew
- Emergency procedures

Operations Manual, Regulations, and Standards Review – 2 lessons

This topic guides trainees through a review of their operations manual, critical components of their Safety Management System, and applicable regulations and standards. We provide different versions of this topic to meet various regulatory operating environments.

Topic Outline

- Regulations and standards
- Operations Manual review

- Aviation legislation
- Operating rules and operational practices
- Requirements and qualifications

Performance Airspace: ADS-B – 1 lesson

Automatic Dependent Surveillance-Broadcast is an automatic datalink that provides transponder and other information through ground stations, satellites, and to other aircraft (equipped with ADS-B In).

Topic Outline

- ADS-B operating procedures, including ADS-B In and ADS-B Out
- Flight planning
- MEL procedures
- Phraseology
- Operational procedures regarding transmission of generic emergency codes
- Data source errors
- ADS-B-NRA operations
- System dependencies

Performance Airspace: ADS-C – 2 lessons

Automatic Dependent Surveillance-Contract (ADS-C) is part of the Future Air Navigation System (FANS) initiative established to improve air to ground communication and increase the number of aircraft that can fly safely in a given airspace. It is mainly used in oceanic airspace and in sparsely used transcontinental airspace.

Topic Outline

- Automatic Dependent Surveillance (ADS)
- Automatic Dependent Surveillance – Contract (ADS-C)
- The airspace where ADS-C is used
- Flight planning procedures
- Types of ADS contracts
- How the contract is established
- How to log onto the ADS-C
- Message report content
- The transfer of contracts from one controlling authority to another

Performance Airspace: A-RNP – 1 lesson

Prerequisites:

Performance Airspace: RNAV and RNP

Performance Airspace: RNAV 1 and 2 (if approved)

Performance Airspace: RNAV 5 (if approved)

Performance Airspace: RNP APCH (if approved)

Performance Airspace: RNP 1 and 2 (if approved)

Performance Airspace: RNP 4 (if approved)

Performance Airspace: RNP 10 (if approved)

This topic reviews Advanced Required Navigation Performance (A-RNP), which is a navigation specification that provides for a single approval of aircraft and aircrew eligibility. It includes multiple navigation specifications. A-RNP approval defines many accuracy requirements and covers multiple phases of flight from enroute to approach.

Topic Outline

- A-RNP equipment and functional options
- Approval
- Scalability
- Normal and contingency aircraft procedures

Performance Airspace: CPDLC (incl. PBCS) – 3 lessons

Prerequisites:

Performance Airspace: RNAV and RNP

Performance Airspace: ADS-C (if installed)

Performance Airspace: RNP 4 (if installed)

Performance Airspace: NAT HLA MNPS (if approved)

Controller Pilot Data Link Communications (CPDLC) is the exchange of routine and emergency information via ACARS, VHF, HF or SATCOM between aircraft and ATC. CPDLC is part of the communications portion that makes up the Communication Navigation Surveillance/Air Traffic Management System (CNS/ATM).

Topic Outline

- PBCS including RCP and RSP explanation, flight planning, operations and failures
- FANS and ATN
- CPDLC approval, phase-in, flight planning, pilot responsibilities, and operating practices
- Human factors associated with CPDLC
- ATS Facilities Notification (AFN) logon
- Controlling authority transfer and uplink aspects of CPDLC
- CPDLC messages that arm the FMS
- Loadable and downlink messages
- The ATC log
- Unsupported downlink message situations
- Emergency communications
- System failure

Performance Airspace: NAT HLA MNPS – 1 lesson

Prerequisites:

Performance Airspace: RNAV and RNP

Performance Airspace: ADS-C (if equipped)

Performance Airspace: CPDLC (if equipped)

Performance Airspace: RNP 4 (if equipped)

This topic provides an overview of Minimum Navigation Performance Specification (MNPS) airspace. Navigation equipment requirements are discussed, along with MNPS altimetry and communications.

Topic Outline

- Transition to NAT HLA
- Specific airspace operations approvals
- General MNPS navigation requirements
- Lateral navigation equipment requirements
- MNPS altimetry and communications
- Longitudinal navigation

Performance Airspace: RNAV 1 and 2 – 1 lesson

Prerequisites:

Performance Airspace: RNAV and RNP

Our RNAV 1 and RNAV 2 topic discusses international requirements for this form of performance-based navigation and provides guidance on flying RNAV 1 and 2 routes, SIDs, and STARs. It covers various specifications and procedures as well as functions related to RNAV, SIDs, and STARs.

Topic Outline

- Performance-Based Navigation (PBN)
- RNAV designations and specifications
- Requirements and procedures (normal and contingency)
- Pre-flight planning
- Navigation database
- Obstacle clearance and route spacing
- SID and STARs and their specific requirements
- RNAV leg types
- Legislation, including: TGL-10, AC90-100, and AC700-019

Performance Airspace: RNAV 5 – 1 lesson

Prerequisites:

Performance Airspace: RNAV and RNP

This lesson provides an overview of the RNAV 5 (ECAC: B-RNAV) navigational requirement. We describe the purpose of RNAV 5, list areas of implementation, and review requirements and procedures for flying RNAV 5 routes.

Topic Outline

- Aircraft requirements
- Navigation performance requirements
- Operational approval
- Flight planning
- En route procedures
- Contingency procedures

Performance Airspace: RNAV and RNP – 4 lessons

This topic covers the RNAV and RNP navigation specifications of Performance-Based Navigation.

Topic Outline

- GNSS
- GPS components
- WGS84
- Autonomous Integrity Monitoring Techniques
- PBN
- Flight planning
- Phraseology
- SIDs and STARs
- Contingency procedures
- RNAV and RNP systems and designations
- Human factors

Performance Airspace: RNP 1 and 2 – 2 lessons

Prerequisites:

Performance Airspace: RNAV and RNP

Required Navigation Performance (RNP) 1 and RNP 2 are GNSS-based navigation specifications. RNP 1 airspace connects the enroute structure with terminal areas and provides guidance for the following phases of flight: arrival and departure, as well as initial approach, intermediate, and missed approach.

RNP 2 airspace is designed for the enroute structure concentrating on geographic areas with minimal navigational aid infrastructure, limited or no air traffic surveillance, and low to medium traffic density.

Topic Outline

- RNP 1 and RNP 2 as a part of the Performance-Based Navigation concept
- RNP 1 and RNP 2 aircraft requirements
- On-board performance monitoring and alerting
- Operating procedures in various phases of flight
- Radius to fix legs for RNP 1
- Flight planning procedures for RNP 1 and RNP 2
- Contingency procedures

Performance Airspace: RNP 4 – 1 lesson

Prerequisites:

Performance Airspace: RNAV and RNP

Performance Airspace: RNAV 1 and 2

RNP 4 is an ICAO Performance Based Navigation designation that can be found in oceanic and remote continental airspace. RNP 4 relies primarily on GNSS to support the navigation element of the airspace concept, and supports 30 NM lateral by 30 NM longitudinal separation tolerances if FANS or ATN technology such as CPDLC and ADS-C are

utilized. In some States, aircraft qualified for RNP 4 operations automatically qualify for RNP 10 operations, which includes WATRS Plus airspace.

Topic Outline

- Communication and surveillance
- Flight planning
- Navigation performance requirements
- En route procedures
- Contingency procedures
- Where RNP 4 airspace and routes can be found including NAT HLA

Performance Airspace: RNP 10 – 1 lesson

Prerequisites:

Performance Airspace: RNAV and RNP

This topic discusses RNP 10 airspace. This includes approval for RNP 10 operations, navigation performance requirements, and pre-flight and flight planning procedures. RNP 10 airspace can be found in WATRS Plus and GOMEX airspace, among others.

Topic Outline

- RNAV and RNP
- RNP 10 approval
- Flight planning
- Navigation performance requirements
- En route procedures
- Contingency procedures

Performance Airspace: RNP APCH – 3 lessons

Prerequisites:

Performance Airspace: RNAV and RNP

This topic covers the Required Navigation Performance Approach (RNP APCH) designation, which uses RNP navigation specifications with increased accuracy limits and allows for greater access to a number of approaches with lower minima. It provides an overview of RNP APCH criteria, including vertical guidance, navigation augmentation, barometric vertical navigation, and RNP APCH minima with and without approved vertical guidance. It also discusses flight planning for RNP APCH, including proper approach and contingency procedures.

Topic Outline

- RNP APCH and RNP APCH minima
- Augmentation Systems
- Baro-VNAV
- RNP APCH with approved vertical guidance
- NOTAMs
- Flight planning

- Approach procedures

Performance Airspace: RNP AR APCH – 2 lessons

Prerequisites:

Performance Airspace: RNAV and RNP

Performance Airspace: RNP APCH

RNP AR APCH is defined as "authorization required." It is the next step in the Performance-Based Navigation (PBN) and Required Navigation Performance (RNP) evolution, following RNP APCH. RNP AR APCH is used at airports where limiting obstacles exist, and/or where operational efficiency is needed.

Topic Outline

- RNP AR requirements, including performance-monitoring programs
- RNP AR-related altimetry and temperature considerations
- ANP constraints
- Pre-flight planning procedures
- Procedures prior to commencing, and during the RNP AR approach
- Procedures with RF legs
- Missed approach and contingency procedures
- RNP AR checklists

Performance Airspace: RVSM – 3 lessons

Prerequisites:

ACAS/TCAS

Our review of RVSM covers the theory and practice of vertical containment procedures associated with RVSM operations, including potential wake upsets in RVSM airspace and contingency procedures. The topic covers standard phraseology and explains the use of ACAS/TCAS.

Topic Outline

- Knowledge of RVSM airspace boundaries
- Weather avoidance
- Rules on exclusion of non-RVSM compliant aircraft
- Pre-flight and in-flight altimeter checks
- Use of the automatic altitude control system
- RVSM operations procedures
- Standard phraseology
- Minimum equipment list (MEL) considerations
- Use of ACAS/TCAS

Performance Airspace: WAAS – 1 lesson

Prerequisites:

Performance Airspace: RNAV and RNP

Performance Airspace: RNP APCH

This topic discusses the Wide Area Augmentation System (WAAS), which consists of equipment and software that improves the GPS Standard Positioning Service (SPS). WAAS provides enhanced integrity, accuracy, availability, and continuity over and above a non-augmented GPS system. The differential correction function of WAAS provides improved accuracy required for precision approaches.

Topic Outline

- Wide Area Augmentation System (WAAS)
- Local Area Augmentation System (LAAS)
- Coverage areas
- The importance of integrity, availability and accuracy of the GPS system signal
- Operational procedures before and during the approach

Pilot Monitored Approach Review – 1 lesson

This topic discusses pilot monitored approach procedures, focusing on SOPs and the control transfer at approach minimums. Initial transfer of aircraft control and standard calls and actions are also discussed.

Topic Outline

- Standard PMA procedure
- Heads-up and heads-down
- Initial transfer of aircraft control
- Go-around
- Standard calls and actions

Pre-departure Clearance (PDC) – 1 lesson

This topic discusses the PDC system and the ways in which pilots can take advantage of its benefits.

Topic Outline

- Availability
- Registration requirements
- Operator requirements
- Flight crew procedures
- Limitations
- Differences between PDC and Controller-Pilot Data Link Communications Departure Clearance (CPDLC-DCL)

Radar Initial – 15 lessons

Our airborne weather radar lessons provide pilots with a comprehensive review of the use and limitations of their radar system. Pilots are presented with specific techniques that will help them identify and avoid hazardous weather using radar, and are also shown how to pair radar usage with other tools and resources. Emphasis is placed on the two absolute radar rules: never use radar to penetrate hazardous weather, and never continue flight towards a radar shadow. Real-life case studies and high-resolution depictions of actual radar screens and hazardous weather help solidify the trainee's understanding of key concepts.

Topic Outline

- System overview (antenna size; beam width; colour thresholds)
- Interpreting radar data
- Gaining proficiency
- Limitations of radar
- Cell reflectivity and anatomy
- Misuse of radar (e.g., overscanning)
- Attenuation
- Tilt positions
- Storm Hazards Indexing Test (©AJT Inc)
- Operational employment
- Oceanic convective weather
- NEXRAD

Radar Recurrent – 3 lessons

These lessons review the fundamentals of airborne weather radar, including the use of radar and the interpretation of radar data. We also discuss radar limitations, inspections and system tests, and give consideration to NEXRAD. The anatomy of a thunderstorm is described, as well as other types of weather. Through the use of both visual and textual information, we deliver clear and comprehensible lessons on Radar.

Topic Outline

- Limitations of radar
- Non-radar clues
- Beam width
- Antenna size
- Rule of 60
- Variables of reflectivity
- Anatomy of a thunderstorm
- Attenuation
- System warnings
- Stratus weather and embedded cells

RCAP

Part of our Operations Manual, Regulations and Standards Review course (Canadian operators only).

Runway Awareness – 2 lessons

This topic is intended to raise awareness of a number of runway related concerns, including: runway incursions, runways excursions and confusion. Information on low visibility operations are provided, as well as non-standard phraseology and human factors that affect runway awareness. Salient examples are used to illustrate the issues.

Topic Outline

- Runway safety initiatives
- High traffic volume
- Non-standard radio phraseology
- Lack of adequate visual aids and reviewing standard airport signage
- Airport familiarization

- Human factors

Safety Management Systems – 4 lessons

This topic provides trainees with fundamental information concerning the ongoing support of a company's safety management system. It includes information on risk management, hazard analysis and change management. The topic also discusses risk assessment, safety studies and reviews along with SMS evaluation and improvement.

Topic Outline

- Hazard identification
- SHELL model
- Safety risk profile, including flight risk assessment tool
- Different management systems, including QMS
- Safety culture
- Performance monitoring
- Safety studies and reviews
- Internal safety investigations
- Other tools to assess safety (e.g., audits, surveys, meetings)

Security Management – 4 lessons

Our security lessons consider the changes that have taken place in aviation security since 9/11. We provide an overview of the core elements of a business aviation security program, including security risk assessment.

Topic Outline

- Elements of a business aviation security program
- Developing a security risk profile
- Threats and risks
- Threat assessment
- Determining event vulnerability, probability and criticality

Single Pilot Resource Management (SRM) – 7 lessons

Single pilot operations present unique challenges not faced in a multi-crew environment. Our SRM topic explores the effective use of all resources available to single pilot operators to meet those challenges and improve safety and efficiency. Single pilot case studies are reviewed and evaluated, highlighting both positive and negative aspects. Threat and error management and human factors are also key components of this topic.

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- Pressure and stress

- Fatigue
- Workload management
- Decision making
- Leadership and team building
- Automation and technology management
- “Surprise and Startle” effect and its mitigation strategies
- Resilience development
- Relevant case study template (TC AC 700-042 only)
- Current safety trends template (TC AC 700-042 only)
- Evacuation drills template (TC AC 700-042 only)

Survival Principles – 3 lessons

Our Survival topic describes the key things pilots need to know in order to ensure a positive outcome in the event of an unscheduled landing in a remote environment. The lessons provide information on survival first aid and basic lifesaving actions, such as building a fire and signaling distress.

Topic Outline

- Psychological effects of survival situations
- How to build a fire
- How to signal distress
- How to obtain water
- How to obtain/build shelter
- Survival first aid

Threat and Error Management – 1 lesson

Our TEM topic recognizes that every crew faces threats throughout a flight. Because our responses to threats can be erroneous, appropriate training and procedures must be implemented to trap errors before they lead to undesired aircraft states. Forming a cornerstone of our Crew Resource Management topic, this topic focuses on the application of TEM philosophy in day-to-day operations.

Topic Outline

- Definitions of threat, error, and undesired aircraft state
- Relationship between TEM and CRM
- Countermeasures against threats and errors
- TEM “toolkit” defenses
- Overcoming complacency

Upset Prevention and Recovery Training (UPRT) – 6 lessons

This topic consists of a review of the industry-leading Upset Recovery Training Aid (URTA). We consider unusual attitude identification and specific recovery procedures, including stall recovery. We also review real-life case studies involving aircraft upsets and unusual attitudes.

Topic Outline

- Overview of aerodynamics

- Upset recognition and avoidance
- Recovery procedures

OCCUPATIONAL HEALTH AND SAFETY TOPICS

Accident Reporting – 1 lesson

Our accident reporting lesson lists steps to take if a workplace accident occurs and discusses reporting expectations. It explains the procedures to be followed in case of a medical emergency, and it also discusses first aid and non-emergency care.

Topic Outline

- Keys to preventing accidents
- Notification and documentation of accidents
- Medical emergencies and non-emergency care
- First aid
- Required medical treatment for employees

Back Injury Prevention – 1 lesson

This lesson provides an overview of how back injuries occur and explains different strategies that can help prevent them. It discusses the anatomy of the body and includes safe lifting, carrying, and lowering techniques and postures.

Topic Outline

- Causes of back injuries
- Anatomy of the body
- Prevention strategies against back injuries
- Correct lifting, carrying and lowering techniques

Blood Borne Pathogens – 1 lesson

Any contact with bodily fluids can place an individual at risk of exposure to blood borne pathogens. This topic reviews methods of keeping workers safe from infection, emergency response procedures, and vaccines.

Topic Outline

- Types of blood borne pathogens
- How blood borne pathogens are transmitted
- What to do if you are potentially exposed to a blood borne pathogen
- Preventative methods

Communicable Disease Management – 3 lessons

This topic is designed to enable operators to develop an appropriate response so that they can continue to operate during a pandemic safely and effectively. It focuses on effective planning, safety measures, and protocols for handling infectious disease and illness both in-flight and post-flight.

Topic Outline

- Suggested protocols for preventing the spread of infection
- Changes to a typical flight experience during a pandemic
- Crew response to passenger/crewmember illness
- Cleaning and disinfection of contaminated areas
- PPE disposal
- Critical components of an Infectious Disease Control Response Plan
- Pre-flight assessment, including risk levels for infectious disease
- Crewmember assessment and passenger screening
- Universal Precaution Kit
- Risk mitigation for ground transportation and accommodation when overnighing

CPR – 1 lesson

Our CPR topic presents current CPR procedures, including airway and breathing support. The lesson also discusses CPR variants, such as hands-only CPR. It also explains how to use the Automated External Defibrillator in concert with CPR.

Topic Outline

- Appropriate use of CPR in the case of a heart attack
- Evaluating the victim for responsiveness
- CPR procedures and guidelines
- AED use and considerations

Emergency Action Plan – 1 lesson

This lesson discusses procedures to follow when confronted with a fire, extreme weather event, or other emergency situations. Key teaching points focus on prevention and planning strategies. The lesson also discusses fire prevention and procedures to be followed during tornados or hurricanes.

Topic Outline

- Fire prevention
- Tornado or hurricane safe zones and safety procedures
- Workplace violence and prevention

Ergonomics – 1 lesson

This lesson discusses ergonomic injuries – what they are, how they occur, and how they can be prevented. It includes information on risk factors and proper workstation setup along with other safety measures to prevent ergonomic injuries.

Topic Outline

- Causes of ergonomic injuries, including awkward or static postures
- Symptoms of musculoskeletal disorders
- Carpal tunnel syndrome
- Risk factors that lead to the development of repetitive stress injury
- Workplace factors that lead to repetitive stress injury
- Safety measures to prevent workplace injury

Fall Protection – 1 lesson

In our fall protection topic, we consider how to avoid falls and recognize fall hazards. We also discuss the use of fall protection equipment (such as safety harnesses). We explain the two major categories of falls and the required protection for employees when they work in certain areas. The anatomy of a fall is described, as well as the training required to inspect and use fall protection equipment properly.

Topic Outline

- Two major categories of falls
- Required protection for workers
- Ways to prevent falls
- Systems that can protect an employee from injury
- Anatomy of a fall
- Training on how to inspect and use fall protection equipment properly

Fire Prevention Practices – 1 lesson

This topic focuses on how trainees can prevent fires in the workplace. The lesson includes tips on housekeeping and safe storage of solid and liquid materials. It explains the fire tetrahedron and electric hazards. Compartmentalization and fire door practices are also discussed.

Topic Outline

- Fire tetrahedron
- Good housekeeping to prevent fires
- Proper storage
- Electrical hazards
- Compartmentalization
- Fire door practices

First Aid Kits – 1 lesson

In this lesson, we review items that are commonly included in first aid kits and explain their uses. The lesson also explains how to administer medical oxygen, and it discusses blood sugar measurement and the equipment that is needed for the procedure.

Topic Outline

- First aid kit compartments
- Items contained within the compartments
- How to use the kit and its equipment
- How to administer medical oxygen
- Blood sugar measurement

Food Safety – 5 lessons

This topic has been carefully designed to ensure that persons who handle food as part of their duties receive adequate training in handling practices to prevent the contamination of food. Specific lessons include examples and case studies that raise awareness of the importance of proper food handling considerations for business aviation.

Topic Outline

- Food handling practices
- Dangers of foodborne illness
- Hazards, including: chemical hazards, allergies, physical hazards, biological hazards, and bacteria
- Food acquisition, distribution, and cleanliness
- Lavatory considerations
- Packaging labels
- Refrigeration and temperature control
- Disposal management and water management
- Pests
- Inspection and monitoring
- Cultural practices
- Food surfaces
- Cleaning agents and compounds
- Handling dry ice
- Documentation

Fuel and Ignition Source Control – 1 lesson

In this lesson, we present guidelines for controlling substances that can cause fires and explosions in the workplace, and review procedures for assessing and mitigating the risks of a particular substance or work process. We provide examples of fuel and ignition sources and explain the zoning process. We also explain workplace fire hazards and discuss strategies to prevent fires from occurring.

Topic Outline

- Fuel and ignition sources
- Assessing and mitigating risk
- Zoning
- Workplace fire hazards
- Fire prevention strategies

Hazard Communication (including WHMIS) – 1 lesson

Our hazard communication lesson reviews systems for communicating hazards, including the requirements and structure of Safety Data Sheets (SDS), labels, and pictograms. It also lists different hazards and explains the proper storage for each type of hazard. We also offer a version of the lesson based on the 2015 WHMIS, which is aligned with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Topic Outline

- Written hazard communication program
- Different hazards and their proper storage
- SDS requirements and structure
- Labelling system and requirements
- NFPA and HMIS labels

Housekeeping and Material Handling – 1 lesson

This lesson consists of a discussion of good housekeeping practices. We consider safe material handling, stacking, and storage practices. We discuss hazards and strategies to prevent accidents that result from improper storage of materials, including ergonomic principles.

Topic Outline

- Good housekeeping practices (workplace and personal)
- Slips, trips and falls and how to prevent them
- Proper handling and storage of materials
- Assessing hazards

In-Flight Medical Emergencies – 6 lessons

This series of lessons provides trainees with specific procedures for responding to in-flight medical emergencies. Emergencies covered include: cardiac, respiratory, neurological, medical disorders (such as allergic reactions, food poisoning, and diabetes) and general injuries (such as broken bones, blood loss, and spinal injuries).

Topic Outline

- Logical, sequential steps to follow when a medical emergency occurs
- In-flight injuries
- Cardiac emergencies
- Neurological emergencies
- In-flight respiratory emergencies
- In-flight medical disorders

Ladder Safety – 1 lesson

In this topic, we consider safe setup, usage, maintenance, and storage practices for different types of ladders. The different types of ladders are explained, as well as the different ladder materials and their characteristics.

Topic Outline

- Ladder selection
- Types of ladders and ladder material
- Ladder set-up
- Inspecting ladders
- Ladder maintenance

Personal Protective Equipment – 2 lessons

Our personal protective equipment lessons thoroughly discuss the proper use, storage, and maintenance of PPE for the eyes, face, hearing, limbs, and respiratory system. This lesson explains the hazards that PPE can prevent.

Topic Outline

- PPE for the eyes and face, including goggles and safety glasses
- Hearing protection and noise hazards
- Hard hats that prevent head injuries



Powered Industrial Trucks/Materials Handling Equipment – 1 lesson

This lesson consists of a review of safe use practices for forklifts and other industrial trucks. The training required to use a forklift is described, as well as the different classes of powered industrial trucks.

Topic Outline

- Classes of powered industrial truck
- Manoeuvring a powered industrial truck
- Pre-operational inspection
- Important work practices
- Managing loads

Topics are regularly updated and further topics are always under development, based on industry issues and customer requests.

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