



Australian Government

AVIH0004 Implement instrument flight rules planning procedures

Release: 1

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Modification History

Release 1. This is the first release of this unit of competency in the AVI Aviation Training Package.

Application

This unit involves the skills and knowledge required to implement instrument flight rules (IFR) planning procedures, in compliance with the relevant regulatory requirements of the Civil Aviation Safety Authority (CASA), national and international civil aviation operating standards

It includes assessing instrument flight planning needs, determining aircraft instrument flight requirements, identifying operational flight documentation, preparing charts and instrument flight plans. It also includes selecting instrument flight routes, determining operational requirements, releasing an instrument flight plan, and providing extended twin-engine operations (ETOPS) flight planning and flight support.

This unit addresses aviation technical skill requirements (physical, mental and task-management abilities) related to route planning and navigation duties of flight dispatch personnel, and contributes to safe and effective performance in complex aviation operational environments.

Operations are conducted as part of commercial and military aircraft activities across a variety of operational contexts within the Australian aviation industry.

Work is performed independently or under limited supervision as a single operator or within a team environment.

Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Use for Defence Aviation is to be in accordance with relevant Defence Orders, Instructions, Publications and Regulations.

Pre-requisite Unit

Not applicable.

Competency Field

H – Route Planning and Navigation

Unit Sector

Not applicable.

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Assess instrument flight planning needs

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Operator flight planning objectives and factors contributing to and or influencing these objectives, are defined
- 1.2 Conflicting flight planning objectives including commercial and safety imperatives are identified
- 1.3 Direct operating costs of a flight plan including fuel, resourcing, engineering, navigational and ground handling factors are considered and assessed for applicability to flight plan
- 1.4 Relationship between different flight planning objectives including minimum fuel, maximum speed and thrust, minimum cost and varying operational requirements is determined and applied
- 1.5 Value of flight plan in establishing track, distance, heading, speed, times, optimum route, altitudes, contingency planning, fuel consumption and reserves, is assessed
- 1.6 Value of flight plan to air traffic services in establishing reporting points, flight information region crossing and coordination, pre-departure clearances, and traffic flow coordination, is assessed
- 1.7 Appropriate state and operator authorisations are obtained to plan and manage a range of instrument flight operation types including scheduled, non-scheduled, charter, ferry, training, test and publicity flights
- 1.8 Instrument flight planning process is applied while assessing a wide range of planning factors including type of flight, weather, aircraft type, availability and performance, crew, payload, schedule, departure, enroute and destination requirements, state based air service requirements, briefing, flight plan delivery and filing
- 1.9 International Civil Aviation Organization (ICAO) air traffic flight plan format, filing, and performance based navigation requirements are determined and applied to instrument flight planning processes

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|----------|--|-----|--|
| 2 | Determine aircraft instrument flight requirements | 2.1 | Aircraft requirements for instrument flight are determined |
| | | 2.2 | Flight and navigation instruments, including minimum electrical lighting, navigation equipment, minimum equipment lists and any other requirements fitted to the aircraft are identified and assessed to ensure they are suitable and acceptable for instrument flight |
| 3 | Identify operational flight documentation | 3.1 | Essential operational documentation applicable to instrument flight type is identified for use by flight crew |
| | | 3.2 | Applicable information contained in documents for flight planning and management is interpreted and applied |
| | | 3.3 | Aircraft library requirements including operating manual suite, aeronautical information publications, logbooks and other relevant flight documents are identified |
| 4 | Prepare charts and instrument flight plans | 4.1 | Charts suitable for intended instrument flight are identified, selected and prepared |
| | | 4.2 | Applicable information to prepare a flight plan that details tracks, distances, times, altitudes to be flown and fuel requirements to reach destination are obtained, analysed and applied |
| | | 4.3 | Meteorological, airways facilities, aerodrome and Notice to Airmen (NOTAM) information applicable to planning and conducting a flight is obtained, interpreted and applied |
| | | 4.4 | Navigation information applicable to flight planning is obtained, interpreted and applied |
| 5 | Select instrument flight routes | 5.1 | Factors contributing to selecting optimum track, great circle track and minimum time track are identified |
| | | 5.2 | Minimum time track on upper air charts is plotted |
| | | 5.3 | Preferred minimum time track is determined and modified as required |
| | | 5.4 | Fuel quantities more than minimum fuel are routinely considered and cost of carriage is assessed and determined in context of overall flight plan |
| 6 | Determine operational requirements | 6.1 | Suitability of aerodrome for instrument flight operations is determined |
| | | 6.2 | Operational constraints are complied with |

- 6.4 Holding, alternate and reserve fuel requirements due to weather, navigation aid availability and aerodrome lighting are determined in accordance with operational requirements
 - 6.5 Total fuel requirements are calculated
- 7 Release an instrument flight plan**
 - 7.1 All required safety conditions, limitations and regulations are met and gross error check is performed
 - 7.2 Flight crew briefing information is collated including meteorological information, airport status, navigation aids, communication facilities, aircraft equipment and deviations, and reasons for flight plan submission
 - 7.3 An ICAO air traffic instrument flight plan is compiled, filed and managed for changes, delays and cancellation purposes
 - 7.4 Scheduled or unscheduled flights are re-cleared (re-filed) as required, based on revised flight information, using fuel saving techniques and varying operational requirements
- 8 Provide extended twin operations flight planning and flight support**
 - 8.1 Extended twin-engine operations (ETOPS) planning considerations and regulatory requirements are determined and applied to instrument flight planning activities
 - 8.2 ETOPS approval processes for regular passenger transport (RPT) or charter operations are understood and implemented where necessary
 - 8.3 System redundancy levels appropriate to ETOPS are identified and applied to ETOPS instrument flight planning activities
 - 8.4 ETOPS communication and navigation requirements between aircraft and relevant agencies and aids are determined and applied to ETOPS instrument flight planning activities
 - 8.5 Required ETOPS take-off, destination and alternate aerodrome requirements are assessed for suitability and recorded within flight planning and flight crew operational documentation
 - 8.6 Actual or forecast weather conditions for duration of planned flight are assessed for ETOPS planning purposes
 - 8.7 Aircraft performance data is interpreted and applied to ETOPS instrument flight planning activities

- 8.8 Relevant flight support information and assistance is provided to pilot in command (PIC) for ETOPS flight planning and normal flight situations
- 8.9 Relevant flight support information and assistance is provided to PIC during abnormal or emergency ETOPS situations

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Unit Mapping Information

No equivalent unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=4725260a-0af3-4daf-912b-ef1c2f3e5816>

Assessment Requirements for AVIH0004 Implement instrument flight rules planning procedures

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria on at least one occasion and include:

- adapting to differences in equipment and operating environment in accordance with standard operating procedures
- applying knowledge of:
 - climb and descent tables and charts
 - constant mach flight planning tables and charts
 - long range cruise charts and tables
- applying knowledge standard extended twin-engine operations (ETOPS) considerations
- applying published instrument flight rules (IFR) procedures
- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant legislation and workplace procedures
- calculating altimeter corrections from authorised sources, true altitude above mean sea level and height above terrain for a range of pressure altitudes and temperatures, and using standard atmosphere tables
- calculating flight time and fuel with varying fuel quantities to determine cost of carriage
- calculating minimum fuel and flight time, including taxi fuel, optimum altitude, use of charts, reserve fuel and critical point (CP) fuel
- calculating minimum fuel to destination to include distant alternates, and using destination as the alternate
- communicating effectively with others
- completing relevant documentation
- decoding aviation weather reports, including observing, trending and analysing simultaneous reports and conditions
- determining aircraft limits and maximum payloads
- determining conversion angles, convergency applications, plotting relative true north and grid north using Mercator, lambert conformal and polar stereographic charts
- determining operational requirements
- estimating winds and temperatures at flight levels corresponding to upper-air charts and at intermediate flight levels
- examining surface and upper-air charts in mid-latitude and tropical regions
- examining synoptic and aeronautical prognostic charts to determine movement and time

evolution

- examining typical charts and forecasts for flight planning to decode aerodrome and trend type landing forecasts
- identifying and briefing aeronautical climatology of a specific route
- identifying and correctly using relevant equipment
- identifying and selecting suitable navigation aids/systems
- implementing contingency plans
- implementing work health and safety (WHS)/occupational health and safety (OHS) procedures and relevant regulations
- inspecting and identifying actual and forecast charts for pressure patterns on surface and upper-air charts, and identifying pressure gradients
- interpreting and following operational instructions and prioritising work
- interpreting instrument flight charts
- interpreting instrument meteorological condition (IMC) forecasts
- interpreting tropopause and maximum winds charts
- interpreting weather observations plotted on standard format synoptic charts
- making flight notifications
- making proficient operational decisions
- modifying activities depending on workplace contingencies, situations and environments
- monitoring and anticipating operational problems and hazards and taking appropriate action
- monitoring work activities in terms of planned schedule
- obtaining and using current operational documents
- operating electronic communications equipment to required protocol
- performing calculations for a given true track, true airspeed (TAS) and distance to CP in zero wind, tailwind and beam wind
- performing calculations for a given true track, TAS and endurance, distance to point of no return (PNR) in zero wind, tailwind and beam wind, establish maximum PNR, return to departure airport and alternate airport all engines and one engine inoperative
- reading, interpreting and following relevant regulations, instructions, procedures, information and signs
- reporting and/or rectifying problems, faults or malfunctions promptly, in accordance workplace procedures
- reviewing aircraft performance and cruise control procedures and variations using aircraft flight manual graphs
- selecting and using required personal protective clothing and equipment conforming to industry and WHS/OHS standards
- working collaboratively with others
- working systematically with required attention to detail without injury to self or others, or damage to goods or equipment.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria and include knowledge of:

- aerodrome and en route holding procedures
- aircraft documents pouch:
 - certificate of airworthiness
 - certificate of registration
 - aircraft radio licence
 - fuel supplier carnet
 - emergency en route charts
 - sabotage checklist
- aircraft fuel planning including holding, alternate, fixed reserve and usage rates
- aircraft library:
 - aircraft operating manual
 - section of operating manual applicable to flight crew
 - aeronautical information publications
 - aircraft journey logbook
- airspace requirements and procedures under IFR conditions
- CP and point of no return
- customs and immigration forms:
 - general declaration forms
 - passenger manifest
 - crew manifest
- ETOPS:
 - adequate airport
 - suitable airport
 - auxiliary power unit
 - ETOPS configuration
 - extended range operations
 - extended range entry point
 - fail-safe
 - inflight shutdown
 - airworthiness
 - 60 minute operation
 - 120 minute operation
 - 180 minute operation
 - minimum equipment list
 - weather

- fuel
- operational practices and procedures
- flight planning
- one engine inoperative performance
- all engines operating performance
- drift down
- cruise altitude, and coverage at 10,000 feet
- holding
- altitude capability
- missed approach
- en route alternate airport requirements
- minima
- precision and non-precision approaches
- fuel and oil supply
- non-standard atmospheric conditions
- factors affecting en route performance, range and endurance
- gross error checking requirements:
 - flight designator
 - aircraft registration
 - minimum fuel
 - maximum permissible take-off mass
 - taxi fuel
 - alternate/s
 - fuel over destination
 - wind component and temperature
 - route
 - name of dispatcher
- ground and space-based navigation systems and infrastructure
 - ground based systems
 - space based systems
 - global navigation satellite system (GNSS) operating procedure errors
 - continuous descent final approach (CDFA) techniques
- how to determine currency of operational documents
- icing conditions and hazards
- IFR cruising levels, selection and hazards
- IFR route planning requirements
- in an Australian Defence Force (ADF) context, relevant Defence Orders and Instructions
- instrument flight documentation requirements
- instrument flight procedures:
 - flight instrument operations, errors and limitations

- radio communication phraseology
- lost communications procedures
- air traffic service requirements
- instrument chart symbology and information
- reporting requirements
- 2D/3D instrument approach operations
- altimeter accuracy and variations due temperature
- flight plan validity
- search and rescue times (SARTIME) and pilot obligations
- missed approach requirements
- alternate aerodrome weather minima
- aircraft separation standards
- pilot activated lighting (PAL)
- runway visual approach slope lighting system operation and limitations
- pilot responsibilities
- aircraft transponder operation
- limitations on use of radar on ground
- lowest safe altitude (LSALT):
 - calculate route LSALT not specified in aeronautical information publication (AIP)
 - missed approach minimum obstacle clearance
 - minimum obstacle clearance provided by minimum circling altitude
 - track establishment after take-off
 - establish aircraft above LSALT requirements
 - descent below LSALT or minimum safety altitude requirements by day/night/night visual flight rules (NVFR)
- meteorological considerations for an IFR flight:
 - atmosphere, composition and structure
 - International Standard Atmosphere (ISA)
 - atmospheric temperature and humidity
 - units of measurement
 - mechanisms
 - actual atmospheric heating
 - temperature at the earth's surface
 - atmospheric humidity
 - adiabatic processes
 - atmospheric stability
 - vertical distribution of temperature (lapse rate)
 - atmospheric pressures
 - variation to pressure height
 - constant pressure charts

- pressure-wind relationships
- horizontal forces acting on the air
- winds near the earth surface
- winds in the free atmosphere
- types of atmospheric turbulence
- mountain waves (rotors)
- formation of clouds and precipitation and processes involved
- motion in cloud formation and precipitation
- formation of types of precipitation
- thunderstorms
- aircraft icing
- visibility and runway visual range (RVR)/slant visual range (SVR)
- components of aerodrome operating minima (visibility and RVR)
- causes of reduced visibility
- fog types
- volcanic ash
- surface observations
- upper air observations
- observations from satellites
- station model
- air masses and fronts
- frontal depressions and characteristics
- other types of pressure systems
- climatology
- tropical weather
- aeronautical meteorological reports
- weather reporting services
- analysis of surface and upper-air charts
- synoptic charts in the topics
- prognostic charts
- aeronautical forecasts
- role of international meteorological services
- meteorological communications
- navigation requirements:
 - position and distance
 - measurement of distance
 - time and time zones
 - true, magnetic and compass directions
 - gyro heading and grid direction

- chart projections (all types)
- International Civil Aviation Organization (ICAO) chart requirements
- charts used by a typical operator
- measurement of true airspeed by airspeed indicator
- measurement of true airspeed by other means
- track and ground speed
- use of slide rules and scientific calculators
- measure of aircraft altitude
- PNR
- CP (equal time point)
- general determination of aircraft position
- introduction to radio navigation
- ground based radar and direction-finding
- relative bearings including aircraft ADF
- VOR/DME-type radio navigation
- instrument landing system (ILS)
- navigation procedures
- position fixing requirements
- aircraft performance categories and operational implications
- waypoints, symbology and pilot requirements
- visual circling by day or night
- pressure error correction (PEC)
- aerodrome operating minima (AOM)
- decision altitude (DA)
- normal segment gradient
- tracking tolerances
- speed limitations and restrictions
- operational planning requirements:
 - flight planning
 - alternate aerodrome requirements
 - holding fuel requirements
 - NVFR operational requirements
 - planned/alternate destination weather conditions below minima
 - receiver autonomous integrity monitoring (RAIM) prediction implications
- performance based navigation (PBN):
 - PBN principles
 - area navigation (RNAV) required navigation performance (RNP) capability
 - core components
 - navigation system performance requirements

- performance monitoring and alerting
- RNP specifications and system requirements
- RNP navigation system errors
- RNP leg types
- RNP leg transitions
- RNP navigation authorisation requirements
- GNSS receiver requirements for RNP APCH operations
- GNSS receiver mode conditions and actions for RNP APCH
- RNP instrument approach requirements
- augmented and non-augmented approaches
- interpret IAP charts for minima information and operational restrictions
- validity and accuracy of QNH for RNP APCH types
- RNP approach differentiation
- Space based augmentation systems (SBAS)
- APV Baro-VNAV instrument approach charts
- vertical guidance information and operational considerations
- Baro-VNAV vertical guidance principles
- practical uses of critical points (CP)
- privileges and limitations conferred by an instrument rating
- reduced vertical separation minima (RVSM) operations
 - range of flight levels within Australian airspace
 - operational requirements
 - aircraft altimeter accuracy requirements
 - vertical height tolerances
 - procedures and standard communication phraseology
 - altimetry system failures
- relevant WHS/OHS and environmental procedures and regulations
- relevant sections of Civil Aviation Safety Regulations (CASRs) and Civil Aviation Orders for IFR and planning requirements
- requirements for an alternate aerodrome
- use of a navigational computer.

Assessment Conditions

As a minimum, assessors must satisfy applicable regulatory requirements, which include requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

As a minimum, assessment must satisfy applicable regulatory requirements, which include

requirements in the *Standards for Registered Training Organisations* current at the time of assessment.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Assessment must occur in workplace operational situations. Where this is not appropriate, assessment must occur in simulated workplace operational situations that reflect workplace conditions.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- acceptable means of simulation assessment
- applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
- relevant materials, tools, equipment and personal protective equipment currently used in industry.

Links

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