



Australian Government

AVIH4001 Navigate aircraft under visual flight rules

Release: 1

AVIH4001 Navigate aircraft under visual flight rules

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 navigate an aircraft under visual flight rules (VFR), in compliance with relevant regulatory requirements of the Civil Aviation Safety Authority (CASA) and national operating standards.

It includes preparing navigation documents and flight plan, complying with airspace procedures, and conducting departure procedures. It also includes navigating aircraft en route, navigating at low level and in reduced visibility, and performing lost procedures. It also includes performing diversion procedures, using instrument navigation systems and executing arrival procedures.

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

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

Work is performed independently or under limited supervision within a single-pilot or multi-crew 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.

PERFORMANCE CRITERIA

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

- | | |
|---|---|
| 1 Prepare navigation documents and flight plan | 1.1 Suitable navigation charts for intended flight are selected and prepared

1.2 Applicable information is obtained, analysed and applied to produce a flight plan that details tracks, distances, times and fuel requirements to reach a destination

1.3 Pre-flight planning is used to minimise in-flight navigational work load

1.4 Applicable VFR are applied to current and forecast operating conditions to determine whether planned flight can proceed

1.5 Hazards to navigation are marked on charts as required |
| 2 Comply with airspace procedures | 2.1 Applicable flight airspace restrictions and dimensions are identified

2.2 Air traffic clearances are obtained and compliance with them is maintained

2.3 Traffic, terrain and airspace separation criteria is maintained in accordance with VFR |
| 3 Conduct departure procedures | 3.1 Pre-flight planning and cockpit organisation is conducted to ensure charts, documentation and navigational equipment are accessible from the control seat

3.2 Departure administration and communication is conducted

3.3 Track is intercepted within five nautical miles of airfield and departure time is recorded or alternative procedures are applied as required

3.4 Orientation is always maintained

3.5 Priority is given to controlling aircraft before conducting navigation administration or communication

3.6 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility and terrain

3.7 Local and published noise abatement requirements and |

- curfews are observed
- 4 Navigate aircraft en route**
- 4.1 Planned route is maintained in accordance with VFR
 - 4.2 In-flight documentation and communication is completed
 - 4.3 Waypoint and/or destination estimated time of arrival (ETA) are checked and revised as required
 - 4.4 Search and rescue times (SARTIME) awareness is maintained and revised based on destination ETA calculations
 - 4.5 Fuel consumption is monitored and reserves are revised
 - 4.6 Pre-descent or navigation turning point checks are executed
 - 4.7 Appropriate techniques to obtain a positive navigation fix at suitable intervals are used
 - 4.8 Route, en route terrain, en route and destination weather awareness is maintained, and appropriate courses of action are implemented in accordance with changing weather conditions
 - 4.9 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility and terrain
 - 4.10 Aircraft is configured as required for turbulent, holding and maximum aircraft range, based on environmental and operational conditions
 - 4.11 Aircraft systems, fuel and engine warnings, cautions and indicators are monitored to ensure aircraft is operated to achieve flight plan objectives
- 5 Navigate at low level and in reduced visibility**
- 5.1 Compliance with VFR is maintained during navigation at low level or in reduced visibility
 - 5.2 Pre-descent and/or navigation turning point checks are executed in accordance with regulatory requirements
 - 5.3 Planned route is maintained in accordance with regulatory requirements and procedures
 - 5.4 In-flight documentation is completed
 - 5.5 Waypoint and/or destination ETA are checked and revised as required

- 5.6 Aircraft is operated and configured to maintain minimum height above ground level (AGL) and terrain separation and remaining within visual meteorological conditions (VMC)
- 5.7 Route, en route terrain, en route and destination weather awareness is maintained, and appropriate courses of action are implemented in accordance with changing weather conditions
- 5.8 Lookout is maintained using a systematic scan technique at a rate determined by traffic density, visibility and terrain
- 5.9 Hazards and threats to low flying navigation are identified and risk controls are implemented
- 5.10 Effects of wind velocity, false horizons, rising ground, adverse environmental conditions, and mountainous terrain are managed, and contingency actions are planned as required
- 5.11 Aircraft is configured as required for reduced visibility and low cloud base environmental and operational conditions
- 5.12 Situational awareness is maintained at all times
- 6 Perform lost procedure**
 - 6.1 Positional uncertainty is identified and recognised
 - 6.2 Position is fixed and new track to destination attainable within limits of fuel and daylight is determined using recognised methods
 - 6.3 Track to destination is re-established or replanned with consideration of fuel usage and reserves
 - 6.4 Waypoint and/or destination ETA are checked and revised as required
 - 6.5 Radio, navigation aids, transponder and air traffic control (ATC) services are used for assistance
 - 6.6 A timely precautionary search and landing is planned for possible circumstances of being lost or having no fuel or no light
- 7 Perform diversion procedure**
 - 7.1 Requirement to perform diversion procedure is identified and a timely decision is made
 - 7.2 Alternate acceptable aerodrome/destination is identified

- 7.3 New route is determined and established
- 7.4 Waypoint and/or destination ETA are checked and revised as required
- 7.5 Flight plan is revised considering operational information, weather, terrain, airspace and fuel available
- 7.6 Air traffic service is advised of action where possible and compliance with airspace procedures is maintained
- 7.7 SARTIME awareness is maintained and revised based on diversion destination ETA calculations and is cancelled on arrival
- 8 Use instrument navigation systems**
 - 8.1 Navigation systems are initialised and system validity checks are conducted as required
 - 8.2 Receiver autonomous integrity monitoring (RAIM) checks are conducted as required
 - 8.3 Navigation aids and systems are utilised to confirm position, track and navigation information
 - 8.4 Flight plan is selected, loaded, checked and activated in aircraft navigation system
 - 8.5 Navigation systems are operated in accordance with operating instructions and procedures
 - 8.6 ATC radar is used for position information and tracking assistance as required
 - 8.7 Waypoints and position fixes are confirmed using instrument navigation systems
 - 8.8 Integrity of navigation aid/systems information is monitored and maintained
- 9 Execute arrival procedures**
 - 9.1 Arrival aerodrome, meteorological conditions and local traffic information is obtained and applied to arrival procedure plan
 - 9.2 Radio communications are established and maintained
 - 9.3 Aerodrome landing direction and arrival procedure suitability are determined
 - 9.4 Descent point is calculated

- 9.5 Arrival and circuit procedures are conducted at destination aerodrome
- 9.6 Lookout is maintained during arrival procedure using a systematic scan technique at a rate determined by traffic density, visibility and terrain
- 9.7 Aerodrome markings, lights, signals and indicators are interpreted, applied and adhered to
- 9.8 Local and published noise abatement requirements and curfews are observed
- 9.9 SARTIME awareness is maintained and revised based on diversion destination ETA calculations and cancelled upon arrival

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

This unit replaces and is equivalent to AVIH4001B Navigate aircraft – VFR.

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 AVIH4001 Navigate aircraft under visual flight rules

Modification History

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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, performance criteria on at least one occasion and include:

- adapting to differences in equipment and operating environment in accordance with standard operating procedures
- adjusting aircraft performance to achieve desired timings
- applying air safety practices and regulations
- applying precautions and required action to minimise, control or eliminate identified hazards
- applying relevant aeronautical knowledge
- applying relevant legislation and workplace procedures
- calculating distance and rate of closure rates to/from ground features
- calculating fuel endurance
- carrying out dead reckoning (DR) navigation techniques
- communicating effectively with others
- completing relevant documentation
- determining dead reckoned position
- fixing aircraft position
- identifying and correctly using relevant equipment
- implementing contingency plans
- implementing work health and safety (WHS)/occupational health and safety (OHS) procedures and relevant regulations
- maintaining compliance with regulatory requirements
- maintaining construction, communication and execution of a traffic deconfliction plan
- maintaining navigation logs
- 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
- operating electronic communications equipment to required protocol
- performing diversion procedure
- planning applicable altitudes/flight levels and tracking tolerances to avoid controlled airspace
- prioritising work load and flight navigation tasks
- reading, interpreting and following relevant regulations, instructions, procedures, information

and signs

- recognising significant variances from forecast meteorological conditions and taking appropriate actions, including issuing an air report (AIREP)
- reporting and/or rectifying problems, faults or malfunctions promptly, in accordance workplace procedures
- selecting and using appropriate navigational instrument systems and aids
- selecting and using required personal protective equipment conforming to industry and work health and safety (WHS)/occupational health and safety (OHS) standards
- sourcing and interpreting aviation weather forecast products and services appropriate to flight planning and navigation procedures
- working systematically with required attention to detail without injuring 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, performance criteria and include knowledge of:

- air navigation techniques
- aircraft fuel usage rates
- allowances for changed visual aspects of ground features at low level
- arrival procedures within visual meteorological conditions (VMC)
- basic global navigation satellite system (GNSS) principles:
 - characteristics of different chart types
 - aeronautical information publication (AIP) visual charts
 - chart symbology
 - topographic details
 - scale representation
 - tracks, distances and rhumb lines
 - plotting positions:
 - latitude and longitude
 - bearing and distance
 - map projections
- chart reading techniques
- circuit and circuit joining procedures
- computations and conversions:
 - ground speed, distance, fuel usage
 - airspeed, air temperature and height
 - determine wind speed and velocity
 - rates/gradients of climb and descent
 - top of climb (TOPC) and top of descent (TOPD) calculations
- controlled airspace requirements
- critical point and point of no return
- DR navigation techniques
- departure procedures within VMC
- diversion considerations and procedures
- en route GNSS navigation principles
- en route navigation techniques
- factors affecting en route performance, range and endurance
- featureless terrain and extended over-water flight navigation techniques
- flight planning requirements
- identification by shape, dimensions, contrast and colour, and uniqueness of ground features
- identification of control area (CTA), control zone (CTR), prohibited, restricted and danger areas
- in an Australian Defence Force (ADF) context, relevant Defence Orders and Instructions
- limitations of navigation aids/systems
- low level and reduced visibility navigation techniques
- maximum payload and minimum fuel operations
- pilot navigation principles:

- map to ground
- ground to map
- position lines
- ground feature selection
- chart selection and preparation
- track made good (TMG)
- track drift
- estimated time of arrival (ETA) calculation methods
- potential impacts of specific weather phenomena on aviation operations
- principles of operation of navigation aids and systems
- procedures for requesting clearances from and into controlled airspace
- radio navigation aids:
 - identification by frequency information
 - extracting aid information from publications
 - aggregating errors and scalloping
 - establishing position lines
 - station homing and station passage
 - establishing position fixes
- relevant WHS/OHS and environmental procedures and regulations
- relevant sections of Civil Aviation Safety Regulations (CASRs) and Civil Aviation Orders related to visual flight rule navigation
- time definitions and application to air navigation:
 - local mean time
 - coordinated universal time (UTC)
 - local (standard) time
 - local summer time
 - zone conversion
 - daylight time calculations
- traffic rules and procedures
- 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.

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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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