Australian Government

AVIY5038A Perform global positioning system (GPS)/non-precision approach (NPA)

Revision Number: 1

INDUSTRY SKILLS COUNCILS
Creating Australia's Future

AVIY5038A Perform global positioning system (GPS)/non-precision approach (NPA)

Modification History

Not applicable.

Unit Descriptor

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This unit involves the skills and knowledge required to conduct a GPS/NPA instrument approach from route Lowest Safe Altitude (LSALT). This includes entering the GPS/NPA approach procedure in compliance with any altitude restrictions; tracking via the specified approach Way-point (WPT), descending in accordance with specified altitude limitations to a straight in or circling Minimum Descent Altitude (MDA), and performing a straight-in or circling approach or conducting a published missed approach if visual reference is not established by the Missed Approach Point (MAPt), using the GPS. Licensing, legislative, regulatory or certification requirements are applicable to this unit.

Application of the Unit

Application of the Unit

Work must be carried out in compliance with the relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA); relevant airspace control requirements and Instrument Flight Rules (IFR); and aircraft control principles, regulations, safety codes, protocols and procedures required to perform global positioning system (GPS)/non-precision approach (NPA) as part of commercial aircraft activities.

Use for ADF Aviation is to be in accordance with relevant Defence Orders and Instructions and applicable CASA compliance.

Operations are conducted across a variety of operational contexts within the Australian aviation industry.

Work is performed under limited supervision.

This unit of competency is packaged at AQF V.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

Employability Skills	This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the required performance needed to demonstrate achievement of the element. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Select approach and determine applicable minima	1.1 The current Instrument Approach and Landing (IAL) chart for the GPS/NPA approach to be flown is selected 1.2 The entry to and conduct of the instrument approach and missed approach procedure is reviewed and briefed 1.3 The currency of the GPS receiver database is confirmed 1.4 The applicable meteorological minima of the approach for the aircraft performance category is determined 1.5 Fuel availability and holding or diversion action if visual reference is not established is reviewed and briefed
2 Select, retrieve and activate approach from database	2.1 GPS approach for the appropriate runway from the GPS receiver navigation database is selected 2.2 Initial approach fix to be used to transition of the approach procedure is selected 2.3 Aerodrome altimeter subscale setting to obtain elevation or altitude (QNH) in the GPS receiver is entered, and approach is activated 2.4 Confidence check of tracks and distances between the approach Way-point (WPT) as calculated by the GPS receiver is performed 2.5 Course Deviation Indictors (CDI) are checked and selected to GPS as applicable
3 Monitor GPS signal integrity	3.1 Receiver autonomous integrity monitoring (RAIM) is checked for availability on the approach 3.2 RAIM indications are monitored throughout the approach
4 Conduct initial approach	4.1 Altimeter is set to appropriate QNH 4.2 Track to the initial approach WPT is maintained at or above route MSA or LSALT
5 Conduct holding pattern	5.1 Automatic sequencing of the GPS is suspended 5.2 Published holding pattern is conducted at the appropriate initial approach WPT using the prescribed sector entry procedure 5.3 Automatic sequencing is resumed to continue the approach
6 Conduct approach procedure	6.1 GPS/NPA instrument approach is conducted while descending on the specified track to each approach WPT 6.2 Approach altitude restrictions are complied with 6.3 GPS receiver transitions to approach mode is confirmed no later than the Final Approach Point (FAP), WPT or discontinue approach 6.4 Secondary navigation aid is utilised to maintain situational awareness

ELEMENT	PERFORMANCE CRITERIA
	6.5 Descent to not below the MDA while tracking to the missed approach point is conducted within tolerances
	6.6 Landing runway is identified
	6.7 Runway or circling approach for a landing is conducted after visual reference is established
7 Conduct missed approach procedure	7.1 Conditions requiring a missed approach are recognised and missed approach is initiated
	7.2 Published missed approach procedure is executed if visual reference is not established before reaching the MAPt or RAIM
	7.3 A missed approached is conducted on any other event specified in AIP or GPS operations manual
	7.4 Aircraft is manoeuvred to Missed Approach Point (MAPt)
	7.5 Missed approach mode is selected
	7.6 Missed approach procedure is conducted in accordance with the IAL chart
	7.7 GPS receiver is configured to conduct another approach or to hold or divert as required
	7.8 Obstacle clearance in IMC/simulated IMC is maintained

Required Skills and Knowledge

REQUIRED KNOWLEDGE AND SKILLS

This describes the essential knowledge and skills and their level required for this unit.

Required knowledge:

- Explain GPS/NPA instrument approach procedure chart
- GPS system fundamentals and principles of operations
- Requirements applicable to pilots and equipment for GPS operations
- Cause and magnitude of typical GPS errors
- Human factors limitations associated with the use of GPS equipment
- Operating procedures which provide safeguards against GPS navigational errors
- GNSS operating procedures for navigation tasks
- GNSS operational and serviceability checks
- GPS warnings and messages
- Tracking tolerances, automatic Way-point sequencing, CDI sensitivity and RAIM availability parameters for entry, RAIM availability and approach segments
- Mode of operation required during each segment of a GPS/NPA
- Conditions required to transition to and operate in that mode of operation for the GPS/NPA, and the associated CDI sensitivity and RAIM protection provided
- Parameters applicable to RAIM warnings in the en route, terminal and approach modes
- Effects of availability or otherwise of baro-aiding on RAIM availability and prediction
- Effects of satellite unserviceability on the reliability of each type of prediction
- Effect of each type of RAIM prediction on operational requirements
- Prediction limitations that apply to availability of approach RAIM at the destination or alternate aerodrome
- Operational requirements which apply to planning a flight on the basis of conducting a RNAV (GNSS) procedure at the destination
- Factors that adversely affect the conduct of a GPS/NPA ,and suitable pilot procedures to minimise such effects
- Operating procedures for GNSS equipment which reduce or eliminate errors
- Operating electronic communications equipment
- Requirements for completing relevant documentation
- Code of practice for working collaboratively with others
- Steps involved in planning the work activities
- Procedures for adjusting controls to optimise the operation of the equipment
- Procedures to be followed in the event of an emergency
- Relevant sections of national and state or territory regulatory requirements and codes of practice

REQUIRED KNOWLEDGE AND SKILLS

- Relevant OH&S and environmental procedures and regulations
- Procedures for managing and controlling hazardous situations when carrying out work activities
- Sources of information on differences in equipment and related standard operating and servicing procedures

Required skills:

- Interpret GPS/NPA instrument approach procedure chart
- Determine GPS/NPA approach procedure applicable minima for aircraft
- Determine conditions permitting descent below minima
- Perform systematic scan techniques
- Apply GNSS operating procedures to typical navigation tasks
- Predict RAIM availability at destination and ETA using aircraft GNSS receiver and, if available, an external RAIM prediction service
- Predict availability of approach RAIM at the destination or alternate aerodrome
- Communicate effectively with others when performing a GPS/NPA
- Read and interpret instructions, regulations, procedures and other information relevant to a GPS/NPA
- Interpret and follow operational instructions and prioritise work
- Complete documentation related to a GPS/NPA
- Operate electronic communication equipment to required protocol
- Work collaboratively with others when performing a GPS/NPA
- Adapt appropriately to cultural differences in the workplace, including modes of behaviour and interactions with others
- Promptly report and/or rectify any identified problems that may occur when performing a GPS/NPA in accordance with regulatory requirements and workplace procedures
- Implement contingency plans for unexpected events that may arise when performing a GPS/NPA
- Apply precautions and required action to minimise, control or eliminate hazards that may exist during a GPS/NPA
- Monitor and anticipate operational problems and hazards and take appropriate action
- Monitor work activities in terms of planned schedule
- Modify activities dependent on differing workplace contingencies, situations and environments
- Work systematically with required attention to detail without injury to self others, or damage to goods or equipment
- Adapt to differences in equipment and operating environment in accordance with standard operating procedures
- Select and use required personal protective clothing and equipment conforming to industry and

REQUIRED KNOWLEDGE AND SKILLS

OH&S standards

- Implement OH&S procedures and relevant regulations
- Identify and correctly use equipment required to perform a GPS/NPA

Evidence Guide

EVIDENCE GUIDE

The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills, the range statement and the assessment guidelines for this Training Package.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	• The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements and performance criteria of this unit and include demonstration of applying: • the underpinning knowledge and skills • relevant legislation and workplace procedures • other relevant aspects of the range statement
Context of and specific resources for assessment	• Performance is demonstrated consistently over a period of time and in a suitable range of contexts • Resources for assessment include: • a range of relevant exercises, case studies and/or other simulated practical and knowledge assessment, and/or • access to an appropriate range of relevant operational situations in the workplace • In both real and simulated environments, access is required to: • relevant and appropriate materials and equipment, and • applicable documentation including workplace procedures, regulations, codes of practice and operation manuals
Method of assessment	• Assessment of this unit must be undertaken by a registered training organisation • As a minimum, assessment of knowledge must be conducted through appropriate written/oral tests • Practical assessment must occur: • through activities in an appropriately simulated environment at the registered training organisation, and/or • in an appropriate range of situations in the workplace

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance.

Tasks may be undertaken in:	• IMC • VMC with simulated IMC conditions
Performance may be demonstrated in:	• single engine aircraft • multi engine aircraft • synthetic training device approved by the relevant authority • variable air traffic conditions • variable weather conditions • variable flight situations • abnormal situations • classes of airspace as designated by the Civil Aviation Safety Authority
Aircraft may include:	• fixed wing • helicopter • commercial balloons • other commercial or military aircraft
Crew may include:	• single pilot • multi crew
Instruments may be:	• fitted flight instruments suitable for instrument flight • head up display suitable for instrument flight
Limitations may be imposed by:	• local noise abatement requirements and curfews • airspace endorsements
Classes of airspace may be:	• as designated by the regulator • restricted and danger areas • military control zones • Air Defence Identification Zones
Navigation aids may include:	• ADF (Automatic Direction Finder) • VOR (VHF Omni-directional Radio Range) • DME (Distance Measuring Equipment) • RADAR • GPS (Global Positioning System) • FMS (Flight Management Systems) • Moving Map Displays • TACAN • INS

RANGE STATEMENT

Conditions may include:	• a method of simulating IMC • simulated icing conditions • moderate turbulence • simulated hazardous weather • Autopilot/Flight Director • FMS/ other NAV system • simulation of emergency and abnormal procedures
Dependent on the type of organisation concerned and the local terminology used, workplace procedures may include:	• company procedures • enterprise procedures • organisational procedures • established procedures • standard operating procedures
Information/documents may include:	• relevant sections of Civil Aviation Safety Regulations and Civil Aviation Orders • in Defence context, relevant Defence Orders and Instructions • Flight Manual/Pilot's Operating Handbook (POH) • Manual of Standards - Pilot Licensing (MOS-PL) • Aeronautical Information Publication (AIP) • En Route Supplement Australia (ERSA) • charts • operations manuals • approved checklists • workplace procedures and instructions and job specification • induction and training materials • conditions of service, legislation and industrial agreements including workplace agreements and awards
Applicable regulations and legislation may include:	• relevant Civil Aviation Safety Regulations and Civil Aviation Orders • in Defence context, relevant Defence Orders and Instructions • relevant state/territory OH&S legislation • relevant state/territory environmental protection legislation • relevant Australian Standards
Performance includes tolerances specified in either of:	• relevant licence and aircraft rating requirements of the Civil Aviation Safety Authority (CASA) such as: • Manual of Standards • relevant Defence documentation such as: • Defence Orders and Instructions • approved curricula and training documentation

Unit Sector(s)

Not applicable.

Competency field

Competency Field Y - Aircraft Operation and Traffic Management