29 Aerial Application Rating

The aim of this flight test is for the applicant to demonstrate competency in the knowledge, skills and attitudes as required in Schedule 5 of the Part 61 MOS for the grant of the aerial application rating (AA).

29.1 Examiner requirements

The following examiner requirements are applicable to the conduct of the AA flight test:

1. The examiner must conduct the AA flight test in accordance with clauses 1 to 3 of Schedule 5 of the Part 61 MOS.
2. The examiner must conduct the AA flight test within the operational scope and conditions described in clause 4 of Schedule 5 of the Part 61 MOS.
3. The examiner must ensure that the ground component of the flight test is successfully completed before conducting the pre-flight briefing and flight component of the flight test.
4. The examiner must not introduce simultaneous, multiple and unrelated simulated emergencies or abnormal events during the flight. Emergencies and abnormal situations relating to aircraft systems, powerplants and the airframe must be limited to those described in the AFM.
5. After a simulated failure, the examiner must ensure the aircraft is reconfigured to a normal operating mode before another simulated failure may be introduced, except where the simulated failures are linked. The safety of the aircraft should never be in doubt when simulating emergencies or failures.
6. Where credits are available for flight test items, they are valid for 28 days only. After 28 days, the flight test must be conducted in full.

29.2 Plan

29.2.1 Testing methodology

The examiner should apply the flight test methodology described in FEH chapter 3, Adult education and competency-based assessment and FEH chapter 4, Assessment of human factors and non-technical skills.

The flight test should be designed such that all required components can be assessed in a logical sequence. Where one or more mandatory units or elements are unable to be assessed for any reason, the flight test cannot be completed.

The examiner must ensure the applicant is given adequate notice of the intended task to allow for unhurried preparation and planning (simulating a commercial operation). The applicant should be given the test scenario at least 24 hours before the start of the flight test.

It is recommended that the examiner plans an **airborne** time of approximately:

- 1.5 hours for the general handling and test specific manoeuvres.

Use of IFR procedures

If IFR procedures are used for a positioning flight, this part of the flight should not form part of the flight test or be taken into account in the flight test flight time. A landing should terminate the IFR flight segment before commencing the AA assessment flight sequences.

The AA flight test should be concluded by a landing in VFR conditions before commencing the IFR return positioning flight.

Only the flight time associated with the AA flight test should be considered as the flight time for the flight test.

29.2.2 AA assessment scope and conditions

The AA flight test must be conducted in VMC, under the VFR and in an aircraft, in accordance with subregulation 61.1115(2) of CASR.

The aircraft used for the AA flight test must be of the appropriate category and be capable of being operated for the kind of operations relevant to the aerial application endorsements covered by the flight test.

The activities and manoeuvres, listed in FEH 29.4.3table 40, mirror the AA test form and FTM items. They are a paraphrase of the Part 61 MOS Schedule 5 for the AA flight test.

These activities and manoeuvres, described in clause 3 of Schedule 5 of the Part 61 MOS and the AA test form, must be assessed against a representative sample of the performance criteria applicable to the Element being assessed, taking into account the relevant competency standards prescribed in Schedule 2 of the MOS.

AA flight tolerances and ground reference tolerances are specified in Tables 2 and 4 of Schedule 8 of the MOS. Sustained deviation outside the applicable flight tolerance is not permitted.

The AA applicant should demonstrate that control of the aircraft or procedure is maintained at all times, that the successful and safe outcome of any manoeuvre is not in doubt and that any corrective action is taken promptly.

For aeroplanes a simulated engine failure in low-level operations must not be initiated below a height of 200 ft AGL.

For single engine helicopters only, a simulated engine failure in low-level operations must not be initiated below a height of 150 ft AGL and not below Vy speed. (Not applicable to hover or taxi simulated engine failures).

Recoveries from unusual attitudes must be conducted by day in VMC.

For the above procedure, the concept is that IMC is simulated, and the examiner has a clear view of the horizon.

29.3 Conduct (ground component)

29.3.1 Initial brief to applicant

In accordance with FEH chapter 3, Adult education and competency-based assessment; the examiner must begin the flight test with a brief to the applicant on the following items:

- flight test context, purpose and content
- assessment procedure
- function of the examiner
- standards against which competency will be assessed
- actions in the event of a failure assessment.

The applicant should be encouraged to ask for clarification should they become uncertain on any of the flight test elements.

29.3.2 Document review

The examiner must confirm that an applicant for the AA satisfies the eligibility requirements to undertake the flight test for the grant of the aerial application rating. To achieve this, the CASR subregulation 61.235(4) certification, training records, logbook, licence and medical certificate must be checked. Ideally, these documents should be presented to the examiner prior to the commencement of the flight test.

Licence – the applicant for the AA must hold a CPL or ATPL (or be applying for the licence simultaneously with the AA) of the same category as the aircraft in which the flight test is conducted.

Aeronautical knowledge examinations – the examiner must review the applicant's theory examination pass records.

Knowledge deficiency report (KDR) – the examiner must ascertain whether the training provider has completed the KDR requirements. It is strongly recommended that the KDR assessment be conducted by an instructor before the flight test.

If the KDR has not been completed, the examiner must complete this before the flight component. Where the examiner conducts the KDR assessment, this should be on the first day of flight test.

Flight training requirements – the examiner must review the applicant's pilot training records to ensure that the training requirements have been met. Normal evidence should at least be a course completion certificate.

Aeronautical experience – the examiner must review the applicant's pilot logbook to ensure that the minimum aeronautical experience requirements have been met.

English language proficiency – N/A.

Eligibility certification – the examiner must ensure that an appropriate person of the training provider has certified in writing that the applicant is eligible to take the flight test.

Medical certificate – the examiner must check that the applicant holds a medical certificate or a medical exemption allowing them to exercise the privileges of the licence and rating. (Refer to FEH 2.9 table 1 for a summary of medical requirements.)

Security check and fit and proper person requirements – N/A.

If the flight test is a retest following a failed assessment – the examiner must review the applicant's training records for evidence that appropriate remedial training has been successfully carried out with the applicant.

29.3.3 Assessment of knowledge requirements

Questions for the oral knowledge assessment must be in accordance with the knowledge requirements topics listed in clause 2 of Schedule 5 of the Part 61 MOS.

The examiner should use a developed set of scenario-based questions for the listed topics to achieve effective assessment of the applicant's working knowledge and reasoning ability. It should be a structured conversation to a logical conclusion, starting broad and funnelling down, rather than simple factual recall. (Refer to FEH 3.2.5 to 3.2.7 for appropriate questioning techniques and methods of enquiry.)

It is recommended the examiner allows 45 to 60 minutes for the knowledge requirements.

29.3.4 Assessment of flight planning

As part of the flight test, the applicant must complete a:

- flight plan
- fuel plan
- flight notification
- weight and balance calculation
- take-off and landing distance/performance calculation.

When reviewing the applicant's flight preparation documents, the examiner must be satisfied that the applicant is able to validate the data on which the planning decisions and calculations have been made (including, forecast weather, NOTAMs, aircraft data, chart validity).

The examiner must ensure, through considered questioning, that the preparation is solely the work of the applicant and meets the knowledge standards as applicable.

29.4 Conduct (flight component)

29.4.1 Assessment of the applicant's performance

When assessing the competency standards for the activities and manoeuvres in this chapter and on the flight test form, the examiner should consider both the technique used to execute the activity or manoeuvre and that tolerances are maintained within required parameters.

The relevant performance criteria for each element frequently use the terms: technique, smoothness, accuracy, judgement, procedures, knowledge, and flight management.

The following explanations are provided to assist the examiner in assessing the flight component:

- **Technique** – is the method by which a task is performed. There may be more than one acceptable technique and the examiner should be mindful of this in their assessment. Technique should, however, always involve the application of smooth, coordinated and accurate control inputs. Adjusting power, attitude and trim should be in a timely and coordinated fashion whilst following correct procedures
- **Smoothness** – is the ability to skilfully make the appropriate rate of adjustment to power and attitude during a manoeuvre. The applicant should demonstrate smooth flying in all sequences
- **Accuracy** – is the ability to control height, airspeed, heading, balance and trim within the required MOS flight tolerances. Sustained errors outside the MOS flight tolerances in any of these aspects should result in a fail assessment
- **Judgement** – is applicable to all tasks but is of importance with respect to the effect of environmental conditions such as cloud, visibility, wind and turbulence. It may be that on some occasions the flight conditions are such that even though the applicant's technique is sound, the aircraft may deviate outside specified tolerances for short periods. In such cases the assessment of technique, smoothness, accuracy and judgment should be the determining factors
- **Procedures** – the applicant should demonstrate awareness and practical application of nominated standard operating procedures and checklist discipline throughout the flight test. In many circumstances, the adherence to SOP's may be the reason a committed error has been corrected in a timely manner
- **Knowledge** – during the flight test the applicant's underpinning knowledge may be further tested. For example, during the management of an aircraft system failure, it may become apparent that there is a lack of knowledge of that system
- **Flight management** – the applicant should demonstrate satisfactory proficiency in aircraft and flight management systems, situational awareness, threat and error management and decision-making during the flight.

Assessment should be based on the technique used by the applicant and not just the ability to perform the task within specified numerical tolerances.

Applicants should not be given a second opportunity to demonstrate a manoeuvre unless, in the opinion of the examiner, the circumstances causing failure of the first attempt were outside the control of the applicant in the test environment or the applicant recognised the error and self-managed corrective actions. This should be considered when the examiner is observing an error or errors which may have the potential to become safety critical, providing the applicant is demonstrating non-technical skills and threat and error management appropriately before the examiner is required to intervene.

29.4.2 Pre-flight briefing

In accordance with FEH chapter 3, Adult education and competency-based assessment; the examiner must brief the applicant on:

- the scenario applied to the test environment (e.g. aerial application commercial operation/simulation of observers)
- pilot in command, including traffic separation roles and responsibilities

- transfer of control
- flight tolerances and ground references
- simulating emergencies, methods and calls
- actual emergencies
- multiple flights and the assessment of competencies (if applicable).

The applicant should be encouraged to ask for clarification should they be uncertain about any of the briefed items.

29.4.3 Assessment of activities and manoeuvres

An examiner must comply with the requirements and take into account the recommendations described below when planning and conducting the **AA** flight test. Where there are no specific recommendations, 'NSR' is listed in the table against the unit or element.

Table 40. Assessment of activities and manoeuvres - AA

Phase of flight	Requirements	Recommendations
Pre-flight	(a) Plan an aerial application operation to ensure a safe outcome	NSR
	(b) Identify hazards and manage risks	NSR
	(c) Ensure aircraft performance capability	NSR
	(d) Consult and brief stakeholders	NSR
	(e) Perform pre-flight actions and procedures	NSR
Ground operations, take-off, departure and climb	(a) Complete all relevant checks and procedures	NSR
	(b) Plan, brief and conduct take-off and departure procedures	NSR
En route cruise	(a) Conduct appropriate checks and procedures before descending below 500ft AGL	NSR
Test specific activities and manoeuvres	(a)(i) At low level, perform straight flight, steep turns and procedure turns	NSR
	(a)(ii) Navigate at low level	NSR
	(a)(iii) At low level, manage wind effects, sloping terrain, false horizons and sun glare	NSR
	(a)(iv) At low level, demonstrate use of escape routes	NSR
	(a)(v) Recover from high energy and low energy unusual attitudes	NSR
	(a)(vi)(A) At low level, perform forced landing (SE only)	For single engine helicopters a simulated engine failure in low-level operations must not be initiated below a height of 150 ft AGL and not below Vy speed. **Note:** not applicable to hover or taxi simulated engine failures
	(a)(vi)(B) At low level, manage engine failure (ME only)	NSR
	(a)(vii) For application ops, fly to, assess, land and take-off from an operational airstrip or HLS	NSR
	(a)(viii) For application ops, fly between operational airstrip or HLS and application area	NSR

Phase of flight	Requirements	Recommendations
	(a)(ix) For application ops, conduct an aerial survey of a treatment area	NSR
	(a)(x) For application ops, conduct operations over and under power lines	NSR
	(a)(xi) For application ops, apply substances	NSR
	(a)(xii) For application ops, operate aircraft safely and effectively using GNSS swath guidance equipment	NSR
	(a)(xiii) For application ops, operate at low level in hilly terrain	NSR
	(a)(xiv) For application ops, jettison load	NSR
	(b)(i) For AA A, conduct steep, max rate and min radius turns	NSR
	(b)(ii) For AA A, recognise and avoid the stall and recover from a simulated low altitude stall	NSR
	(b)(iii) For AA A, recover from wing drop at the stall (SE only)	NSR
	(b)(iv) For AA A, conduct operations at a certified or registered aerodrome	NSR
	(b)(v) For AA A, manage abnormal and emergency situations during low-level operations	NSR
	(c)(i) For AA H, at low level conduct flight at various speeds and configurations	NSR
	(c)(ii) For AA H, at low level perform quick stop manoeuvres into wind and downwind	NSR
	(c)(iii) For AA H, manage helicopter risks during application operations	NSR
	(d)(i) For AA FIRE, apply human factors	NSR
	(d)(ii) For AA FIRE, conduct pre-flight actions	NSR
	(d)(iii) For AA FIRE, demonstrate understanding of fire agency procedures, fire traffic management and other aircraft separation requirements	NSR
	(d)(iv) For AA FIRE, perform planning and risk management	NSR
	(d)(v) For AA FIRE, fly to, assess, land and take-off from an operational airstrip or HLS or pick up point	NSR
	(d)(vi) For AA FIRE, fly between operational airstrip or HLS and drop zone	NSR
	(d)(vii) For AA FIRE, conduct an aerial survey of a fire area	NSR
	(d)(viii) For AA FIRE, apply substances	NSR
	(d)(ix) For AA FIRE, operate aircraft at maximum permissible weights for fire operations	NSR
	(d)(x) For AA FIRE, operate at low-level in hilly terrain	NSR
	(d)(xi) For AA FIRE, operate in high winds, high density altitude and high turbulence	NSR

Phase of flight	Requirements	Recommendations
	(d)(xii) For AA FIRE, conduct low-visibility operations	NSR
	(d)(xiii) For AA FIRE, manage abnormal or emergency situations during operations on a fire ground	NSR
	(d)(xiv) For AA FIRE, jettison load	NSR
	(e)(i) For AA FIRE H, replenish helicopter load with snorkel or bucket	NSR
	(e)(ii) For AA FIRE H, manage known helicopter risks during firefighting operations	NSR
	(f)(i) For AA NGT, complete aircraft and equipment serviceability check	NSR
	(f)(ii) For AA NGT, conduct a risk assessment	NSR
	(f)(iii) For AA NGT, conduct pre-flight actions	NSR
	(f)(iv) For AA NGT, determine whether an airstrip or HLS is suitable for night operations	NSR
	(f)(v) For AA NGT, take-off and land at night at an airstrip or HLS remote from ground lighting	NSR
	(f)(vi) For AA NGT, conduct safe transit from airstrip to treatment area	NSR
	(f)(vii) For AA NGT, operate work lights to illuminate treatment area	NSR
Descent and arrival	(a) Plan and conduct arrival and circuit joining procedures	NSR
Circuit, approach and landing	(a) Conduct low-level circuit, approach and landing (day only)	NSR
	(b) Perform after-landing actions and procedures	NSR
Shut down and post-flight	(a) Park, shut down, secure aircraft and complete post-flight administration	NSR
General requirements	(a) Maintain effective lookout	In most flight tests, the assessment of emergency and non-normal events will provide sufficient evidence of the NTS competencies. The examiner should provide, where possible, applicable operational environment scenarios to support these events. The examiner should request a copy of company SOPs to ensure familiarity with standard briefs, work-cycles and procedural techniques.
	(b) Maintain situational awareness	
	(c) Assess situations and make decisions	
	(d) Set priorities and manage tasks	
	(e) Maintain effective communications and interpersonal relationships	
	(f) Recognise and manage threats	
	(g) Recognise and manage errors	
	(h) Recognise and manage undesired aircraft state	
	(i) Use correct radio procedures	NSR
	(j) Manage relevant aircraft systems	NSR
	(k) Manage fuel system and monitor fuel plan and usage	NSR

29.4.4 Failure assessment

The failure to perform a manoeuvre or procedure may be broken into 2 levels depending on the safety implications during the flight test. Both levels result in a fail assessment.

Safety-critical items

The highest level, being safety critical, is where the control of the aircraft is such that the safe outcome of the manoeuvre or procedure is in doubt and the examiner has to take control (physically or by direction).

Examples of safety-critical failure items include, **but are not limited to**:

- failure to complete checklist items mandated by the AFM
- failure to correctly prepare the aircraft for flight
- failure to comply with ATC clearances and airspace requirements
- failure to operate the aircraft within the limitations of the AFM
- failure to maintain required flight visibility and cloud separation during a visual segment
- failure to maintain required terrain clearance
- failure to comply with minimum descent altitudes
- failure to maintain minimum traffic separation standards
- failure to comply with the hand-over/take-over technique (not applicable to single pilot authorisations)
- failure to safely and consistently apply the elements of NTS1 and NTS2.

If the error is safety critical and the examiner needs to take control or intervene, the flight test must be terminated immediately. Some credits may be given for test items already assessed that are not associated with or relevant to the safety-critical event.

Non safety-critical items

The second level is where the control of the aircraft is such that the safe outcome of the manoeuvre or procedure is certain, but the flight tolerances have been exceeded or the technique is unsatisfactory. Under these circumstances the flight test may be continued, and credits given for successfully completed test items.

The examiner has the discretion to enable the applicant to demonstrate NTS2 TEM to avoid the situation where the error becomes safety critical.

Credits are only valid for one retest.

29.5 Complete (post flight)

29.5.1 Debriefings

The examiner must debrief the applicant and the training provider as soon as practicable after the conclusion of the flight component.

In the event of a fail assessment, in addition to the verbal debriefing, the examiner should ensure sufficient detail is entered into the applicant's training records to allow the training provider to construct a remedial training program. CASR 61.385 implications should also be discussed with the applicant.

29.5.2 Flight test administration

At the conclusion of the flight test, the examiner must:

- within 14 days after the day of the test, complete the flight test report and provide a copy of the report to the applicant, training provider and CASA
- within 14 days after the day of the test, complete the flight test management system notification requirements.

All items on the test form must be marked to indicate the assessment, with either ✓ (pass), **X** (fail), **N** (not tested) or **TR** (training records).

Licence entries made by the examiner (if applicable) must be in accordance with the Flight Crew Licensing Manual.