Australasian Forensic Science Assessment Body

AFSAB FIREARMS CANDIDATE GUIDE

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PURPOSE

This document provides guidance for candidates preparing to undergo the AFSAB assessment in Firearms Examination. Details are provided regarding core and discipline competencies to be assessed, assessment structure and recommended resources.

BACKGROUND

AFSAB is committed to enhancing confidence in forensic science service delivery by certifying individuals to an agreed professional standard. The AFSAB assessment process is used to determine competency, focusing on demonstrable ability around eight core competencies. Each component of the assessment will examine the candidate's skills, knowledge, reasoning and abilities in tasks relevant to the operational requirements and practices, standards and contemporary issues relevant to the discipline. Core competencies that will be assessed are:

- Decision making
- Communication
- Critical thinking
- Problem solving
- Sequencing of examinations
- Technical knowledge
- Uncertainty
- Understanding limitations

These core competencies will be assessed in light of the discipline specific competencies, which represent the knowledge and skills required for a firearms expert to meet competency requirements to perform their day-to-day role. A focus will be placed on both underpinning knowledge and principles, as well as jurisdictional processes where applicable and appropriate.

ASSESSMENT STRUCTURE

The AFSAB Firearms assessment will consist of the following:

Assessment Component	Maximum Length	Format	Total Available Marks
Written	3 hours	30 x multiple choice 20 x short answer 2 x long answer	105
Practical	3 days	Bullet and Cartridge Case Comparisons	TBA
Oral	3 hours	Panel discussion based on 3 x casefiles submitted by the candidate	TBA

It is expected that candidates will sit each assessment in the order presented in the table above. Candidates must achieve at least at least 75% in the written and oral component and 100% in the practical component to pass, and must pass each component before progressing to the next assessment. Each component will be assessed by a panel of three (3) assessors – two (2) from the candidate's own jurisdiction and one (1) external to the jurisdiction. In the event a candidate fails a component, they may apply to re-sit that component, and do not have to re-sit previously passed components if all assessments are completed within a two-year period. For further information on unsuccessful certification attempts refer to the AFSAB Policy and Processes for Certification (http://www.anzpaa.org.au/forensic-science/resources/afsab).

DISCIPLINE SPECIFIC COMPETENCIES

Eight (8) discipline specific competencies will be assessed over the written, practical and oral assessments. The weighting of competencies across each assessment component is determined by how the knowledge or skills would be presented or used by the candidate when performing their day to day role. A breakdown of each discipline specific competency is provided below:

AMMUNITION

The examination and identification of ammunition, ammunition components and related materials, including (but not limited to) ammunition composition and manufacture.

COMPARISON AND IDENTIFICATION METHODOLOGY

Comparative microscopic examinations of ammunition and ammunition components including:

- Assessment of class and individual characteristics on fired bullets and fired cartridge cases
- Interpretation of the quality and quantity of matching and non-matching characteristics to form an opinion of identification, exclusion or inconclusive

INCIDENT SCENE AND EXHIBIT PROCESSING

Principles and techniques related to shooting scene investigation and reconstruction. This includes (but is not limited to) the following:

- Discharge residue production and transference
- Evidence handling procedures
- Distance estimation
- Shooting scene reconstruction to form an opinion on events.

SERIAL NUMBER RESTORATION

Knowledge of the restoration of obliterated alpha numeric markings on firearms, firearms components and related material, including consideration of limitations of techniques.

BALLISTICS

Theoretical principles of physics, as they relate to the discipline of firearms, in the context of interior and exterior ballistics, terminal ballistics and wound ballistics.

FIREARMS

Understanding of firearms, firearm modifications and firearms accessories.

LEGAL FRAMEWORK

Knowledge of the legal framework pertaining to a firearms examiner giving evidence in court, including both factual and opinion evidence.

CONTEMPORARY ISSUES

Knowledge and awareness of contemporary issues relating to the discipline of firearms, or which have an impact on forensic science as a whole.

Candidates are encouraged to read the recommended resources listed at the end of this document to aid in preparation for their AFSAB assessments.

WRITTEN ASSESSMENT

Core and discipline specific competencies will be assessed in a three (3) hour written assessment which will be supervised by one (1) of the candidate's internal assessors. Questions will be presented in three forms:

Multiple choice

Each multiple choice question will be worth 1 mark. They will be presented as a question followed by four possible answers (A, B, C or D). Unless otherwise stated, candidates should select a single response.

Short answer

Short answer questions will consist of a brief prompt that requires a written response varying in length from one sentence (minimum) to several sentences. Short answer questions will be clearly marked as being worth either 2 or 5 marks depending on the complexity of the question and answer.

Long answer

Long answer questions will consist of a complex prompt that requires a written response that can vary in length, but should be no longer than one (1) page. All long answer questions will be worth 10 marks.

Question Style	Marks Available	Discipline Specific Competencies
Multiple Choice	1 mark	Ammunition
		Comparison and Identification Methodology
		Incident Scene and Exhibit Processing
		Serial Number Restoration
		Ballistics
		Firearms
		Legal Framework
		Contemporary Issues
Short Answer	2 marks	Ammunition
		Comparison and Identification Methodology
		Incident Scene and Exhibit Processing
		Serial Number Restoration
		Ballistics
		Firearms
		Legal Framework
		Contemporary Issues
Short Answer	5 marks	Comparison and identification methodology
		Incident scene and exhibit processing
		Ballistics
		Firearms
Long Answer	10 marks	Comparison and identification methodology
		Incident scene and exhibit processing

PRACTICAL ASSESSMENT

The purpose of the practical phase is to examine a candidate's ability to assess, compare and interpret fired cartridge cases and bullets, in a range of tasks that represent those encountered in their day-to-day role. The practical assessment will be conducted over three (3) days and be supervised by one (1) of the candidate's internal assessors.

A new practical assessment is currently in development. Further information will be provided as it becomes available.

ORAL ASSESSMENT

The oral assessment will take the form of a panel discussion assessed by two (2) internal and one (1) external assessors. The oral assessment will be in the form of a review where the applicant will submit copies of three (3) finalised cases that are of a complex nature, covering work undertaken by them relating to scene attendance and event reconstruction, comparison microscopy and firearms/ballistics knowledge and ability. The cases must be submitted to the internal jurisdictional contact no less than two (2) weeks prior to the confirmed oral assessment date. The panel may assess the candidate on any aspect of all three (3) cases. The applicant should only submit the forensic examination component of the brief of evidence, and the assessment will be limited to this component only.

1. Collectively, the three (3) casefiles shall demonstrate experience in the following areas:

- Scene examination
- Distance estimation
- Serial number restoration
- Gunshot wound interpretation
- Firearms
- Fired component comparison

2. Each casefile shall include:

- If appropriate, a selection of photographs that best demonstrate the scene and evidence
- A copy of the examination notes
- Exhibit list
- Examination results
- Comparison results – written and photographic
- Clear justification for all conclusions reached
- Statement or technical report
- Verification/peer review details

3. The case does not need to be finalised in court, however all case examinations must be complete.

4. The candidate should be the lead examiner, or adopt the role of lead examiner, for any statement included in the three casefiles.

The oral assessment will be run over a maximum of three (3) hours, and will be marked by the three assessors (3) according to the following rubric:

Mark	Criteria
4	• Demonstrates advanced technical knowledge • Succinctly communicated all details • Displayed exceptional ability to critically analyse, interpret and evaluate • Comprehensive ability to apply established theories to the specifics of their discipline
3	• Demonstrates sound technical knowledge • Communicated key details • Displayed sound ability to critically analyse, interpret and evaluate • Adeptly applies established theories to the specifics of their discipline
2	• Demonstrates basic technical knowledge • Communicated some detail • Displayed some ability to critically analyse, interpret and evaluate • Some ability to apply established theories to the specifics of their discipline
1	• Demonstrates limited technical knowledge • Communicated limited detail • Displayed little ability to critically analyse, interpret and evaluate • Minimal ability to apply established theories to the specifics of their discipline

Candidates may be asked questions on any or all of the core discipline competencies, as they relate to the collective case file contents.

NOTIFICATION OF ASSESSMENT OUTCOME

All assessment will be reviewed by all three (3) assessors. Candidates will be provided with their assessment results and feedback within ten (10) business days of completing each assessment. A feedback mechanism is currently in development.

If a candidate does not agree with an assessment result or certification recommendation they are permitted to lodge an appeal or grievance in accordance with the AFSAB Certification Appeals and Grievance Process (contained with the *AFSAB Policy and Processes for Certification*).

RECOMMENDED RESOURCES

Candidates may find the following information useful to review prior to undergoing assessment. The material is focused on expanding a candidate's knowledge of legal factors and contemporary issues.

1. Code of conduct/ rules of expert evidence relevant to your jurisdiction
2. Forensic Science Regulator. 2015. Cognitive Bias Effects Relevant to Forensic Science Examinations. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/510147/217_FSR-G-217_Cognitive_bias_appendix.pdf. Sections 1, 2, 3 and 9 recommended as a minimum
3. President's Council of Advisors on Science and Technology. 2016. Forensic Science in Criminal Courts: Ensuring Scientific Validity of Feature-Comparison Methods. https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf. Sections 1, 4, and 5.5 recommended as a minimum.
4. Baldwin DP, Bajic SJ, Morris M, Zamzow D. 2016. A study of false-positive and false-negative error rates in cartridge cases comparisons. US Department of Justice NCJ 249874. https://www.ncjrs.gov/pdffiles1/nij/249874.pdf
5. Bolton-King R. 2016. Preventing miscarriages of justice: A review of forensic firearm identification. *Science and Justice* 56:129-142.
6. Kerkhoff W, Stoel RD, Mattijssen EJAT, Berger CEH, Didden FW, Kerstholt JH. 2018. A part-declared blind testing program in firearms examination. *Science and Justice* 58:258-263
7. Mattijssen EJAT, Kerkhoff W, Berger CEH, Dror IE, Stoel RD. 2016. Implementing context information management in forensic casework: Minimizing contextual bias in firearms examination. *Science and Justice* 56:113-122.