


Schedule of Accreditation

Issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 <p>20085</p> <p>Accredited to ISO/IEC 17025:2017</p>	<p>QinetiQ Ltd</p> <p>Issue No: 003 Issue date: 26 February 2026</p>	
	<p>MOD Pendine Llanmiloe Carmarthen SA33 4UA</p>	<p>Contact: Andrew Leahy Tel: +44 (0) 1994 452289 E-Mail: ajleahy@qinetiq.com</p>
<p>Testing performed at the above address only</p>		

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
<p>MORTARS UP TO 120MM SMALL ARMS UP TO 12.7MM CANNON AND SMOOTH BORE UP TO 40MM RECOIL-LESS WEAPONS PYROTECHNICS AMMUNITION FOR ABOVE FREE FLIGHT ROCKETS GUIDED WEAPONS WARHEADS</p>	<p><u>EXTERNAL BALLISTICS</u></p>	<p>DEF STAN 07-085 Part 4 Issue 2 DGM ISS Plans (various depending on calibre and nature), NATO Multi calibre MOPI-AEP -97 Edition A V1 2020</p> <p>NATO STANAGs/AOPs, NATO AEPs and In-House Procedures based on above specifications using the equipment listed</p>
	<p><u>ACCURACY</u></p> <p>Surveyed Lines (GPS) – 1 m to 7000 m Length and distance - 1mm to 50m</p> <p><u>VERTICAL PLANE</u></p> <p>Angular measurement - Quadrants (± 1 mil)</p>	
	<p><u>VELOCITIES</u></p> <p>Photoelectric Counter Chronometer (PCC) – up to 30 m base Dopler Radar (DR) – 50 ms⁻¹ to 2000 ms⁻¹ Velocity Analysing Systems (VAS)- 1 µs to 100µs (Resolution)</p> <p>High Speed Digital Video (HSDV): - Frame rates from 1000 fps to 150000 fps with an exposure of 300 nanoseconds Tapes – 300 mm to 30 m</p>	



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As listed on page 1	<p><u>EXTERNAL BALLISTICS</u> (cont'd)</p> <p><u>PROJECTILE STABILITY</u></p> <p>Pitch and Yaw (High Speed Video) - ($\pm 1^\circ$)</p> <p>-25 and 240 pps for 30 mins Yaw Cards - 1 mm to 200 mm</p>	
	<p><u>PENETRATION</u></p> <p>Up to 3m depth Measurement by calibrated instruments (e.g. rules, length bars, depth micrometres and Vernier callipers), manual measurements (e.g. rules and probes)</p>	
	<p><u>Video Duration</u></p> <p>Up to 180 mins @ 25 fps UP to 30 mins @ 240 fps</p>	
	<p><u>RICOCHET</u></p> <p>VAS-1 μs to 100 μs (Resolution) Witness Screens</p>	
	<p><u>BLAST OVERPRESSURES</u></p> <p>Piezo-Electric Pressure transducers up to 2 MPa other sensor types to 3.5 MPa</p>	



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As listed on page 1	<u>INTERNAL BALLISTICS</u> (cont'd) <u>PREMATURES</u> HSDV - (Acc. ± 1 Frame)	
	<u>RATE OF FIRE</u> ROF Recorders - Up to 10 000 rounds/min. HSDV: - (Acc. ± 1 Frame) @ 300 ns exposure	
	<u>RECOIL/VIBRATION</u> Accel - 0 to 250 g (linear) Load Cells - 0 to 160 kN HSDV: - (Acc. ± 1 Frame) @ 300 ns exposure LVDT - 2.5 mm to 12 mm	
	<u>FLASH</u> HSDV: - (Acc. ± 1 Frame) @ 300 ns exposure Standard video - 25 and 240fps	
	<u>WEAPON STABILITY ON FIRING</u> HSDV: - (Acc. ± 1 Frame) @ 300 ns exposure Standard video - 25 and 240 fps	



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<p>As listed on page 1</p>	<p><u>INTERNAL BALLISTICS</u> (cont'd)</p> <p><u>BLAST PRESSURE</u></p> <p>Piezoelectric Transducers -up to 100 MPa</p>	
	<p><u>PRESSURE & THRUST</u></p> <p>Pressure transducers - Piezo-up to 2 MPa Load cells - up to 200 kN</p>	
	<p><u>PROOF</u></p> <p>Proof of propellant samples Transducers-up to 750 MPa Copper crushers-up to 200 MPa Scales - 0.001 g to 32 kg</p>	
	<p><u>BULLET ATTACK</u></p> <p>Colour CCTV - 25 and 250 fps HSDV: - (Acc. ± 1 Frame) VAS-1 µs to 100 µs (Resolution) Transducers up to 750 MPa PCC – up to 30 m base</p>	



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TARGETS AMMUNITION PROPELLANTS EXPLOSIVE STORES PACKAGING FUEL TANKS ROCKET MOTORS FUZES AND SAFUS DECOY SYSTEMS	<p><u>PERFORMANCE</u></p> <p><u>PENETRATION AND EMPLACEMENT OF FRAGMENTS VELOCITY RETARDATION</u></p> <p>Flash X Ray - 0 to 450 kV VAS - 1 μs to 100 μs (Resolution) HSDV - (Acc. \pm 1 Frame) Linear - Up to 5000 mm Measuring Jigs Strawboard packs RHA Plate</p>	<p>DEF STAN 07-085 Part 4 Issue 2 DEF STAN 05-101 Part 1 Issue 1 DEF STAN 05-101 Part 2 Issue 1 DGM ISS Plans (various depending on calibre and nature) NATO Multi Calibre MOPI –AEP-97 Edition A V1 2020</p> <p>NATO STANAGs/AOPs, NATO AEP's and In-House Procedures using the equipment listed</p>
UK IN SERVICE MUNITIONS	<p><u>CREDIBLE ACCIDENT</u></p> <p>- Any incident or accident that could reasonably take place during the transport and storage of UK in service munitions</p>	<p>STANAG 4240 PPS (EDITION 2) – LIQUID FUEL / EXTERNAL FIRE, MUNITION TEST PROCEDURES</p> <p>STANAG 4382 PPS (EDITION 2) – SLOW HEATING, MUNITIONS TEST PROCEDURES</p>
	<p><u>FUEL FIRE</u></p> <p>Temperature vs time – K type thermocouple to 1200 °C 25 m/s per DAQ channel Blast - Piezo to 200 Kpa HSDV with audio capability Store response diary – Genesis from 15 ns res</p>	
	<p><u>SLOW COOK OFF</u></p> <p>Temperature vs time – K type thermocouple to 1200 °C</p> <p>Blast – Piezoelectric transducers to 2 MPa HSDV with audio capability Store response diary – Genesis from 15 ns res</p>	



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UK IN SERVICE MUNITIONS (cont'd)	<p><u>CREDIBLE ACCIDENT</u> (cont'd)</p> <p><u>BULLET ATTACK</u></p> <p>Bullet impact velocity – 1Mega/s/sec = 1µs res</p> <p>Genesis from 15ns res HSDV with audio capability Store response (blast pressure) – Piezoelectric transducers to 200 KPa Fragmentation or debris plot (GPS)</p>	STANAG 4241 (EDITION 2) BULLET IMPACT, MUNITION TEST PROCEDURES
	<p><u>FRAGMENT ATTACK</u></p> <p>Bullet impact velocity – 1Mega/s/sec = 1µs res</p> <p>Genesis from 15ns res Store response (blast pressure) – Piezoelectric transducers to 200 KPa Fragmentation or debris plot (GPS)</p>	STANAG 4496 (EDITION 1) FRAGMENT IMPACT, MUNITION TEST PROCEDURES
	<p><u>SYMPATHETIC REACTION</u></p> <p>Genesis from 15ns res HSDV / CCTV with audio capability Store response (blast pressure) – Piezoelectric transducers to 200 KPa Fragmentation or debris plot (GPS)</p>	STANAG 4396 PPS (EDITION 2) – SYMPATHETIC REACTION, MUNITION TEST PROCEDURES



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EXPLOSIVE WARHEADS. INCLUDING MORTARS, ROCKET WARHEADS, FREE FALL BOMBS, GUIDED MISSILE WARHEADS. GRENADES	<p>ARENA TRIALS - in order to establish ballistic characterisation of the warhead</p> <p>Fragmentation patterns (Theta zones) Fragment recovery to establish mass and material – 0.001g - 20 kg Fragmentation velocity – VAS 1µs - 100 µs res Penetration criteria including Strawboard Packs Rule and tapes</p> <p>Thermal output K-Type (our standard) between - 200°C and 1260°C</p>	<p>ITOP 4-2-813:1993</p> <p>In- House Procedures based on above specification using the equipment listed</p>
SHIPS STEELS	<p>PENETRATION RESISTANCE TO SMALL ARMS WEAPONS</p> <p>Plate specification and thickness – digital callipers ± 0.03 mm</p> <p>Plate temperature - 450 °C magnetic Thermocouple @ 0.1 °C res and DAQ</p> <p>Impact velocity of rounds (PCC) - 1 µs res</p>	<p>NATO AEP-88 Edition A Version 1</p> <p>In-House Procedures based on above specifications using the equipment listed</p>



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SHIPS STRUCTURES	<p><u>BLAST RESISTANCE OF SHIPS HATCHES. STRUCTURAL INTEGRITY OF GRP/STEEL PLATE BONDING; WHEN SUBJECTED TO BLAST LOADINGS.</u></p> <p>Visual repose of items under test using HSDV / CCTV</p> <p>Blast pressure - piezo electric to 600 MPa Piezo resistive to 1300 KPa</p> <p>Strain rates within the hatches, bonding surfaces – 1% of gauge Sensitivity</p>	<p>DES NAG-VR2 In-House Procedures and customer specifications based on the above authority</p>
<p>TARGETS AMMUNITION WARHEADS, MISSILES FUZES AND SAFUS RADOMES PENETRATORS EJECTOR SEATS ROCKET MOTORS ELECTRONIC COMPONENTS SUB-MUNITION EJECTORS ACCIDENT SIMULATION ETC.</p>	<p><u>DYNAMIC FIRINGS</u></p> <p><u>LONG TEST TRACK (LTT)</u> Dynamic firings against armour,</p> <p>concrete, structures, etc. Fuze functioning and discrimination</p> <p>LTT (1500 m): Velocity up to 1100 ms⁻¹ Acceleration calculated from first principles. CPMU (Coil Pulse Measuring Unit) HSDV</p>	<p>STANREC 4536 Edition 2 NATO STANAGs/AOPs, NATO AEPs and In-House Procedures based on above specifications using the equipment listed</p>
END		