

Attachment 1 to Appendix 4 to Annex B

C21 MULTI-CALIBRE SNIPER WEAPON SYSTEM

SAT PROCEDURES



Reference Number: W8476-196090

Date: 7 May 2019

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NOTICE

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1. PURPOSE

The purpose of this document is to detail the testing procedures that will be used during System Acceptance Testing (SAT) of the MCSW.

2. SAT PROCEDURES

2.1. Test 1: Inspection of Unique Canadian Requirements

2.1.1. Aim

The Technical Data Package (TDP) and the MCSW Systems will be subjected to visual inspections by Canada to confirm that they are compliant to the following requirements:

- a. Annex B SOW Requirements:
 - i. 5.2.1: Rifle and Barrels Serial Numbers;
 - ii. 5.2.3: Bolt Serial Number;
 - iii. 5.2.4: Rifle and Calibre Designation;
 - iv. 5.2.5: Proof Mark; and
 - v. 8.4.2: Confirmation Firing.
- b. Annex C Technical and Performance Specification Requirements:
 - i. 3.1.1.9: Rifle Colour;
 - ii. 3.3.3.8: Suppressor Colour; and
 - iii. 3.8.1: Markings (Suppressor).

2.1.2. Setup

- a. Canada will select three (3) MCSW Systems from the initial lot of 25 Systems to undergo Test 1.
- b. Canada will have a hard copy of the TDP, produced from a soft copy previously submitted with CDRL 005 (See Annex B, section 5.4).

2.1.3. Procedure

- a. Capture the Serial Numbers for all three MCSWs prior to the start of the Inspection.
- b. Canada will visually inspect the TDP and the three selected MCSW Systems to ensure that they meet the requirements listed under para. 1.1.1 of this Attachment.
- c. When inspecting the colour of components, a colour chip of Elite Coyote M17 Tan E-170 must be used.

2.1.4. Sentencing Criteria

The Technical Data Package (TDP) and the three MCSW Systems must be compliant to the requirements listed under para. 2.1.1.

2.2. **Test 2: Transit Case Inspection**

2.2.1. Aim

The Transit Case will be subjected to visual inspections by Canada to confirm that it is compliant to Requirements 3.2.1 to 3.2.12 of Annex C.

2.2.2. Setup

Canada will use the same three (3) MCSW Systems from Test 1 to undergo Test 2. The three MCSW systems will not be used for any other testing during SAT.

2.2.3. Procedure

Canada will visually inspect the three Transit Cases to confirm that they meet Requirements 3.2.1 to 3.2.12 of Annex C.

2.2.4. Sentencing Criteria

The three Transit Cases must be compliant to Requirements 3.2.1 to 3.2.12 of Annex C.

2.3. **Test 3: Ammunition Compatibility/Safety Inspection**

2.3.1. Aim

The Contractor must complete a safety inspection of the MCSW Systems in both calibres to confirm compliance to Requirement 3.1.1.2 of Annex C, and to verify that the MCSWs fire safely.

2.3.2. Setup

Canada will select 10 MCSW Systems from the remaining systems of the initial lot of 25 Systems to undergo the Safety Inspection.

2.3.3. Procedure

- a. Capture the Serial Numbers for all 10 MCSWs prior to the start of the Safety Inspection.
- b. All 10 MCSWs must be inspected and gauged by the Contractor to verify that they are safe to fire in both calibres using maintenance gauges provided by the Contractor.
- c. Following the safety inspection, each MCSW must fire 5 rounds of GM308M2 Cartridges for the 7.62 x 51mm configuration, and 5 rounds of GM338LM Cartridges for the .338LM configuration, to confirm safe operation in both configurations.

2.3.4. Sentencing Criteria

All 10 MCSWs must be found safe to fire in both calibre configurations.

2.4. **Test 4: Precision And Accuracy Demonstration**

2.4.1. Aim

2.4.2. Verify Compliance to Requirements 3.5.1.1, 3.5.1.2, 3.5.6.1, 3.5.6.2, 3.5.6.3 and 3.5.6.4 of Annex C.

2.4.3. Setup

- a. Canada will select one (1) MCSW System from the 10 that were previously Safety Inspected in Test 3 to undergo Test 4. The selected MCSW will not be used for any other testing during SAT.
- b. All precision and accuracy shooting must be conducted at a range of 100m provided by the Contractor.
- c. Paper or electronic targets must be used to measure precision.
- d. No precision shooting will occur at open ranges on days with sustained cross winds of 9.25 km/h or more.
- e. The PPS must only be fired when barrel temperature is below the manufacturer's maximum barrel temperature.

2.4.4. Procedure

- a. The MCSW must be hand fired from a bi-pod provided by the Contractor, by one or more marksmen that have been designated and provided by the Contractor.
- b. Start the firing sequence as detailed in Attachment 2 of Appendix 4.
- c. The MCSW must be zeroed with the Suppressor installed before the shooting.
- d. After zeroing, conduct a precision test by firing 5 x 5 groupings of GM308M2 cartridges with the suppressor attached;
 - i. The Contractor is permitted to fire one warming round prior to firing the first grouping.
 - ii. Prior to each grouping being fired, the Suppressor must be removed and re-attached.
 - iii. The shooter must maintain the same point of aim on the target for all shots.
- e. The Contractor may request to reshoot up to 2 of the 5 groupings, if there was an anomaly (flyer) in the groupings compared to the other groupings by that weapon. The shooter must then remove the 7.62 barrel and re-install it (without removing the suppressor from the barrel), and shoot a grouping of 5 rounds using GM308M2 cartridges.

- f. Repeat steps c. to e. in the .338 configuration using GM338LM cartridges as detailed in Attachment 2.

2.4.5. Results

- a. The Contractor must calculate the Mean Radius and the MPI for each group, under witness by Canada.
- b. Canada will verify and record all measurements using their own equipment for both precision and accuracy on the record sheet at Attachment 2 to Appendix 4.

2.4.6. Sentencing Criteria

- a. The Average Mean Radius for the 5 x 5 round groupings for each MCSW, in each calibre, must be less than or equal to 1.2cm, as calculated in Attachment 2 to Appendix 4.
- b. The MPI shift between groupings for the 5 x 5 groupings for each MCSW, in each calibre, must be less than or equal to 29.1mm, as calculated in Attachment 2 to Appendix 4.
- c. The MPI shift when the barrel is removed and re-attached for each MCSW, in each calibre, must be less than or equal to 29.1mm, as calculated in Attachment 2 to Appendix 4.

2.5. **Test 5: Interchangeability**

2.5.1. Aim

Verify Compliance to Requirement 3.6.1 of Annex C.

2.5.2. Setup

Canada will select seven (7) MCSW Systems from the 9 remaining systems that were Safety Inspected in Test 3 to undergo Test 5.

2.5.3. Procedure

- a. The MCSWs must be designated as MCSW (A), MCSW (B), ..., MCSW (G).
- b. Start with all seven MCSWs in the 7.62 x 51mm configuration.
- c. The MCSWs must be disassembled into the major subassemblies indicated below:

Subassembly Groups:

Group 1: Chassis (Stock);

Group 2: Bolt Assembly (w/Bolt Head);

- Group 3: Trigger Mechanism;
Group 4: Suppressor/Muzzle Brake;
Group 5: Magazine;
Group 6: Barrel; and
Group 7: Firing Pin Assembly.

- d. The MCSWs must be reassembled according to the weapon interchangeability schedule below:

		Interchanged Weapons						
		I	II	III	IV	V	VI	VII
Initial Weapons	A	1	2	3	4	5	6	7
	B	7	1	2	3	4	5	6
	C	6	7	1	2	3	4	5
	D	5	6	7	1	2	3	4
	E	4	5	6	7	1	2	3
	F	3	4	5	6	7	1	2
	G	2	3	4	5	6	7	1

- e. Interchanged MCSW I consists of Group 1 of weapon A, Group 7 of weapon B, Group 6 of weapon C, Group 5 of weapon D, Group 4 of weapon E, Group 3 of weapon F, Group 2 of weapon G.
- f. Load a full magazine and fire 5x GM308M2 cartridges in each interchanged MCSW to confirm operation.
- g. Change all the MCSWs into the .338LM configuration.
- h. Load a full magazine and fire 5x GM338LM cartridges in each interchanged MCSW to confirm operation.
- i. The Interchanged MCSWs must be returned to their original state (MCSW A, B, ... , G) at the conclusion of Test 5.

2.5.4. Sentencing Criteria

- a. Parts must be found to be interchangeable between the MCSWs within the same calibre group.
- b. The interchanged MCSWs must be serviceable and fire safely, in both calibre configurations.