

RESTRICTED

ENVIRONMENTAL TESTING OF SABO AMMUNITION IN MAGAZINES
(SA 80 PHASE C ORDNANCE BOARD TRIALS)

Report No. 270239

March 1986



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SECTION 1

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Report on

ENVIRONMENTAL TESTING OF SA80 AMMUNITION IN MAGAZINES (SA 80 PHASE C ORDNANCE BOARD TRIALS)

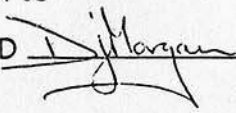
March 1986

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SECTION 1

Data Summary
on

ENVIRONMENTAL TESTING OF SA80 AMMUNITION IN MAGAZINES
(SA80 PHASE C ORDNANCE BOARD TRIALS)

PROJECT ENGINEER: D J ANSELL

Titchfield, Fareham, Hampshire, PO14 4QA

1.1	<u>STATUS</u>	
1.1.1	MANUFACTURING DESCRIPTION	SA80 5.56mm Ammunition in magazines
1.1.2	OBJECTIVE OF TEST	To assess the ability of the magazines and ammunition to withstand specified conditions of environmental stress.
1.1.3	MANUFACTURER)
1.1.4	MANUFACTURER'S TYPE OR MODEL NUMBER)) See Table 1 page 4
1.1.5	SERIAL NUMBER)
1.1.6	DRAWING NUMBER ISSUE DATE	Not advised - -
1.1.7	SPECIFICATION NUMBER ISSUE DATE	D/OB/51/1/15 - 31.7.85
1.1.8	PASL REGISTRATION NUMBER	005181
1.1.9	QUANTITY OF ITEMS TESTED	60 magazines each containing 30 rounds of ball/tracer ammunition
1.1.10	SECURITY CLASSIFICATION OF ITEMS	Restricted
1.1.11	INCOMING RELEASE DATE	Form S9 15.8.85
1.1.12	DISPOSAL REFERENCE DATE	Collected by Woolwich Arsenal Transport Packing Note 10492 24.2.86
1.1.13	ORDER NUMBER DATE	ROF2A/4059 7.8.85
1.1.14	START OF TEST	August 1985
	FINISH OF TEST	January 1986

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TABLE 1

Magazine Designation		Ammunition Manufacturer		Magazine Designation		Ammunition Manufacturer	
Box	Pouch Pocket Mag	Ball	Tracer	Box	Pouch Pocket Mag	Ball	Tracer
Magazine Manufacturer				Magazine Manufacturer			
P1-1-1-1	Radway Green	RG	FN	P2-1-1-1	Radway Green	RG	FN
P1-1-1-2	Radway Green	RG	FN	P2-1-1-2	Radway Green	RG	FN
P1-1-2-1	Radway Green	RG	FN	P2-1-2-1	Radway Green	RG	FN
P1-1-2-2	Radway Green	RG	FN	P2-1-2-2	Radway Green	RG	FN
P1-2-1-1	Radway Green	RG	RG	P2-2-1-1	Radway Green	RG	RG
P1-2-1-2	Radway Green	RG	RG	P2-2-1-2	Radway Green	RG	RG
P1-2-2-1	Radway Green	RG	RG	P2-2-2-1	Radway Green	RG	RG
P1-2-2-2	Radway Green	RG	RG	P2-2-2-2	Radway Green	RG	RG
P1-3-1-1	Radway Green	RG	FN	P2-3-1-1	Radway Green	RG	FN
P1-3-1-2	Radway Green	RG	FN	P2-3-1-2	Radway Green	RG	FN
P1-3-2-1	Radway Green	RG	FN	P2-3-2-1	Radway Green	RG	FN
P1-3-2-2	Radway Green	RG	FN	P2-3-2-2	Radway Green	RG	FN
P1-4-1-1	Radway Green	RG	RG	P2-4-1-1	Radway Green	RG	RG
P1-4-1-2	Radway Green	RG	RG	P2-4-1-2	Radway Green	RG	RG
P1-4-2-1	Colt	RG	RG	P2-4-2-1	Colt	RG	FN
P1-4-2-2	Colt	RG	RG	P2-4-2-2	Colt	RG	FN
P1-5-1-1	Colt	RG	RG	P2-5-1-1	Colt	RG	FN
P1-5-1-2	Colt	RG	FN	P2-5-1-2	Colt	RG	RG
P1-5-2-1	Colt	RG	FN	P2-5-2-1	Colt	RG	RG
P1-5-2-2	Colt	RG	FN	P2-5-2-2	Colt	RG	RG
P1-6-1-1	Thermold	RG	RG	P2-6-1-1	Thermold	RG	RG
P1-6-1-2	Thermold	RG	RG	P2-6-1-2	Thermold	RG	RG
P1-6-2-1	Thermold	RG	FN	P2-6-2-1	Thermold	RG	FN
P1-6-2-2	Thermold	RG	FN	P2-6-2-2	Thermold	RG	FN
P1-7-1-1	DME Translucent	RG	RG	P2-7-1-1	DME Opaque	RG	RG
P1-7-1-2	Thermold	RG	RG	P2-7-1-2	Thermold	RG	FN
P1-7-2-1	DME Translucent	RG	FN	P2-7-2-1	DME Translucent	RG	RG
P1-7-2-2	DME Translucent	RG	FN	P2-7-2-2	DME Translucent	RG	FN
P1-8-1-1	DME Opaque	RG	RG	P2-8-1-1	DME Opaque	RG	RG
P1-8-1-2	DME Opaque	RG	FN	P2-8-1-2	DME Opaque	RG	FN

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1.2 BRIEF SUMMARY OF RESULTS

<u>Trial</u>	<u>Result</u>
38 Humid/Hot Diurnal Cycling	DME Opaque magazines bell-mouthed. Stress frosting at mouths of some DME Translucent magazines.
39 Cold Diurnal Cycling	DME Opaque magazines - weak spring action.
40 Bump	DME Opaque magazines failed to retain ammunition content at high temperature, spring action frozen at low temperature.
41 1.5m Drop	Radway Green magazine - one base fractured at low temperature, other bases partially separated or separated. Colt magazine base plates distorted and separated. Thermold magazines cracked at mouths. DME Opaque magazine base sheared at low temperature. DME Translucent magazine base sheared at low temperature. All 3 DME Opaque magazines in the P2(Cold) stream withdrawn. 1 DME Translucent magazine in the P2(Cold) stream withdrawn. 1 Thermold magazine in the P2(Cold) stream withdrawn.
42 Salt Mist	Heavy tarnishing with corrosion/salt deposits to rounds in all magazines. Press stud fasteners on pouches corroded.
43 Sine Vibration	Cracks extended at mouths of Thermold magazines. Some DME Translucent magazines cracked at mouths. Several loose rounds from DME Opaque magazines.

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1.2 BRIEF SUMMARY OF RESULTS

<u>Trial</u>	<u>Result</u>
44 Random Vibration	Thermold magazines failed to retain ammunition at high temperature, one magazine released most of its ammunition at low temperature. DME Opaque magazines failed to retain ammunition. 4 Thermold and 2 DME Opaque magazines in the P1(Hot) stream withdrawn.
45 Bounce	1 DME Translucent magazine in the P1 (Hot) stream failed to retain its ammunition due to a chipped mouth and was withdrawn.
46 Low Temperature/ Low Pressure	No further deterioration observed
47 Free Fall (Parachute Drop)	Some Radway Green magazines tested at low temperature had erratic spring action.

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1.3 TEST OBSERVATIONS

1.3.1 General

Environmental testing of the SA80 Magazines was carried out in accordance with Annex A to Contract No. ROF2A/4059. These tests also form part of the SA80 Phase C Ordnance Board Trials, D/OB/51/1/15 dated 31st July, 1985 refers.

Visual Examinations of magazines and their ammunition contents were conducted after each test serial by representatives of DGDQA(PS) Woolwich. Trial Reports of these examinations were issued under separate cover and are also contained in Annex A to this report.

After Humid/Hot Diurnal Cycling and Cold Diurnal Cycling tests, four Radway Green magazines were withdrawn from the test programme for check firing at ROSA Enfield. After the 1.5m Drop test, six Radway Green magazines were withdrawn for check firing at ROSA Enfield.

1.3.2 Radway Green Magazines

During the 1.5m Drop test, the bases of two magazines became detached releasing their ammunition content. The bases of other magazines partially separated and some loose rounds were slightly indented. Slight cracking and chipping of some bases was also observed in the sample tested at low temperature. All magazines were easily re-assembled.

After the Salt Corrosion Test, up to twenty rounds in each magazine were badly tarnished. The extent of the degradation varied according to the position of rounds in the magazine, heavy tarnishing together with corrosion/salt deposits being most apparent on the leading rounds. The spring action of some magazines was also impaired by corrosion/salt deposits.

Subsequent Sine and Random Vibration removed much of the deposits and the spring action of the magazines was improved.

During Random Vibration, the flap of one pouch was abraded by the head of a screw securing the pouch to the machine table causing damage to the magazine mouth and leading round.

1.3.3 Colt Magazine

During the 1.5m Drop Test, the base plates of all magazines were buckled. Five base plates detached and released the ammunition content. All base plates were straightened and replaced.

After the Salt Corrosion Test, up to fifteen rounds in each magazine were badly tarnished with corrosion/salt deposits on the leading rounds. The spring action was also impaired by deposits. As in paragraph 1.3.2 above, subsequent mechanical tests removed many of the deposits and the spring action was improved.

*leak
drop altitude -
damaged
caps?*

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1.3 TEST OBSERVATIONS

1.3.3 Colt Magazine (continued)

During Random Vibration, the flap of one pouch was abraded by the head of a screw securing the pouch to the machine table causing damage to the base of one magazine.

1.3.4 Thermold Magazines

During the 1.5m Drop Test, the base of one magazine became detached but was easily replaced. Cracks developed at the mouths of several magazines and although most were still capable of retaining rounds, one magazine from those tested at low temperature was withdrawn from test.

After the Salt Corrosion Test, the leading six rounds of each magazine were tarnished but the degree of degradation was less than that observed in the metal magazines. Less corrosion/salt deposits were also apparent and the spring actions of the magazines were unimpaired. ✓

During Sine Vibration, the previously observed cracks at the mouths of magazines became extended.

During Random Vibration, four magazines tested at high temperature failed to retain their ammunition content and were withdrawn. Among those tested at low temperature one released twenty-one rounds. ✓ Cracked magazines

1.3.5 DME Translucent Magazines

After the Humid/Hot Diurnal Cycling, stress frosting was observed at the mouths of some magazines.

During the 1.5m Drop Test, one of the samples tested at high temperature sustained a slight crack at its mouth. In the samples tested at low temperature, one sustained scuffing of its base and was chipped at its mouth. The other failed to retain its ammunition content after its base retaining lugs sheared and was withdrawn.

After the Salt Corrosion Test, the leading six rounds of each magazine were tarnished with corrosion/salt deposits and the spring action was impaired. One magazine, which had been relocated to share a pouch pocket containing a Radway Green magazine, sustained tarnishing to both leading and lower rounds. This apparent anomaly is considered to be due to electrolytic action between the aluminium Radway Green magazine and the lower rounds of the DME magazine where the pocket separator did not extend to the base of the pouch.

During Sine Vibration, some magazines tested at high temperature sustained slight cracks at their mouths.

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1.3 TEST OBSERVATIONS

1.3.5 DME Translucent Magazines (continued)

During Random Vibration, some magazines tested at high temperature sustained abrasion damage where adjacent magazines had rubbed together. The mouth of one magazine was chipped.

During the Bounce Test the mouth of one magazine chipped, failed to retain ammunition and was withdrawn.

After Parachute Drop, one magazine tested at high temperature had erratic spring action. Another tested at low temperature had very erratic spring action and cracking at the mouth had deteriorated.

1.3.6 DME Opaque Magazines

After Humid/Hot Diurnal Cycling, all magazines were bell-mouthed and failed to retain their ammunition content.

After Cold Cycling, weak spring action of all magazines was observed.

During the Bump Test, magazines tested at high temperature failed to retain their ammunition. The spring mechanism froze in the magazines tested at low temperature.

During the 1.5m Drop Test, magazines tested at high temperature released approximately ten rounds each. The bases of all magazines tested at low temperature detached due to sheared retaining lugs and were withdrawn.

After the Salt Corrosion Test, fifteen rounds in each magazine were badly tarnished with corrosion/salt deposits and their spring action was impaired.

Several loose rounds were observed after Sine Vibration due to bell-mouthing of magazines during previous tests.

During Random Vibration the magazines again failed to retain their ammunition content and were withdrawn.

1.3.7 Pouches

The pouches used for this phase of SA80 Trials were of a different construction to those used previously. For this submission, the pouches were secured on their side to the appropriate machine table for the rough handling tests. During previous tests, pouches had been mounted in the "on the man" orientation. There was therefore little abrasion damage observed except where the pouch securing screw heads abraded through the flaps of two pouches during Random Vibration. After this occurrence it was found that not all types of magazine were of equal length.

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During the Salt Corrosion Test, the pouches offered poor protection to their ammunition contents, particularly at the flap sides. The press stud fasteners corroded making opening extremely difficult. In some cases the fasteners pulled through the fabric of the pouches.

1.4 CONCLUSIONS

1.4.1 Plastic magazines are very susceptible to damage under the specified conditions of environmental stress. Of the twenty magazines on trial, twelve were withdrawn at various stages due to an inability to retain their ammunition content due to bell-mouthing, cracked mouths or base breakage. //

1.4.2 The Colt magazines retain and protect their ammunition content well under the specified conditions of environmental stress. Whilst the base plates are prone to distortion or separation from the magazines when dropped they are fairly easily straightened and replaced. It is considered that the effects of corrosion observed during these trials would be minimised if the magazines were protected by an improved pouch.

1.4.3 The Radway Green magazines retain and protect their ammunition content well under the specified conditions of environmental stress. Whilst the bases are prone to separation or partial separation from the magazines when dropped, they are very easy to replace. It is considered that the effects of corrosion observed during these trials would be minimised if the magazines were protected by an improved pouch.

SECTION 2

**Test Schedule & Results
on**

ENVIRONMENTAL TESTING OF SA80 AMMUNITION IN MAGAZINES

(SA80 PHASE C ORDNANCE BOARD TRIALS)

Test Engineers - J R Driscoll
R L Harris

Titchfield, Fareham, Hampshire, PO14 4QA

2.1 HUMID/HOT DIURNAL CYCLING

2.1.1 Specification References

D/OB/51/1/15 Trial 38 and OB Proc 41849 B3 Storage Cycle.

2.1.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Climatic Chamber	647	11.6.85
Temperature Recorder	743	3.9.85

2.1.3 Test Conditions

30 P1 and 30 P2 magazines in pouches were installed in the chamber whose conditions were then adjusted to the following cycle:-

<u>Time</u>	<u>Temp °C</u>	<u>% R.H.</u>
0300	34	75
0600	33	80
0900	44	42
1200	62	17
1500	71	14
1800	63	21
2100	41	53
2400	35	63

42 of the above cycles were carried out.

2.1.4 Result

A Visual Examination of magazines and ammunition was conducted by a representative of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A2 to A5 and Figures 1 and 2 pages 13 and 14.

Magazines P1-1-1-1, P1-1-1-2, P2-1-1-1 and P2-1-1-2 were withdrawn for check firing at ROSA Enfield.

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2.1 HUMID/HOT DIURNAL CYCLING

2.1.4 Result



Figure 1 Magazine P1-7-1-1 showing abrasion or stress damage
Negative No. TB106/2

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2.1 HUMID/HOT DIURNAL CYCLING

2.1.4 Result

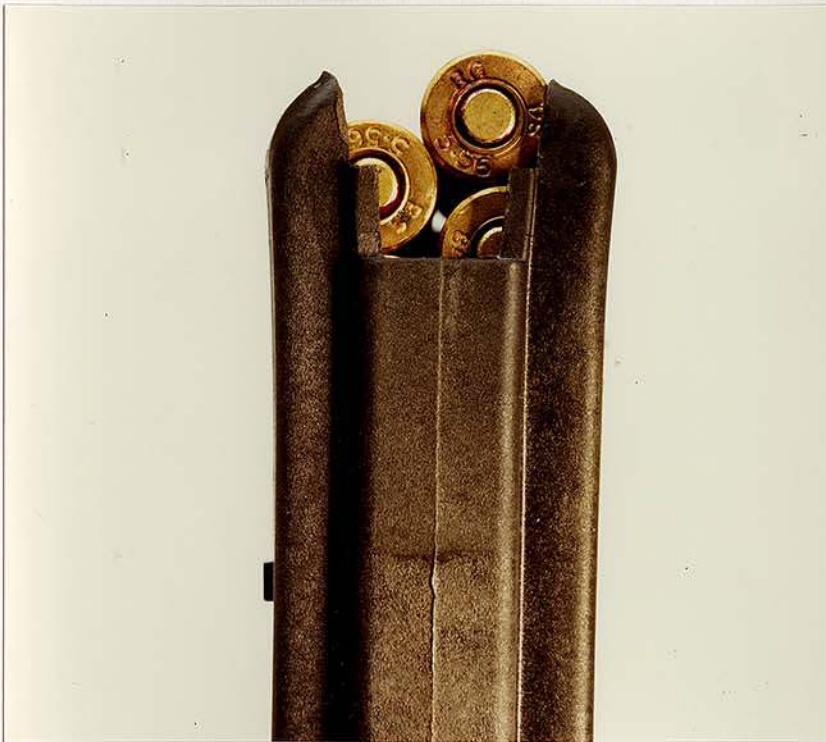


Figure 2 Typical distortion at mouth of magazine P1-8-1-1
Negative No. TB106/1

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2.2 COLD DIURNAL CYCLING

2.2.1 Specification References

D/OB/51/1/15 Trial 39 and OB Proc 41849, C2 Storage Cycle.

2.2.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Climatic Chamber	1086	2.8.85
Temperature Recorder	1086	2.8.85

2.2.3 Test Conditions

28 P1 and 28 P2 magazines in pouches were installed in the chamber whose conditions were then adjusted to the following cycle:-

<u>Time</u>	<u>Temp °C</u>
0300	-46
0600	-46
0900	-43
1200	-37
1500	-37
1800	-39
2100	-43
2400	-45

14 of the above cycles were carried out.

2.2.4 Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A6 to A8.

Magazines P1-1-2-1, P1-2-1-2, P2-1-2-1 and P2-2-1-2 were withdrawn for check firing at ROSA Enfield.

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2.3 BUMP

2.3.1 Specification References

D/OB/51/1/15 Trial 40 and DEF STAN 07-55 Test A5.

2.3.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Climatic Chamber	908	13.5.85
Climatic Chamber	407	6.9.85
Temperature Recorder	743	3.9.85
Bump Machine	700	calibrated before use
Charge Amplifier	0181	30.4.85
Accelerometer	162	7.10.85
Oscilloscope	258	8.10.85
Transient Recorder	260	30.4.85
X-Y Plotter	263	19.9.85

2.3.3 Test Conditions

26 P1 magazines in pouches were installed in a chamber and conditioned to $+71 \pm 2^\circ\text{C}$ for a period of not less than 16 hours. 26 P2 magazines in pouches were installed in a chamber and conditioned to $-46 \pm 2^\circ\text{C}$ for a period of not less than 16 hours. The pouches were removed from the chamber in batches of four and mounted on their side to the bump machine table, see Figures 3 and 4 pages 17 and 18. All magazines in pouches were subjected to 1000 half sine bumps of 40g peak acceleration 6ms duration at a rate of less than 3 bumps/sec. Time from removal from conditioning chamber to completion of bump not greater than 10 minutes. See Figures 5, 6 and 7 pages 19, 20 and 21 for typical bump pulses at beginning, mid-point and end of test.

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2.3 BUMP

2.3.3 Test Conditions



Figure 3 Magazines in pouches mounted on bump machine table,
polythene bags to retain detached rounds

Negative No. TB125/2

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2.3 BUMP

2.3.3 Test Conditions



Figure 4 Detail of pouch securing method for bump test
Negative No. TB125/1

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2.3 BUMP

2.3.3 Test Conditions

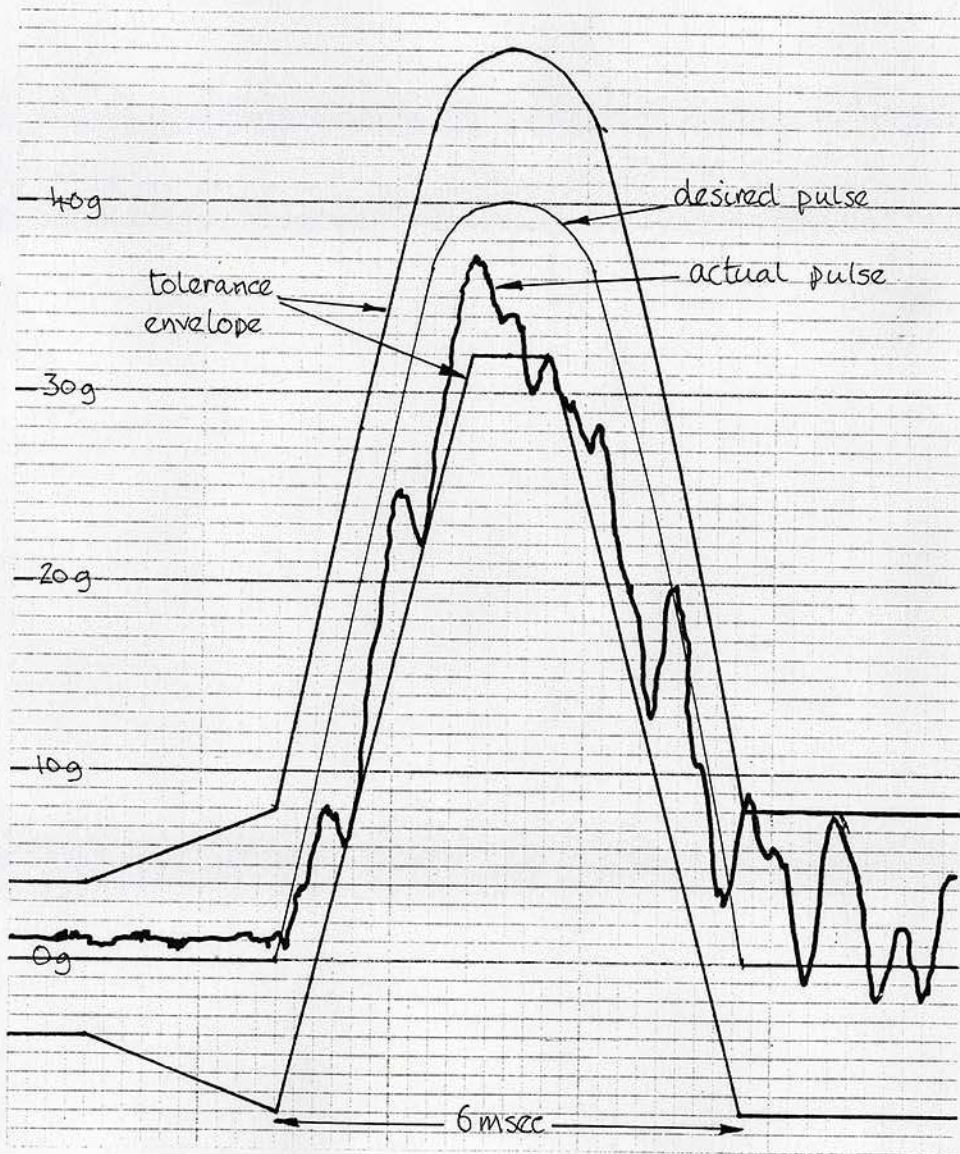


Figure 5 Typical bump trace at start of test

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2.3 BUMP

2.3.3 Test Conditions

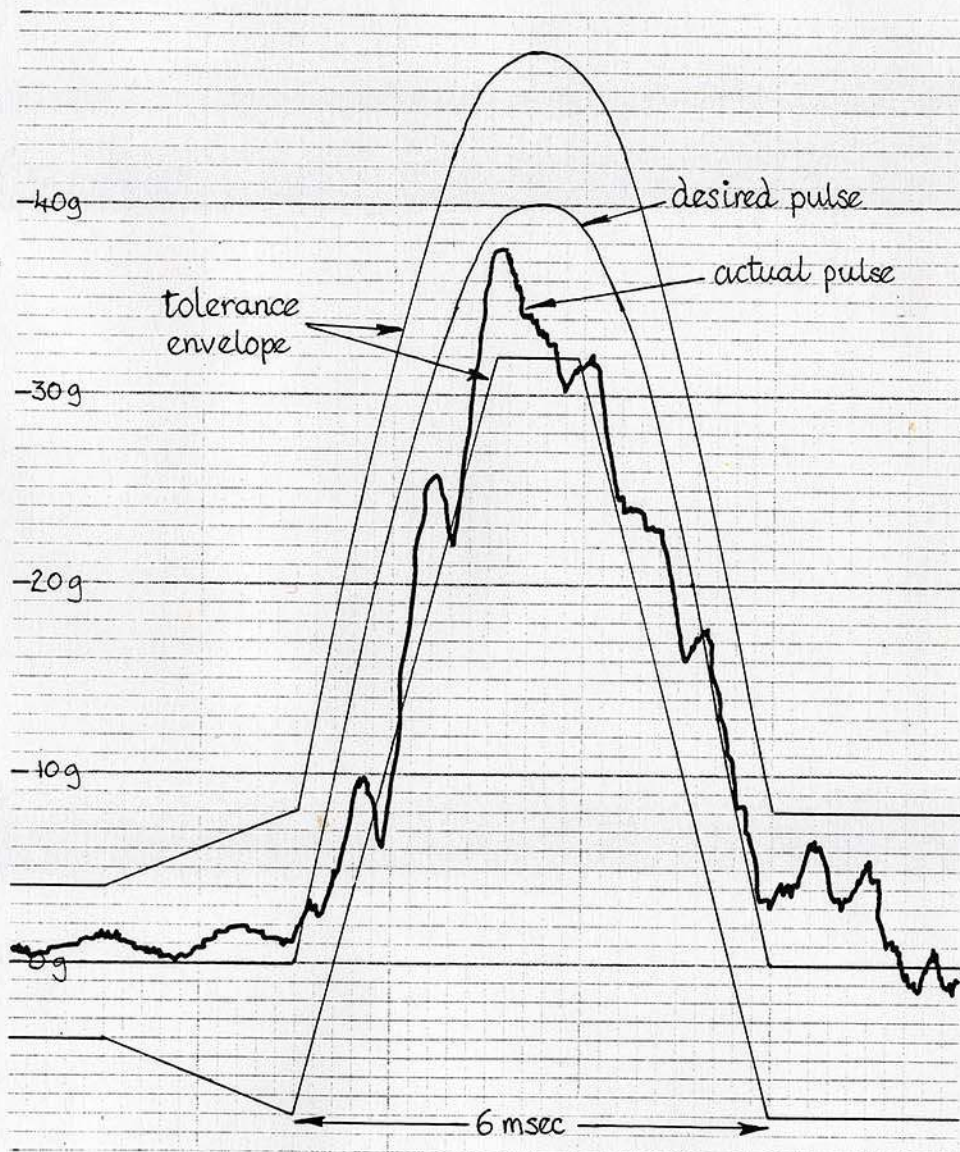


Figure 6 Typical bump trace at mid-point of test

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2.3 BUMP

2.3.3 Test Conditions

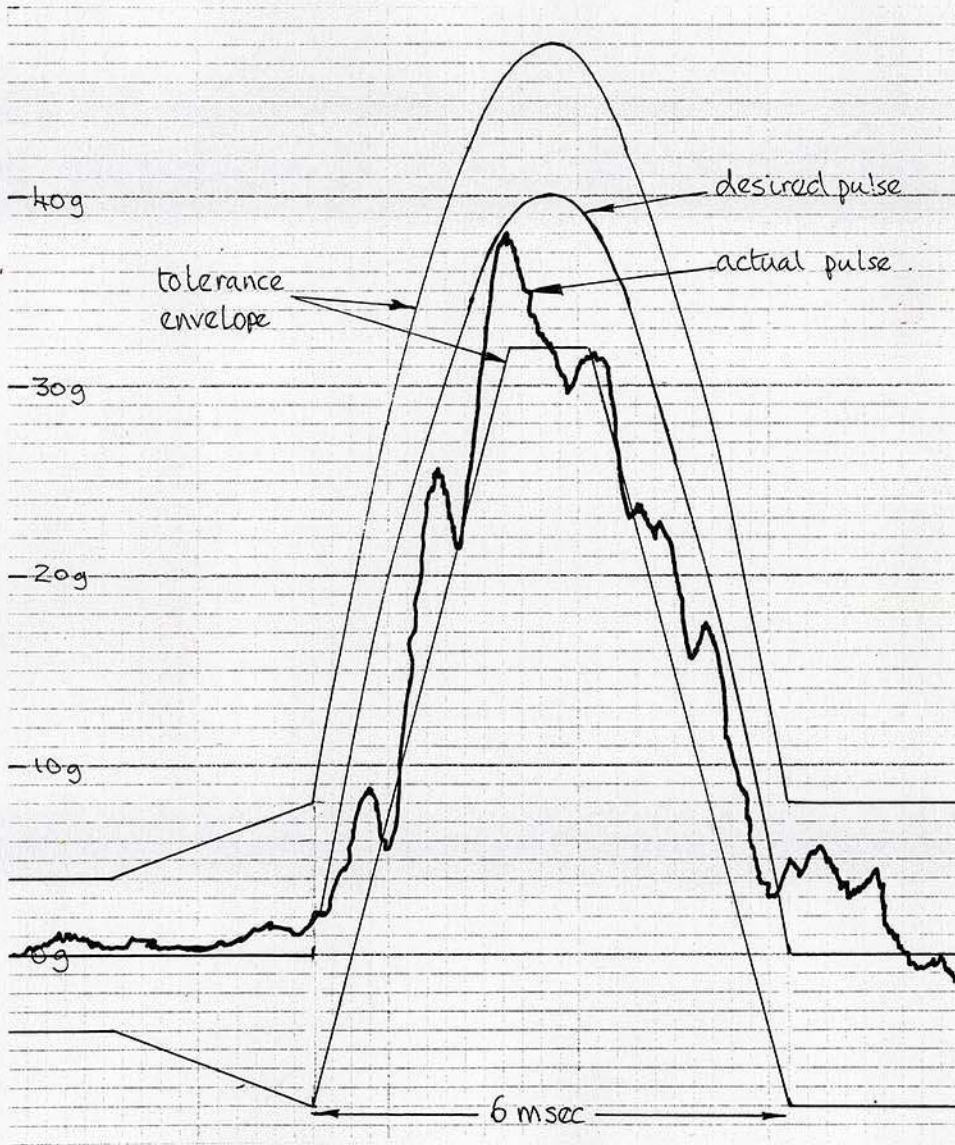


Figure 7 Typical bump trace at end of test

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2.3 BUMP

2.3.4 Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A9 to A12.

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2.4 1.5m DROP

2.4.1 Specification References

D/OB/51/1/15 Trial 41 and DEF STAN 07-55 Test A9.

2.4.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Climatic Chamber	908	13.5.85
Climatic Chamber	407	6.9.85
Temperature Recorder	743	3.9.85

2.4.3 Test Conditions

26 P1 magazines in pouches were installed in a chamber and conditioned at a temperature of $+71^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. 26 P2 magazines in pouches were installed in a chamber and conditioned at a temperature of $-46 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. Each pouch in turn was then removed from the conditioning chamber and dropped from a height of 1.5m onto a steel plate wet floated on concrete in successive order

- (a) on base
- (b) on one side
- (c) one one end
- (d) on edge between base and one end
- (e) on edge between base and one side.

Time from removal from chamber to completion of drops not greater than 5 minutes.

See Figure 8 page 24 for detail of drop faces.

See Figure 9 page 25 for detail of drop method.

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2.4 1.5m DROP

2.4.3 Test Conditions

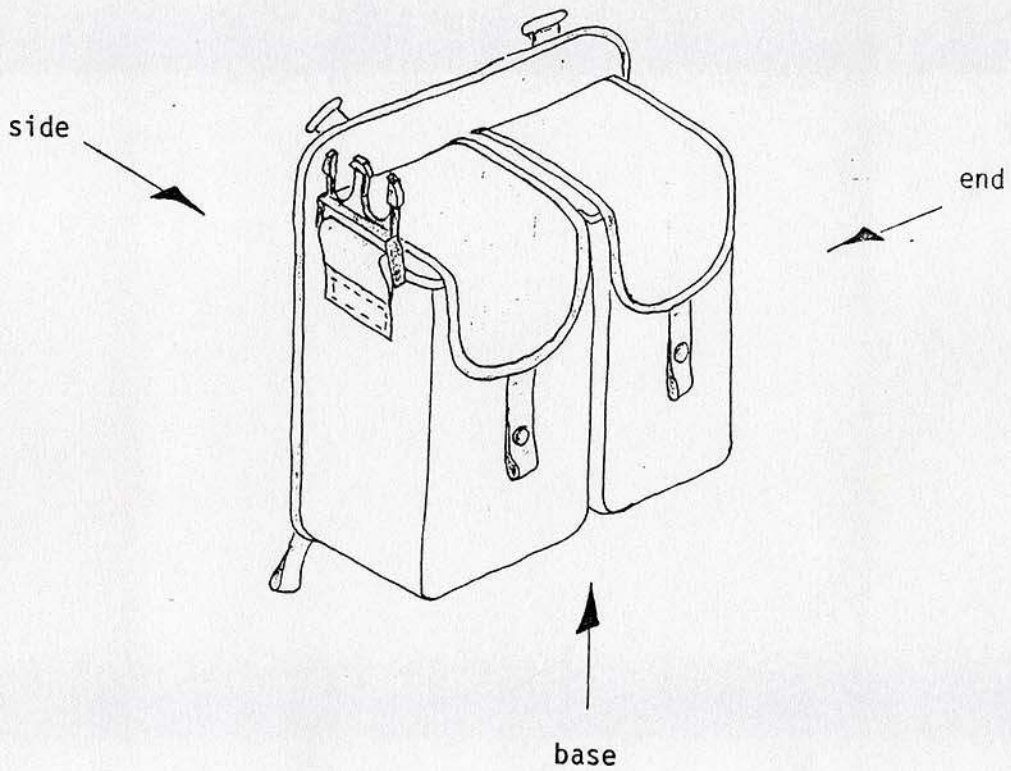


Figure 8 Identification of major faces of pouch for Drop Test

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2.4 1.5m DROP

2.4.3 Test Conditions



Figure 9 Pouch in polythene bag, suspended from bomb release for 1.5m Drop Test on base. Other drops conducted in similar method

Negative No. TB145/1

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2.4 1.5m DROP2.4.4 Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A13 to A20 and Figures 10 to 18 pages 26 to 34.

The following damaged magazines and ammunition were withdrawn from test P2-7-1-1, P2-7-1-2, P2-7-2-2, P2-8-1-1 and P2-8-1-2.

Magazine P2-7-2-1 was transferred to pouch position P2-4-1-1. Magazines P1-1-2-2, P1-2-1-1, P1-4-1-1, P2-1-2-2, P2-2-1-1 and P2-4-1-1 were taken for check firing at ROSA Enfield.

2.4.4 Result

Figure 10 Colt magazine P2-4-2-1 with detached base plate after 1.5m Drop test at -46°C

Negative No. TB132-4

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2.4. 1.5m DROP

2.4.4 Result



Figure 11 Colt magazine P1-4-2-2 with detached base plate after 1.5m Drop test at +71°C

Negative No. TB132-1

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2.4 1.5m DROP

2.4.4 Result

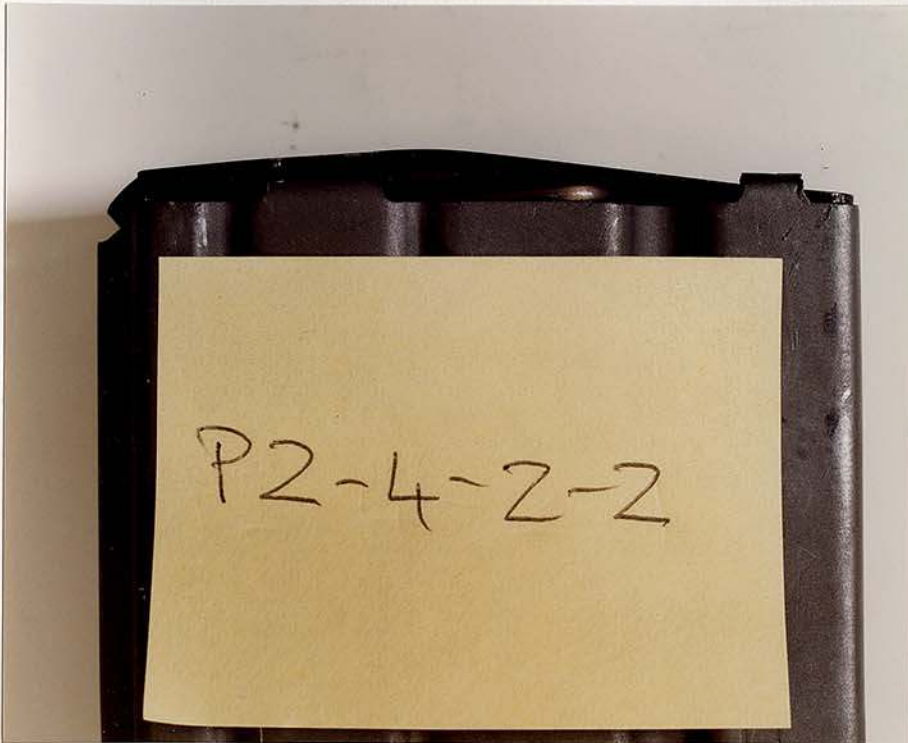


Figure 12 Colt magazine P2-4-2-2 with deformed base plate after 1.5m Drop at -46°C

Negative No. TB132-6

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2.4 1.5m DROP

2.4.4 Result



Figure 13 Thermold magazine P1-6-1-2 with detached base plate after 1.5m Drop at +71°C

Negative No. TB132-2

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2.4 1.5m DROP

2.4.4 Result

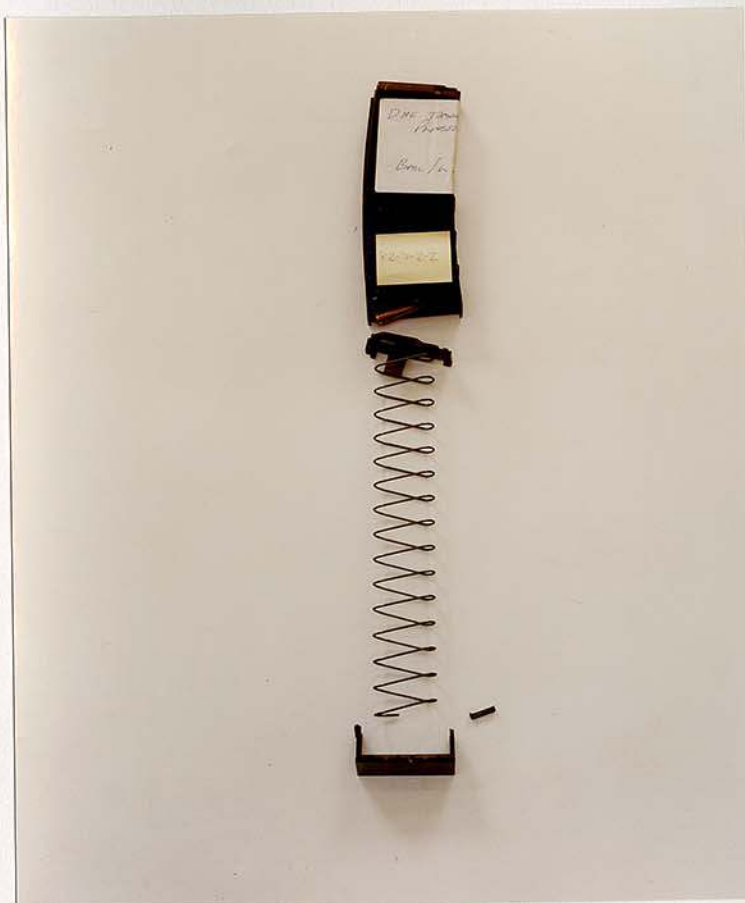


Figure 14 DME Translucent magazine P2-7-2-2 with detached/broken base plate after 1.5m Drop test at -46°C

Negative No. TB132-5

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2.4 1.5m DROP

2.4.4 Result

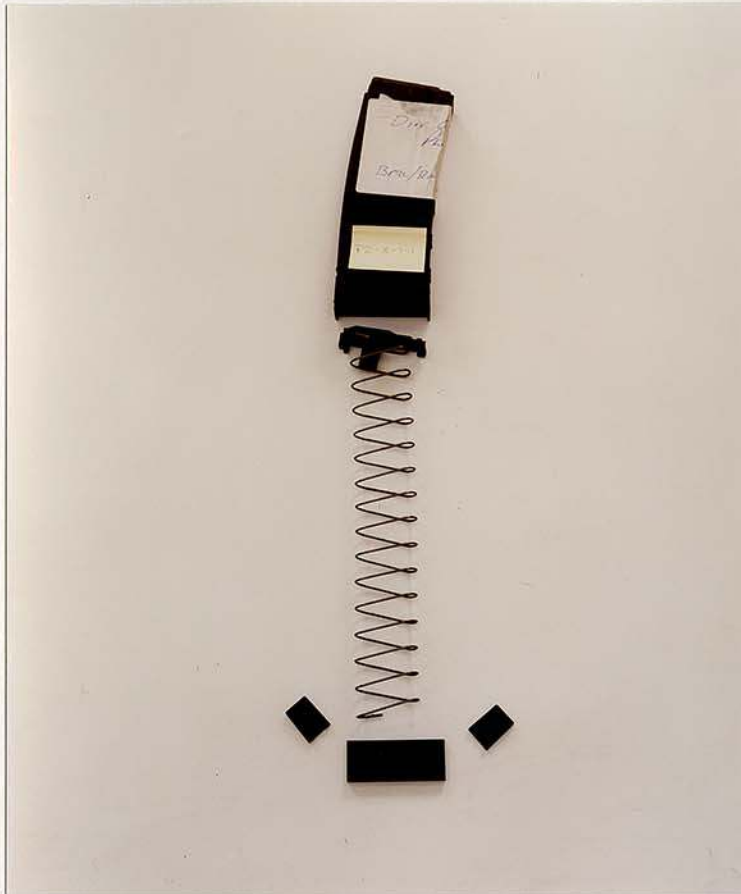


Figure 15 DME Opaque magazine P2-8-1-1 with detached/broken base plate after 1.5m Drop test at -46°C

Negative No. TB132-3

Plessey Assessment Services Limited

Titchfield, Fareham, Hampshire, PO14 4QA

2.4 1.5m DROP

2.4.4 Result



Figure 16 Thermold magazine P1-6-1-1 showing split side after 1.5m Drop test at +71°C

Negative No. TB132-7

Titchfield, Fareham, Hampshire, PO14 4QA

2.4 1.5m DROP

2.4.4 Result

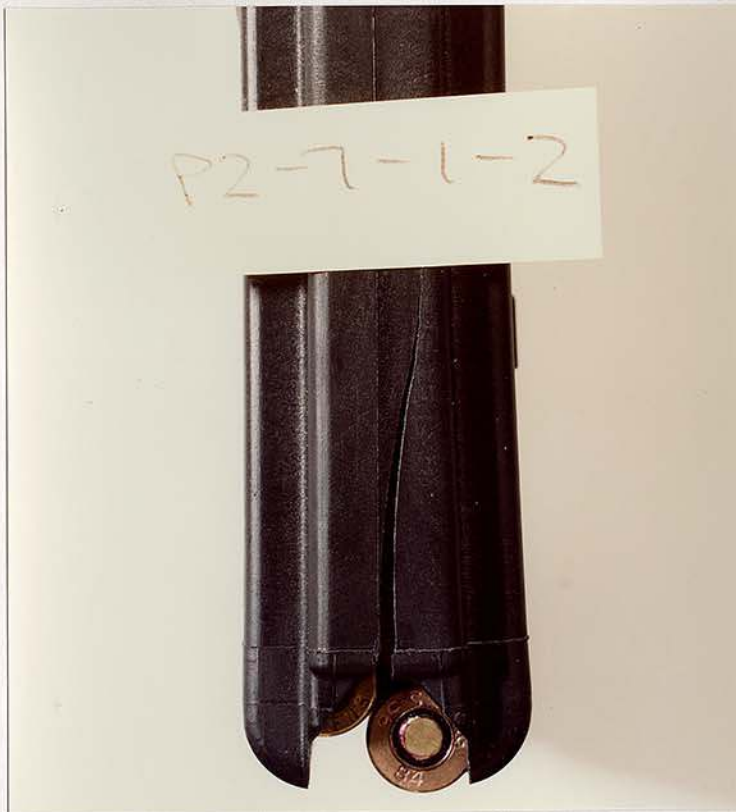


Figure 17 Thermold magazine P2-7-1-2 showing split side after 1.5m Drop test at -46°C

Negative No. TB132-8

Titchfield, Fareham, Hampshire, PO14 4QA

2.4 1.5m DROP

2.4.4 Result



Figure 18 Radway Green magazine P2-3-1-1 with broken base plate
Negative No. TB208/8

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.1 Specification References

D/0B/51/1/15 Trial 42 and BS2011 Part 2.1 Test Kb.

2.5.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Salt Mist Chamber	904	22.8.85
Temperature Recorder	452	2.10.85
Climatic Chamber	411	10.9.85
Temperature Recorder	743	3.9.85

2.5.3 Test Conditions

23 P1 and 18 P2 magazines in pouches were installed in the salt mist chamber and subjected to a spray period of 2 hours with the specified test solution. On completion the magazines were stored in a climatic chamber and conditioned at $+35 \pm 2^{\circ}\text{C}$, 90-95%RH for a period of 7 days. A total of 4 spray/storage cycles were carried out.

2.5.4 Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A21 to A23 and Figures 19 to 27 pages 36 to 44.

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 19 Radway Green magazine P1-2-2-2 and contents after Salt Mist

Negative No. TB208/5

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 20 Typical salt and corrosion deposits at mouth of Radway Green magazine

Negative No. TB208/6

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 21 Colt magazine P1-4-2-2 and contents after Salt Mist
Note detached press stud on pouch

Negative No. TB208/2

2.5 SALT MIST

2.5.4 Result



Figure 22 Typical salt and corrosion deposits at mouth of Colt magazine

Negative No. TB208/11

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 23 Thermold magazine P1-6-1-1 and contents after Salt Mist
Negative No. TB208/7

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 24 Typical salt and corrosion deposits at mouth of Thermold magazine

Negative No. TB208/10

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 25 DME Translucent magazine P1-7-1-1 and contents after Salt Mist

Negative No. TB208/3

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 26 Typical salt and corrosion deposits at mouth of DME Translucent magazine

Negative No. TB208/4

Titchfield, Fareham, Hampshire, PO14 4QA

2.5 SALT MIST

2.5.4 Result



Figure 27 DME Translucent magazine P2-7-2-1 and contents after Salt Mist

Negative No. TB208/9

Titchfield, Fareham, Hampshire, PO14 4QA

2.6 VIBRATION ENDURANCE (SINE SWEEP)

2.6.1 Specification References

D/OB/51/1/15 Trial 43 and DEF STAN 07-55 Test A1.

2.6.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Vibrator	906	26.11.85
Vibration Controller	183	28.11.85
Charge Amplifier	660	13.8.85
Accelerometer	615	28.6.85
Level Recorder	185	24.10.85
Climatic Chamber	906	21.5.85
Temperature Recorder	906	21.5.85

2.6.3 Test Conditions

23 P1 magazines in pouches were installed in a chamber and conditioned at a temperature of $+71 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. 18 P2 magazines in pouches were installed in a chamber and conditioned at a temperature of $-46 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. The pouches were then mounted four at a time on their sides to the vibration table where the appropriate temperature conditions were maintained. The stores were subjected to swept sinusoidal vibration endurance for a period of 5 hours to the following levels:-

5-13Hz \pm 6mm constant displacement

13-500Hz \pm 2g constant acceleration

Sweep rate less than 1 octave/minute

See Figure 28 page 46 for detail of mounting method and Figure 29 page 47 for control accelerometer plots.

Titchfield, Fareham, Hampshire, PO14 4QA

2.6 VIBRATION ENDURANCE (SINE SWEEP)

2.6.3 Test Conditions

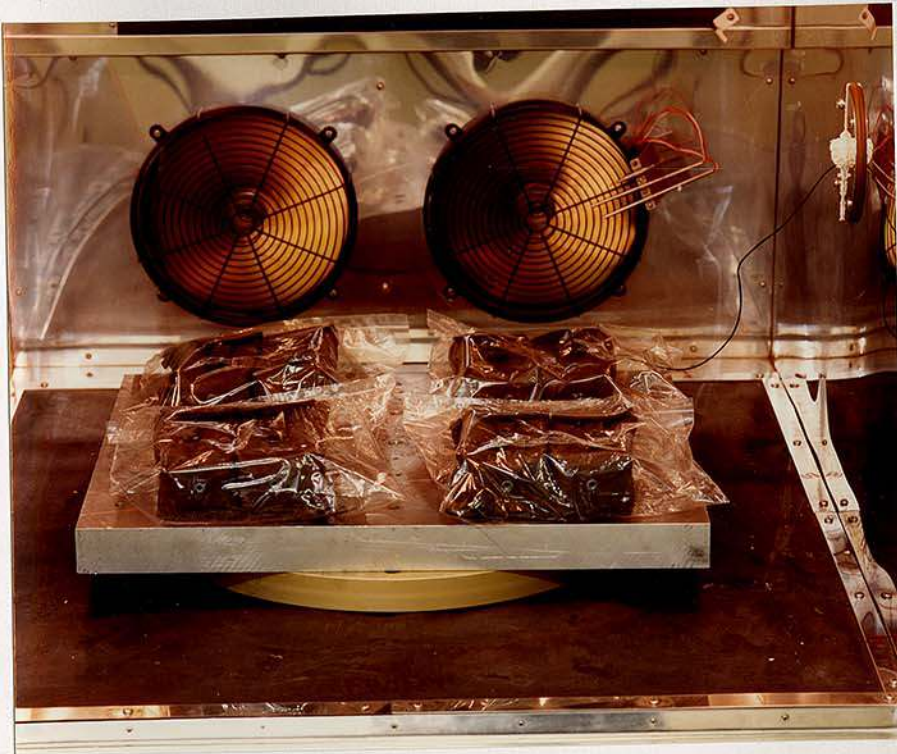


Figure 28 Pouches mounted on their side for vibration test.
Polythene bags used to retain detached rounds

Negative No. TB208/1

Titchfield, Fareham, Hampshire, PO14 4QA

2.6 VIBRATION ENDURANCE (SINE SWEEP)

2.6.3 Test Conditions

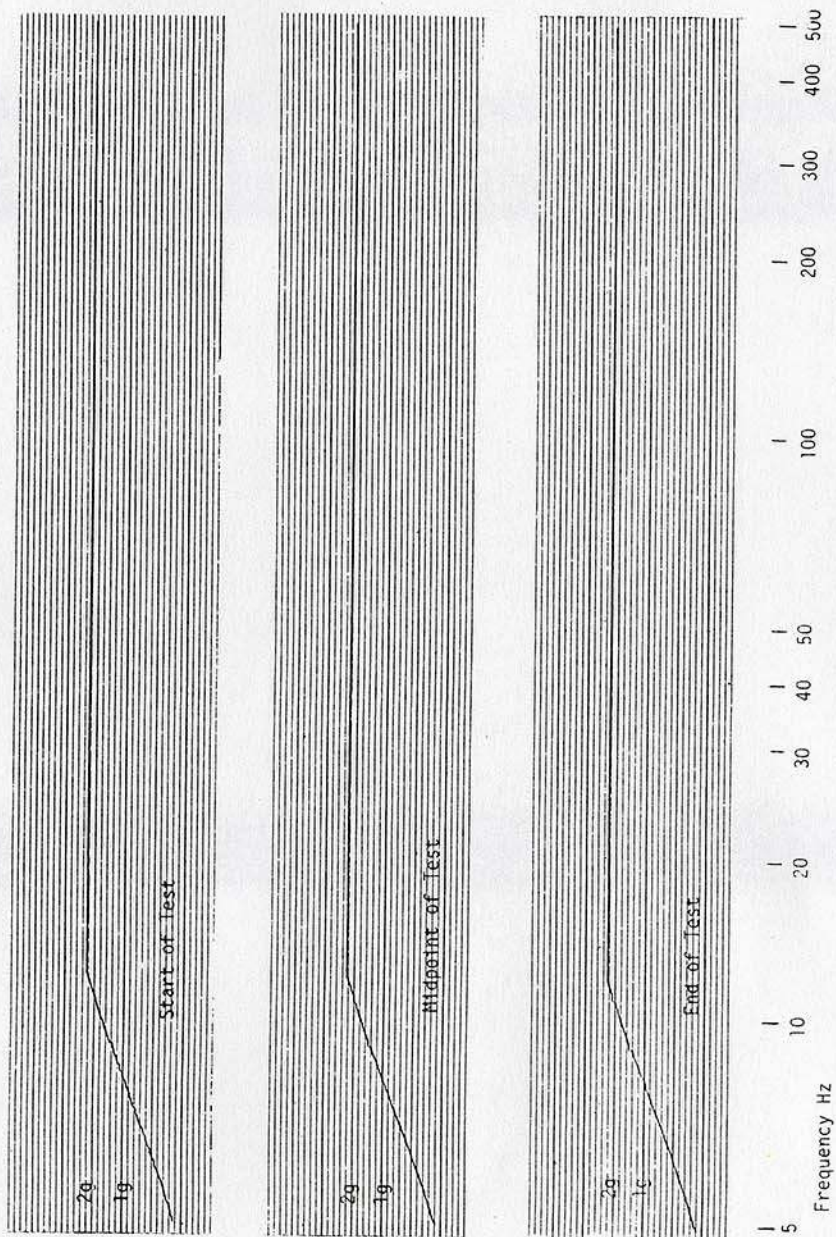


Figure 29 Typical control accelerometer plots

Titchfield, Fareham, Hampshire, PO14 4QA

2.6 VIBRATION ENDURANCE (SINE SWEEP)

2.6.4 Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A24 to A26.

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.1 Specification References

D/OB/51/1/15 Trial 44 and DEF STAN 07-55 Test A2.

2.7.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Vibrator	821	21.11.85
Vibration Controller	529	15.10.85
Charge Amplifier	660	13.8.85
Accelerometer	162	7.10.85
Climatic Chamber	562	29.11.85
Temperature Recorder	309	3.12.85

2.7.3 Test Conditions

23 P1 magazines in pouches were installed in a chamber and conditioned at a temperature of $+71 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. 18 P2 magazines in pouches were installed in a chamber and conditioned at a temperature of $-46 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. The pouches were then mounted four at a time on their sides to the vibration table where the appropriate temperature conditions were maintained. The stores were then subjected to random vibration endurance for a period of 6 hours at a level of $0.1\text{g}^2/\text{Hz}$ over the frequency range 5 to 500Hz.

See Figure 28 page 46 for detail of mounting method and Figures 30 to 32 pages 50 to 52 for control accelerometer plots.

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.3 Test Conditions

CONTROL :
RMS LEVEL = 7.047 G'S
DB RE G SQR/HZ

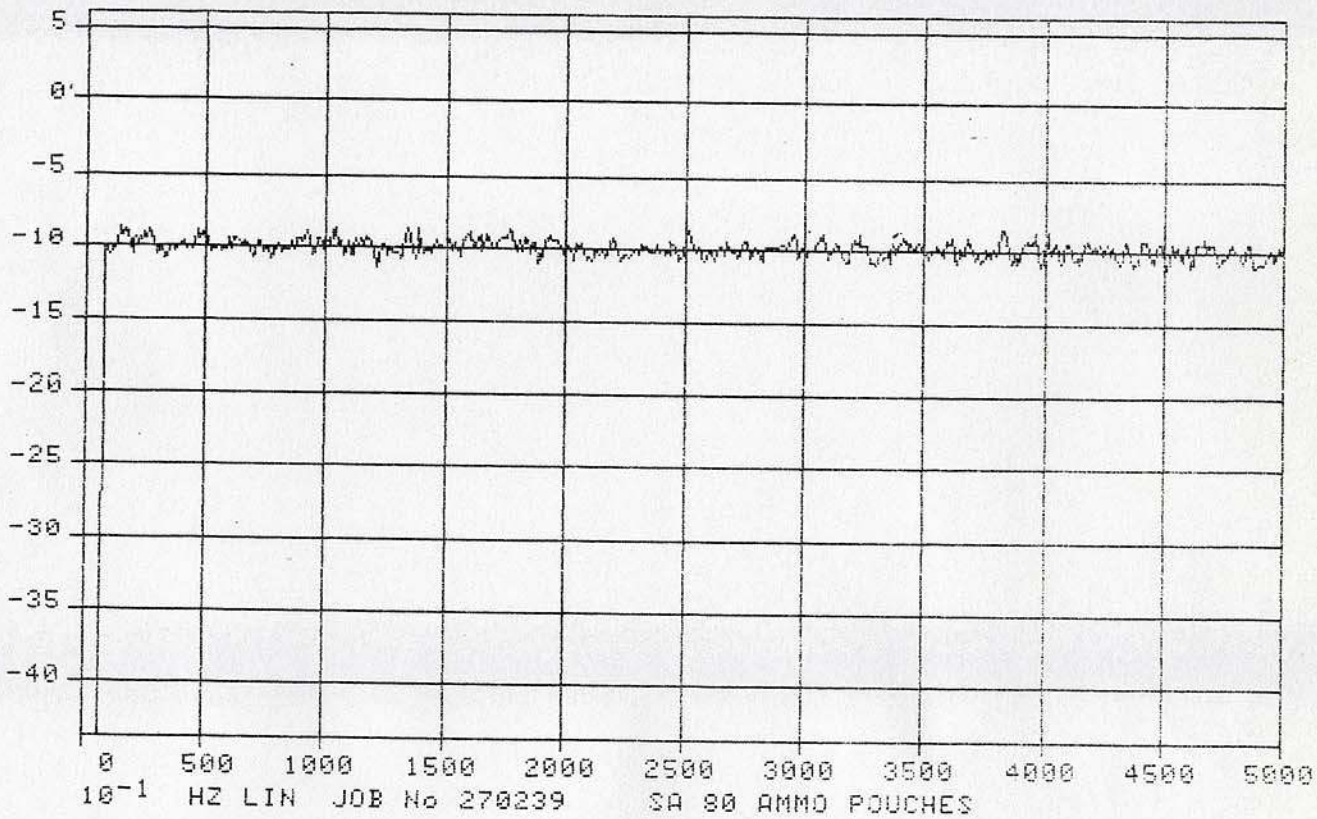


Figure 30 Typical control accelerometer plot at start of test.

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.3 Test Conditions

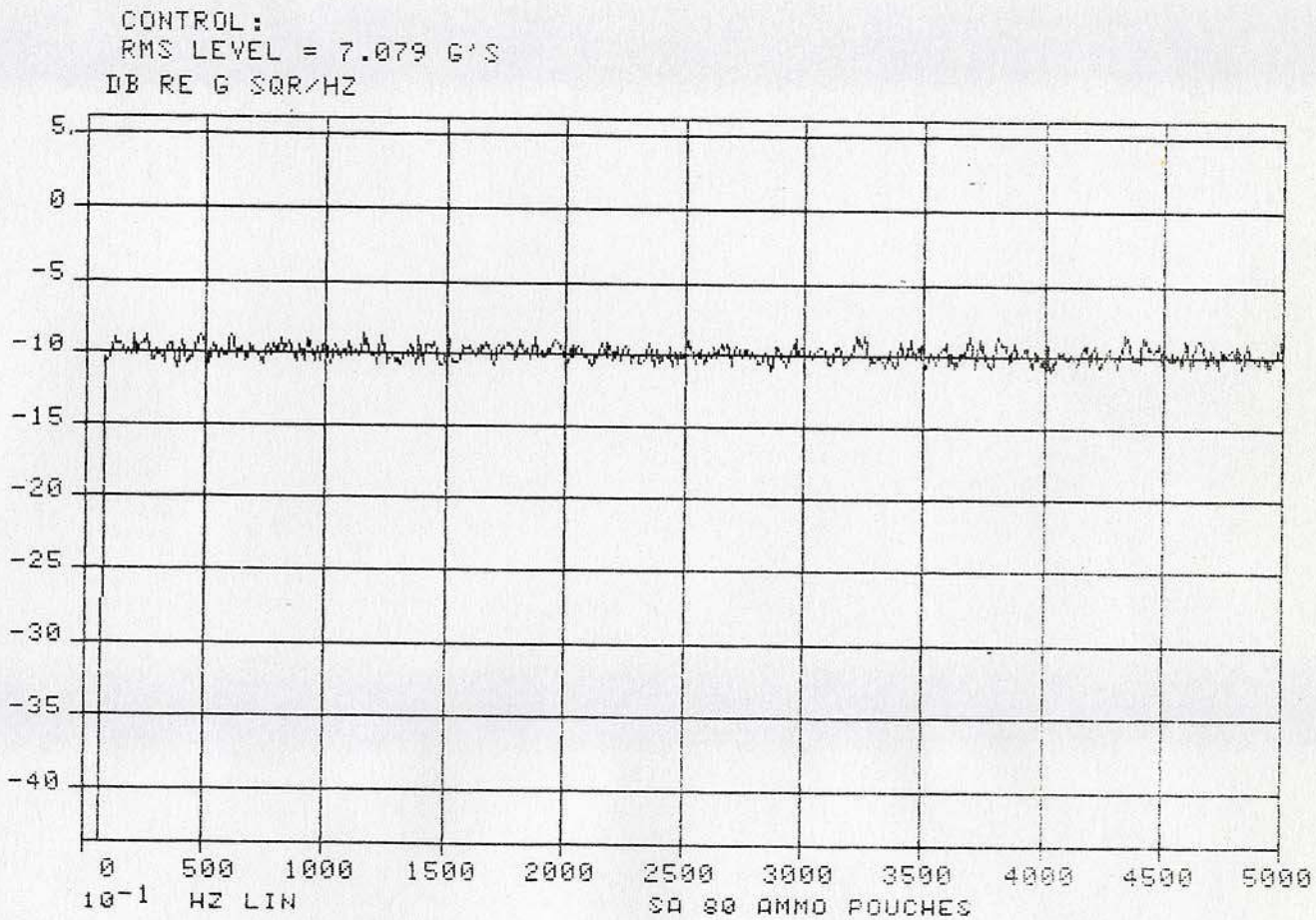


Figure 31 Typical control accelerometer plot at mid-point of test.

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.3 Test Conditions

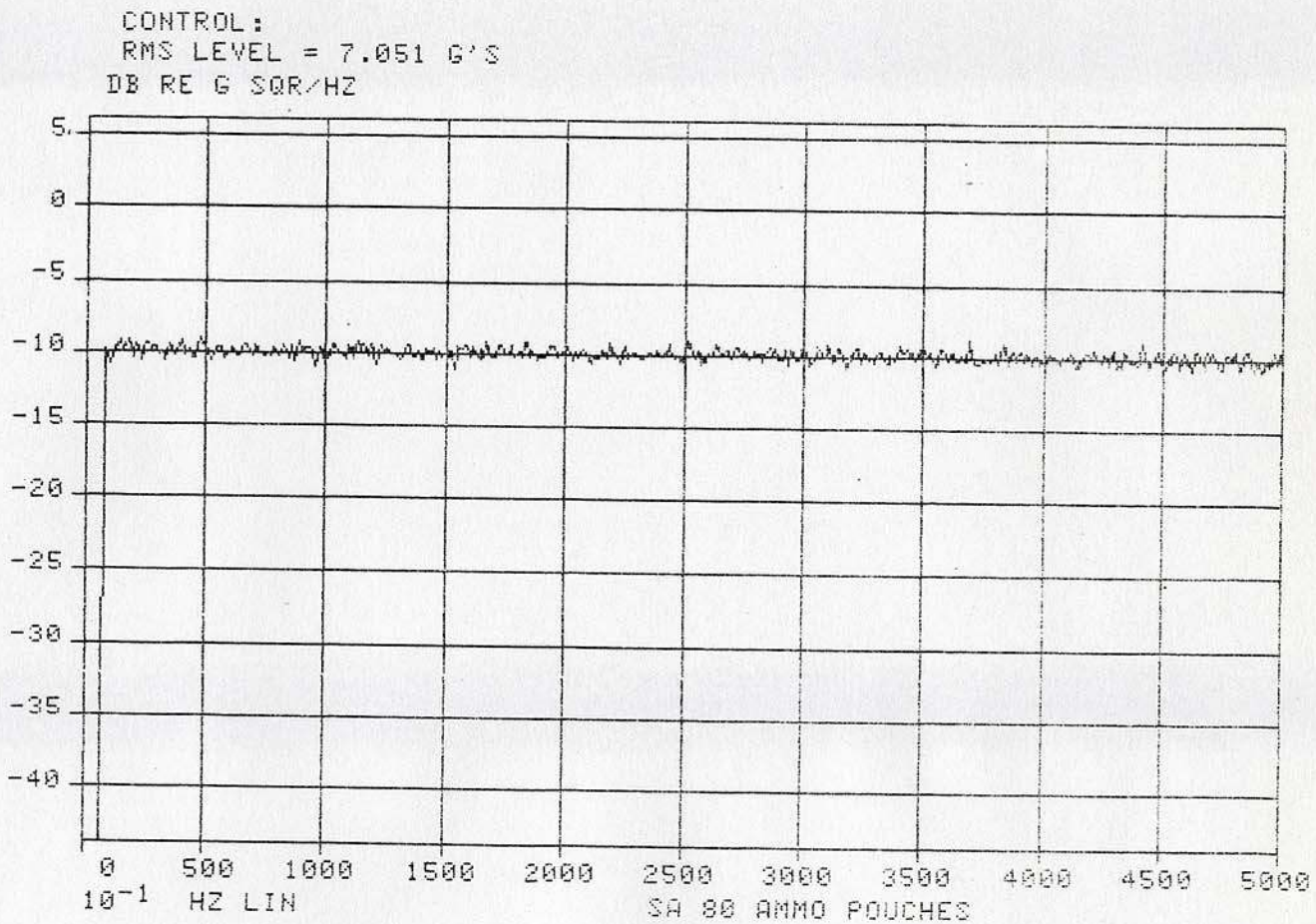


Figure 32 Typical control accelerometer plot at end of test.

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)**2.7.4** Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A27 to A30 and Figures 33 to 37 pages 53 to 57. Thermold magazines P1-6-1-1, P1-6-1-2, P1-6-2-1 and P1-6-2-2 were withdrawn from test. DME Opaque magazines P1-8-1-1 and P1-8-1-2 were withdrawn from test.



Figure 33 Damage to Radway Green magazines and ammunition due to chaffing of pouch securing screw.

Negative No. TB258/2

Plessey Assessment Services Limited

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.4 Result



Figure 34 Chaffing damage to flap of pouch P1-3 caused by securing screw head.

Negative No. TB258/3

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.4 Result



Figure 35 Damage to base of Colt magazine due to chaffing of pouch securing screw.

Negative No. TB243/1

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.4 Result



Figure 36 Scuff marks to Colt magazines adjacent surfaces.

Negative No. TB258/4

Plessey Assessment Services Limited

Titchfield, Fareham, Hampshire, PO14 4QA

2.7 VIBRATION ENDURANCE (RANDOM)

2.7.4 Result



Figure 37 DME Translucent magazine showing chipped mouth.
Negative No. TB258/1

Titchfield, Fareham, Hampshire, PO14 4QA

2.8 BOUNCE

2.8.1 Specification References

D/OB/51/1/15 Trial 45 and DEF STAN 07-55 Test A8.

2.8.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Bounce Machine	734	6.1.86
Climatic Chamber	1086	2.8.85
Temperature Recorder	1086	2.8.85
Climatic Chamber	407	6.9.85
Temperature Recorder	743	3.9.85

2.8.3 Test Conditions

17 P1 magazines in pouches were installed in a chamber and conditioned at a temperature of $+71 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. 18 P2 magazines in pouches were installed in a chamber and conditioned at a temperature of $-46 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. The pouches were then placed five at a time on the machine table and subjected to bounce for a period of 5 minutes followed by a 5 minute rest period during which they were returned to the appropriate conditioning chamber. A total of 15 minutes bounce was applied to all pouches.

2.8.4 Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A31 to A34 and Figure 38 page 59.

DME Translucent magazine P1-7-2-1 was withdrawn from test. Colt magazine P1-5-1-1, previously damaged during Random Vibration, was withdrawn from test.

Titchfield, Fareham, Hampshire, PO14 4QA

2.8 BOUNCE

2.8.4 Result

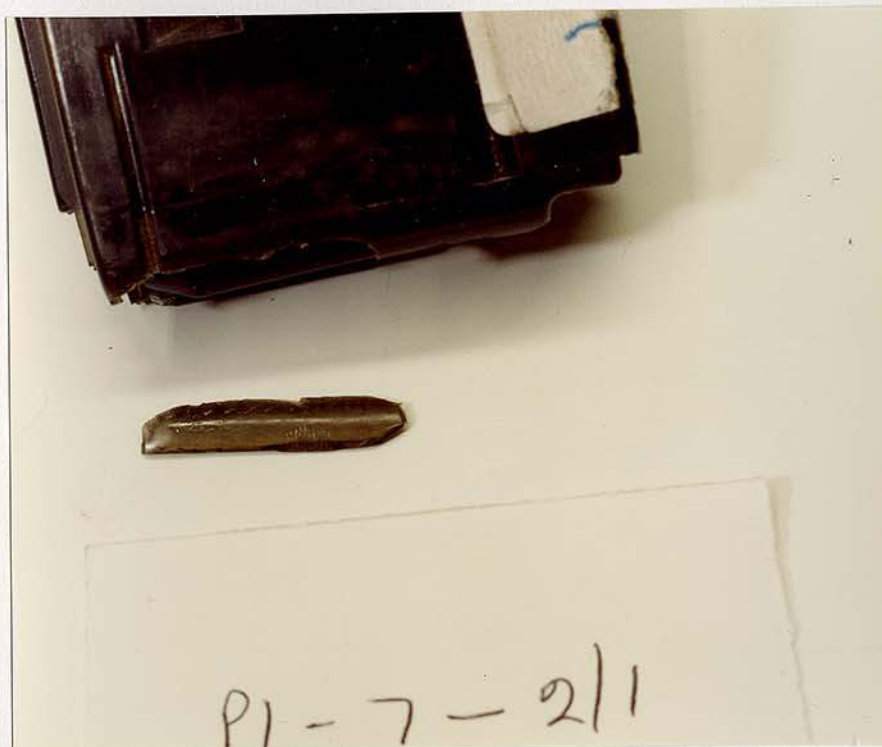


Figure 38 DME Translucent magazine P1-7-2-1 with damaged mouth after Bounce Test.

Negative No. TB243/2

Titchfield, Fareham, Hampshire, PO14 4QA

2.9 LOW TEMPERATURE/LOW PRESSURE

2.9.1 Specification References

D/OB/51/1/15 Trial 46 and DEF STAN 07-55 Test B12.

2.9.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Climatic Chamber	1086	2.8.85
Temperature/Pressure Recorder	1086	2.8.85

2.9.3 Test Conditions

15 P1 magazines and 18 P2 magazines in pouches were installed in the chamber and conditioned to a temperature of $-55 \pm 2^{\circ}\text{C}$ for a period of not less than 16 hours. The chamber pressure was then adjusted to 300mbar and conditions maintained for a period of 30 minutes.

2.9.4 Result

A Visual Examination of magazines was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A pages A35 to A36. This examination also witnessed by a representative of the Ordnance Board.

Titchfield, Fareham, Hampshire, PO14 4QA

2.10 FREE FALL (PARACHUTE DROP)

2.10.1 Specification References

D/OB/51/1/15 Trial 47.

2.10.2 Test Equipment Used

<u>Equipment</u>	<u>Inventory No.</u>	<u>Last Calibration</u>
Climatic Chamber	601	12.12.85
Temperature Recorder	452	4.12.85
Climatic Chamber	906	20.12.85
Temperature Recorder	906	20.12.85

2.10.3 Test Conditions

15 P1 magazines in pouches were packed as part of a representative load in a Bergen rucksack as provided by JATE Brize Norton. The loaded rucksack was then conditioned to $+71 \pm 2^{\circ}\text{C}$ for a period of not less than 24 hours. 18 P2 magazines in pouches were packed as part of a representative load in a Bergen rucksack as provided by JATE. The loaded rucksack was then conditioned to $-46 \pm 2^{\circ}\text{C}$ for a period of not less than 24 hours. Each rucksack was then dropped from a height of 2 metres onto a grass surface representative of meadowland.

2.10.4 Result

A Visual Examination of magazines and ammunition was conducted by representatives of DGDQA(PS) Woolwich. Trial Inspection reports were issued under separate cover. See also Annex A page A37 to A40.

Titchfield, Fareham, Hampshire, PO14 4QA

ANNEX A

DGDQA(PS) TRIAL INSPECTION REPORTS

<u>D/08/51/1/15</u>	<u>Trial Description</u>	<u>Page No</u>
38	Humid/Hot Diurnal Cycling	A2 - A5
39	Cold Diurnal Cycling	A6 - A8
40	Bump	A9 - A12
41	1.5m Drop	A13 - A20
42	Salt Mist	A21 - A23
43	Vibration Endurance (Sine)	A24 - A26
44	Vibration Endurance (Random)	A27 - A30
45	Bounce	A31 - A34
46	Low Temperature/Low Pressure	A35 - A36
47	Free Fall (Parachute Drop)	A37 - A40

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PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE

PROJECT SUPPORT DIRECTORATE

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2192 Telex 22210

Your reference

Our reference WPNS(A)19/9/10

Date 22nd November 1985

SA80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

OB PROC NO:- D/OB/51/1/15
TEST SERIAL NO:- 38 Humid hot diurnal cycling
DATE OF TEST:- 11th October 1985
LOCATION:- Plessey Assessment Services, Titchfield, Fareham, Hants
PERSONS PRESENT:- Mr D Ansell, Test Facilities Manager, Plessey Ltd
Mr J Allen, DGDQA PS WPNS(A)4

STORE CONFIGURATION:- As defined in the OB PROC.

STORE DETAIL:-
5.56mm Ball, L2A1, ROSA Radway Green
5.56mm Tracer, L1A1, ROSA Radway Green
5.56mm Tracer, L110, FN Belgium
Radway Green Aluminium Magazines
Colt Aluminium Magazines
Thermold Opaque Plastic Magazines
DME Opaque Plastic Magazines
DME Translucent Plastic Magazines

DISTRIBUTION:

SEC OB - Maj N Rowe - 2 copies
WPNS 3a St Christopher House - Lt Col T Dutton - 1 copy
ROSA Plc Enfield - Mr S Alderton - 1 copy
ROSA Plc Radway Green - Mr B Peach - 1 copy
Plessey Assessment Centre, Titchfield- Mr D Ansell - 1 copy
QO/W4C WPNS(A) - Mr A Flett - 1 copy
File DQA/PS/WPNS(A)19/9/10
Float

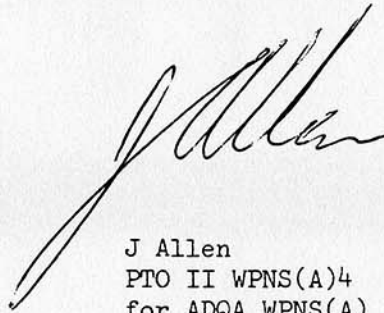
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Magazine Identification

1. Each magazine has been individually identified using a small white label with an individual number. Each pouch has also been marked with black writing to enable any particular magazine to be located with ease.
2. A complete tabulated list of this identification is at Annex A. Also shown is the make of tracer ammunition contained in any one magazine.

General Comments

3. All magazines were visually inspected and the results are detailed at Annex B.
4. The magazines listed at Annex A that have been asterisked were stripped of the ammunition. The ammunition was 100% visually inspected. No faults were found.
5. Magazines P1-1-1/1, p1-1-1/2. P2-1-1/1, P2-1-1/2 were withdrawn and forwarded to ROSA Enfield for test firing.
6. All other magazines were passed to test serial 39, Cold Diurnal Cycling.



J Allen
PTO II WPNS(A)4
for ADQA WPNS(A)

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Annex A to
Trial Report for Test 38

BOX POUCH POCKET MAG No.	Magazine Manufacturer	Ammunition Manufacturer		BOX POUCH POCKET MAG No.	Magazine Manufacturer	Ammunition Manufacturer	
		Ball	Tracer			Ball	Tracer
* P1-1-1/1	RADWAY GREEN	RG	FN	* P2-1-1/1	RADWAY GREEN	RG	FN
P1-1-1/2	RADWAY GREEN	RG	FN	P2-1-1/2	RADWAY GREEN	RG	FN
P1-1-2/1	RADWAY GREEN	RG	FN	P2-1-2/1	RADWAY GREEN	RG	FN
P1-1-2/2	RADWAY GREEN	RG	FN	P2-1-2/2	RADWAY GREEN	RG	FN
* P1-2-1/1	RADWAY GREEN	RG	RG	* P2-1-1/1	RADWAY GREEN	RG	RG
P1-2-1/2	RADWAY GREEN	RG	RG	P2-2-1/2	RADWAY GREEN	RG	RG
P1-2-2/1	RADWAY GREEN	RG	RG	P2-2-2/1	RADWAY GREEN	RG	RG
P1-2-2/2	RADWAY GREEN	RG	RG	P2-2-2/2	RADWAY GREEN	RG	RG
P1-3-1/1	RADWAY GREEN	RG	FN	P2-3-1/1	RADWAY GREEN	RG	FN
P1-3-1/2	RADWAY GREEN	RG	FN	P2-3-1/2	RADWAY GREEN	RG	FN
P1-3-2/1	RADWAY GREEN	RG	FN	P2-3-2/1	RADWAY GREEN	RG	FN
P1-3-2/2	RADWAY GREEN	RG	FN	P2-3-2/2	RADWAY GREEN	RG	FN
P1-4-1/1	RADWAY GREEN	RG	RG	P2-4-1/1	RADWAY GREEN	RG	RG
P1-4-1/2	RADWAY GREEN	RG	RG	P2-4-1/2	RADWAY GREEN	RG	RG
* P1-4-2/1	COLT	RG	RG	* P2-4-2/1	COLT	RG	FN
P1-4-2/2	COLT	RG	RG	P2-4-2/2	COLT	RG	FN
P1-5-1/1	COLT	RG	RG	P2-5-1/1	COLT	RG	FN
P1-5-1/2	COLT	RG	FN	P2-5-1/2	COLT	RG	RG
P1-5-2/1	COLT	RG	FN	P2-5-2/1	COLT	RG	RG
P1-5-2/2	COLT	RG	FN	P2-5-2/2	COLT	RG	RG
* P1-6-1/1	THERMOLD	RG	RG	* P2-6-1/1	THERMOLD	RG	RG
P1-6-1/2	THERMOLD	RG	RG	P2-6-1/2	THERMOLD	RG	RG
P1-6-2/1	THERMOLD	RG	FN	P2-6-2/1	THERMOLD	RG	FN
P1-6-2/2	THERMOLD	RG	FN	P2-6-2/2	THERMOLD	RG	FN
* P1-7-1/1	DME TRANSLUCENT	RG	RG	* P2-7-1/1	DME OPAQUE	RG	RG
P1-7-1/2	THERMOLD	RG	RG	P2-7-1/2	THERMOLD	RG	FN
P1-7-2/1	DME TRANSLUCENT	RG	FN	* P2-7-2/1	DME TRANSLUCENT	RG	RG
P1-7-2/2	DME TRANSLUCENT	RG	FN	P2-7-2/2	DME TRANSLUCENT	RG	FN
* P1-8-1/1	DME OPAQUE	RG	RG	P2-8-1/1	DME OPAQUE	RG	RG
P1-8-1/2	DME OPAQUE	RG	FN	P2-8-1/2	DME OPAQUE	RG	FN

Detailed ResultsMagazines P1-7-1/1, P1-7-2/1, P1-7-2/2, P2-7-1/1, DME Translucent

1. There was slight stress frosting on one top corner by the base of the top round, this can be seen on the photographs at Annex C. There was also evidence of contact between the magazine and the pouch material. These magazines appeared to have weak springs.

Magazine P2-7-2/2 DME Translucent

2. The comments at paragraph 1 also apply to this magazine with the exception of the stress frosting of which there was no evidence.

Magazines P1-8-1/1, P1-8-1/2, P2-7-1/1, P2-8-1/1, P2-8-1/2 DME, (opaque)

3. These magazines had gone "Bell Mouthed" as can be seen in the photograph of one example at Annex C. This had resulted in several rounds being found loose in the pouches. As it was difficult for the magazine to contain the ammunition in this condition due to the spring pressure, adhesive tape was placed across the mouth to enable the magazines to continue on the trials programme.

4. All other magazines were found to be visually serviceable.

NOTES

1. See Figure 1 page 13 for photograph of stress frosting of DME Translucent magazine.
2. See Figure 2 page 14 for photograph of typical "bell-mouthed" magazine.

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PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE
PROJECT SUPPORT DIRECTORATE

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2192 Telex 22210

Your reference

Our reference WPNS(A)19/9/10

Date **25** November 1985SA80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

OB PROC NO:- D/OB/51/1/15

TEST SERIAL NO:- 39 (COLD DIURNAL CYCLING)

DATE OF TEST:- 29 OCTOBER 1985

LOCATION:- PLESSEY ASSESSMENT SERVICES, TITCHFIELD, FAREHAM, HANTS.

PERSONS PRESENT:- Mr D Ansell - Test Facilities Manager, Plessey Ltd
 Mr A G C Williams - DGDQA/PS Wpns (A) 4
 Mr J A Williams - "

STORE CONFIGURATION:-

As defined in the OB Proc

STORE DETAIL:-

5.56mm Ball, L2A1 ROSA Radway Green
 5.56mm Tracer, L1A1 ROSA, Radway Green
 5.56mm Tracer, L110, FN Belgium
 Radway Green Magazines for SA80
 US Colt Magazines
 Thermold Nylon Magazines
 DME Translucent Magazines
 DME Opaque Magazines

DISTRIBUTION:

SEC OB - Maj N Rowe - 2 copies

WPNS 3a St Christopher House - Lt Col T Dutton - 1 copy

ROSA Plc Enfield - Mr S Alderton - 1 copy

ROSA Plc Radway Green - Mr B Peach - 1 copy

Plessey Assessment Centre, Titchfield - Mr D Ansell - 1 copy

Wpns(A) 4C2 - Mr Flett - 1 copy

File DQA/PS/WPNS(A)19/9/10

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RESULTS - Boxes P1 and P2RADWAY GREEN MAGAZINES

Containing:

Radway Green Ball & Trace or
Radway Green Ball & FN Trace

NO DAMAGE TO MAGAZINES OR AMMUNITION

US COLT MAGAZINES

Containing:

Radway Green Ball & Trace or
Radway Green Ball & FN Trace

NO DAMAGE TO MAGAZINES OR AMMUNITION

THERMOLD NYLON MAGAZINES

Containing:

Radway Green Ball & Trace or
Radway Green Ball & FN Trace

NO DAMAGE TO MAGAZINES OR AMMUNITION

DME TRANSLUCENT MAGAZINES

Containing:

Radway Green Ball & Trace or
Radway Green Ball & FN Trace

NO DAMAGE TO MAGAZINES OR AMMUNITION

DME OPAQUE MAGAZINES

Containing:

Radway Green Ball & Trace or
Radway Green Ball & FN Trace

NO DAMAGE TO AMMUNITION BUT MAGAZINES HAVE BELLMOUTHED, AS REPORTED IN TEST SERIAL NO 38, THUS MAKING IT DIFFICULT TO LOAD THE FULL 30 ROUNDS OF BALL & TRACE. SPRING ACTION APPEARS TO BE WEAK IN COMPARISON TO OTHER TYPES OF MAGAZINE.

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GENERAL COMMENTS

1. No damage to individual rounds was found on inspection. Bell-mouthing of DME Opaque Magazines, that made reloading difficult, has already been reported after Test Serial No 38 (Humid Hot Diurnal Cycling).
2. Two Radway Green Magazines, one containing Radway Green Ball & Trace and the other Radway Green Ball & FN Tracer, were removed from each box and sent to ROSA Enfield for check firing.



A G C WILLIAMS
PTO III
WPns (A) 4
for ADQA/Wpns (A)

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DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE
PROJECT SUPPORT DIRECTORATE

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2192 Telex 22210

Your reference

Our reference WPNS(A)19/9/10

Date 25 Nov 85

SA80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

OB PROC NO:- D/OB/51/1/15

TEST SERIAL NO:- 40 (BUMP)

DATE OF TEST:- 31 OCTOBER 1985

LOCATION:- PLESSEY ASSESSMENT SERVICES, TITCHFIELD, FAREHAM, HANTS

PERSONS PRESENT:- Mr D ANSELL, PLESSEY ASSESSMENT SERVICES
 Mr R DRISCOLL, PLESSEY ASSESSMENT SERVICES
 Mr A G C WILLIAMS, DGDQA/PS WPNS(A)4
 Mr J A WILLIAMS, DGDQA/PS WPNS(A)4

STORE CONFIGURATION:-

As defined in the OB PROC.

STORE DETAIL:- 5.56mm Ball L2A1 ROSA RADWAY GREEN
 5.56mm Tracer L1A1 ROSA RADWAY GREEN
 5.56mm TRACER L110 FN BELGIUM
 RADWAY GREEN MAGAZINES FOR SA 80
 US COLT MAGAZINES
 THERMOLD NYLON MAGAZINES
 DME TRANSLUCENT MAGAZINES
 DME OPAQUE MAGAZINES

DISTRIBUTION:

SEC OB - Maj N Rowe - 2 copies
 WPNS 3a St Christopher House - Lt Col T Dutton - 1 copy
 ROSA Plc Enfield - Mr S Alderton - 1 copy
 ROSA Plc Radway Green - Mr B Peach - 1 copy
 Plessey Assessment Centre, Titchfield - Mr D Ansell - 1 copy
 Wpns (A) 4C2 - Mr Flett - 1 copy
 File DQA/PS/WPNS(A)19/9/10
 Float

RESTRICTED

RESULTS

BOX P1 (CONDITIONED AT +70°C)

RADWAY GREEN MAGAZINE

Containing:

RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

RADWAY GREEN MAGAZINE

Containing:

RADWAY GREEN BALL & TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

US COLT MAGAZINE

Containing:

RADWAY GREEN BALL & TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

US COLT MAGAZINE

Containing:

RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

THERMOLD NYLON MAGAZINE

Containing:

RADWAY GREEN BALL & TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

THERMOLD NYLON MAGAZINE

Containing:

RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

D M E TRANSLUCENT MAGAZINE

Containing:

RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION. 1 LOOSE ROUND

D M E OPAQUE MAGAZINE

Containing:

RADWAY GREEN BALL & TRACER

NO DAMAGE TO AMMUNITION. MAGAZINES BELL MOUTHED. ALL ROUNDS
LOOSE, MAGAZINE EMPTY.

D M E OPAQUE MAGAZINE

Containing:

RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO AMMUNITION. MAGAZINES BELL MOUTHED.
27 ROUNDS LOOSE.

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BOX P2 (CONDITIONED AT -46°C)

RADWAY GREEN MAGAZINE

Containing:
RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

RADWAY GREEN MAGAZINE

Containing:
RADWAY GREEN BALL & TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

US COLT MAGAZINE

Containing:
RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

US COLT MAGAZINE

Containing:
RADWAY GREEN BALL & TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

THERMOLD NYLON MAGAZINE

Containing:
RADWAY GREEN BALL & TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

THERMOLD NYLON MAGAZINE

Containing:
RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION

D M E OPAQUE MAGAZINE

Containing:
RADWAY GREEN BALL & TRACER

NO DAMAGE TO AMMUNITION. MAGAZINES BELLMOUTHED, SPRING MECHANISM FROZEN AND ROUNDS NOT FEEDING CORRECTLY.

D M E OPAQUE MAGAZINE

Containing:
RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO AMMUNITION. MAGAZINE BELLMOUTHED, SPRING MECHANISM FROZEN AND NOT FEEDING ROUNDS CORRECTLY. 12 ROUNDS LOOSE.

D M E TRANSLUCENT MAGAZINE

Containing:
RADWAY GREEN BALL/FN TRACER

NO DAMAGE TO MAGAZINES OR AMMUNITION.

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1. GENERAL COMMENTS

Results from previous tests have shown that, due to Bellmouthing of magazines, loose rounds occur. It was anticipated that the Bump Test would be more severe and even more loose rounds would be found.

As a precaution, each pouch was placed in a polythene bag to contain any rounds that might come loose. This in no way affected the action of the Bump Test on the store.

2. HOT CONDITIONING

No damage to magazines or ammunition was found. Rounds contained in D M E opaque magazines were shaken loose as expected.

3. COLD CONDITIONING

No damage to ammunition was found.

D M E Opaque Magazines were the only ones affected by cold conditioning. Their spring mechanism was frozen and feed action was impaired.



A G C WILLIAMS
PTO III -
Wpns(A)4
for ADQA/Wpns(A)

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PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE**PROJECT SUPPORT DIRECTORATE**

ROYAL ARSENAL WEST, WOOLWICH, LONDON. SE18 6ST Tel: 01-854 2044 Ext 2192 Telex 22210

Your reference

Our reference WPNS(A)19/9/10

Date 27 November 1985

SA80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

OB PROC NO:- D/OB/51/1/15

TEST SERIAL NO:- 41 (1.5m DROP)

DATE OF TEST:- 2.11.85 - 7.11.85

LOCATION:- PLESSEY ASSESSMENT SERVICES, TITCHFIELD, FAREHAM, HANTS

PERSONS PRESENT:- MR D ANSELL, PLESSEY ASSESSMENT SERVICES
 MR R DRISCOLL, PLESSEY ASSESSMENT SERVICES
 MR A G C WILLIAMS, DGDQA/PS WPNS(A)4
 MR J A WILLIAMS, DGDQA/PS WPNS(A)4

STORE CONFIGURATION:-

AS DEFINED IN THE OB PROC

STORE DETAIL:- 5.56mm BALL L2A1, ROSA RADWAY GREEN
 5.56mm TRACER L1A1, ROSA RADWAY GREEN
 5.56mm TRACER L110 FN BELGIUM
 RADWAY GREEN MAGAZINES FOR SA 80
 US COLT MAGAZINES
 THERMOLD NYLON MAGAZINES
 DME TRANSLUCENT MAGAZINES
 DME OPAQUE MAGAZINES

DISTRIBUTION:

SEC OB - Maj N Rowe - 2 copies

WPNS 3a St Christopher House - Lt Col T Dutton - 1 copy

ROSA Plc Enfield - Mr S Alderton - 1 copy

ROSA Plc Radway Green - Mr B Peach - 1 copy

Plessey Assessment Centre, Titchfield - Mr D Ansell - 1 copy

File DQA/PS/WPNS(A)19/9/10

Float

QO W4C2 - Mr Flett - 1 copy

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RESTRICTED

RESULTSBOX P1 (CONDITIONED AT +70°C)RADWAY GREEN MAGAZINE

Containing:
Radway Green Ball/FN Tracer

The base of one magazine had separated from case and all rounds were loose in the pouch. Other bases had partially separated and a few loose rounds were found.

The rounds themselves were generally unaffected. One or two end rounds were slightly indented but would still chamber and function satisfactorily.

The bases that had separated were undamaged and were easily snapped back into position.

RADWAY GREEN MAGAZINE

Containing:
Radway Green Ball and Tracer

One base had partially separated and a few loose rounds were found in a pouch.

Rounds were generally unaffected, some end rounds were indented but would still function satisfactorily.

US COLT MAGAZINE

Containing:
Radway Green Ball and Tracer

Impact has caused base plates to buckle badly. Two bases had completely separated from case and all rounds were loose in their pouches. The remainder had partially separated and a few loose rounds were found. (See Plate 1).

The rounds themselves appeared undamaged.

US COLT MAGAZINE

Containing:
Radway Green Ball/FN Tracer

Base plates had buckled in every magazine. One had completely separated and all rounds were loose. One loose round was found from one of the other magazines.

Rounds themselves were undamaged.

THERMOLD NYLON MAGAZINE

Containing:
Radway Green Ball and Tracer

One base had separated from case and all rounds were loose. Cracks had developed at mouths of several magazines and loose rounds were found. Rounds themselves appeared undamaged. (See Plates 2 and 3).

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THERMOLD NYLON MAGAZINE

Containing:
Radway Green Ball/FN Tracer

Both magazines had cracks at their mouths and one loose round was discovered. Rounds were undamaged.

DME TRANSLUCENT MAGAZINE

Containing:
Radway Green Ball/FN Tracer

Magazines and rounds were undamaged, two loose rounds were found from each magazine.

DME TRANSLUCENT MAGAZINE

Containing:
Radway Green Ball and Tracer

Magazine had a slight crack at its mouth, one round was loose. Ammunition was undamaged.

DME OPAQUE MAGAZINE

Containing:
Radway Green Ball and Tracer

Magazine and rounds were undamaged, 8 loose rounds were found.

DME OPAQUE MAGAZINE

Containing:
Radway Green Ball/FN Tracer

Magazine and rounds were undamaged, 10 loose rounds were found.

BOX P2 (CONDITIONED AT -46°C)

RADWAY GREEN MAGAZINE

Containing:
Radway Green Ball/FN Tracer

One magazine base had separated from case spilling its full quota of rounds into the pouch. Another had partially separated and one loose round was found. End rounds in some magazines were slightly indented and one bullet had been pushed back into the case by 1/8". Most bases show some damage and many were cracked but still contained their full quota of rounds. Damaged rounds would still have functioned in weapons.

RADWAY GREEN MAGAZINE

Containing:
Radway Green Ball and Tracer

Some bases showed signs of damage, some were chipped and others had cracks. All were still containing their full quota of rounds. The end round was indented in some magazines, but was still operable.

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US COLT MAGAZINE

Containing:
Radway Green Ball and Tracer

Base plates had buckled in most cases and had partially separated from magazine. Several loose rounds were found in pouches but there was no sign of any damage.

US COLT MAGAZINE

Containing:
Radway Green Ball/FN Tracer

Two magazines had completely separated and their contents were loose in the pouch. Base plates had badly buckled and sprung clear of their retaining lugs. The rounds themselves were undamaged. The other magazine had partially separated and one loose round was found. (See Plates 4 and 5).

THERMOLD NYLON MAGAZINE

Containing:
Radway Green Ball and Tracer

No damage was found to the magazine or rounds. One loose round was found in the pouch.

THERMOLD NYLON MAGAZINE

Containing:
Radway Green Ball/FN Tracer

One magazine was badly split at the mouth and rounds had spilled out. The other two magazines were undamaged. One loose round was found. No damage to ammunition was found. (See Plate 6).

DME TRANSLUCENT MAGAZINE

Containing:
Radway Green Ball/FN Tracer

Base was completely separated from case and all rounds were loose in pouch. On inspection, one of the base retaining lugs had sheared off and magazine could not be re-assembled. (See Plate 7).

DME TRANSLUCENT MAGAZINE

Containing:
Radway Green Ball and Tracer

Magazine was intact with a full content of ammunition. The base was scuffed and the magazine mouth had been chipped. There was no damage to ammunition.

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DME OPAQUE MAGAZINE

Containing:
Radway Green Ball and Tracer

Both magazines had completely separated and all rounds were loose in the pouch. Base retaining lugs had sheared off and it was not possible to re-assemble magazines. No damage was found to ammunition. (See Plate 8).

DME OPAQUE MAGAZINE

Containing:
Radway Green Ball/FN Tracer

Base had completely separated from case and all rounds were loose in pouch. Base retaining lugs had sheared off and therefore magazine could not be re-assembled. Ammunition was undamaged.

NOTES

1. For Plate 1 see Figure 11 page 27
2. For Plate 2 see Figure 16 Page 32
3. For Plate 3 see Figure 13 Page 29
4. For Plate 4 see Figure 10 Page 26
5. For Plate 5 see Figure 12 Page 28
6. For Plate 6 see Figure 17 Page 33
7. For Plate 7 see Figure 14 Page 30
8. For Plate 8 see Figure 15 Page 31
9. For Plate 9 see Figure 18 Page 34

RESTRICTED

GENERAL COMMENTS

1. As with the previous test, pouches were placed in polythene bags to contain any rounds that might come loose. This in no way affected the action of the drop test on the store.

2. Damage to magazines occurred from both hot and cold conditioning, the latter being the more severe. The drop that appeared to cause the most damage was drop 'd' (on the edge between base and one end).

3. HOT CONDITIONING

RADWAY MAGAZINES

Magazines that had separated were easily re-assembled together with their full quota of rounds.

US COLT MAGAZINES

Buckled base plates were straightened and slid back into position. They were reloaded with their full quota of rounds.

THERMAL NYLON MAGAZINES

The separated magazine easily clipped back into position and was reloaded. Those magazines cracked, still retained their full quota of rounds and were passed on for further trials.

DME TRANSLUCENT MAGAZINES

No serious damage was noted.

DME OPAQUE MAGAZINES

No serious damage was noted.

4. COLD CONDITIONING

RADWAY GREEN MAGAZINES

Separated magazine was easily re-assembled and full quota of rounds were inserted. Although most bases were chipped or cracked, all still retained their full quota of ammunition.

US COLT MAGAZINES

As for Hot Conditioning.

THERMOLD NYLON MAGAZINE

One magazine was badly split at the mouth and could no longer hold its full quota of 30 rounds, it was therefore removed from trials programme.

Magazine that had separated was easily re-assembled and re-loaded. Other split magazines, still retaining their full complement, were passed on for further testing.

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DME TRANSLUCENT MAGAZINES

Magazine that had separated was beyond repair and could not be re-assembled. It was therefore withdrawn from further testing.

DME OPAQUE MAGAZINES

These magazines suffered badly from the cold conditioning drop. Damage resulting could not be repaired and magazines could not be re-assembled. They were therefore withdrawn from further testing. There are now no DME OPAQUE MAGAZINES in Box P2.

5. Three Radway Green Magazines, two containing Radway Green Ball and Tracer and the other Radway Green Ball and FN Tracer were removed from each box and sent to ROSA Enfield for check firing.



A G C WILLIAMS
PTO III
Wpns(A)4
for ADQA/WPNS(A)

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PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE**PROJECT SUPPORT DIRECTORATE**, Building 22

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2192 Telex 22210

Your reference

Our reference WPNS(A)19/9/10

Date 14 January 1986SA80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT - AMENDMENT NO 1

OB PROC NO:- D/OB/51/1/15

TEST SERIAL NO:- 41 (1.5m DROP)

DATE OF TEST:- 2.11.85-7.11.85

LOCATION:- PLESSEY ASSESSMENT SERVICES, TITCHFIELD, FAREHAM, HANTS

PERSONS PRESENT:- Mr D ANSELL - PLESSEY ASSESSMENT SERVICES
 MR R DRISCOLL - "
 MR A G C WILLIAMS - DGDQA/PS (WPNS A) 4
 MR J A WILLIAMS - "

STORE CONFIGURATION:-

AS DEFINED IN THE OB PROC

STORE DETAIL:- 5.56mm BALL 12A1, ROSA RADWAY GREEN
 5.56mm TRACER L1A1, ROSA RADWAY GREEN
 5.56mm TRACER L110 FN BELGIUM
 RADWAY GREEN MAGAZINES FOR SA80
 US COLT MAGAZINES
 THERMOLD NYLON MAGAZINES
 DME TRANSLUSCENT MAGAZINES
 DME OPAQUE MAGAZINES

AMENDMENTS: RESULTS: BOX P2 (CONDITIONED AT -46°C)PAGE 3: RADWAY GREEN MAGAZINE

After Text INSERT: "(SEE PLATE 9)"
 ADD Additional Page containing Plate 9.

DISTRIBUTION:

SEC OB - Maj N Rowe - 2 copies
 WPNS 3a St Christopher House - Lt Col T Dutton - 1 copy
 ROSA Plc Enfield - Mr S Alderton - 1 copy
 ROSA Plc Radway Green - Mr B Peach - 1 copy
 Plessey Assessment Centre, Titchfield - Mr D Ansell - 1 copy
 QO/W C2 - Mr Flett - 1 copy
 File DQA/PS/WPNS(A)19/9/10
 Float

A G C Williams
 A G C WILLIAMS
 PTO III
 WPNS(A) 4
 for ADQA/WPNS (A)

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PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE
PROJECT SUPPORT DIRECTORATE

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2192 Telex 22210

Your reference

Our reference WPNS(A)19/9/10

Date ~~14~~ January 1986SA80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

OB PROC NO:- D/OB/51/1/15

TEST SERIAL NO:- 42 (SALT MIST)

DATE OF TEST:- 11.11.85 - 6.12.85

LOCATION:- PLESSEY ASSESSMENT SERVICES, TITCHFIELD, FAREHAM, HANTS

 PERSONS PRESENT:- MR D ANSELL, PLESSEY ASSESSMENT SERVICES
 MR R DRISCOLL "
 MR A G C WILLIAMS DGDQA/PS WPNS(A)4
 MR J A WILLIAMS "

STORE CONFIGURATION:-

AS DEFINED IN THE OB PROC

STORE DETAIL:-

 5.56mm BALL L2A1, ROSA RADWAY GREEN
 5.56mm TRACER L1A1, ROSA RADWAY GREEN
 5.56mm TRACER L110, FN BELGIUM
 RADWAY GREEN MAGAZINES FOR SA 80
 US COLT MAGAZINES
 THERMOLD NYLON MAGAZINES
 DME TRANSLUCENT MAGAZINES
 DME OPAQUE MAGAZINES
DISTRIBUTION:

SEC OB - Maj N Rowe - 2 copies

WPNS 3a St Christopher House - Lt Col T Dutton - 1 copy

ROSA Plc Enfield - Mr S Alderton - 1 copy

ROSA Plc Radway Green - Mr B Peach - 1 copy

Plessey Assessment Services, Titchfield - Mr D Ansell - 1 copy

QO W4C2 - Mr Flett - 1 copy

File DQA/PS/WPNS(A)19/9/10

Float

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RESULTSBox P1 & P2RADWAY GREEN MAGAZINES

CONTAINING:

RADWAY GREEN BALL & TRACER
RADWAY GREEN BALL & FN TRACER

Some rounds were badly tarnished by what appeared to be salt deposits. The number of rounds affected was as many as 2/3 of the full complement for some magazines. (See Plates 1 & 2).

The action of magazine spring was not functioning correctly in some cases, probably due to salt deposits that could be seen internally. The first few rounds were difficult to unload and reloading, after inspection, was difficult for some magazines.

US COLT MAGAZINES

CONTAINING:

RADWAY GREEN BALL & TRACER
RADWAY GREEN BALL & FN TRACER

As for Radway Green magazines, some rounds were badly tarnished with salt deposits. The number of rounds affected varied between 1/3 to 1/2 of the full 30 round complement. (See Plates 3 & 4).

Salt deposits could be seen both internally and externally on the magazines and the spring action was affected as a result.

THERMOLD NYLON MAGAZINES

CONTAINING:

RADWAY GREEN BALL & TRACER
RADWAY GREEN BALL & FN TRACER

As for radway Green and US Colt Magazines, salt deposits were found on some rounds. The number of rounds affected were not as bad as previous magazines. Only the first 6 rounds were tarnished (See Plates 5 and 6).

No deposits were noticed either internally or externally on magazines and spring action was not affected.

Two loose rounds were found in the pouch probably as a result from splits in the magazine mouth caused at earlier tests.

DME TRANSLUCENT MAGAZINES

CONTAINING:

RADWAY GREEN BALL & TRACER
RADWAY GREEN BALL & FN TRACER

For magazines in Box P1, the first 6 rounds were badly tarnished with salt deposits. (See Plates 7 & 8).

No salt deposits were noticed internally or externally on magazines but spring action made the loading and unloading of rounds difficult.

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The only surviving magazine of this type in Box P2 was an oddity. The first 1/3 and the last 1/3 were badly tarnished with salt deposits. The middle 1/3 were unaffected. This was the only magazine that we found affected in this manner. (See Plate 9).

DME OPAQUE MAGAZINES

CONTAINING:

RADWAY GREEN BALL & TRACER
RADWAY GREEN BALL & FN TRACER

Half of the rounds in each magazine were found to be badly tarnished with salt deposits.

Spring action of magazines were sticky and reloading was difficult. Both magazines are badly bell-mouthed caused during previous tests.

POUCHES

Salt deposits were noticed on all of the pouches. Press buttons and clips were coated with a green deposit. The pouches were extremely difficult to open. Two people were required in some instances, one to hold the pouch and the other to pull on the flap! The press buttons in some cases, pulled out of the pouch rather than open.

GENERAL COMMENTS

1. The worst of the badly affected rounds were so heavily coated with salt deposits that it is doubtful whether they would have chambered.
2. The first few rounds were extremely difficult to unload. Considerable force being required in some instances. It is questionable whether the magazines would have functioned correctly in the weapons.
3. The pouch press buttons were extremely difficult to open in some instances. Some even pulled out of the material before they opened.

The pouches had no side flaps, the magazines were therefore fully exposed to the salt mist from the side direction. It is felt that this is the probable reason why so many rounds were badly tarnished with salt deposits.

NOTES

1. For Plate 1 see Figure 19 page 36
2. For Plate 2 see Figure 20 page 37
3. For Plate 3 see Figure 21 page 38
4. For Plate 4 see Figure 22 page 39
5. For Plate 5 see Figure 23 page 40
6. For Plate 6 see Figure 24 page 41
7. For Plate 7 see Figure 25 page 42
8. For Plate 8 see Figure 26 page 43
9. For Plate 9 see Figure 27 page 44



A G C WILLIAMS
PTO III
WPNS(A)4
for ADQA/WPNS(A)

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PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE
PROJECT SUPPORT DIRECTORATE

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2192 Telex 22210

Your reference

Our reference WPNS(A)19/9/10

Date 17 January 1986

SA80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

OB PROC NO:- D/OB/51/1/15

TEST SERIAL NO:- 43 (VIBRATION - ENDURANCE SINE SWEEP)

DATE OF TEST:- DECEMBER 1985

LOCATION:- PLESSEY ASSESSMENT SERVICES, TITCHFIELD, FAREHAM, HANTS

PERSONS PRESENT:- MR D ANSELL - PLESSEY ASSESSMENT SERVICES
 MR R DRISCOLL - " " "
 MR A G C WILLIAMS DGDQA/PS WPNS(A)4
 MR J A WILLIAMS " " "

STORE CONFIGURATION:-

AS DEFINED IN THE OB PROC

STORE DETAIL:- 5.56mm BALL L2A1, ROSA RADWAY GREEN
 5.56mm TRACER L1A1, ROSA RADWAY GREEN
 5.56mm TRACER L110, FN BELGIUM
 RADWAY GREEN MAGAZINES FOR SA80
 US COLT MAGAZINES
 THERMOLD NYLON MAGAZINES
 DME TRANSLUCENT MAGAZINES
 DME OPAQUE MAGAZINES

DISTRIBUTION:

SEC OB - Maj N Rowe - 2 copies
 WPNS 3a St Christopher House - Lt Col T Dutton - 1 copy
 ROSA Plc Enfield - Mr S Alderton - 1 copy
 ROSA Plc Radway Green - Mr B Peach - 1 copy
 PLESSEY ASSESSMENT CENTRE, TITCHFIELD - MR D ANSELL - 1 Copy
 QO W4C2 - MR FLETT - 1 Copy
 File DQA/PS/WPNS(A)19/9/10
 Float

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RESULTS

BOX P1 (CONDITIONED AT +70°C)

RADWAY GREEN MAGAZINES

CONTAINING:

RADWAY GREEN BALL AND TRACER
RADWAY GREEN BALL AND FN TRACER

No damage to rounds or magazines. Some of the salt deposits on rounds from previous test has been shaken free.

US COLT MAGAZINES

CONTAINING:

RADWAY GREEN BALL AND TRACER
RADWAY GREEN BALL AND FN TRACER

No damage to rounds or magazines. Slight scuffing marks on magazines where they have rubbed together in the pouch.

THERMOLD NYLON MAGAZINES

CONTAINING:

RADWAY GREEN BALL AND TRACER
RADWAY GREEN BALL AND FN TRACER

Several loose rounds found in pouches. Splits in magazines caused during previous tests are no worse. No damage to rounds or magazines.

DME TRANSLUCENT MAGAZINES

CONTAINING:

RADWAY GREEN BALL & TRACER
RADWAY GREEN BALL AND FN TRACER

One loose round found in pouch. No damage to rounds but some magazines have slight cracks at their mouths.

DME OPAQUE MAGAZINES

CONTAINING:

RADWAY GREEN BALL & TRACER
RADWAY GREEN BALL AND FN TRACER.

Several loose rounds found in pouch resulting from bell-mouthing of magazines at previous tests. No damage to rounds and no additional damage to magazines.

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BOX P2 (CONDITIONED AT -46°C)

RADWAY GREEN MAGAZINES

CONTAINING:

RADWAY GREEN BALL AND TRACER
RADWAY GREEN BALL AND FN TRACER

No damage to rounds or magazines. Spring action of magazines still remain sticky. 1 loose round found in Pouch 2.

US COLT MAGAZINES

CONTAINING:

RADWAY GREEN BALL AND TRACER
RADWAY GREEN BALL AND FN TRACER.

No damage to rounds or magazines. One loose round found in Pouch 5.

THERMOLD NYLON MAGAZINES

CONTAINING:

RADWAY GREEN BALL AND TRACER
RADWAY GREEN BALL AND FN TRACER

One loose round found in pouch. No damage to rounds and no further damage to magazine splits that had occurred at previous tests.

DME TRANSLUCENT MAGAZINE

CONTAINING:

RADWAY GREEN BALL AND TRACER

No damage to rounds and no further damage to split in magazine.

DME OPAQUE MAGAZINES

No magazines of this type remain in Box P2, all have been withdrawn as a result of previous tests.

GENERAL COMMENTS

No apparent damage to rounds or magazines was found after this test. Some of the salt deposits, left after the last test, have been shaken free leaving them in a better condition.



A. G. C. WILLIAMS

PTO III

Wpns(A)4

for ADQA/WPNS(A) . Page A26

Report No 270239

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PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE**PROJECT SUPPORT DIRECTORATE** Room 213 Bldg 22

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2178 Telex 22210

Your reference

Our reference Wpns(A) 19/9/10

Date **12**, February 1986

Ordnance Board
Empress State Building
Lillie Rd
London SW6 1TR

Attention Maj N C Rowe

SA 80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

Reference:

- A. D/OB/51/1/15 dated 31 Jul 1985
- B. Contract ROF 2a/4059 dated 7 Aug 1985

1. Please find enclosed at Annex A two copies of report for Test Serial No 44 (Vibration - Endurance Random).
2. The test was carried out by Plessey Assessment Services at Titchfield during December 1985.

A G C WILLIAMS
for ADQA/Wpns(A)

Copy to:

DLWP/Wpns 3A - Lt Col Dutton
ROSA Plc Enfield - Mr S Alderton
ROSA Plc Radway Green - Mr B Peach
Plessey Assessment Services - Mr D Ansell
QO W4C2 - Mr Flett
File
Float

Annex

A - Report for Test Serial No 44 (Vibration - Endurance Random)

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ANNEX A TO
WPNS(A) 19/9/10
DATED 12 FEBRUARY 1986

REPORT FOR TEST SERIAL NO 44 (VIBRATION - ENDURANCE RANDOM)

1. DATE OF TEST During December 1985.
2. LOCATION Plessey Assessment Services, Titchfield, Fareham, Hants.
3. PERSONS PRESENT
 - (a) Mr D Ansell, Plessey Assessment Services
 - (b) Mr R Driscoll, "
 - (c) Mr A G C Williams, DGDQA/PS WPNS(A)4
 - (d) Mr J A Williams, "
4. STORE CONFIGURATION As defined in OB Proc, Ref A.
5. STORE DETAIL
 - (a) 5.56mm BALL L2A1, ROSA RADWAY GREEN
 - (b) 5.56mm TRACER L1A1, ROSA RADWAY GREEN
 - (c) 5.56mm TRACER L110, FN BELGIUM
 - (d) RADWAY GREEN MAGAZINES FOR SA80
 - (e) US COLT MAGAZINES
 - (f) THERMOLD NYLON MAGAZINES
 - (g) DME TRANSLUCENT MAGAZINES
 - (h) DME OPAQUE MAGAZINES

RESULTS

6. BOX P1 (CONDITIONED AT +70°C)

a. RADWAY GREEN MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

Two loose rounds found in Pouch 2, rounds and magazine in this pouch were undamaged.

In pouch 3, the screws securing pouch to the vibration machine platform had rubbed against the pouch flap causing severe damage to the pouch, magazine and end round. (See Plates 1 & 2). This damage was attributable to the set up for the test, not the vibration test itself.

Other magazines and rounds of this type were undamaged.

b. US COLT MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

In Pouch 5 magazines were inserted base side up. One magazine rubbed against the screws attaching the pouch to the vibration platform. Severe damage was incurred by the pouch flap and the base plate of the magazine (See Plate 3).

RESTRICTED

As with the Radway Green Magazine, this damage was the result of the set up for the test and not the random vibration itself. This magazine will no longer retain a full quota of rounds and it is therefore proposed to remove it from the trials programme.

For the other US Colt Magazines some rounds showed circular scuff marks where they had rotated and rubbed against one another. Some salt deposits, from previous tests, had been shaken free. Scuff marks on magazine mating faces were noted. (See Plate 4).

c. THERMOLD NYLON MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

All four magazines in Puch 6 were empty. Splits at magazine mouths from previous tests have made it impossible for these magazines to retain their full quota of rounds. No damage was noted to the rounds. It is proposed that these magazines be withdrawn from the remaining trials programme.

The one remaining magazine of this type in Pouch 7 was unaffected, with no apparent damage to rounds or magazine.

d. DME TRANSLUCENT MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

Several loose rounds were found in the pouch. Some rounds have circular scuff marks on them due to them rotating in the magazines.

Some magazines have scuff marks on the mating surfaces where they have rubbed together. One mouth was badly chipped (See Plate 5).

e. DME OPAQUE MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

Both magazines were empty. The mouth of each magazine is badly bell-mouthed and they can no longer retain their 30 round complement. It is proposed to withdraw these magazines also from the remaining trials programme.

7. BOX P2 (CONDITIONED AT -46°C)

a. RADWAY GREEN MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

No loose rounds were found. No apparent damage to rounds or magazines was noted.

RESTRICTED

b. US COLT MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

No loose rounds were found. No damage to rounds was noted. Some magazines had slight scuff marks on their mating surfaces where magazines had rubbed together in the pouch. Scuffing was not as severe as that incurred by the hot conditioned magazines.

c. THERMOLD NYLON MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

One magazine had 21 loose rounds. The other magazines still held their full 30 round quota. No apparent damage to rounds or magazines was found.

d. DME TRANSLUCENT MAGAZINES

CONTAINING:

- (1) RADWAY GREEN BALL & TRACER

One loose round was found from the one remaining magazine of this type in box P2. No damage to round or magazine was noted.

e. DME OPAQUE MAGAZINES

No magazines of this type remain in Box P2

GENERAL COMMENTS

8. The only serious damage found was that incurred by the Radway Green & US Cold Magazines. This damage resulted from the set up for the test and not the random vibration itself.

9. Many loose rounds were found in the test chamber after the Hot Conditioned Test. Most of these came from the Thermold Nylon & DME Opaque Magazines. These magazines are either split at the mouth or have badly bell-mouthed. They can no longer retain their full quota of 30 rounds. No worth-while purpose can be seen in continuing to test these magazines. It is therefore proposed to withdraw them from the remaining trials programme.

NOTE: For Plate 1 see Figure 33 page 53
For Plate 2 see Figure 34 page 54
For Plate 3 see Figure 35 page 55
For Plate 4 see Figure 36 page 56
For Plate 5 see Figure 37 page 57

RESTRICTED



PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE
PROJECT SUPPORT DIRECTORATE

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2178 Telex 22210

Your reference

Our reference

Date D/DQA/PS/WPNS(A)19/9/10

26 February 1986

Ordnance Board
 Empress State Building
 Lillie Road
 London SW6 1TR

For the attention of Maj N C Rowe

SA 80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

Reference:

- A. D/OB/51/1/15 dated 31 Jul 1985
 B. Contract ROF 2a/4059 dated 7 Aug 1985

1. Please find attached at Annex 'A', two copies of report for Test Serial No 45 (Bounce).
2. The test was carried out by Plessey Assessment Services at Titchfield, Hants during January 1986.

Annex

A - Report for Test Serial No 45 (Bounce).

A G C WILLIAMS
 for ADQA/WPNS(A)

Copy to :

DLWP/Wpns 3a - Lt Col T Dutton
 ROSA PLC Enfield - Mr S Alderton
 ROSA PLC Radway Green - Mr B Peach
 Plessey Assessment Services - Mr D Ansell
 QO W4C2 - Mr Flett

File
 Float

RESTRICTED

RESTRICTED

- (2) Radway Green Ball and FN Tracer

Two magazines had one loose round. No damage to rounds or magazines was noted.

c. Thermold Nylon Magazines

Containing:

- (1) Radway Green Ball and Tracer

No damage to rounds or magazines was noted.

d. DME Translucent Magazines

Containing:

- (1) Radway Green Ball and Tracer

- (2) Radway Green Ball and FN Tracer

The mouth of one magazine was badly chipped and many loose rounds were found in the pouch (see Plate 1). The magazine will no longer retain a full quota of 30 rounds and it is therefore proposed to withdraw it from the trials programme.

No damage was found on inspection of the other two magazines in this box.

e. DME Opaque Magazines

No magazines of this type remain in Box P1.

7. BOX P2 (Conditioned at -46°C)

a. Radway Green Magazines

Containing:

- (1) Radway Green Ball and Tracer

- (2) Radway Green Ball and FN Tracer

No damage to rounds or magazines was noted.

b. US Colt Magazines

Containing:

- (1) Radway Green Ball and Tracer

- (2) Radway Green Ball and FN Tracer

No damage to rounds or magazines was noted.

RESTRICTED

c. Thermold Nylon Magazines

Containing:

- (1) Radway Green Ball and Tracer
- (2) Radway Green Ball and FN Tracer

No damage to rounds or magazines was noted.

d. DME Translucent Magazines

Containing:

- (1) Radway Green Ball and Tracer

No damage to rounds or magazine was noted.

e. DME Opaque Magazines

No magazines of this type remain in Box P2.

GENERAL COMMENTS

8. The DME Translucent Magazine that has been withdrawn was cracked during an earlier test. The crack has gradually developed and has now separated completely. It will no longer hold a full complement of 30 rounds and has therefore been withdrawn.

9. No other damage to rounds or magazines was noted from either the Hot or Cold conditioned boxes.

NOTE: For Plate 1 see Figure 38 page 59

RESTRICTED



PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE**PROJECT SUPPORT DIRECTORATE** Room 213 Bldg 22

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2178 Telex 22210

Your reference

Our reference Wpns(A)19/9/10

Date 6 February 1986

Ordnance Board
Empress State Building
Lillie Rd
London SW6 1TR

Attention Maj N C RoweSA 80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

Reference:

- A. D/08/51/1/15 dated 31 Jul 1985
- B. Contract ROF 2a/4059 dated 7 Aug 1985

1. Please find enclosed at Annex A, two copies of report for Test Serial No 46 (Low temperature, low pressure).
2. The test was carried out by Plessey Assessment Services at Titchfield on the 16th January 1986.

A G C WILLIAMS
for ADQA/Wpns(A)

Annex

A - Report for Test Serial No 46 (Low temperature, low pressure)

Copy to:

DLWP/Wpns 3a - Lt Col Dutton
ROSA Plc Enfield - Mr S Alderton
ROSA Plc Radway Green - Mr B Peach
Plessey Assessment Services - Mr D Ansell
QO W4C2 - Mr Flett
File
Float

RESTRICTED



PROCUREMENT EXECUTIVE MINISTRY OF DEFENCE

DIRECTORATE GENERAL OF DEFENCE QUALITY ASSURANCE**PROJECT SUPPORT DIRECTORATE** Room 213 Bldg 22

ROYAL ARSENAL WEST, WOOLWICH, LONDON, SE18 6ST Tel: 01-854 2044 Ext 2178 Telex 22210

Your reference

Our reference Wpns(A)19/9/10

Date 7 February 1986

Ordnance Board
Empress State Building
Lillie Rd
London SW6 1TR

Attention Maj N C Rowe

SA 80 ORDNANCE BOARD TRIALS - AMMUNITION REPORT

Reference:

- A. D/OB/51/1/15 dated 31st July 1985
B. Contract ROF 2a/4059 dated 7th Aug 1985

1. Please find enclosed at Annex A, two copies of report for Test Serial No 47 (Free-fall, parachute drop).
2. The test was carried out by Plessey Assessment Services at Titchfield on the 22nd January 1986.

A G C WILLIAMS
for ADQA/Wpns(A)

Annex

- A - Report for Test Serial No 47
(Free-fall, parachute drop)

Copy to:

DLWP/Wpns 3a - Lt Col T Dutton
ROSA Plc Enfield - Mr S Alderton
ROSA Plc Radway Green - Mr B Peach
Plessey Assessment Services - Mr D Ansell
QO W4 C2 - Mr Flett
File
Float

RESTRICTED

ANNEX A to
WPNS(A) 19/9/10
Dated 7 February 1986REPORT FOR TEST SERIAL No 47 (FREE-FALL, PARACHUTE DROP)

1. DATE OF TEST - 22 Jan 1986
2. LOCATION - Plessey Assessment Services, Titchfield, Fareham, Hants.
3. PERSONS PRESENT -
 - a. Mr D Ansell, Plessey Assessment Services
 - b. Mr A G C Williams, DGDQA/PS Wpns(A)4
 - c. Mr J A Williams, "
4. STORE CONFIGURATION - As defined in OB Proc, Ref A.
5. STORE DETAIL -
 - a. 5.56mm BALL L2A1, ROSA RADWAY GREEN
 - b. 5.56mm TRACER L1A1, ROSA RADWAY GREEN
 - c. 5.56mm TRACER L110, FN BELGIUM
 - d. RADWAY GREEN MAGAZINES FOR SA 80
 - e. US COLT MAGAZINES
 - f. THERMOLD NYLON MAGAZINES
 - g. DME TRANSLUCENT MAGAZINES
 - h. DME OPAQUE MAGAZINES

RESULTS

6. BOX P1 (CONDITIONED AT +70°C)
 - a. RADWAY GREEN MAGAZINES
Containing:
 - (1) RADWAY GREEN BALL & TRACER
 - (2) RADWAY GREEN BALL & FN TRACER
 No damage to rounds or magazines.
 - b. US COLT MAGAZINES
Containing:
 - (1) RADWAY GREEN BALL & TRACER
 - (2) RADWAY GREEN BALL & FN TRACER
 No damage to rounds or magazines.
 - c. THERMOLD NYLON MAGAZINE
Containing:
 - (1) RADWAY GREEN BALL & TRACER
 One loose round found in the pouch. No damage to rounds or magazine.

RESTRICTED

d. DME TRANSLUCENT MAGAZINES

Containing:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

Action of magazine spring was erratic. It was of the rounds free. No further damage to magazine.

e. DME OPAQUE MAGAZINES

All of the magazines of this type have been worked after previous tests.

7. BOX P2 (CONDITIONED AT -46°C)

a. RADWAY GREEN MAGAZINES

Containing:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

No damage to magazines or rounds. Spring action unloading difficult. Some rounds were tilting and needed to be re-aligned before they would

b. US COLD MAGAZINES

Containing:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

No damage to magazines or rounds. Spring action

c. THERMOLD NYLON MAGAZINE

Containing:

- (1) RADWAY GREEN BALL & TRACER
- (2) RADWAY GREEN BALL & FN TRACER

One loose round in the pouch. No further damage was noted. The spring action of this type of order.

d. DME TRANSLUCENT MAGAZINE

Containing:

- (1) RADWAY GREEN BALL & TRACER

1. DATE

2. LOCAL

3. PERS

4. STOR

5. STOR

RESULTS

6. BOX

a.

b.

c.

RESTRICTED

The crack at the mouth of magazine, that had occurred after previous tests, has developed. It has almost reached the complete separation stage. Spring action was very erratic. No damage to rounds was noted.

e. DME OPAQUE MAGAZINES

No magazines of this type remain in Box P2. All have been withdrawn after suffering damage from previous tests.

GENERAL COMMENTS

8. No severe damage to any of the magazines was found resulting from the Free-fall, parachute Drop Test.

9. The cold conditioning affected the feed action of the Radway Green & DME Translucent Magazines.

10. This test completes the Environmental Trials Programme for these magazines. Remaining magazines are to be sent for check firing.