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Report No. DPS-2209

FINAL REPORT ON ENGINEERING TEST OF GRENADE DISPENSING ADAPTER, LWL GDA-3 (SAFETY RELEASE)

BY

GERALD J. SCHUELER

DECEMBER 1966

ABERDEEN PROVING GROUND
ABERDEEN PROVING GROUND, MARYLAND

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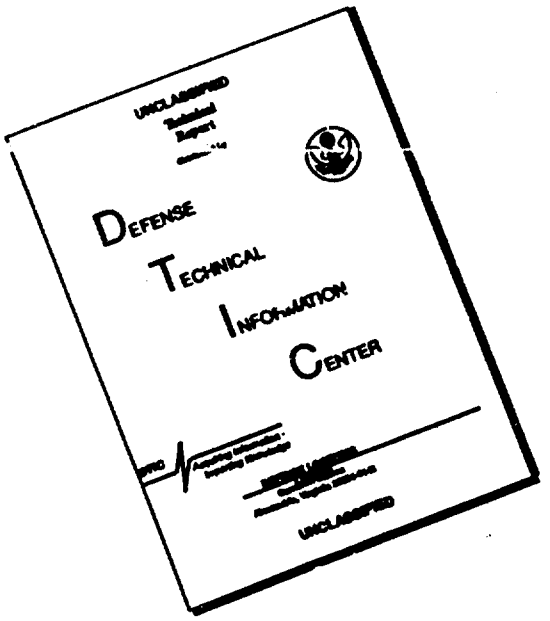

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DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY TEST AND EVALUATION COMMAND
ABERDEEN PROVING GROUND, MARYLAND 21005

AMSTE-BG
4-5-2980-11

27 JAN 1967

SUBJECT: Final Report on Engineering Test (Safety Release) of Grenade Dispensing Adapter, LWL GDA-3

TO: Commanding General
U. S. Army Materiel Command
ATTN: AMCPM-AI

Subject report is approved by this Headquarters and is forwarded for information and retention.

FOR THE COMMANDER:

DAVID M. KYLE
Colonel, GS
Dir, Avn Mat Testing

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USATECOM PROJECT NO. 4-5-2980-11

ENGINEERING TEST OF GRENADE DISPENSING ADAPTER, LWL GDA-3 (SAFETY RELEASE)

FINAL REPORT

BY

GERALD J. SCHUELER

DECEMBER 1966

ABERDEEN PROVING GROUND
ABERDEEN PROVING GROUND, MARYLAND
21005

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ABSTRACT

An engineering (safety release) test was conducted on the grenade dispensing adapter, LWL GDA-3, at Aberdeen Proving Ground from 9 March to 19 October 1966. Testing consisted of a vibration test, drop test, and a usability test. A 7-tube (LAU-32) and a 19-tube (LAU-3) model of the GDA-3 were tested. The LAU-32 model suffered significant physical damage during the vibration test. No further testing was conducted on this model, and it was not recommended for safety release. The LAU-3 model met the criteria for all tests and it was recommended for safety release for both rotary and fixed-wing aircraft within the limitations imposed by applicable safety-of-flight releases.

FOREWORD

This test was authorized by USATECOM Test Directive, 27 September 1965, under USATECOM Project No. 4-5-2980-11 and by AMSTE-BG letters, 1 December 1965 and 11 January 1966 (Appendix II).

The test was requested by US Army Limited War Laboratory letter, 26 August 1965, Subject: Request for Test and Safety Evaluation of LWL Grenade Dispensing Adapter for M8 Smoke Grenade.

Development and Proof Services was responsible for preparing the test plan, conducting the test, and preparing the test report.

ABERDEEN PROVING GROUND
ABERDEEN PROVING GROUND, MARYLAND 21005

USATECOM PROJECT NO. 4-5-2980-11

FINAL REPORT ON ENGINEERING TEST OF GRENADE DISPENSING ADAPTER, LWL GDA-3 (SAFETY RELEASE)

9 MARCH TO 19 OCTOBER 1966

SECTION 1. INTRODUCTION

1.1 BACKGROUND

In 1964, the US Army Limited War Laboratory developed a system for aerially dispensing AN-M8 smoke grenades to produce a smoke screen covering troop landings or movements (troop landing smoke screen, TLSS). The TLSS system uses two XM3, 2.75-inch rocket launch racks mounted on a UH-1 helicopter. The TLSS has been safety-released (Reference 6) and several systems are in use in Vietnam.

The grenade dispensing adapter (GDA-3) was developed by LWL as a result of a request by troops in Vietnam (Reference 5). It uses the LAU 2.75-inch rocket-launch pods and is designed to be used on helicopters and on high- and low-performance fixed-wing aircraft.

1.2 DESCRIPTION OF MATERIEL

The grenade dispensing adapter is an aluminum assembly which clamps on the rocket discharge end of the LAU pod. The LAU pod, when used with the adapter, is mounted in a reversed position so that the grenades are ejected rearward by means of constant-force springs incorporated in the adapter.

The grenade handle is retained by the tube wall and the safety pin is pulled as each grenade is pushed into the tube against the force of the spring. A small metal gate is snapped across the tube when loaded and is retained by a solenoid-actuated latch (Figures 1 and 2). A safety pin is inserted in each latch for safety during loading. An intervalometer is used to time the tube discharge rate according to aircraft speed (Figure 3).

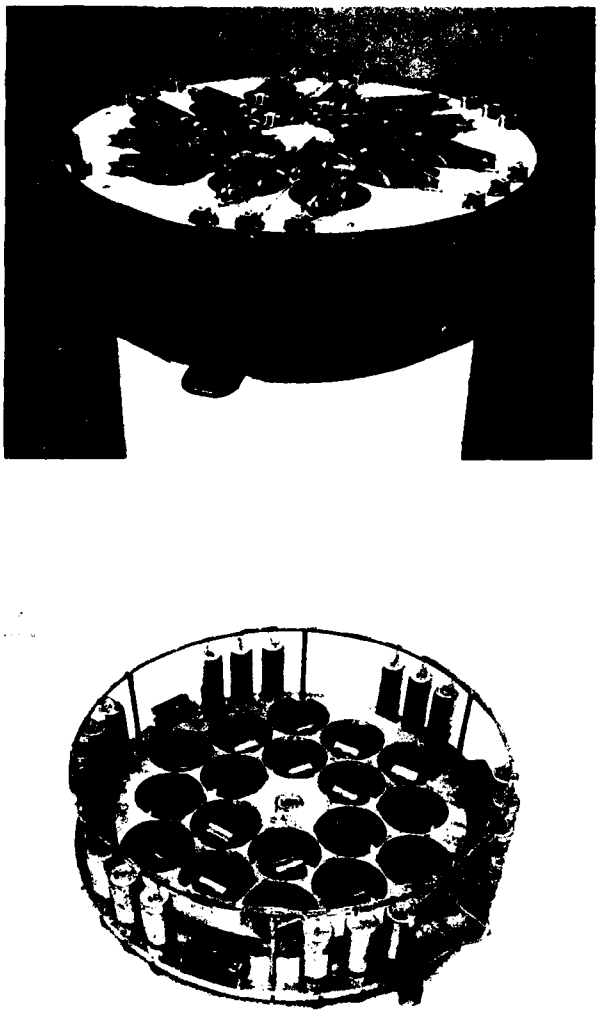

Figure 1: Grenade Dispensing Adapter, LAU-3 Model. TOP: External View. BOTTOM: Internal View.

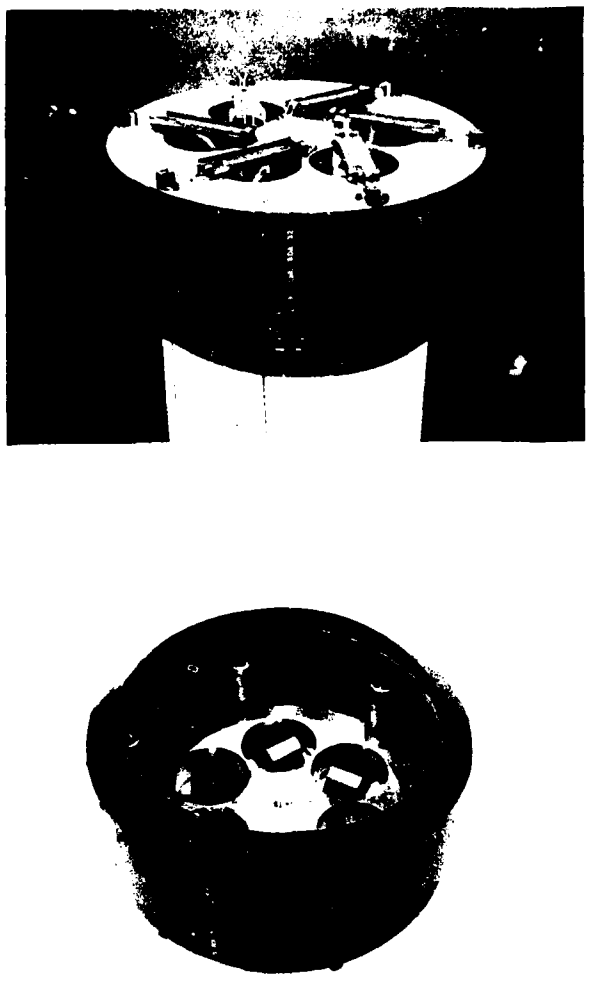

Figure 2: Grenade Dispensing Adapter, LAU-32 Model. TOP: External View. BOTTOM: Internal View.

Figure 3: GDA-3, LAU-3 Model with Accessories. A. LAU-3 Rocket Launcher. B. Adapter Plate Assembly. C. Cover Plate. D. Dispensing Signal Cable. E. Power Adapter Cable. F. Intervalometer.

Two models of the GDA are available. Characteristics of each are as shown in Table I.

Table I. Characteristics

	Launcher Pod Model	
	LAU-3	LAU-32
Number of tubes	19	7
Tubes available using GDA	18	6
Length, in.	52	52
Diameter, in.	19	13
Weight empty, pounds	116	56
Weight loaded, pounds	318 ([a]299)	123 ([a]114)
Number of grenades per pod	126 ([a]108)	42 ([a] 36)

[a]In some situations, small parachutes are taped to the bottom of the grenades causing the reduction in capacity and weight.

Both adapter models furnished for this test were held to their respective pods by a straight metal bar through the center tube. This rigid bar was replaced by a cable assembly on both models during the course of this test.

Both models are loaded by means of a loading tube (Figure 4) specifically designed by LWL for this purpose. The loading-tube capacity is six grenades (each tube, however, has a capacity of seven grenades without parachutes).

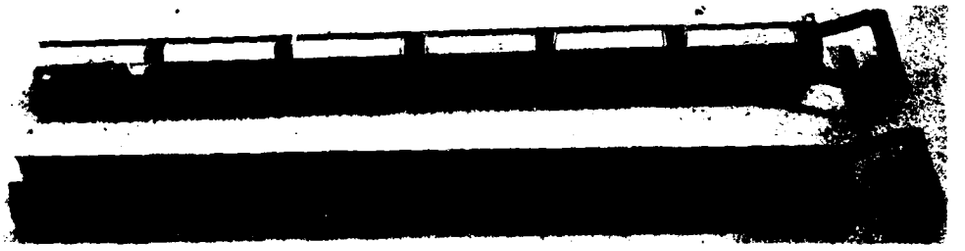

Figure 4: Loading Tube for Both Models of GDA-3.

1.3 TEST OBJECTIVES

This test was conducted to determine the engineering adequacy and the safety characteristics of the grenade dispensing adapter, LWL GDA-3.

1.4 SUMMARY OF RESULTS

1.4.1 Vibration Test

No physical damage was observed after vibration testing of the LAU-3 model adapter.

The following deficiencies were noted during vibration testing of the LAU-32 model adapter:

a. The rigid metal bar which holds the adapter assembly to the launcher broke four times in four attempts.

b. Constant-pressure springs broke during each phase of testing.

c. The wiring harness broke from the solenoids during each phase of testing.

The rigid bar was replaced with a cable assembly which did not break. No further testing was conducted on the LAU-32 model adapter due to the results of the vibration test.

1.4.2 Five-Foot Drop Test

No safety problem resulted from the 5-foot drop test of the LAU-3 model. The safety pins remained in place and no spontaneous ignition of the grenades was observed. Three tubes failed to operate properly after this test.

1.4.3 Usability Test

One tube of one of the two LAU-3 adapters under test failed to eject grenades when dispensing was attempted from a UH-1 helicopter. The grenades remaining in the tube after the test were safety emptied manually. About 15% of the grenades dropped from the helicopter failed to produce smoke.

Four tubes of two LAU-3 adapters under test failed to eject grenades when dispensing was attempted from a U6 aircraft. These tubes were safely emptied manually. About 20% of the grenades dropped from the U6 aircraft failed to produce smoke.

Failure of the tubes to eject grenades was considered a shortcoming.

1.5 CONCLUSIONS

It is concluded that:

a. The LAU-32 model of the GDA-3 did not meet the criteria for the vibration phase of this test (ref par. 2.2).

b. The LAU-3 model met the criteria for all three phases of this test (ref pars. 2.2, 2.3, and 2.4).

1.6 RECOMMENDATION

It is recommended that a safety release be issued for the LAU-3 model of the grenade dispensing adapter for both rotary and fixed-wing aircraft within the limitations imposed by respective safety-of-flight releases.

SECTION 2. DETAILS OF TEST

2.1 INTRODUCTION

The safety of the GDA-3 system with respect to vibrations and dropping onto a hard surface was investigated; also the adequacy and safety of the GDA-3 system in ejecting the grenades from the dispenser on moving aircraft was determined. The LAU-32 model adapter failed during vibration testing and no further tests were conducted with this model.

2.2 SIMULATED AIRCRAFT VIBRATION TEST

2.2.1 Objective

This test was conducted to determine if the test items remain safe and operable after experiencing simulated aircraft vibrations.

2.2.2 Criteria

The criteria for acceptance are as follows:

a. There shall be no spontaneous functioning of the test items during vibration.

b. There shall be no spontaneous ignition of the armed grenades during vibration.

c. There shall be no significant physical damage to either the test items or the grenades.

d. The test items shall operate properly after each phase of vibration.

2.2.3 Method

Each test item was subjected to simulated aircraft vibrations. The fixed-wing aircraft test was conducted in accordance with Method 514.1, Equipment Class 1, Mounting Method A, Curve 514-1B, and Time Table 514-II, Schedule I, of MIL-STD-810A. The helicopter test was conducted in accordance with Method 514.1, Equipment Class 2, Mounting Method A, Curve 514-2B, and Time Table 514-II, Schedule I, MIL-STD-810A. The method of mounting was designed to simulate both the O-1 aircraft method and the helicopter method, the only difference being that the helicopter method uses sway bars.

Each model was vibrated through three primary, mutually perpendicular axes, while critically loaded for each particular axis.

Figure 5 shows the LAU-3 model with accelerometer locations. Figure 6 shows the LAU-32 model prior to the vibration test with accelerometer locations on the launch pod. Figure 7 shows the entire setup for testing the LAU-32 model in the transverse axis. A detailed description of this test is contained in Reference 7.

Figure 5: LAU-3 Model Showing Accelerometer Locations Prior to Vibration Test. 1. U Channel Gates. 2. Retaining Latches. 3. Ejection Springs. 4. Launch Pod. 5. Adapter.

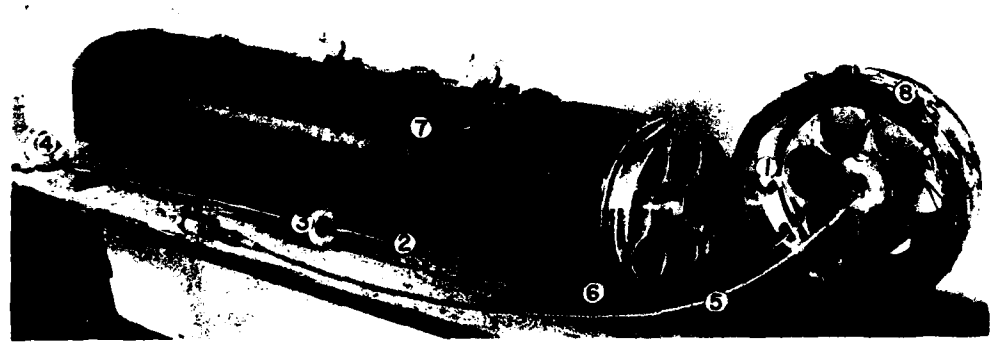

Figure 6: LAU-32 Model Showing Accelerometer Locations Prior to Vibration Test. 1. Firing Solenoids. 2. Adapter Holding Rod. 3. Wooden Block Modification to Rod. 4. Aluminum Plate Modification. 5. Cable Assembly. 6. Area Where Steel Rods Broke. 7. Launch Pod. 8. Adapter.

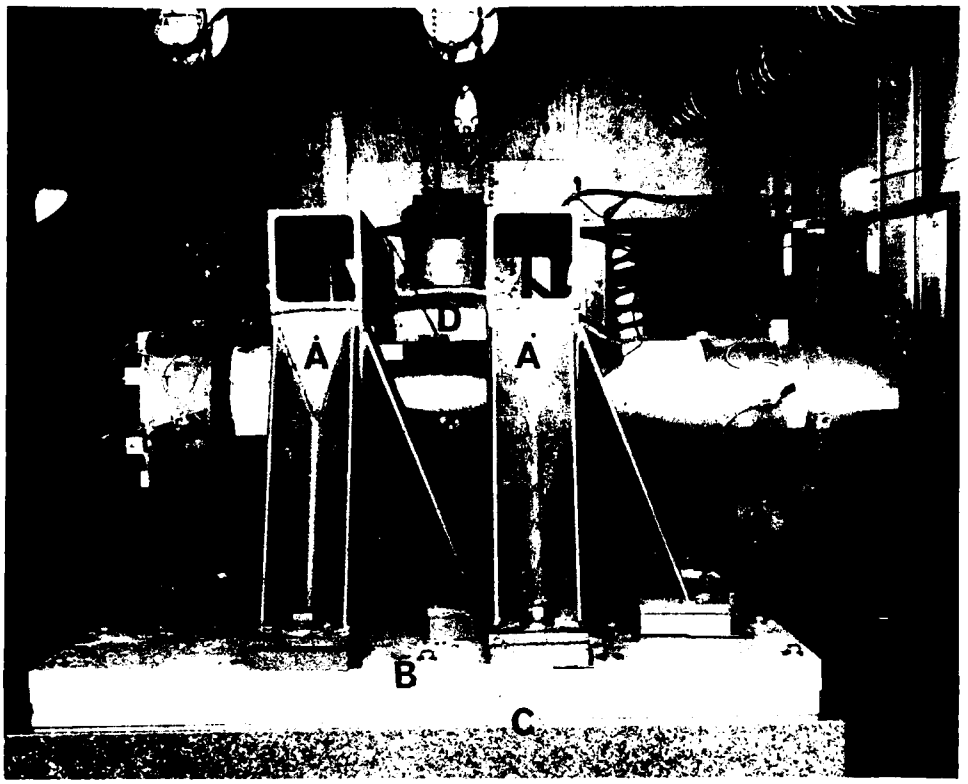

Figure 7: LAU-32 Model in Vibration Test Setup. A. Fixture for Vibration through Transverse Axis. B. Two-Inch Aluminum Plate. C. Vibra-Plane. D. Driving Motor, C210 Exciter.

2.2.4 Results

The LAU-3 model passed all phases of the vibration test satisfactorily and no visible damage occurred.

Significant damage occurred to the LAU-32 model in all phases of the test.

Three of the six ejection springs broke off during the transverse aircraft phase of the test (Figure 8).

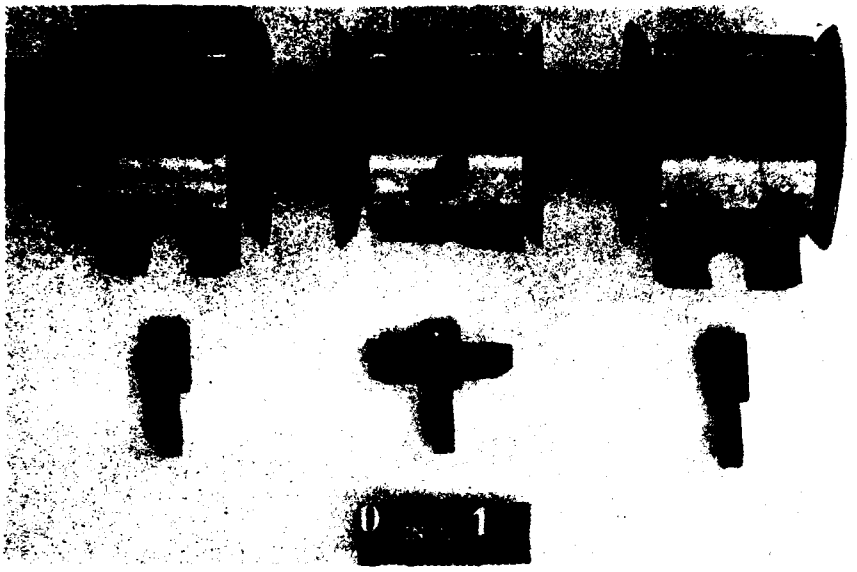

Figure 8: Vigration Test Areas of Breakage of Original Single-Rivet Springs, Model LAU-32.

The adapter holding rod (Figure 6) broke in the vertical axis of vibration at about 54 cps. This rod was replaced with a similar rod which broke at about 70 cps. Another rod was then used with a round wooden block modification (Figure 6) to dampen vibration. This rod broke at about 60 cps. A fourth rod was used with an aluminum plate modification (Figure 6); and this fourth rod broke during the first two minutes at 64 cps. Each rod broke at the threaded area where the rod screws into the adapter as shown in Figure 6.

When each rod broke, all of the wires on the solenoids broke (Figure 9).

The adapter holding rod was replaced with a cable assembly (Figure 6) which did not break.

Figure 10 shows the area around the tubes which was impacted by the springs.

The single-rivet springs were replaced by new springs using two rivets. Three bolts were also installed through the adapter, as shown in Figure 11, which tightened against the launcher.

Figure 9: Result of Vibration Test for LAU-32 Model Showing Wiring Harness Broken from the Solenoid.

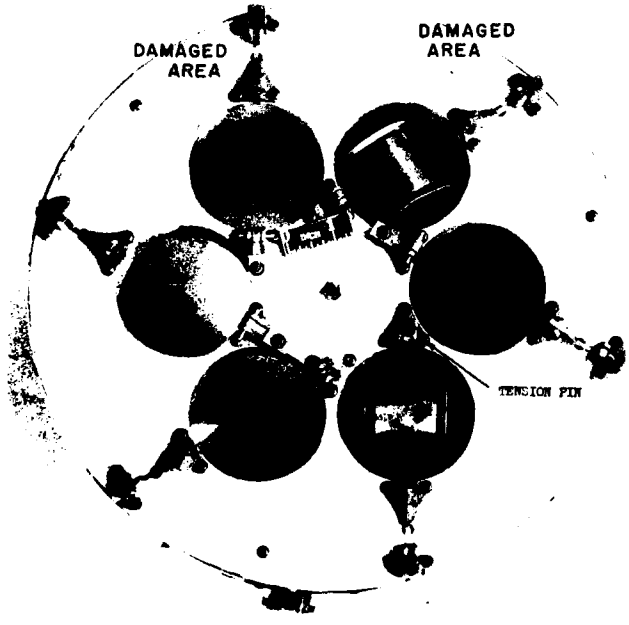

Figure 10: Vibration Test Results for LAU-32 Model Showing Damage to Surface Area Resulting from Spring Impact.

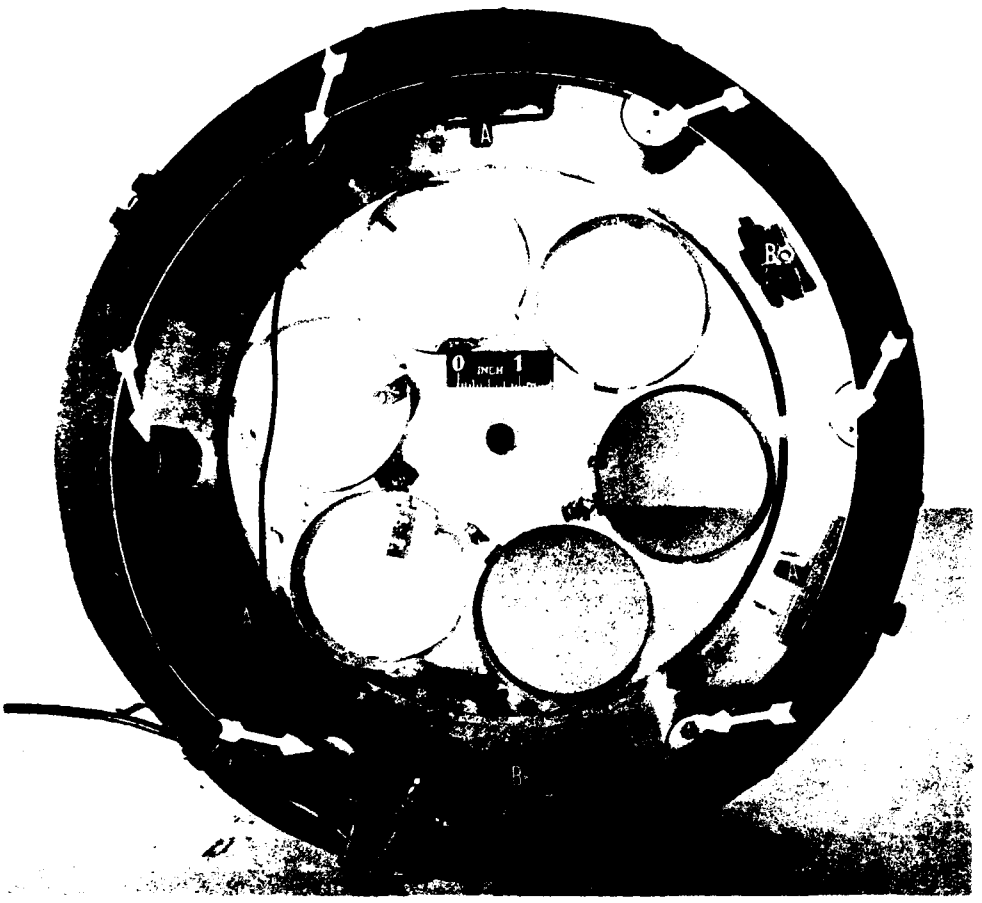

Figure 11: LAU-32 Model Adapter after Vibration Test. A. Bolts Installed to Hold Adapter to Pod. B. Holes Where Broken Standoffs Belong. Arrows Indicate Broken Wires on Solenoids on Last Retest.

The vibration of this modified adapter resulted in all six springs breaking as shown in Figure 12, and the wiring harness breaking from the solenoids and hanging outside the adapter as shown in Figure 13. Two of the three standoffs inside the adapter were also broken off, as shown in Figures 11 and 12. Detailed results of this test are contained in Reference 7.

2.2.5 Analysis

The LAU-3 model met the criteria for acceptance. The LAU-32 did not meet the criteria for acceptance and this failure is considered a deficiency.

The cable assembly is considered a definite improvement over the rigid metal bar (Figure 6).

Figure 12: Vibration Test Results for LAU-32 Model Showing Area of Breakage of Two-Rivet Springs. A. Standoffs. B. Wiring Harness.

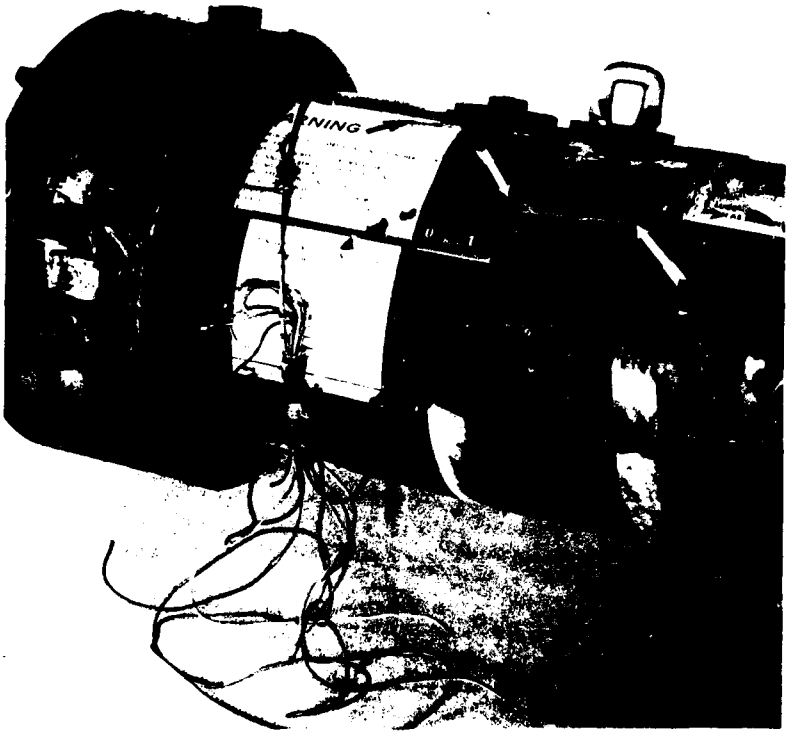

Figure 13: LAU-32 Model after Final Vibration Test Showing Broken Wiring Harness. Arrows Indicate Skin Cracks Around Antisway Brace Area.

2.3 FIVE-FOOT DROP TEST

2.3.1 Objective

This test was conducted to determine if the test items remain safe and operable after a free fall from a height of five feet.

2.3.2 Criteria

The criteria for acceptance are as follows:

a. There shall be no spontaneous ignition of the armed grenades.

b. There shall be no failure of the tube closure system of the adapter.

c. The adapter shall remain safe to handle.

d. It is desired, but not required, that the adapter remain operable.

2.3.3 Method

One fully loaded LAU-3 model dispenser was dropped from a height of five feet onto a concrete surface (Figure 14). The drop was with the dispenser in a horizontal position (Reference 1). Three drops were specified in the USATECOM test plan (Appendix II) but due to a lack of test items and the results of one drop it was decided that one drop would be sufficient (Appendix II). The safety pins were in place during this test.

The tube closure system was observed for failures and the armed grenades were unloaded and inspected. The LAU-32 model was not used in this test because it had previously failed the vibration test.

2.3.4 Results

No significant visible damage occurred to the adapter system as shown in Figure 15. Figure 16 shows the front end of the launcher which mashed against the concrete surface.

All of the safety pins remained in place. An electrical check of the Tables revealed that three tubes (tube Nos. 2, 3, and 9 in Figure 15) failed to operate properly after the drop. No failures of the tube closure systems were observed.

The activating latch on tube No. 2 stuck, preventing the gate from opening. All grenades were safely removed from the tubes. No physical damage to the grenades was observed.

Figure 14: Five-Foot Drop Test Setup for LAU-3.

Figure 15: Aft End of LAU-3 Model after 5-Foot Drop.

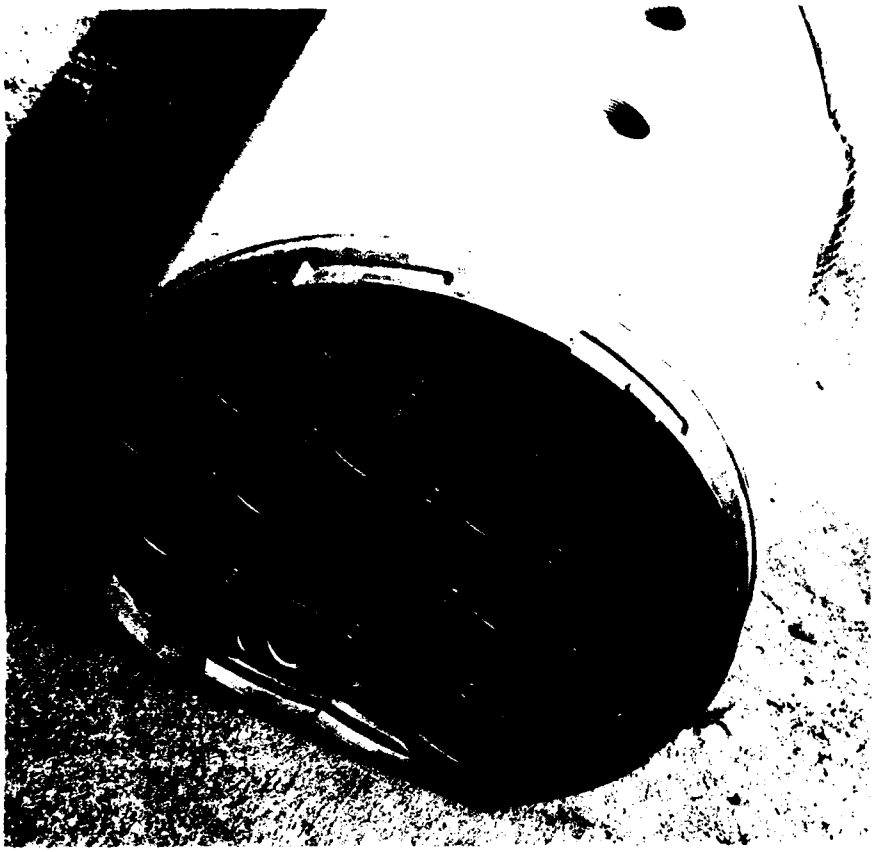

Figure 16: Front End of LAU-3 Model after 5-Foot Drop.

2.3.5 Analysis

The LAU-3 model is considered to have met the criteria for the drop test.

The grenades were safe to handle but care was required in removing them one at a time and inserting each safety pin before removal.

Two of the tubes which failed electrically (tube Nos. 2 and 3) were located nearest the point of impact with the concrete (Figure 15).

The failure of the three tubes to operate is not considered a safety problem because all of the grenades remained inside the tubes.

2.4 USABILITY TEST

2.4.1 Objective

This test was conducted to determine if the smoke grenades can be safely ejected from aircraft during flight.

2.4.2 Criteria

The criteria for acceptance is that all grenades can be safely ejected from the aircraft.

2.4.3 Method

Two 18-tube dispensers were mounted on a UH-1B helicopter using the XM16 mount and an L20 (U6) fixed-wing aircraft (Reference 2). Live, armed smoke grenades were used in each case.

Parachutes were not used with the grenades at the request of LWL because the standard procedure will be to dispense the grenades from aircraft without parachutes (Appendix II).

The grenades were dispensed according to Table II.

Table II. Usability Test Flight Schedule

Legend: IAS = Indicated air speed.
GD = Grenades to be dispensed.
FPS = Failing to produce smoke.

No. Flight	Flight Condition	IAS, knots	Altitude, feet	Firing[a] Interval	No. of Grenades GD[b]	FPS[c]
			Helicopter			
1	Steady, level	100	50	0.3	24	5
2	Steady, level	100	50	0.5	28	1
3	Steady, level	75	75	0.5	24	5
4	Steady, level	75	75	0.5	28	3

[a] Intervalometer setting.
[b] Figures represent total number of grenades; half were dispensed from the left side of aircraft, half from the right side.
[c] The number of grenades failing to produce smoke from the fixed-wing aircraft was not determined.

Table II (Cont'd)

No. Flight	Flight Condition	IAS, knots	Altitude, feet	Firing[a] Interval	No. of Grenades GD[b]	No. of Grenades FPS[c]
5	Steady, level	50	100	0.7	24	6
6	Steady, level	50	100	1.0	28	6
7	Turn	70	100	0.7	24	None
8	Turn	70	50	0.5	28	6
9	Hover	0	150	1.0	12	4
10	Hover	0	150	0.1	14	None
			Fixed-Wing			
11	Steady, level	110	100	0.3	24	
12	Steady, level	110	50	.3	24	
13	Steady, level	90	100	.5	24	
14	Steady, level	90	50	.5	24	
15	Steady, level	70	100	.5	24	
16	Steady, level	70	50	.7	24	
17	Turn	80	100	.5	24	
18	Turn	80	50	.5	24	
19	Dive	125	75	.3	12	
20	Dive	125	75	.3	12	

[a]Intervalometer setting.
[b]Figures represent total number of grenades; half were dispensed from the left side of aircraft, half from the right side.
[c]The number of grenades failing to produce smoke from the fixed-wing aircraft was not determined.

The LAU-32 was not used in this test because it had previously failed the vibration test.

2.4.4 Results

2.4.4.1 Helicopter. All of the smoke grenade fuzes functioned, but about 15% failed to produce smoke. The number of grenades which failed to produce smoke in each flight is given in Table II.

One tube (No. 8) on the right dispenser and three tubes (Nos. 11, 13, and 14) on the left dispenser failed to function on the first attempt. All tubes dispensed grenades on the second attempt except tube No. 11. This tube was emptied by hand without difficulty.

The LAU-3 was considered safe to mount, load, and dispense.

2.4.4.2 Fixed-Wing. Two tubes (Nos. 1 and 12) on the right dispenser and two tubes (Nos. 2 and 5) on the left dispenser failed to function after two attempts. These tubes were emptied manually without difficulty.

One grenade fuze failed to function and about 20% of the dispensed grenades failed to produce smoke.

The pattern of distribution of the grenades was not obtained because some of the grenades landed within a restricted dud area.

2.4.5 Analysis

The LAU-3 met the test plan criteria (Reference 2) since all grenades were safely ejected (though some were ejected manually) from the aircraft. The only safety problem during loading or manually unloading the dispensers is the possibility of the loaded grenades being ejected before the tube safety pin is emplaced. An unsafe situation would occur because each individual safety pin would have been pulled allowing the grenades to fire when ejected. Care must be taken to insert a safety pin in each grenade as it is removed from the tube when manually unloading a dispenser.

The failure of some of the tubes to fire was probably due to the design of the tube gates (Figure 5). Each spring exerts pressure through the grenades to a gate. This pressure is located at the center of the gate which distributes an equal amount of force on each end. The gate is being redesigned by LWL with a dimple off center toward the latched end. The pressure exerted by the spring through the grenades onto the gate would thereby be localized at a point towards the latched end. This would distribute an unequal amount of force on the ends with the greatest force on the firing end. When the tube is fired the unequal forces applied to the gate would help it to swing open.

SECTION 3. APPENDICES

APPENDIX I - DEFICIENCY AND SHORTCOMING

1. DEFICIENCY

DEFICIENCY	SUGGESTED CORRECTIVE ACTION	REMARKS
The LAU-32 model experienced mechanical and electrical failures during the simulated aircraft vibration test (ref par. 2.2.4).	Corrective action is presently being taken by LWL including the use of a cable assembly instead of a rigid bar to hold the adapter to the launcher (ref par. 2.2.4).	None.

2. SHORTCOMING

SHORTCOMING	SUGGESTED CORRECTIVE ACTION	REMARKS
One tube failed to dispense from the helicopter and four tubes failed to dispense from the fixed-wing aircraft during the usability test (ref par. 2.4.4).	Corrective action is presently being taken by LWL including the addition of a dimple on the "U" channel gates (ref par. 2.4.5).	None.

APPENDIX II - CORRESPONDENCE

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY TEST AND EVALUATION COMMAND
ABERDEEN PROVING GROUND, MARYLAND 21005

S-27 October 65

COPY/ht
AMSTE-BG

27 Sep 1965

SUBJECT: Test Directive, USATECOM Project No. 4-5-2980-11, Engineering Test (Safety Release), Grenade Dispensing Adapter, LWL GDA-3

TO: Commanding Officer
Aberdeen Proving Ground
ATTN: STEAP-DS-TI
Aberdeen Proving Ground, Md 21005

1. Reference: Letter, LWL, dated 26 August 1965, subject: Request for Test and Safety Evaluation of LWL Dispensing Adapter for M-8 Smoke Grenade. (Incl 1)

2. Description of Material: Contained in reference.

3. Test Objective: To determine the engineering adequacy and safety characteristics of the Grenade Dispensing Adapter, LWL GDA-3.

4. Responsibility: Your agency is responsible for preparation of a test plan and conduct of those tests required to provide a basis for a safety release recommendation.

5. Coordination: Direct coordination is authorized with LWL to determine details of test item, delivery of test item, establishment of test schedule and fund requirements.

6. Special Instructions:

a. USATECOM Project No. 4-5-2980-11 has been assigned to this task and has been entered into TSMS by this Headquarters. (Incl 2)

b. Relative priority of this task will be determined upon receipt of guidance from AMCPM-AI.

c. After coordination with LWL is completed, scheduled dates for Critical Events 0900, 1000, and 5010 will be submitted by your agency.

d. No aerial flights will be conducted prior to receipt of safety-of-flight release.

COPY/ht

AMSTE-BG 27 Sep 1965

SUBJECT: Test Directive, USATECOM Project No. 4-5-2980-11, Engineering Test (Safety Release), Grenade Dispensing Adapter, LWL GDA-3

7. Plans of Test and Reports:

a. Plan of Test: The Plan of Test will be prepared in accordance with USATECOM Regulation 705-16 and submitted to this Headquarters not later than COB 27 October 1965.

b. Test Report: This is a Category I test; therefore, the report will be prepared and forwarded to this Headquarters for approval in accordance with USATECOM Regulation 705-7. Test report will be submitted within thirty (30) days after completion of test.

c. Distribution of Plan of Test and Test Report: The Plan of Test and Test Report to be developed under this directive will be distributed in accordance with USATECOM Regulation and the approved distribution list for this project. (Incl 3)

FOR THE COMMANDER:

/s/ Richard H. Miller
/t/ DAVID M. KYLE
Colonel, GS
Dir, Avn Mat Testing

3 Incl
as w/d

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w/o Incl
CG, USAMC, ATTN: AMCPM-AI
w/Incl 1

DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY TEST AND EVALUATION COMMAND
ABERDEEN PROVING GROUND, MARYLAND 21005

COPY/ht

AMSTE-BG 1 Dec 1965

SUBJECT: Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11

TO: Commanding General, U. S. Army Materiel Command, ATTN: AMCPM-AI, AMCRD, Washington, D. C. 20315
Commanding General, U. S. Army Combat Developments Command, ATTN: USACDC Liaison Officer, USATECOM, Aberdeen Proving Ground, Maryland 21005

1. This Headquarters approves inclosed plan as modified by this letter.

2. Re paragraph 2.2.3: Change to read as follows: Three fully loaded dispensers will be dropped from a height of 5 feet - one drop, 45° nose down; one drop, 45° tail down; and one drop, horizontal position. Observe for failure of any component of the tube closure system.

3. Plan is to be expanded to include aerial flights. During aerial flight, the smoke munitions (with and without parachutes) will be dispensed at various airspeeds and aircraft altitudes. Objective: To determine if the smoke munition can be safely ejected from the dispenser while aircraft is in flight.

4. Your comments or concurrence is requested.

FOR THE COMMANDER:

/s/ David M. Kyle
/t/ DAVID M. KYLE
Colonel, GS
Dir, Avn Mat Testing

1 Incl
Plan of Test
(AMCPM-AI - 5 cy)
(AMCRD - 5 cy)
(CDC LnO - 11 cy)

Copies furnished: w/o Incl
CO, LWL
CO, APG, STEAP-DS-TI

DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY TEST AND EVALUATION COMMAND
ABERDEEN PROVING GROUND, MARYLAND 21005

AMSTE-BG

11 JAN 1966

SUBJECT: Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11

TO: Commanding Officer
Aberdeen Proving Ground
ATTN: STEAP-DS-TI
Aberdeen Proving Ground, Maryland 21005

1. References:

a. Letter, LWL, dated 26 August 1965, subject: Request for Test and Safety Evaluation of LWL Dispensing Adapter for M-8 Smoke Grenade.

b. Letter, LWL, dated 1 October 1965, subject: same as reference 1a.

c. Letter, AMSTE-BG, dated 27 September 1965, subject: Test Directive, USATECOM Project No. 4-5-2980-11, Engineering Test (Safety Release), Grenade Dispensing Adapter, LWL GDA-3.

d. Letter, AMCPM-AI, dated 8 October 1965, subject: same as reference 1c. (Incl 1)

e. Letter, AMSTE-BG, dated 1 December 1965, subject: same as this letter.

f. Letter, AMCPM-AI, dated 28 December 1965, subject: same as this letter. (Incl 2)

2. Subject test plan is approved as modified by paragraph 2 of reference 1e.

3. Your attention is directed to paragraphs 2a and 2d of reference 1d and paragraphs 2 and 3 of reference 1f which state that it is highly undesirable to test the LWL GDA-3 on the Kellet Pylon. Based on the objections presented by AMCPM-AI, no aerial flight tests are to be conducted utilizing the Kellet Pylon.

AMSTE-BG 11 JAN 1966

SUBJECT: Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11

4. As noted in paragraph 3 of reference 1e, the overall test plan is to be expanded to include aerial flights. Details of test to cover aerial flights, in the XM-16 configuration, should be prepared and forwarded to this Headquarters for approval within 21 working days.

5. Request your agency start testing, at the earliest possible date, in accordance with the test plan as approved in paragraph 2 above. Start of aerial flight tests will be dependent upon receipt and approval of details of test and receipt of safety-of-flight release.

FOR THE COMMANDER:

2 Incl
as w/d

DAVID M. KYLE
Colonel, GS
Dir, Avn Mat Testing

Copies furnished:
CG, USACDC Ln O, USATECOM
w/Incl
CG, USAMC, AMCPM-AI
w/o Incl
CO, LWL, CRD-AM-8B
w/Incl

COPY/ht

Mr. Schueler/jag/231-1380-2662

STEAP-DS-TI 27 Sept 1966

SUBJECT: Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11

TO: Commanding General
U. S. Army Test and Evaluation Command
Attn: AMSTE-BG

1. References:

a. Letter, AMSTE-BG, dated 1 Dec 1965, Subj: "Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11".

b. Plan of Test for Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, dated October 1965.

2. All tests required in references 1a and 1b have been completed except dispersing of items containing parachutes and two of the three five-foot drops.

3. Dispersing of items with parachutes was deleted because LWL stated the standard procedure will be to drop items without parachutes. Only one of the three five-foot drop tests has been conducted because the only available GDA-3 was damaged beyond repair on the first drop. No unsafe conditions have resulted from failure of the tube closure system in any test phase.

4. In view of the lack of test items and the results obtained, the tests conducted to date are considered sufficient for issuance of recommendations for safety release. Request that the test program be considered complete.

FOR THE COMMANDER:

/t/ J. A. TOLEN
Ass't Deputy Director
for Engineering Testing
Development and Proof Services

/ht

Mr. Schueler/jag/231-1380-2662

?-DS-TI 27 Sept 1966

ECT: Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11

Commanding General
U. S. Army Test and Evaluation Command
Attn: AMSTE-BG

1. References:

a. Letter, AMSTE-BG, dated 1 Dec 1965, Subj: "Engineering ety Release) Test of Grenade Dispensing Adapter, LWL GDA-3, USATECOM ect No. 4-5-2980-11".

b. Plan of Test for Engineering (Safety Release) Test of ade Dispensing Adapter, LWL GDA-3, dated October 1965

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FOR THE COMMANDER:

/t/ J. A. TOLEN
Ass't Deputy Director
for Engineering Testing
Development and Proof Services

DEPARTMENT OF THE ARMY
HEADQUARTERS, U. S. ARMY TEST AND EVALUATION COMMAND
ABERDEEN PROVING GROUND, MARYLAND 21005

COPY/ht

AMSTE-BG
4-5-2980-11

19 Oct 1966

SUBJECT: Engineering (Safety Release) Test of Grenade Dispersing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11

TO: Commanding Officer
Aberdeen Proving Ground
ATTN: STEAP-DS-TI

1. Reference: Letter, STEAP-DS-TI, 27 September 1966, subject as above.

2. This Headquarters concurs with paragraph 4 of referenced letter.

3. Request your recommendations for a safety release be forwarded this Headquarters ASAP.

FOR THE COMMANDER:

DAVID M. KYLE
Colonel, GS
Dir, Avn Mat Testing

APPENDIX III - REFERENCES

1. Kertis, Paul E. "Plan of Test for Engineering (Safety Release) Test of Grenade Dispensing Adapter, LWL GDA-3," October 1965.

2. Letter, STEAP-DS-TI, 25 February 1966, Subject: "Change to Engineering (Safety Release) Plan of Test for Grenade Dispensing Adapter, LWL GDA-3, USATECOM Project No. 4-5-2980-11."

3. Owens, Franklin: USALWL Technical Report No. 61-11, "Final Report of Adapter, Troop Landing Smoke Screen, for the XM-3, 2.75-Inch Rocket Launcher," December 1964.

4. Installation and Operation Manual for Twelve-Tube and Thirty-Six-Tube Grenade Dispenser Systems (Aerial), US Army Limited War Laboratory, Aberdeen Proving Ground, Maryland.

5. Letter, US Military Assistance Command, Vietnam to Assistant Chief of Staff for Force Development, 4 September 1964, Subject: "Request for Materiel."

6. Letter, STEAP-DS-TI to LWL, 6 August 1964, Subject: "Recommendation for Safety Release for Smoke Screen, Troop Landing, USATECOM Project No. 9-4-0001-39."

7. J. A. Robinson, "Laboratory Simulated Aircraft and Helicopter Flight Vibration Tests of Grenade Dispensing Adapters, GDA-3, Models LAU-3 and LAU-32," Aberdeen Proving Ground Report No. 66-196, 11 July 1966.

AD Accession No.

Development and Proof Services, Aberdeen Proving Ground, Maryland
Final Report on Engineering Test of Grenade Dispensing Adapter, LWL GDA-3 (Safety Release), December 1966, USATECOM Proj No. 4-5-2980-11
RDT&E Project No. Not Available, Report No. DPS-2209
Author Gerald J. Schueler
Secondary distribuiton controlled by US Army Limited War Laboratory, CRD-AM-8B
40 pages, 18 illustrations

Unclassified Report

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Development and Proof Services, Aberdeen Proving Ground, Maryland
Final Report on Engineering Test of Grenade Dispensing Adapter, LWL GDA-3 (Safety Release), December 1966, USATECOM Proj No. 4-5-2980-11
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5. AUTHOR(S) *(Last name, first name, initial)*
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