AD-A163 121 TEST AND EVALUATION OF PROTOTYPE M-16 WEAPONS CONTAINER 1/1
(U) AIR FORCE PACKAGING EVALUATION AGENCY
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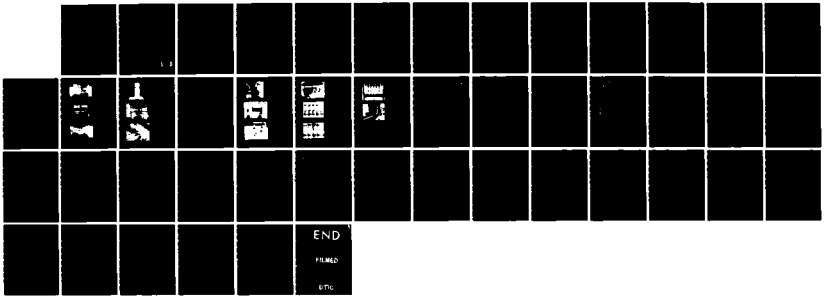

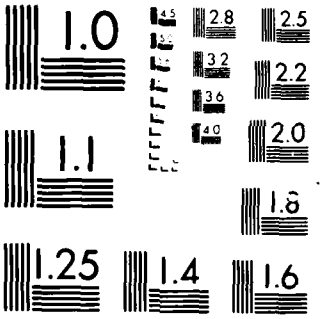

MICROCOPY RESOLUTION TEST CHART

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DSTZD REPORT NO. 85-R-03
AFPEA PROJECT NO. 84-P-142

AD-A163 121

CHII C. HWANG

Mechanical Engineer

AUTOVON 787-3120

Commercial (513) 257-3120

TEST AND EVALUATION OF PROTOTYPE M-16 WEAPONS CONTAINER

HQ AFLC/DSTZ
AIR FORCE PACKAGING EVALUATION AGENCY
Wright-Patterson AFB OH 45433-5999

October 1985

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AFPEA PROJECT NO.: 84-P-142

TITLE: Test and Evaluation of Prototype M-16 Weapons Container

ABSTRACT

Hardigg Industries Inc. developed a polyethylene container for storage and shipping of M-16 weapons upon request from WR-ALC/DSTDS. Projected cost of containers is $247.00 each in quantities of 1,000. This developmental effort is in response to the need for protecting M-16 weapons while in storage, transit, and/or in the field operation. Cost savings are estimated at $6.29/weapon for each shipment with potential gross savings of $2,031,500.00 for the Department of Defense.

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Justification
By
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Availability Codes
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A-1

PREPARED BY:

CHIT HWANG
Mechanical Engineer
AFPEA

REVIEWED BY:

RALPH ZYNDA
Chief, Design Branch
AFPEA

PUBLICATION DATE:

13 NOV 1985

APPROVED BY:

JACK E. THOMPSON
Chief, AF Packaging
Evaluation Agency

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INTRODUCTION

BACKGROUND: A container requirements conference for the M-16 weapon was hosted by WR-ALC/DSPS (Atch 1). The conference objective was to determine the interest/requirements for worldwide security protection of the M-16 rifle. The Air Force Packaging Evaluation Agency (AFPEA) was requested by WR-ALC/DSPS to perform a first article production qualification test on the new design of the weapons container (Atch 2).

PURPOSE: The purpose of this project was to:

a. Evaluate the container and determine its deficiencies.

b. Make design changes, if applicable, to improve the performance of the container.

c. Test design changes and prepare an engineering report.

TEST SPECIMEN: Two each M-16 weapon containers were received at AFPEA for testing and evaluation. The containers were fabricated from a polyethylene material under contract No. F099650-84-C-0225 (Atch 5), by Hardigg Industries Inc., South Deerfield, Mass. The containers are designed with a security bar to contain either 12 or 6 M-16 rifles (Figures 1, 2, 3, and 4).

TEST OUTLINE AND TEST EQUIPMENT

Tests were conducted in accordance with the AFPEA container test plan Project No. 84-P-142, 22 April 1985 (Table I). Test methods and procedures used were Federal Test Method Standard (FTMS) No. 101 and Military Standard 648 (MIL-STD-648). Equipment used for the testing was as follows:

a. Water Manometer - Meriam Instrument Company, Model No. 30EB25TM, with accuracy $\pm$ 0.1 inch H_2O.

b. L.A.B. Corporation Vibration Machine, Serial No. 56801, type 5000-96P.

c. General Electric Industrial Halogen Leak Detector, type H6-25.

d. High and low temperature environmental chambers equipped with a Honeywell electronic temperature recorder.

e. Head weight and steel plate.

TEST PROCEDURES AND RESULTS

INSPECTION (FIRST ARTICLE NO. 1)

TEST NO. 1: Two each containers, as received, were visually inspected. The exterior and interior surfaces, hardware, security bar, and container seal were inspected for manufacturing imperfections. The container was also checked for weight compliance and size.

RESULTS: Results of the visual inspection indicated excellent workmanship on the container. Tare weight of the container was 60 pounds. Size of the container was 44 1/4 x 24 x 17 1/2 inches. Results of the inspection are acceptable.

LEAKAGE TEST

TEST NO. 2: The pneumatic pressure test was conducted in accordance with FTMS No. 101, Method 5009.1. The test was performed at 0.5 psig. The failure criteria for the test was 0.025 psig during a 30-minute period.

RESULTS: At the end of the 30-minute pressure leak test period, the result was as follows:

Pressure loss during leak test, 0.0488 psig

The results of the test are not acceptable. However, it was agreed by WR-ALC/DSTDS and HQ AFLC/DSTZ to continue with test No. 6 to observe the structural properties of the container.

SUPERIMPOSED-LOAD TEST (STACKABILITY WITH DUNNAGE)

TEST NO. 6: The superimposed-load test was conducted in accordance with FTMS No. 101, Method 5016.1. The container was placed in a high temperature/humidity environmental chamber. A load of 1,440 pounds was equally distributed on the container. The temperature was stabilized at 120 degrees F and 90 percent relative humidity and the test was continued for a period of 168 hours. The container was observed for deflection, permanent deformation, and structural failure.

RESULTS: Visual inspection revealed deflection, permanent deformation, and structural failure in the walls of the container. A total of 1 3/4 inches permanent set is recorded for the test. The results of the test are not acceptable. The test was discontinued and the container was returned to the contractor for redesign.

INSPECTION (FIRST ARTICLE NO. 2)

TEST NO. 1: Two each redesigned containers were received from the contractor. Visual inspection was made of the exterior and interior surfaces, hardware, security bar, and container seal for manufacturing imperfections. The container was also checked for weight compliance and size.

RESULTS: Inspection revealed that the containers satisfactorily met the requirements specified in the contract. There was no visual damage to either of the two containers. Tare weight of the container was 68 pounds. Size of the container was 44 1/4 x 24 x 17 1/2 inches. It was noted that the security bar could be manually removed sufficiently to enable unauthorized access to the weapons (Figures 5 and 6).

LEAKAGE TEST

TEST NO. 2: The pneumatic pressure test was conducted in accordance with FTMS No. 101, Method 5009.1. The test was performed at 1.5 psig. The failure criteria for the test was 0.025 psig during a 30-minute period.

RESULTS: At the end of the 30-minute pressure leak test period, the result was as follows :

Pressure loss during leak test, 0.000 psig

The results of the test are acceptable.

FREE FALL DROP TEST

TEST NO. 3a: The free fall drop test was conducted in accordance with FTMS No. 101, Method 5007, procedure B and E. The container was conditioned at -20 degrees F for more than four hours. Six flat drops were made to the faces and eight cornerwise drops were made to the corners of the container. The drop height was 16 inches (Figures 7 and 8).

RESULTS: Visual inspection revealed no damage to the container walls, ends, corners or hardware. However, one of four screws in the handle of the cover (right side of end 2) was dislodged (Figure 9). Inspection of the container interior revealed no damage to the weapons or to the security bar. Results of the test are acceptable.

TEST NO. 3b: The free fall drop test was conducted the same as Test No. 3a. However, the container was conditioned at -40 degrees F for more than four hours before the free fall drop test was commenced.

RESULTS: Visual inspection revealed no damage to the container walls, ends, corners, or hardware. However, it was much more difficult to close the container after the low temperature conditioning. There was inadequate clearance between the mating parts during closure to allow for the temperature variation specified. Also, the nylon buttons that secure the elastic string became brittle and broke into several pieces. Results of the test are acceptable; however, the nylon buttons need to be replaced with a better material.

TEST NO. 4: The free fall drop test was conducted in accordance with FTMS No. 101, Method 5007, procedures B and E. The container was conditioned at +140 degress F for more than 4 hours. Six flat drops were made to the faces and eight cornerwise drops were made to the corners of the container. The drop height was 16 inches.

RESULTS: Visual inspection revealed no damage to the container walls, ends, corners or hardware. No damage was noted to the interior of the container or the weapons. Also, there was no closure problem. Results of the test are acceptable.

LEAKAGE TEST

TEST NO. 5: The same procedure was followed as used in TEST NO. 2.

RESULTS: At the end of the 30-minute pressure leakage test period, the result was as follows:

Pressure loss during leakage test, 0.015 psig

The results of the test are acceptable.

SUPERIMPOSED-LOAD TEST (STACKABILITY WITH DUNNAGE)

TEST NO. 6: The superimposed-load test was conducted in accordance with FTMS No. 101, method 5016.1. The container was placed in a high temperature/humidity environmental chamber. A load of 1,440 pounds was equally distributed on the container. The temperature was stabilized at +120 degrees F and 90 percent relative humidity. The test was conducted for a period of 168 hours. The container was observed for deflection, permanent deformation, and structural failure (Figures 10 and 11).

RESULTS: Visual inspection revealed no damage to the container. Measurement of the permanent set was 1/8 inches. Results of the test are acceptable.

LEAKAGE TEST

TEST NO. 7 : The same procedure was followed as used in Test No. 2.

RESULTS: At the end of the 30-minute pressure leak test period the result was as follows:

Pressure loss during leak test, 0.024 psig

The results of the test are acceptable.

VIBRATION (REPETITIVE SHOCK TEST)

TEST NO. 8: The repetitive shock test was conducted in accordance with MIL-STD-648, Section 5.2.2 and FTMS No. 101, Method 5019.1. The container was placed on a L.A.B. Corporation vibration machine. The container was placed on, but not fastened to, the platform. Restraining blocks were attached to the platform to prevent the container from moving off the platform. A clearance of approximately 1/2 inch in all directions was used for the restraint blocks to allow free movement of the container during the 2-hour test period. With the container in position, the platform was vibrated until the container raised from the platform (1/16 inch feeler gauge clearance between bottom of the container and platform) for a maximum acceleration of 1 G.

RESULTS: Visual inspection revealed no damage to the container or to the weapons. There was a small amount of polyethylene dust on the bottom section of the container. The vertical vibration increased in amplitude at the end of the test as indicated in Figures 12 and 13. The results of the test are acceptable.

LEAKAGE TEST

TEST NO. 9: The same procedure was followed as used in Test No. 2.

RESULTS: At the end of the 30-minute pressure leak test period, the results were as follows:

Pressure loss during leak test, 0.018 psig

The results of the test are acceptable. However, the contractor agreed to redesign the security bar according to the memorandum of agreement (MOA 3).

TEST NO. 10: Test No. 10 was not performed due to nonavailability of equipment during the scheduled test period.

TEST NO. 11: Test No. 11 was not performed due to nonavailability of engineering drawings and data.

TEST NO. 12: Test No. 12 was not performed due to nonavailability of engineering drawings and data.

FIT AND FUNCTION TEST: The security bar was redesigned by the contractor (Figures 14 and 15). The first article No. 2 container was used to perform the test. A free fall drop test and a vibration test were performed in an ambient temperature.

RESULTS: The security bar was fully qualified by the 2750th Security Police Office to meet their security and closure requirements. The results of the structural performance of the container during the free fall drop and vibration tests are acceptable.

CONCLUSION: Qualification tests indicate that the overall structural performance of the container is acceptable for storage and shipment of the M-16 weapons. The nylon button used to secure the elastic string should be replaced.

RECOMMENDATION: Recommend that the initial operational test and evaluation (IOT&E) be held to evaluate field operations (Atch 4).

TABLE I

AIR FORCE PACKAGING EVALUATION AGENCY
(Container Test Plan)

AFPEA PROJECT NUMBER: 84-P-142					
CONTAINER SIZE (L X W X D)(INCHES) INTERIOR:	EXTERIOR: [illegible] x 24" x 17[illegible]"	WEIGHT (LBS) GROSS: 168#	ITEM: 12 Rifles 108#	CUBE (CU. FT.): 10.45	QUANTITY: 2
DATE: 22 Apr 85					

ITEM NAME: M-[illegible] Rifle

MANUFACTURER: Hardigg Industries, Inc.

CONTAINER NAME: M-[illegible] Weapon Container

CONTAINER COST: N/A

PACK DESCRIPTION: [illegible] Case

CONDITIONING: Ambient or as specified in test.

TEST NO	REF STD SPEC AND TEST METHOD OR PROCEDURE NOs	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRUMENTATION
Inspection				
[illegible]		Visual inspection before start [illegible] test.		
[illegible] Test				
	[illegible]	[illegible] pressure technique [illegible] for 30 minutes. [illegible] criteria test-0.025 PSI [illegible] minutes.	N/A	Manometer
[illegible]				
	[illegible]	[illegible] Conditioned at -20°F, 4 [illegible] drops from 16 inches. [illegible] Conditioned at -40°F tour [illegible] inspection for [illegible] container.	As required by test. 6 faces 8 corners	N/A
	[illegible]	[illegible]	As required by test. 6 faces 8 corners	N/A
		[illegible] Test No. [illegible]		
[illegible]		[illegible] with [illegible]		
	[illegible]	[illegible] safety factor [illegible] Test for [illegible]	[illegible] rigid floor	Yes

COMMENTS

PREPARED BY: [signature]

APPROVED: [signature] Ralph Zynda, Chief, Design Branch, AFPEA

AFALD [illegible] 4

1 2

AIR FORCE PACKAGING EVALUATION AGENCY
(Container Test Plan)

AFPEA PROJECT NUMBER: 84-P-142

CONTAINER SIZE (L X W X D)(INCHES) INTERIOR:	EXTERIOR: 43" x 24" x 17½"	WEIGHT (LBS) GROSS: 168# ~~108#~~	ITEM: 12 Rifles	CUBE (CU. FT.)	QUANTITY	DATE
				10.45	2	22 Apr 85

ITEM NAME	MANUFACTURER
M-16 Rifle	Hardigg Industries, Inc.

CONTAINER NAME	CONTAINER COST
M-16 Weapon Container	N/A

PACK DESCRIPTION
Polyethylene Rotomolded Case

CONDITIONING
As [illegible] specified in test.

TEST NO	REF STD SPEC AND TEST METHOD OR PROCEDURE NOs	TEST TITLE AND PARAMETERS	CONTAINER ORIENTATION	INSTRU-MENTATION
[illegible]	[illegible]	[illegible] Test)		
[illegible]	[illegible]	[illegible] to 5 (Hz) or 1G whichever is [illegible] for not less than 2.0 hrs.	Normal position	Triaxial Accelerometer
[illegible]	[illegible]	[illegible] Test		
[illegible]	[illegible]	ASTM D 1008-59T +100°F and 90 RH	N/A	N/A
11	Finite Element Modeling for Statics Analysis			
	Max. stress less than working stress.	Computer Simulation Tests for tests No. 3, 4, & 5.		CADS
12	Finite Element Modeling for Vibration Analysis			
	Lowest natural frequency more than 5 (Hz).	Computer Simulation Test for Test No. 6.		CADS

COMMENTS

PREPARED BY	APPROVED BY
CHII C. HWANG, Mechanical Engineer	RALPH ZYNDA, Chief, Design Branch, AFPEA

AFALD FORM NOV 84 4

Figure 1 - Exterior view of 12-pack M-16 weapons container.

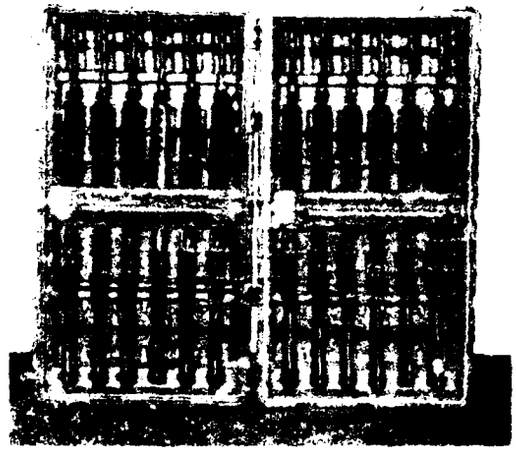

Figure 2 - Interior view of loaded 12-pack M-16 weapons container.

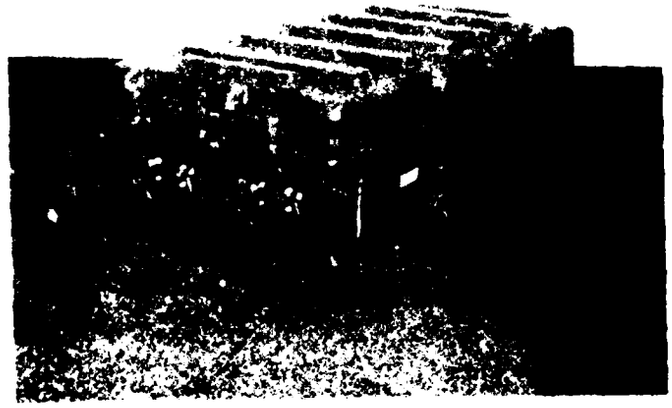

Figure 3 - Exterior view of 6-pack M-16 weapons container.

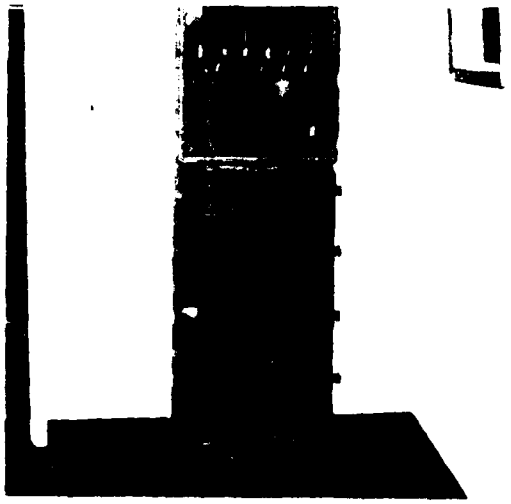

Figure 4 - Interior view of stacked M-16 weapons container.

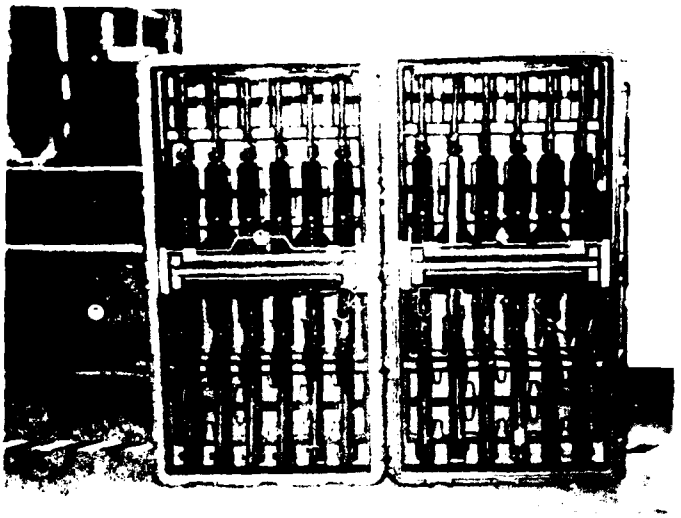

Figure 5 - Second prototype M-16 weapons container with security bar.

Figure 6 - Failure of security bar, allowing unauthorized removal of weapons.

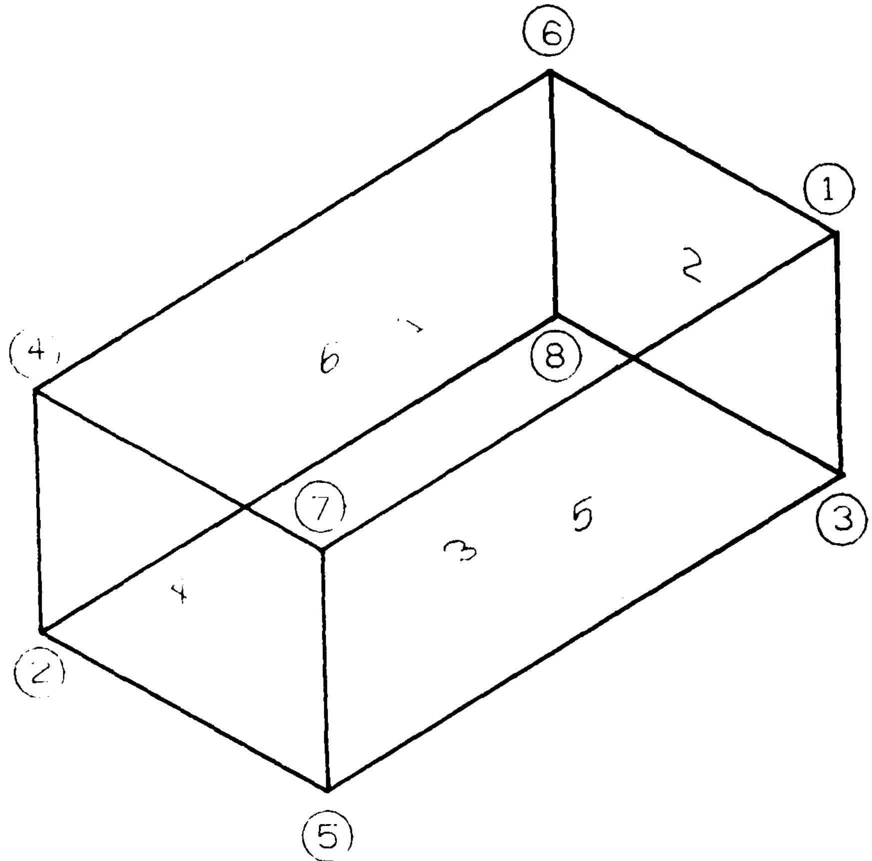

Figure 7 - Faces and corners numbered for free fall drop sequence.

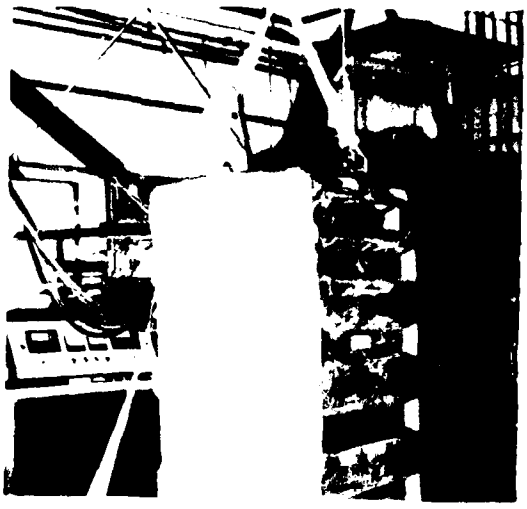

Figure 8 - Hoisted M-16 container for the free fall drop test. This is a view of flat drop which is one of 14 drops required by the test procedure.

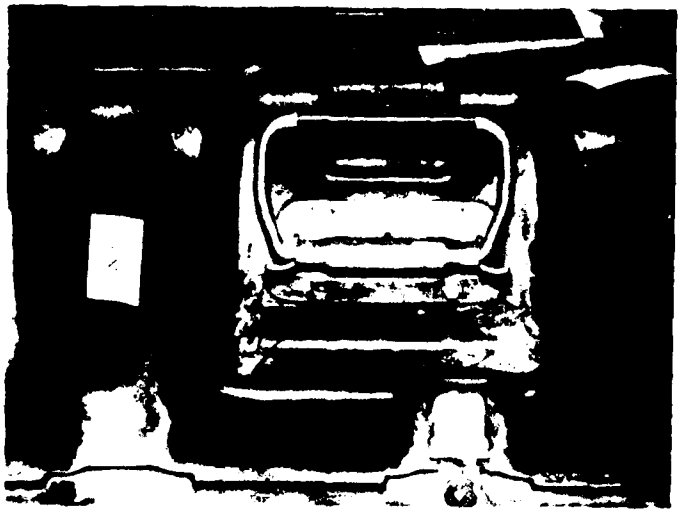

Figure 9 - A view of dislodged screw which is one of four screws to secure the handle of the cover (right side of end 2) of M-16 weapons container. The picture was taken after Test No. 3a.

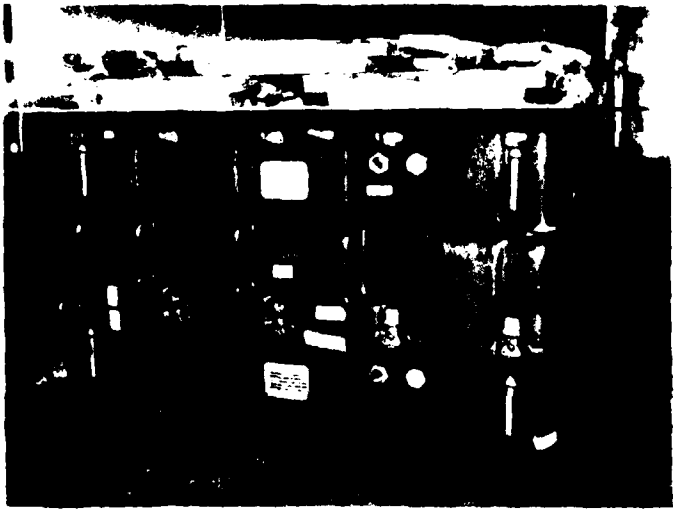

Figure 10 - A view of superimposed-load test.

Figure 11 - A view of lead weight equally distributed on the container for the superimposed-load test.

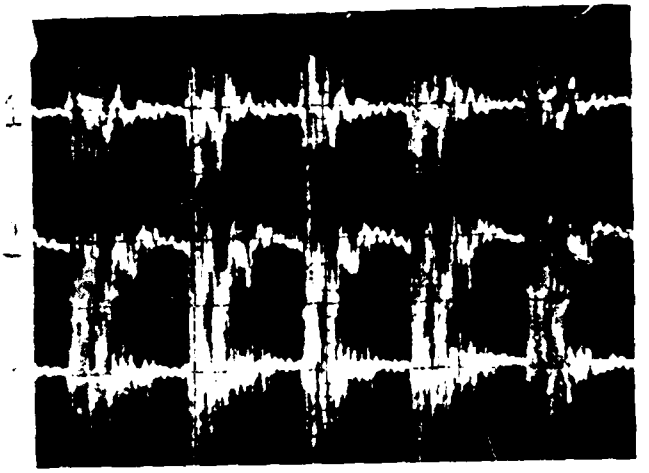

Figure 12 - Vibration data acquisition at the early stage of Test No. 8. Curve 2 shows the vertical vibration amplitude.

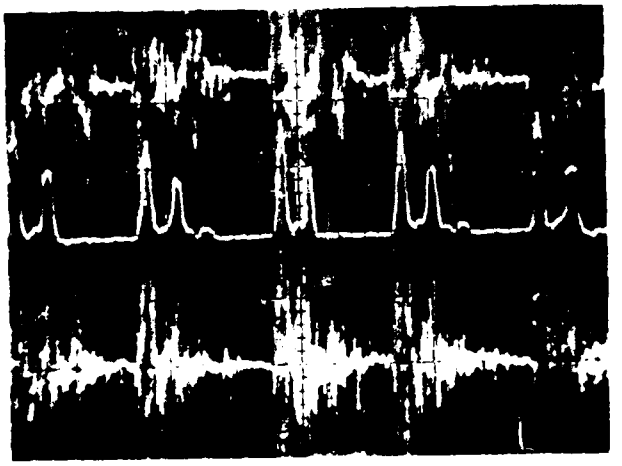

Figure 13 - Vibration data acquisition at the final stage of Test No. 8. Curve 2 shows the increased vibration amplitude.

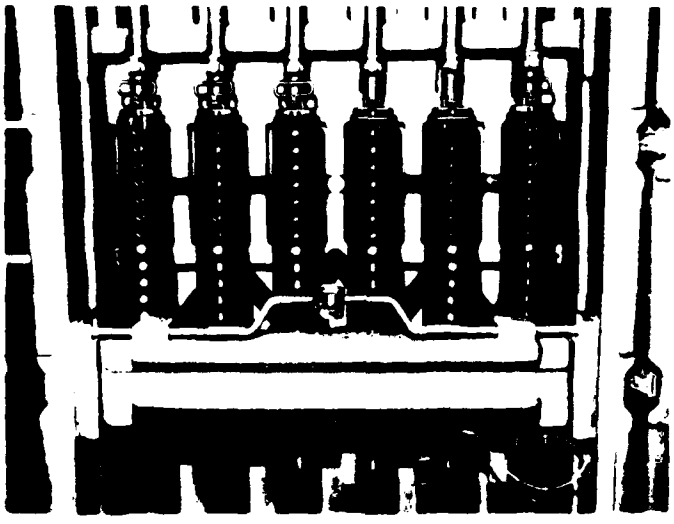

Figure 14 - Redesigned security bar of M-16 weapons container.

Figure 15 - Interface area between the redesigned security bar and wall of M-16 weapons container.

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS WARNER ROBINS AIR LOGISTICS CENTER (AFLC)
ROBINS AIR FORCE BASE, GEORGIA 31098

REPLY TO ATTN OF: DSPS (Ms Tackett/AV 468-3259/2771) 1 Dec 81

SUBJECT: Minutes of Container Requirements for M-16 Rifles Conference

TO: See Distribution

1. A conference to address container requirements for M-16 rifles was convened at WR-ALC, Robins AFB GA, 13 Oct 81. The objective of the conference was to determine DOD container interest/requirements for complete management control and protection of M-16 rifles in order to mesh these requirements into a single fixture (container). A complete list of attendees is attached.

2. Introductory remarks were provided by Col Frederick C. Anderson, Director of Distribution, WR-ALC. Potential savings and improved handling, storage and inventory were discussed by Pearlie Tackett, WR-ALC, and security requirements were addressed by James Owens, Ft Belvoir VA. Except for a tour of the WR-ALC Weapons Storage Area, the remainder of the meeting was comprised of discussing unique requirements.

3. The deficiencies of the long life metal containers, which WR-ALC procured to house AF WRM weapons, were discussed. The deficiencies identified were excessive weight and cube, which WR-ALC has identified and taken action to correct on future buys. It was the consensus of opinion that issue from these containers under field conditions was not adequate and should be improved.

4. The attendees agreed that while accomplishing this objective would be complex, the potential DOD savings, in excess of 3.4 million dollars annually, fully justified the effort. Unique design features which were identified as being required included:

a. Compatibility with 463L and other transportation modes.

b. Capability of being locked, internally or externally.

c. Accessibility equal to the present security rack.

d. The ability to issue from a stacked configuration.

e. Ready visibility. Degree of visibility not fully resolved. Visibility of fully enclosed weapons relative to other considerations to be further explored during coordination of Statement of Work (SOW) and technical evaluation of proposals.

f. Maximum quantity per pack of 12 each.

g. Must include space for slings and clips.

h. Interchangeability between weapons desired.

i. Maximum cube utilization and minimum weight (capable of two man lift, = 200 pounds).

j. Visibility of serial number for inspection without removal.

k. Environmental protection equal to Method 1A (watervaporproof) of MIL-P-116.

l. Alternate plans for small quantity shipments will be included in the overall effort.

5. WR-ALC agreed to prepare a SOW for a container system which incorporates these features. The SOW will be coordinated with all concerned DOD elements.

6. Cost computations presented at the conference are attached. These computations do not include the savings to be realized from deletion of the requirement for separate security racks, reduced cube utilization during deployment, reduced depacking time during inspection/serialization and reduced rifle repair costs which will result from improved protection. The intangible benefits to be gained from accomplishing this objective, such as improved supply discipline and reduced waste disposal, were also discussed.

7. WR-ALC was informed that an OASD charter was issued in 1976 establishing Army as lead service to develop a container of this nature; however, the only active effort being pursued presently is to develop a security rack.

EDWIN P. FOUNTAIN
Ch, Pkg & Trnsp Spt Div
Directorate of Distribution

2 Atch
1. Cost Computations
2. List of Attendees/Distribution List

SHIPPING COST - PER RIFLE, PER TRIP

WOOD CONTAINER AND INSERTS: $24.06 ÷ 10 TRIPS	$ 2.41	
RECURRING COSTS, EACH TRIP: UNIT PRES & CONTAINER STRAP	$69.72	
TOTAL COST PER RIFLE: $72.13 ÷ 10 EACH		$7.213
METAL CONTAINER: $392.25 ÷ 100 TRIPS	$ 3.92	
RECURRING COSTS, EACH TRIP: DESICCANT & PRESERVATIVE	$ 7.15	
TOTAL COST PER RIFLE: $11.07 ÷ 12		$ .923
SAVINGS PER WEAPON		$6.29

GROSS SAVINGS PER YEAR

- AIR FORCE	22,274 WEAPONS X $6.29	$ 140,103.46
- DOD (EST)*	322,973 WEAPONS X $6.29	$2,031,500.10

*DOD ESTIMATE BASED ON RATIO OF 14.5 TO 1

ANNUAL INSPECTION

TOTAL ASSETS	INSPECTION PERCENTAGE	QUANTITY INSPECTED	RANGE OF SAVINGS*
262,319	6%	15,740	$ 50,683 - $ 100,264 (AF)
3,800,000	6%	228,000	$734,160 - $1,452,360 (DOD)

GROSS SAVINGS	AIR FORCE	DOD
- SAVINGS PER SHIPMENT (ONE YEAR)	$140,103	$2,031,500
- SAVINGS PER INSPECTION (ONE YEAR)	$100,264	$1,452,360
TOTAL	$240,367	$3,483,960

ADDITIONAL SAVINGS NOT INCLUDED ABOVE:

- COST OF RACK
- REDUCED CUBE DURING DEPLOYMENT (DELETION OF RACK)
- REDUCED DEPACKING TIME

*SAVINGS WILL RANGE FROM $3.22 FOR BAG REPLACEMENT ONLY TO $6.37 FOR TOTAL RECURRING COSTS.

LIST OF ATTENDEES/DISTRIBUTION LIST

ORGANIZATION	NAME
AFALD/PTPD	Rick Adams
436 MAW/LGSMX, Dover AFB DE	SMS Tommie Maybin
HQ AFLC/SPT	Maj Frank Winkler
AFOSP/SPOL, Kirtland AFB NM	Capt Marshall Sanders
HQ U S Marine Corps	Capt G Polanco
Naval Weapons Spt Center	Terry O'Brian
Naval Civil Eng Lab	Bob Leek
HQ ARRADCOM	Anthony Buono
USA Military Police School	SFC Charles R Lowery
USA Armont Mtl Readiness Cmd	Joe Garnica
HQ ARRADCOM	Maj Robert A DeLaar
Cmdr, MERADCOM	James W. Owens
ARRADCOM	Paul Agresti
WR-ALC/MMIRDB	Joe Farmer
HQ AFRES/LGSO	Carlo Emilio
HQ AFRES/LGSOM	MSGT Glenn S. Gibbe
WR-ALC/DSPS	Jane Floyd
WR-ALC/DSPS	Pearlie Tackett
WR-ALC/DSPS	John Adams

ADDITIONAL DISTRIBUTION

HQ AFLC/LOZPP	NGB/LGS
HQ SAC/LGS	HQ MAC/LGS
HQ TAC/LGS	Marine Corp Logistics Base
WR-ALC/MMIICB (Jewel Akins)	WR-ALC/MMIME (Klon Waldrip)

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS WARNER ROBINS AIR LOGISTICS CENTER (AFLC)
ROBINS AIR FORCE BASE, GEORGIA 31098

12 OCT 1984

REPLY TO ATTN OF: DSTDS (Maloy, 3259)

SUBJECT: Test Plan For M-16 Weapons Container

AFLC/DSTZ

1. A contract was recently awarded to Hardigg Industries Inc. for the procurement of a Category I container for the M-16 weapon. First Article is expected to be available for testing approximately 1 Mar 84.

2. Request a test plan be established IAW testing requirements specified in attached Item Description.

EDWIN P. FOUNTAIN
Ch, Pkg Mgmt Branch
Directorate of Distribution

1 Atch
Item Description

Atch 2

WORKMANSHIP: Container shall be clean and free from faulty construction or any defect which affects appearance, serviceability or durability.

CERTIFICATION: The contractor shall certify that the product offered meets the salient characteristics of this description, that it conforms to the producer's own drawings, specifications, standards, and quality assurance practices and is the same product offered for sale in the commercial marketplace. The Government reserves the right to require proof of such conformance prior to acceptance.

TESTING: The product will be subjected to and must pass all the test requirements prior to acceptance, stipulated in MIL-P-116 for Method II preservation and Appendix C, MIL-STD 794, except the test shall be applicable to small containers. Testing will be accomplished by AFPEA, AFLC/DSTZ.

REJECTION AND RETEST CRITERIA: Failure of the container to conform to any of the requirements of this item description or failure to protect contents shall be cause for rejection. If the container fails in any individual inspection, demonstration, or test, it shall be repaired or replaced by an operable unit and reverified until successful completion of all testing.

PACKAGING, PACKING & MARKING: Packaging, packing and marking shall be in accordance with normal commercial practice and shall assure acceptance by common carrier.

GOVERNMENT FURNISHED MATERIAL: Six model M-16s, one clip, one sling, and descriptive data on modified M16A2 will be furnished to the contractor 30 days after award of contract.

FIRST ARTICLE INSPECTION REQUIREMENT

NSN	PART NO	DATE PREPARED
	11214-4094-300	15 Feb 1984

1. As used in the following text first article includes preproduction models, preproduction testing or inspection, initial production samples, test samples, first lots, pilot models and pilot lots. Approval involves testing and evaluating the first article for conformance with and evaluating the first article for conformance with specified contract requirements before or in the initial stage of production under a contract.

2. Estimated time to deliver First Article (including testing time): ~~120~~ 750 Days after receipt of GFM.

3. First article sample quantity: 2

4. Estimated Evaluation Time 30 Days

5. Preproduction Test Sample (First Article) Inspection Option (see blocks 7, 8, 9, and 10).

- [ ] a. At plant or approved testing laboratory witnessed by Government inspector and Warner Robins ALC engineer
- [ ] b. At plant or approved testing laboratory witnessed by ~~Government inspector; certified test report per MIL-STD-831 to be submitted to Warner Robins ALC~~ a representative of WR-ALC/DSTDS and AFLC/DSTZ.
- [ ] c. At plant or approved testing laboratory witnessed by Government inspector; certified test report per MIL-STD-831 and First Article to be submitted to Warner Robins ALC
- [ ] d. At Warner Robins ALC

6. Estimated cost for Government inspection/evaluation. $ ~~2500.00~~ 1200.00

7. Government loaned equipment required: NO [ ] YES [X] (Explain in remarks)

8. First Article shipping instructions:

First Article and/or test reports together with all supporting documentation required by contract shall be sent to ~~Warner Robins ALC/DSTPC~~ AFLC/DSTZ.

The shipping container and DD Form 250 shall be marked in the following manner.

TO: ~~Transportation Officer~~	AFLC/DSTZ	First Article(s) Submitted for
~~Warner Robins ALC~~	Wright-Patterson	Inspection and Test
~~Robins AFB, GA 31098~~	AFB OH	Contract No:
~~Mark For: DSTPC/~~	45433	DO NOT STOCK
~~Special Handling Unit/~~		
~~FIRST ARTICLE~~		

At least 10 days prior to actual shipment of the first article(s), the contractor shall send a letter of notification of shipment to Warner Robins ALC, Robins AFB, GA 31098. The notification shall include the contract number, stock number, quantity of first article and method of shipment (including shipping document number, if possible).

9. Conditions for waiver of First Article requirements:

- [ ] a. First Article inspection is not required if contractor has previously manufactured the item under a DOD contract which required first article or if contractor has qualified to [illegible]
- [ ] b. First article inspection is not required if item is procured from a contractor who has previously been given first article approval and 12 months have not elapsed since completion of a prior DOD contract.
- [ ] c. First article inspection is not required if the contractor is producing the item under a current DOD contract which required a first article.

10. Disposition of approved First Article shall be as follows:

☐ a. First Article Point of Acceptance will be Warner Robins ALC, with approved First Article to be retained by Warner Robins ALC for additional evaluation.

☒ b. First Article Point of Acceptance will be AFLC/DSTZ, Wright Patterson AFB OH, with approved First Article to be forwarded to USAF supply.

☐ c. Approved First Article will be returned to contractor's plant for reconditioning (if necessary), and use as a prototype or other purposes (if requested by contractor), with final acceptance at contractor's plant.

☐ d. Approved First Article will be retained at contractor's plant for reconditioning (if necessary), and use as a prototype or other purposes (if requested by contractor), with final acceptance at contractor's plant.

☐ e. *( ) preproduction sample(s) will be expended in testing: Residual Components will not be returned to contractor; First Article approval will also constitute acceptance.

☐ f. First Article will be approved at Warner Robins ALD with *( ) samples (approved First Article) returned to contractor for use as testing standard and acceptance at contractor's plant. Point of acceptance for any remaining preproduction sample(s) will be Warner Robins ALC, with the samples retained by Warner Robins ALC for additional evaluation.

☐ g. First Article approval by Warner Robins ALC will constitute final acceptance. First Article will be retained at Warner Robins ALC and forwarded to USAF supply after testing and evaluation is completed. Fit and function tests required at a military installation prior to final approval.

11. Disposition of disapproved First Article shall be as follows:

☒ a. Disapproved First Article shall be returned to the contractor's plant.

☐ b. Disapproved First Article will not be returned to contractor except at the option of the Government. (For example, one preproduction sample may be returned to contractor and one preproduction sample may be retained at Warner Robins ALC).

☐ c. *( ) preproduction sample(s) will be expended in testing; residual components will not be returned to contractor.

* Insert quantity as appropriate

12. Optional Clause

☐ a. Reference "First Article approval" clause. Subparagraph (h) and/or (i) as appropriate, should be included in the contract.

13. Remarks

The Packaging Support Section, WR-ALC/DSTDS, will furnish six model M-16s, one clip, one sling, and descriptive data on the modified M16A2, for use in designing container.

SIGNATURE

FC: 5700

FIRST ARTICLE INSPECTION REQUIREMENT

SN	PART NO	DATE PREPARED
	11214-4094-100	15 Feb 1984

As used in the following text first article includes preproduction models, preproduction testing or inspection, initial production samples, test samples, first lots, pilot models and pilot lots. Approval involves testing and evaluating the first article for conformance with and evaluating the first article for conformance with specified contract requirements before or in the initial stage of production under a contract.

2. Estimated time to deliver First Article (including testing time): ~~120~~ 150 Days after receipt of GFM.

3. First article sample quantity: 2

4. Estimated Evaluation Time 30 Days

5. Preproduction Test Sample (First Article) Inspection Option (see blocks 7, 8, 9, and 10).

[ ] a. At plant or approved testing laboratory witnessed by Government inspector and Warner Robins ALC engineer

[XX] b. At plant or approved testing laboratory witnessed by a representative of WR-ALC/DSTDS and AFLC/DSTZ

[ ] c. At plant or approved testing laboratory witnessed by Government inspector; certified test report per MIL-STD-831 and First Article to be submitted to Warner Robins ALC

[ ] d. At Warner Robins ALC

6. Estimated cost for Government inspection/evaluation. $ ~~2500.00~~ 1200.00

7. Government loaned equipment required: NO [ ] YES [X] (Explain in remarks)

8. First Article shipping instructions:

First Article and/or test reports together with all supporting documentation required by contract shall be sent to AFLC/DSTZ.

The shipping container and DD Form 250 shall be marked in the following manner.

TO: AFLC/DSTZ
Wright-Patterson AFB OH 45433

First Article(s) Submitted for Inspection and Test
Contract No:
DO NOT STOCK

At least 10 days prior to actual shipment of the first article(s), the contractor shall send a letter of notification of shipment to Warner Robins ALC, Robins AFB, GA 31098. The notification shall include the contract number, stock number, quantity of first article and method of shipment (including shipping document number, if possible).

9. Conditions for waiver of First Article requirements:

[ ] a. First Article inspection is not required if contractor has previously manufactured the item under a DOD contract which required first article or if contractor has qualified to Product Qualification.

[ ] b. First article inspection is not required if item is procured from a contractor who has previously been given first article approval and 12 months have not elapsed since completion of a prior DOD contract.

[ ] c. First article inspection is not required if the contractor is producing the item under a current DOD contract which required a first article.

PREVIOUS EDITION IS OBSOLETE.

10. Disposition of approved First Article shall be as follows:

- ☐ a. First Article Point of Acceptance will be Warner Robins ALC, with approved First Article to be retained by Warner Robins ALC for additional evaluation.
- ☒ b. First Article Point of Acceptance will be Warner Robins ALC, with approved First Article to be forwarded to USAF supply. AFLC/DSTZ, Wright-Patterson AFB OH
- ☐ c. Approved First Article will be returned to contractor's plant for reconditioning (if necessary), and use as a prototype or other purposes (if requested by contractor), with final acceptance at contractor's plant.
- ☐ d. Approved First Article will be retained at contractor's plant for reconditioning (if necessary), and use as a prototype or other purposes (if requested by contractor), with final acceptance at contractor's plant.
- ☐ e. *( ) preproduction sample(s) will be expended in testing: Residual Components will not be returned to contractor; First Article approval will also constitute acceptance.
- ☐ f. First Article will be approved at Warner Robins ALD with *( ) samples (approved First Article) returned to contractor for use as testing standard and acceptance at contractor's plant. Point of acceptance for any remaining preproduction sample(s) will be Warner Robins ALC, with the samples retained by Warner Robins ALC for additional evaluation.
- ☐ g. First Article approval by Warner Robins ALC will constitute final acceptance. First Article will be retained at Warner Robins ALC and forwarded to USAF supply after testing and evaluation is completed. Fit and function tests required at a military installation prior to final approval.

11. Disposition of disapproved First Article shall be as follows:

- ☒ a. Disapproved First Article shall be returned to the contractor's plant.
- ☐ b. Disapproved First Article will not be returned to contractor except at the option of the Government. (For example, one preproduction sample may be returned to contractor and one preproduction sample may be retained at Warner Robins ALC).
- ☐ c. *( ) preproduction sample(s) will be expended in testing; residual components will not be returned to contractor.

* Insert quantity as appropriate

12. Optional Clause

- ☐ a. Reference "First Article approval" clause. Subparagraph (h) and/or (i) as appropriate, should be included in the contract.

13. Remarks

The Packaging Support Section, WR-ALC/DSTDS, will furnish six model M-16s, one clip, one sling, and descriptive data on the modified M16A2, for use in designing container.

SIGNATURE

MEMORANDUM OF AGREEMENT

1. Hardigg Industries agrees to modify the cross bar to accommodate M16/A2 weapons. Metal locking device will be increased approximately one inch in length and the diameter of the metal locking device will be increased to 3/8 inch. The metal locking device will be further modified to accommodate a MIL-P-17802 pad lock.

2. One way lock-tight screws will be used to secure the handles to the containers.

3. M16 containers will remain at the Air Force Packaging Evaluation Agency (AFPEA) until modifications on the cross bar are completed. Hardigg Industries will then send modified cross bars to AFPEA for a fit and function test using the M16/A2 rifles. The test will include free fall drop test and vibration test at ambient temperatures.

Norman Roberts

Date: 8-22-85

NORMAN ROBERTS
HARDIGG INDUSTRIES

Jerry E Stuckey

Date: 8-22-85

JERRY E. STUCKEY
WR-ALC/DSTD
Robins AFB GA

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS WARNER ROBINS AIR LOGISTICS CENTER (AFLC)
ROBINS AIR FORCE BASE, GEORGIA 31098

19 FEB 1985

REPLY TO ATTN OF: DSTD

SUBJECT: IOT&E for the M-16 Weapon Prototype Container

HQ AFLC/DSTZ
Wright-Patterson AFB OH 45433-5999

1. We contacted HQ AFTEC, per your recommendation, concerning test plan for the M-16 container. They advised that test plans for containers would not be in their area of responsibility. They, in fact, referred us to your office as OPR for testing of containers.

2. We have prepared a test plan (attached) that we feel will provide a good evaluation of this container and will identify any problems which may be encountered during field operations. Request you evaluate the plan and furnish your comments.

3. We have submitted a request to HQ TAC that they host the IOT&E. We desire participation by your office, as well as the other organizations listed on the test plan. Firm test dates and test sites will be furnished as they become available.

EDWIN P. FOUNTAIN
Chief, Packaging Management Branch
Directorate of Distribution

1 Atch
Test Plan

INITIAL OPERATIONAL TEST AND EVALUATION (IOTE)

DATE: TBD

TEST TITLE: Initial Operational Test and Evaluation (IOT&E) of the M-16 weapon long life shipping container.

WEAPON SYSTEM: M-16 Weapon

TYPE OF TEST: IOT&E

TEST LOCATION:

TEST DESCRIPTION: The major objective is to provide DOD with a long-life container for shipment, storage, deployment, inspection, issue, and security of M-16 weapons. This test will ascertain that the container meets all of the above requirements.

1. INTRODUCTION:

a. BACKGROUND: The requirement has existed for a long time to provide a more efficient packaging technique for M-16 weapons. Serialization and inspection requirements for the M-16 make it necessary to continuously open and repack weapons. Further, mobility operations are hampered by the present requirement to deploy with weapons packed in bulky wooden containers in addition to adequate quantities of storage racks. The weapons are removed from the shipping containers and placed in the storage racks at the deployment site to meet security and issue requirements. This produces corrosion because of inadequate protection and doubles the cube utilization for already critical airlift capability during contingency operations.

—A container has been designed which satisfies all of the above requirements and is economical and lightweight. Container is designed to protect, transport, store, inventory and issue twelve (12) M-16 rifles with slings and clips under world wide climatic conditions and under war and peace time operational environments. The following maintainability design features are incorporated into the container to enhance support and minimize maintenance: Interchangeability of cover section; replacement of cover section with shallow lid; no special tools or hardware; positive positioning of cover section; hardware treated for corrosion prevention; continuous length seal; locking capability within each section; attachment of tamperproof seal on container exterior; visibility of serial numbers; easy removal of any weapon. Container will be primarily maintained at field level.

Rework or major repair may be accomplished above field level. The Development, Test and Evaluation (DTE) of this container will be conducted at the Air Force Packaging Evaluation Agency, Wright-Patterson AFB OH approximately 15 Mar 1985. Upon completion of DTE, IOT&E tests will be required.

2. CONCEPT OF TEST OPERATIONS:

a. PURPOSE:

The Initial Operational Test and Evaluation (IOT&E) team will assess operation suitability, reliability, maintainability, availability, and logistics supportability for the M-16 weapon container. This testing will support WR-ALC's decision to procure production quantities for the Air Force and recommendations for use throughout DOD.

b. OBJECTIVE:

The overall objective of the long-life M-16 container is to provide DOD with a container that will satisfy all user requirements. The critical questions and issues to be addressed in evaluating operational effectiveness and suitability of this container are as follows:

(1) Will the container provide environmental protection to the weapons in all weather conditions?

(2) Are the container's reliability and maintainability adequate to meet its intended operational requirements given the planned level of resource support?

(3) Can the weapons be adequately inspected without removal of weapons?

(4) Will the container serve as a storage rack for issue of weapons during deployment/contingency operations?

(5) Does the container meet all security requirements?

(6) Can the container be stacked for storage?

(7) Can most repairs be accomplished at field level,(i.e., replacement of latches, seals, humidity indicator, pressure relief valve, mounting brackets, handles, patch small holes in shell)?

(8) Is the container compatible with 463L and standard (40 X 48) pallets?

(9) Is the container two-man portable?

(10) Is the container's functional use adaptable to field use and normal day-to-day activities? (armory and dining hall)

(11) Are container life cycle costs acceptable?

(12) Will container convert to small container to accommodate small quantity shipments?

(13) Can single rifles be easily and safely removed?

(14) Can sections be locked with standard padlock?

(15) Can container sections be wall mounted?

c. SCOPE:

(1) Validation Phase: The Development Test Evaluation (DTE) will be conducted at Air Force Packaging Evaluation Agency, Wright-Patterson AFB OH.

(2) Full-scale Engineering Phase: Engineering has been accomplished by Hardigg Industries and level 1 drawings will be procured for reprocurement purposes.

(3) IOT&E PHASE: IOT&E will be conducted after completion of DTE and will consist of team participation from the following activities: WR-ALC Packaging; Air Force Packaging Evaluation Office; WR-ALC Technician; Hq SAC; Hq TAC; Hq Security; Air National Guard; Marine Corps;

3. TEST METHODOLOGY:

a. Suitability: Operational suitability will be assessed through military hands on ground operations during loading, unloading, storage (stacking), wall mounting; storage racks; security; issue and serial number inspection. To accomplish all aspects of the suitability evaluation, all equipment, procedures, and previous test results will be required. Limitations to fully accomplish the suitability evaluation will be identified to the test director and a determination made on the impact of accomplishing the suitability objectives.

b. Reliability: Reliability will be assessed as follows:

(1) Failure rate of latches.

(2) Failure rate of the internal locking device to secure weapons.

(3) Failure rate of the wall mounts to be mounted to provide a storage rack.

Reliability assessment will be accomplished by a combination of visual inspection and engineering analysis.

c. Maintainability: Maintainability will be assessed by determining the level of repair such as:

(1) Ease of replacement of latches.

(2) Ease of replacement of mounting brackets.

(3) Ease of patching holes in container shell.

(4) Ease of replacement of gasket

(5) Ease of replacement of humidity indicator.

(6) Ease of replacement of pressure relief valve.

(7) Ease of replacement of mounting brackets.

(8) Ease of replacement of handles.

d. Availability and Logistical Supportability: Provisioning of spares and stock listing of containers will be accomplished subsequent to the IOT&E. User input will be required to determine total Air Force requirements. Compatibility of the weapons container with facilities, packaging, storage, transportation methods, and human factors will be assessed within these objectives.

SOLICITATION/CONTRACT

BIDDER/OFFEROR TO COMPLETE BLOCKS 11,13 15,21,22 & 27

RATING: DO C9E — DMS REG 2

PAGE 1 OF 10

CONTRACT NO	AWARD EFFECTIVE	4. SOLICITATION NUMBER	SOLICITATION TYPE	6. SOLICITATION ISSUE DATE
F09650-84-C-0228	1984 SEP 15	F09650-84-R-0184	☐ INVITATION FOR BID (IFB) ☐ REQUEST FOR PROPOSAL (RFP)	

ISSUED BY — CODE

DEPARTMENT OF THE AIR FORCE
DIRECTORATE OF CONTRACTING & MFG
WARNER ROBINS AIR LOGISTICS CENTER
ROBINS AIR FORCE BASE GA 31098

BUYER JOANN SMITH PMKC (912) 926 [illegible]

8. THIS ACQUISITION IS
[✓ UNRESTRICTED] ☐ LABOR SURPLUS AREA CONCERNS
☐ SET ASIDE % FOR ☐ COMBINED SMALL BUSINESS & LABOR SURPLUS AREA CONCERNS
☐ SMALL BUSINESS ☐ OTHER
SIC SIZE STANDARD

SOLICITATION N/A

1984 SEP 15

10. ITEMS TO BE PURCHASED (BRIEF DESCRIPTION)
[✓ SUPPLIES] ☐ SERVICES Category 1 Containers

11. IF OFFER IS ACCEPTED BY THE GOVERNMENT WITHIN ______ CALENDAR DAYS (60 CALENDAR DAYS UNLESS OFFEROR INSERTS A DIFFERENT PERIOD) FROM THE DATE SET FORTH IN BLK 6 ABOVE, THE CONTRACTOR AGREES TO HOLD HIS OFFERED PRICES FIRM FOR THE ITEMS SOLICITED HEREIN AND TO ACCEPT ANY RESULTING CONTRACT SUBJECT TO THE TERMS AND CONDITIONS STATED HEREIN

12. ADMINISTERED BY — CODE S0701A
DCASMA HARTFORD
96 MURPHY RD
HARTFORD CT 06114

PAS # NONE SCD C

13. CONTRACTOR/OFFEROR — CODE 11214 — FACILITY CODE

HARDIGG INDUSTRIES INC
N MAIN ST
SOUTH DEERFIELD MA 01373

[✓] CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER
TELEPHONE NO

14. PAYMENT WILL BE MADE BY — CODE S2202A
DCASR BOSTON
495 SUMMER ST
BOSTON MASSACHUSETTS 02210

SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 14

15. PROMPT PAY DISCOUNT
NONE

16. THIS CONTRACT WAS
☐ ADVERTISED [✓ NEGOTIATED PURSUANT TO] [✓ 10 USC 2304 (a) (10)] ☐ 41 USC 252 (c)

17 ITEM NO	18 SCHEDULE OF SUPPLIES/SERVICES	19 QUANTITY	20 UNIT	21 UNIT PRICE	22 AMOUNT
	SEE SCHEDULE REMITTANCE ADDRESS HARDIGG INDUSTRIES INC P O BOX 5355 BOSTON MA 02206				

OFFICIAL FILE COPY
NAME [illegible] DATE 1984 SEP 15
WARNER ROBINS/ALC/PMK

23. ACCOUNTING AND APPROPRIATION DATA
SEE SECTION G

24. TOTAL AWARD AMOUNT
$27,675 00

25. [✓] CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 5 COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY CONTINUATION SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN

26. [✓] AWARD OF CONTRACT: YOUR OFFER ON SOLICITATION NUMBER SHOWN IN BLOCK 4 INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN IS ACCEPTED AS TO ITEMS
0001 and 0002

27. SIGNATURE OF OFFEROR/CONTRACTOR
John C Miller

NAME AND TITLE OF SIGNER (TYPE OR PRINT)
JOHN C. MILLER
VICE PRESIDENT

DATE SIGNED
9/11/84

28. UNITED STATES OF AMERICA (SIGNATURE OF CONTRACTING OFFICER)
Charlotte R Spratling

NAME OF CONTRACTING OFFICER
CHARLOTTE SPRATLING

DATE SIGNED
84 Sep 14

THIS IS AN URGENT REQUIREMENT

Part I - The Schedule
Section B
Supplies or Services and Prices/Costs

Item	Supplies/Services	Qty Unit	Unit Price	Amount
0001	8145P102332065	2 EA	$2,587.50	$5,175.00

Container
P/N: Hardigg, P/N: 11214-4094-300
Appl: Category I Container for M-16 Weapon in accordance with attached purchase description
PR NR: FB206540760763
PR LI: 0001
FOB: Destination
Quantity Variation: 0% Over 0% Under
ACRN: AA
PQA/Insp Site: Destination Acceptance: Destination

(A) Government's required delivery schedule:

QTY	U/I	ON OR BEFORE	SHIP TO	REQUISITION NR	PRI
2	EA	150 days ARO	See Below	Non-Milstrip	--

First Article completed within 150 days. Government approval/disapproval within 35 days after receipt of first article.

Item	Supplies/Services	Qty Unit	Unit Price	Amount
0002	8145P1602342065	2 EA	$11,250.00	$22,500.00

Container
P/N: Hardigg, P/N: 11214-4094-100
Appl: Category I Container for M-16 Weapon in accordance with attached purchase description
PR NR: FB206540760762
PR LI: 0002
FOB: Destination
Quantity Variation: 0% Over 0% Under
ACRN: AA
PQA/Insp Site: Destination Acceptance: Destination

(A) Government's Required Delivery Schedule:

QTY	U/I	ON OR BEFORE	SHIP TO	REQUISITION NR	PRI
2	EA	150 days ARO	See Below	Non-Milstrip	--

First Article completed within 150 days. Government approval/disapproval within 35 days after receipt of first article.

0001	Option to purchase data (FLIN A001) in accordance with Exhibit A attached	1 LO	$18,500	
0004	Option to Purchase unlimited rights for the M-16 Rifle containers			
0004AA	Option to Purchase Data Rights	1 LO	$30,000	
0004AB	License to use U.S. Patent No. 4,284,202.	1 LO	NSP	

Delivery Same as Item 0003

TOTAL $27,675.00

SHIP TO/MARK FOR:

AFLC/DSIZ .
Wright-Patterson AFB OH 45433

MARK/FOR

Contract: (See Face Sheet of Award)

Requisition Nr: (See Each Item in Schedule)

B-10 **CLAUSES AND PROVISIONS**

a. Clauses and Provisions from the Federal Acquisition Regulation (FAR) and the DOD FAR Supplement are incorporated in this document by reference and in full-text. Those incorporated by reference have the same force and effect as if they were given in full-text.

b. Clauses or Provisions in this document will be numbered in sequence, but will not necessarily appear in a consecutive order.

c. The contractor's Annual Representations and Certifications (Section K) and/or Section K of the solicitation, if any, preceding this contract are incorporated (IAW FAR 15.406-1(b)).

PART I - The Schedule
Section E
Inspection and Acceptance

E-34 **INSPECTION AND ACCEPTANCE**

Inspection and acceptance will be at destination(s) specified in Section "B" hereof.
(AFLC0484)

E-35 **DD FORM 1423 DATA INSPECTION AND ACCEPTANCE**

The Inspection and Acceptance for Data Items are as shown on DD Form 1423 attached hereto
(AFLC0484)

AD-A163 121

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION Unclassified	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY None	3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release distribution unlimited
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S) DSTZ 84-P-142	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION Air Force Packaging Evaluation Agency 6b. OFFICE SYMBOL (If applicable) HQ AFLC/DSTZ	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State and ZIP Code) HQ AFLC/DSTZD Wright-Patterson AFB OH 45433-5999	7b. ADDRESS (City, State and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State and ZIP Code)	10. SOURCE OF FUNDING NOS. PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT NO.
11. TITLE (Include Security Classification) Test and Evaluation of M-16 Weapon Container	
12. PERSONAL AUTHOR(S) Chii C. Hwang	
13a. TYPE OF REPORT Final 13b. TIME COVERED FROM Oct 84 TO Nov 85	14. DATE OF REPORT (Yr., Mo., Day) 85-Nov-15 15. PAGE COUNT 40
16. SUPPLEMENTARY NOTATION	
17 COSATI CODES FIELD / GROUP / SUB. GR.	18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number) Polyethylene container, superimposed-load, rough handling, repetitive shock, pneumatic pressure

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

Hardigg Industries Inc. developed a polyethylene container for storage and shipping of M-16 weapons upon request from AR-ALC/DSTDS. Projected cost of containers is $247.00 each in quantities of 1,000. This developmental effort is in response to the need for protecting M-16 weapons while in storage, transit, and/or in the field operation. Cost savings are estimated at $6.29/weapon for each shipment with potential gross savings of $2,031, 500.00 for the Department of Defense.

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT. ☐ DTIC USERS ☐	21. ABSTRACT SECURITY CLASSIFICATION Unclassified
22a. NAME OF RESPONSIBLE INDIVIDUAL Chii C. Hwang	22b. TELEPHONE NUMBER (Include Area Code) 513-257-3362 22c. OFFICE SYMBOL HQ AFLC/DSTZD

DD FORM 1473, 83 APR EDITION OF 1 JAN 73 IS OBSOLETE.

SECURITY CLASSIFICATION OF THIS PAGE

DISTRIBUTION LIST

DTIC/TSR Cameron Station Alexandria VA 22314	2
HQ AFLC/DSTZ Library	20
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OC-ALC/DST Tinker AFB OK 73145	1
CO-ALC/DST Hill AFB UT 84406	1
SA-ALC/DST Kelly AFB TX 78241	1
SM-ALC/DST McClellan AFB CA 95652	1
WR-ALC/DST/DSTD Robins AFB GA 31098	2 ea
ASD/AWL Wright-Patterson AFB OH 45433-5999	1
DLSIE/DRXMC-D USA Logistics Mgt Cen Ft Lee VA 23801	1
US AMC Packaging, Storage, and Containerization Center/SDSTO-T Tobyhanna PA 18466	1
US Army Natick Labs/DRDNA-EPS Natick MA 01760	1
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