FINAL REPORT JULY 1994

REPORT NO. 94-23

2,000-POUND MK84 BOMBS IN A COMMERCIAL ISO SIDE-OPENING CONTAINER TRANSPORTABILITY TESTS

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Prepared for:U.S. Army Defense Ammunition Center and SchoolATTN: SMCAC-DETSavanna, IL 61074-9639 Distribution Unlimited

U.S. ARMY ARMAMENT MUNITIONS CHEMICAL COMMAND

U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL

VALIDATION ENGINEERING DIVISION SAVANNA, ILLINOIS 61074-9639

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The U.S. Army Defense Ammunition Center and School (USADAU Division (SMCAC-DEV), was tasked by USADACS, Transportation Engineering Division (SMCAC-DET), to test a reduced wooden dunnage loading and bracing procedure for 2,000-pound MK84 bombs with fins on metal pallets in a commercial International Organization for Standardization (ISO) side-opening container. Rail impact, road, and container tilt tests were performed on a loaded commercial ISO side-opening container. The container was rail impact tested on a Trailer-on-Flatcar (TOFC). Road tests were performed with the container mounted on the M871 semitrailer (with the gross weight of the load exceeding transportation chassis limits.) Due to the Shipboard Transportation Simulator (STS) being inoperable, the container was tilted 80 degrees to the back wall with a crane. There was no damage to the load or the container as a result of these tests; therefore, this load is acceptable for transportation in all surface modes.

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U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL VALIDATION ENGINEERING DIVISION SAVANNA, IL 61074-9639

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REPORT NO. 94-23

2,000-POUND MK84 BOMBS IN A COMMERCIAL ISO SIDE-OPENING CONTAINER TRANSPORTABILITY TESTS

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INTRODUCTION

A. <u>BACKGROUND</u>. The U.S. Army Defense Ammunition Center and School (USADACS), Validation Engineering Division (SMCAC-DEV), was tasked by USADACS, Transportation Engineering Division (SMCAC-DET), to test a reduced wooden dunnage loading and bracing procedure for 2,000-pound MK84 bombs as a complete round in a commercial International Organization for Standardization (ISO) side-opening container.

B. <u>AUTHORITY</u>. This test was conducted IAW mission responsibilities delegated by the U.S.
Army Armament, Munitions and Chemical Command (AMCCOM), Rock Island,
IL 61299-6000. Reference is made to AR-700, 15 April 1979, DARCOM Supplement 1,
4 September 1979; and AMCCOM-R 10-17, 13 January 1986, Mission and Major Functions of USADACS.

C. <u>OBJECTIVE</u>. The objective of these tests was to determine if the loading and bracing procedure with wooden dunnage in a commercial ISO side-opening container of 2,000-pound MK84 bombs, complete round would satisfy the transportation requirements of Transportability Testing Procedure, TP-91-01. The following tests were conducted: rail, road hazard course, washboard course, and container tilt test.

D. <u>CONCLUSION</u>. This loading and bracing procedure satisfactorily retained the 2,000-pound MK84 bombs and prevented damage to the container.

E. <u>RECOMMENDATION</u>. This procedure is recommended for approval for transportation of 2,000-pound MK84 bombs and fins in all surface modes.

7 and 17 July 1994

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TEST PROCEDURES

These procedures were extracted from TP-91-01, Transportability Testing Procedures, July 1991, for tactical vehicles used for shipping munitions by tactical truck.

A. The test load was prepared using the outloading procedure specified for the munitions (see part 6). The 2,000-pound MK84 bombs used in the load were inert (nonexplosive). The weight and physical characteristics of the load configuration were identical to the live (explosive) ammunition provided for in part 6; i.e., weights, physical dimensions, center of gravity (CG), etc. The ammunition packages duplicated live ammunition.

B. Tests for this load configuration are as follows:

- 1. Rail Impact (Test Method No. 1).
- 2. Road Hazard Course (Test Method No. 2).
- 3. Road Trip (Test Method No. 3).
- 4. Road Hazard Course (Test Method No. 2).
- 5. Washboard Course (Test Method No. 6).
- 6. Tilt Test (Test Method No. 5).

C. The test methods are as follows:

1. Test Method No. 1 (Rail Impact Test). The container load of 2,000-pound MK84 bombs was positioned on a container chassis and securely locked in place using the twist locks at each corner. The container chassis was secured to a Trailer-on-flatcar (TOFC). Equipment needed to perform the test included the TOFC (hammer) railcar, five empty railroad cars connected together to serve as the anvil, and a railroad locomotive. These anvil cars were

positioned on a level section of track with air and hand brakes set with draft gears compressed. The locomotive unit pulled the TOFC several hundred yards away from the anvil cars, pushed the TOFC toward the anvil at a predetermined speed, then disconnected from the TOFC approximately 50 yards away from the anvil cars, which allowed it to roll freely along the track until it struck the anvil. This constituted an impact. Impacting is accomplished at speeds of 4, 6, and 8.1 mph in the forward direction and at 8.1 mph in reverse. The 4 and 6 mph impact speeds are approximate; the 8.1 mph speed is a minimum. Impact speeds are determined by using an electronic counter to measure the time required for the TOFC to traverse an 11-foot distance immediately prior to contact with the anvil cars (see Figure 1, page 3-4).

2. Test Method No. 2 (Road Hazard Course). This step required the container load of 2,000-pound MK84 bombs transported on the M871 semitrailer be pulled over a 200-foot-long segment of concrete road which consists of two series of railroad ties projecting 6-inches above the level or the road surface. The load traversed the course two times (see Figure 2, page 3-5).

3. Test Method No. 3 (Road Trip). The M871 semitrailer and container of 2,000-pound MK84 bombs was transported for a distance of 30 miles over a combination of roads surfaced with gravel, concrete, or asphalt. The test route included curves, corners, railroad crossings, cattle guards, and stops and starts. The load traveled at the maximum speed suitable for the particular road being traversed, except as limited by legal restrictions. No panic stops were performed since the test load was subjected to rail impact testing.

4. Test Method No. 6 (Washboard Course). A suitable tractor was used to pull the M871 semitrailer with the container load of 2,000-pound MK84 bombs over the 300-foot-long washboard course at a speed which produced the most violent response in the container load. The washboard course is constructed as shown in Figure 3, page 3-5.

5. Test Method No. 5 (80 Degree Tilt Test). The container load of 2,000-pound MK84 bombs was positioned on level terrain with the corner fittings resting on timbers so the entire container was supported by the corner fittings. The timbers were oriented parallel to the end rails of the container and extended 2 feet beyond the corner fittings on each side. Using one mobile crane and appropriate rigging, the container was rotated (tilted) using the bottom corner fittings as a fulcrum. The rigging (sling) was attached to the top corner fittings of the long side of the container. Tilting was accomplished by lifting the top corner fittings directly above the fulcrum. The crane boom was then positioned over the center of the container and the container was allowed to complete rotation to 80 degrees from where it started. The container was allowed to remain at the 80 degree tilt position for at least 1 minute, then the container was uprighted by reversing this procedure.

	TIMED INTERVAL	SPECIMEN CAR IS RELEASED BY SWITCH ENGINE TO	ATTAIN: IMPACT NO. 1 @ 4 MPH IMPACT NO. 2 @ 6 MPH IMPACT NO. 3 @ 8.1 MPH	THEN THE CAR IS REVERSED AND RELEASED BY SWITCH ENGINE TO	ATTAIN: IMPACT NO 4. @ 8.1 MPH	
STANDARD TEST PLAN		5 BUFFER CARS (ANVIL) WITH DRAFT GEAR COMPRESSED AND AIR BRAKES IN A SET	POSITION ANVIL CARS TOTAL WT 250,000 LBS (APPROX)			FIGURE 1

ASSOCIATION OF AMERICAN RAILROADS (AAR)

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TEST RESULTS

RAIL IMPACT DATA

Test No.: 1

Date: 7 July 1994

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Specimen Load: 2,000-pound MK84 bombs on metal pallets and associated complete round components, loaded and braced with wooden dunnage in a commercial ISO side-opening container, chassis mounted on a TOFC.

Chassis No.: ISCZ 164587Wt.: 6,540Container Type: ISO side-openingNo.: USAF0014335Wt.: 6,050Load Type: 2,000-pound MK84 bombs, dunnageWt.: 43,543Chassis No.: 5394Wt.: 6,100Container Type: ISO side-openingNo.: USAF0013998Wt.: 6,050Load Type: 500-pound MK82 bombs, dunnageWt.: 38,265	TOFC No.: RTTX 153058	Lt. Wt.:	70,500
Container Type: ISO side-openingNo.: USAF0014335Wt.: 6,050Load Type: 2,000-pound MK84 bombs, dunnageWt.: 43,543Chassis No.: 5394Wt.: 6,100Container Type: ISO side-openingNo.: USAF0013998Wt.: 6,050Load Type: 500-pound MK82 bombs, dunnageWt.: 38,265	Chassis No.: ISCZ 164587	Wt.:	6,540
Load Type: 2,000-pound MK84 bombs, dunnageWt.:43,543Chassis No.:5394Wt.:6,100Container Type:ISO side-openingNo.:USAF0013998Wt.:6,050Load Type:500-pound MK82 bombs, dunnageWt.:38,265	Container Type: ISO side-opening No.: USAF0014335	Wt.:	6,050
Chassis No.: 5394Wt.: 6,100Container Type: ISO side-openingNo.: USAF0013998Wt.: 6,050Load Type: 500-pound MK82 bombs, dunnageWt.: 38,265	Load Type: 2,000-pound MK84 bombs, dunnage	Wt.:	43,543
Container Type: ISO side-openingNo.: USAF0013998Wt.: 6,050Load Type: 500-pound MK82 bombs, dunnageWt.: 38,265	Chassis No.: 5394	Wt.:	6,100
Load Type: 500-pound MK82 bombs, dunnage Wt.: 38,265	Container Type: ISO side-opening No.: USAF0013998	Wt.:	6,050
	Load Type: 500-pound MK82 bombs, dunnage	Wt.:	38,265

Total Specimen Wt.: 176,548

Buffer Car (five cars) Wt.: 250,000

Impact	End Struck	<u>Velocity</u>	Remarks
1	Forward	4.21	No load movement in either container.
2	Forward	6.52	No load movement in either container.
3	Forward	8.33	No longitudinal load movement in either container. Observed 1/2-inch vertical movement in center gate of 2,000-pound MK84 bombs.
4	Reverse	8.41	No Load movement. No additional vertical gate movement.

ROAD TEST DATA

Test No.: 2

Date: 17 July 1994

Specimen Load: 2,000-pound MK84 bombs in an ISO side-opening container mounted on an M871 semitrailer.

ROAD HAZARD COURSE:

PASS 1-A OVER FIRST SERIES OF TIES:	5.62 SEC	6.1 MPH
PASS 1-B OVER SECOND SERIES OF TIES:	5.72 SEC	5.7 MPH
REMARKS: No damage to trailer or load movement.		
PASS 2-A OVER FIRST SERIES OF TIES:	6.45 SEC	5.2 MPH
PASS 2-B OVER SECOND SERIES OF TIES:	6.19 SEC	5.3 MPH

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REMARKS: No damage or load movement.

30-MILE ROAD TEST: No damage or load movement.

PANIC STOP TEST: No panic stops were performed since the container load was previously subjected to four rail impact tests.

PASS 3-A OVER FIRST SERIES OF TIES:	5.82 SEC	5.6 MPH
PASS 3-B OVER SECOND SERIES OF TIES:	5.67 SEC	5.7 MPH
REMARKS: No damage or load movement.		
PASS 4-A OVER FIRST SERIES OF TIES:	5.81 SEC	5.9 MPH
PASS 4-B OVER SECOND SERIES OF TIES:	6.13 SEC	5.4 MPH

REMARKS: No lateral or visual vertical load or dunnage movement.

WASHBOARD COURSE: No visual damage to the load or container.

80 DEGREE TILT TEST: No visual damage to the load or container.

PHOTOGRAPHS







U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL - SAVANNA, IL

PHOTO NO. SCN-94-186-2980. This photo shows the test setup used to rotate containers 80 degrees in the rotational test. The crane has a capacity of 40 tons. The container is tilted 80 degrees from its upright position. No load movement was observed after the test.



DRAWING

REVISION NO. 1 APPROVED BY BUREAU OF EXPLOSIVES
 DATE

LOADING AND BRACING WITH WOODEN DUNNAGE IN SIDE OPENING ISO CONTAINERS OF MK-84 (2,000 POUND) BOMBS, COMPLETE ROUND

LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS.

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GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE SPECIFIED OUTLOADING PROCEDURES ARE APPLICABLE TO LCADS OF MK-84 (2,000 POUND) BOHBS, COMPLETE ROUND. SEE PAGE 3 FOR DETAILS OF THE ITEMS TO BE SHIPPED. <u>CAUTION</u>: REGARDLESS OF THE DUANTITY OF CONTAINERS TO BE SHIPPED, THE "MAXIMUM GROSS WEIGHT" OF THE SIDE OPENING ISO CONTAINER MUST NOT BE EXCEEDED.
- C. THE LOAD AS SHOWN IS BASED ON A 6,050 POUND 20' LONS BY B' WIDE BY B'-6' HIGH SIDE OPENING INTERMODAL CONTAINER WITH INSIDE DIMENSIONS OF 19'-4" LONG BY B9" WIDE BY 88" HIGH. THE LOAD IS DESIGNED FOR TRAILER/ CONTAINER-ON-FLAT-CAR (T/COFC) SHIPMENT, HOWEVER, THE LOAD AS DESIGNED CAN ALSO BE MOVED BY OTHER SURFACE MODES OF TRANSPORT. NOTICE: OTHER CONTAINERS OF THE SAME DESIGN CONFIGURATION CAN BE USED.
- D. WHEN LOADING CONTAINERS, THEY ARE TO BE POSITIONED SO AS TO ACHIEVE A TIGHT LOAD (TIGHT AGAINST THE DUNNAGE ASSEMBLIES). ALTHOUGH A TOTAL OF 1-1/2" OF UNBLOCKED SPACE ACROSS THE WIDTH OF A LOAD BAY IS PERMITTED, LATERAL VOIDS WITHIN THE LOAD ARE TO BE HELD TO A MINIMUM. EXCESSIVE SLACK CAN BE ELIMINATED FROM A LOAD BY LAMINATING ADDITIONAL PIECES OF APPROPRIATE THICKNESS TO THE HORIZONTAL PIECES ON THE CENTER GATE ASSEMBLY. NAIL EACH ADDITIONAL PIECE W/I APPROPRIATELY SLIZD NAIL EVERY 12". ADDITIONALLY, THE THICKNESS AND/OR OUANTITY OF THE VERTICAL AND HORIZONTAL PIECES IN THE CENTER GATE ASSEMBLY MAY BE ADJUSTED AS REQUIRED TO FACILITATE VARIANCE IN THE CONTAINER SIZE.
- E. DUNNAGE LUMBER SPECIFIED IS OF NOMINAL SIZE. FOR EXAMPLE, 1" X 4" MATERIAL IS ACTUALLY 3/4" THICK BY 3-1/2" WIDE AND 2" X 6" MATERIAL IS ACTUALLY 1-1/2" BY 5-1/2" WIDE.
- F. A STAGGERED NAILING PATTERN WILL BE USED WHENEVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.
- G. IN SOME CONTAINERS THERE IS A SLOT AT THE CORNERS OF THE ENDWALLS. PIECES OF DUNNAGE MATERIAL MUST BE LAMINATED TO THE BUFFER PIECES ON THE END BLOCKING ASSEMBLIES TO PROVIDE A FLAT SURFACE FOR THE BUFFER PIECES. A PIECE OF 2" X 4", 2" X 3" OR A SPECIAL WIDTH PIECE CUT-TO-FIT CAN BE USED. THIS FILL PIECE WILL BE NAILED WITH ONE APPROPRIATELY SIZED NAIL EVERY 12". THIS PIECE IS NOT REDUIRED WHEN THE CORNER PORTIONS OF THE CONTAINER ENDWALLS ARE SMOOTH AND FLAT.
- H. <u>CAUTION</u>: DO NOT NAIL DUNNAGE MATERIAL TO THE CONTAINER WALLS OR FLOOR. ALL NAILING WILL BE WITHIN THE DUNNAGE.
- J. PORTIONS OF THE CONTAINER DEPICTED WITHIN THIS DRAWING, SUCH AS THE SIDE DOORS, HAVE NOT BEEN SHOWN IN THE LOAD VIEWS FOR CLARITY PURPOSES.

(CONTINUED AT RIGHT)

MATERIAL SPECIFICATIONS

<u>LUMBER</u> :	SEE TM 743-200-1 (DUNNAGE LUMBER) AND FED SPEC MM-L-751.
<u>NAILS</u> :	FED SPEC FF-N-105; COMMON.
<u>PLYWOOD</u> :	COMMERCIAL ITEM DESCRIPTION A-A-S5057, TYPE A, CONSTRUCTION AND INDUSTRIAL PLYWOOD.INTERIOR WITH EXTERIOR GLUE, GRADE C-D. IF SPECIFIED GRADE IS NOT AVAILABLE, A BETTER INTERIOR OR AN EXTERIOR GRADE MAY BE SUBSTITUTED.
WIRE, CARBON STEEL -:	ASTM AB53; ANNEALED AT FINISH, BLACK OXIDE FINISH, .0800° DIA, GRADE 1005 OR BETTER.

(GENERAL NOTES CONTINUED)

K. REQUIREMENTS CITED WITHIN THE BUREAU OF EXPLOSIVES PAMPHLET 6C APPLY WHEN THE SHIPMENT MOVES BY TRAILER/ CONTAINER-ON-FLAT-CAR (T/COFC). SPECIAL T/COFC NOTES FOLLOW:

- 1. A LCADED CONTAINER MUST BE ON A CHASSIS EQUIPPED VITH TWO BOGIE ASSEMBLIES WHEN BEING MOVED IN TOFC SERVICE.
- 2. THE LOAD LIMIT OF A T/COFC RAILCAR MUST NOT BE EXCEEDED, NOR VILL A CAR BE LOADED SO THAT THE TRUCK UNDER ONE END OF THE CAR CARRIES MORE THAN ONE-HALF OF THE LOAD LIMIT FOR THAT CAR.
- L. DURING INTRASTATE AND/OR INTERSTATE MOVES BY MOTOR CARRIER, A PROPER CHASSIS OR MODIFIED FLATBED TRAILER MUST BE USED TO PRECLUDE VIOLATION OF ONE OR MORE "WEIGHT LAWS" APPLICABLE TO THE STATE OR STATES INVOLVED.
- M. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND DNE POUND EQUALS 0.454KG.

REVISION

REVISION NO. 1, DATED JUNE 1994 CONSISTS OF: 1. ADDING PROCEDURES FOR A 16-UNIT LOAD.





PROJECT SP 155-88

PAGE 4

(KEY NUMBERS CONTINUED FROM PAGE 4)

- (2) CROSS BLOCKING, 2" X 4" BY CUT TO FIT BETWEEN STRUTS (1 READ PER BOX).
- (3) CLEAT, 2' X 4' X 12" (2 REOD PER BOX). POSITION AS SHOWN AND NAIL TO THE STRUT, PIECE MARKED (1), W/4-10d NAILS. TOENAIL TO CROSS BLOCKING W/1-12d NAIL.
- (14) VERTICAL STRUT BRACING, 2' X 4' BY LENGTH TO SUIT (4 REOD). NAIL TO THE STRUTS, PIECES MARKED (2). W/2-10d NAILS AT EACH JOINT.
- (5) HORIZONTAL STRUT BRACING, 2" X 4" BY LENGTH TO SUIT (2 REOD). NAIL TO THE STRUTS, PIECES MARKED (9), W/2-10d NAILS AT EACH JOINT.

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SECUREMENT OF MISCELLANEOUS BOXES

BILL OF MATERIAL					
LUMBER	LINEAR FEET	BOARD FEET			
1' X 4' 2' X 2' 2' X 4' 2' X 6' 4' X 4'	44 41 173 292 81	15 14 115 292 108			
NAILS	NO. REOD	POUNDS			
6d (2*) 10d (3*) 12d (3-1/4*) 16d (3-1/2*)	464 2-3/4 376 5-3/4 8 NIL 64 1-1/4				
WIRE, NO. 14 GAGE 12' REOD NIL PLYWOOD, 3/4" 56 SD FT REOD 116 LBS PLYWOOD, 3/8" 277 SC FT REOD 285 LBS					

SPECIAL NOTES:

- THE LGAD AS SHOWN ON PAGE 4 DEPICTS A COMPLETE ROUND LOAD OF 2,000 POUND MK-B4 BOMBS, INCLUDING 4 PALLETS OF BOMBS, 4 CNU 335-A/E CONTAINERS WITH BSU-50/B FINS, 4 BOXES CONTAINING MISCELLANEOUS ITEMS SUCH AS FUZES, ADAPTORS, AND COUPLERS.
- WHEN INSTALLING THE DUNNAGE THAT APPLIES TO THE MISCELLANEOUS BOXES, ADJUSTMENTS TO THE DUANTITY AND SIZE OF MATERIAL MAY BE ADJUSTED AS NECESSARY.

TYPICAL ITEMS AS DEPICTED ON PAGE 4		
DODIC	NOMENCLATURE	QUANTITY
G212 F989 M187 F491 F387 F275 BY31 EY21 BY29 CY72 EY91 F746 GY26	MS NON DELAY FUZE M905 TAIL FUZE CTG, ARD 446-1 CTG, ARD 863-1 MAU-86/8/3 SHAFT ADAPTER, BOOST TAIL MK84 BOMB, 2000 LB ARM WIRE BULK FERRULE ATU-35/8 DRIVE ASSY SWIVEL & LINK ASSY MAU-87 DRIVE COUPLER FMU 113 FUZE BSU-50/8 FIN	8 8 8 8 8 8 8 8 4 1 8 8 8 8 8 8 8 8 8 8

LOAD AS SHOWN

ITEM	QUANTITY	<u>WEIGHT</u> (APPROX)
MK 84 BOMB PALLET BSU-50/B FIN MISCELLANEOUS ITEM DUNNAGE CONTAINER	4	2,236 L82 2,236 L82 200 L82 1,500 L82 1,500 L82 6,050 L82
TOTAL W	EIGHT	26,518 LBS (APPROX)

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PROJECT SP 155-88

PAGE 8

SPECIAL NOTES:

- THE LOAD AS SHOWN ON PAGE B DEPICTS A COMPLETE ROUND LOAD DF 2,000 POUND MK-84 BOMBS, INCLUDING 8 PALLETS OF BOMBS, B CNU-335 A/E CONTAINERS WITH BSU-50 FINS, 5 BOXES CONTAINING MISCELLANEOUS ITEMS SUCH AS FUZES, ADAPTORS, COUPLERS, ETC. SEE THE CHARTS BELOW FOR TYPICAL ITEMS.
- MISCELLANEOUS BOXES MAY BE PLACED IN THE AREA BETWEEN THE CENTER GATES "C" AND SECURED AS SHOWN IN THE "SECUREMENT OF MISCELLANEOUS BOXES" DETAIL ON PAGE 5.
- 3. WHEN INSTALLING THE DUNNAGE THAT APPLIES TO THE MISCELLANEOUS BOXES, ADJUSTMENTS TO THE DUANTITY AND SIZE OF MATERIAL MAY BE ADJUSTED AS NECESSARY.

TYPICAL ITEMS AS DEPICTED ON PAGE B		
DODIC	NOMENCLATURE	DUANTITY
F275 GY26 F835 G119 F372 G212	MK 84 BOMB PALLET BSU 50 FIN M904 FUZE FMU 139 FUZE T-45 ADAPTOR MS NON-DELAY FUZE	8 16 30 18 30 240

TYPICAL ITEMS FOR MK 84 AIR BURST (NOT SHOWN)*		
DODIC	NOMENCLATURE	QUANTITY
F275 GY26 F745 F989 BY29 EY91 F491 F387 G212	MK 84 BOMB PALLET BSU 50 FIN FMU 113 FUZE M905 FUZE ATU-35 DRIVE MAU 87 COUPLER MAU 86 B3 SHAFT M147 ADAPTOR M-9 NON-DELAY FUZE	8 16 16 30 120 120 316 30 240

* MK 84 AIR BURST LOAD WILL BE LOADED USING THE PROCEDURES SHOWN ON PAGE 8. ADDITIONAL COMPONENTS WILL BE SECURED BETWEEN THE CENTER GATES AND/OR IN VOID AREA BETWEEN LATERALLY ADJACENT PALLET UNITS.

LOAD	AS	SHOW	۷
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ITEM	QUANTITY	VEIGHT	(APPROX)
MK 84 BOMB BSU-50 FIN MISCELLANE DUNNAGE - CONTAINER	PALLET - 8	33,064 LBS 8,304 LBS 300 LBS 1,875 LBS 6,050 LBS	
	TOTAL WEIGHT	49,593 LBS	(APPROX)

BILL OF MATERIAL		
LUMBER	LINEAR FEET	BOARD FEET
1" X 4"	101	34
2" X 2"	17	6
2" X 4"	202	135
2" X 6"	419	419
4" X 4"	9	12
NAILS	NO. REOD	POUNDS
6d (2°)	594	3-1/2
10d (3°)	408	6
16d (3-1/2°)	32	3/4
PLYWOOD, 3/8"	320 SQ FT R	200 330 L82
PLYWOOD, 1/2"	118 SO FT R	200 162 L82
PLYWOOD, 3/4" -	77 SO FT R	200 159 L82

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