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**DODPOPHM/USA/DOD/NADTR93113**

**PERFORMANCE ORIENTED PACKAGING TESTING  
OF  
PPP-B-621 WOOD BOX FOR  
7.62 X 39MM AK47 BALL CARTRIDGE  
FOR PACKING GROUP II SOLID HAZARDOUS MATERIALS**

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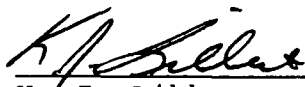
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| 4. TITLE AND SUBTITLE<br>Performance Oriented Packaging Testing of PPP-B-621 Wood Box for 7.62 X 39MM AK47 Ball Cartridge for Packing Group II Solid Hazardous Materials                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                    | 5. FUNDING NUMBERS                                                         |                                      |
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| 13. ABSTRACT (Maximum 200 words)<br><br>Qualification tests were performed to determine whether the in-service PPP-B-621 wood box used for shipping and storage of 7.62 x 39MM AK47 ball cartridges could be utilized to contain properly dunnaged solid type hazardous materials weighing up to a gross weight of 37 kg (81.5 pounds). The tests were conducted in accordance with Performance Oriented Packaging (POP) requirements specified by the United Nations Recommendations on the Transportation of Dangerous Goods, ST/SG/AC.10/1 and the Code of Federal Regulations, Title 49 CFR, Parts 107 through 178. The PPP-B-621 wood box has conformed to the POP performance requirements; i.e., the box successfully retained its contents throughout the specified tests. |                                                    |                                                                            |                                      |
| 14. SUBJECT TERMS<br><br>POP Test of PPP-B-621 Wood Box for 7.62 x 39MM AK47 Ball Cartridges                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                    | 15. NUMBER OF PAGES<br>7                                                   |                                      |
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This Performance Oriented Packaging (POP) test was performed to ascertain whether the PPP-B-621 wood box used for shipping and storage of the 7.62 x 39MM AK47 Ball Cartridge meets the Packing Group II requirements specified by the Code of Federal Regulations, Title 49, Parts 107 through 178, dated 31 December 1991. The objectives were to evaluate the adequacy of the container in protecting the hazardous materials.

## TESTS PERFORMED

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.603. One container was used for each drop orientation. The drop height was 1.2 meters and the drop sequence was as follows:

- The test was performed at ambient temperature ( $70^{\circ} \pm 20^{\circ}\text{F}$ ). The contents of the container should be retained within its packaging and exhibit no damage liable to affect safety during transport.

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.606. Three different containers were used, each with a stack weight of 2038 pounds. This represents the weight imposed on the bottom container of a sixteen-foot stack of like containers weighing 81.5 pounds each. The test was performed for 24 hours. After the allowed time, the weight was removed and the container examined. Any leakage, deterioration, or distortion which could adversely affect transport or reduce its strength or cause instability in stacks of packages is cause for rejection.

This test was performed in accordance with Title 49 CFR, Part 178, Subpart M, Sec. 178.608. Three sample containers were loaded with brass weights and dunnage and closed as for shipment. Each container was placed on a vibrating platform that had a vertical double-amplitude (peak-to-peak displacement) of one inch. The packages were constrained horizontally to prevent them



from falling off the platform, but were free to move vertically, bounce and rotate. The test was performed for one hour at a frequency that caused each point of the container bottom to be raised from the platform 1.6 mm. A 1.6 mm thick metal strip was passed between the bottom of the container and the platform.

## **PASS/FAIL**

### **1. Drop Test**

The criteria for passing the drop test is outlined in Title 49 CFR, Part 178, Subpart M, Sec. 178.603(f): A package is considered to successfully pass the drop test if for each sample tested, no rupture occurs which would permit spillage of loose explosive substances or articles from the outer packaging.

### **2. Stacking Test**

The criteria for passing the stacking test is outlined in Title 49 CFR, Part 178, Subpart M, Sec. 178.606: No test sample may show any deterioration which could adversely affect transportation safety or any distortion likely to reduce its strength, cause instability in stacks of packages, or cause damage to inner packagings likely to reduce safety in transportation.

### **3. Base Level Vibration Test**

The criteria for passing the Base Level Vibration Test is outlined Title 49 CFR, Part 178, Subpart M, Sec. 178.608: Immediately following the period of vibration, each package must be removed from the platform, turned on its side and observed for any evidence of leakage. A packaging passes the vibration test if there is no rupture or leakage from any of the packages. No test sample should show any deterioration which could adversely affect transportation safety or any distortion liable to reduce packaging strength.

## **TEST RESULTS**

### **1. Drop Test**

Satisfactory.

### **2. Stacking Test**

Satisfactory.

### **3. Base Level Vibration Test**

Satisfactory.

## **DISCUSSION**

### **1. Drop Test**

After each drop the container was inspected for any damage which would be cause for rejection. The flat drops caused no visible damage, but the corner drop splintered the impacted corner and cracked the end of the box, as shown figure 2. In all cases, the container remained intact and there was no spillage of contents.

### **2. Stacking Test**

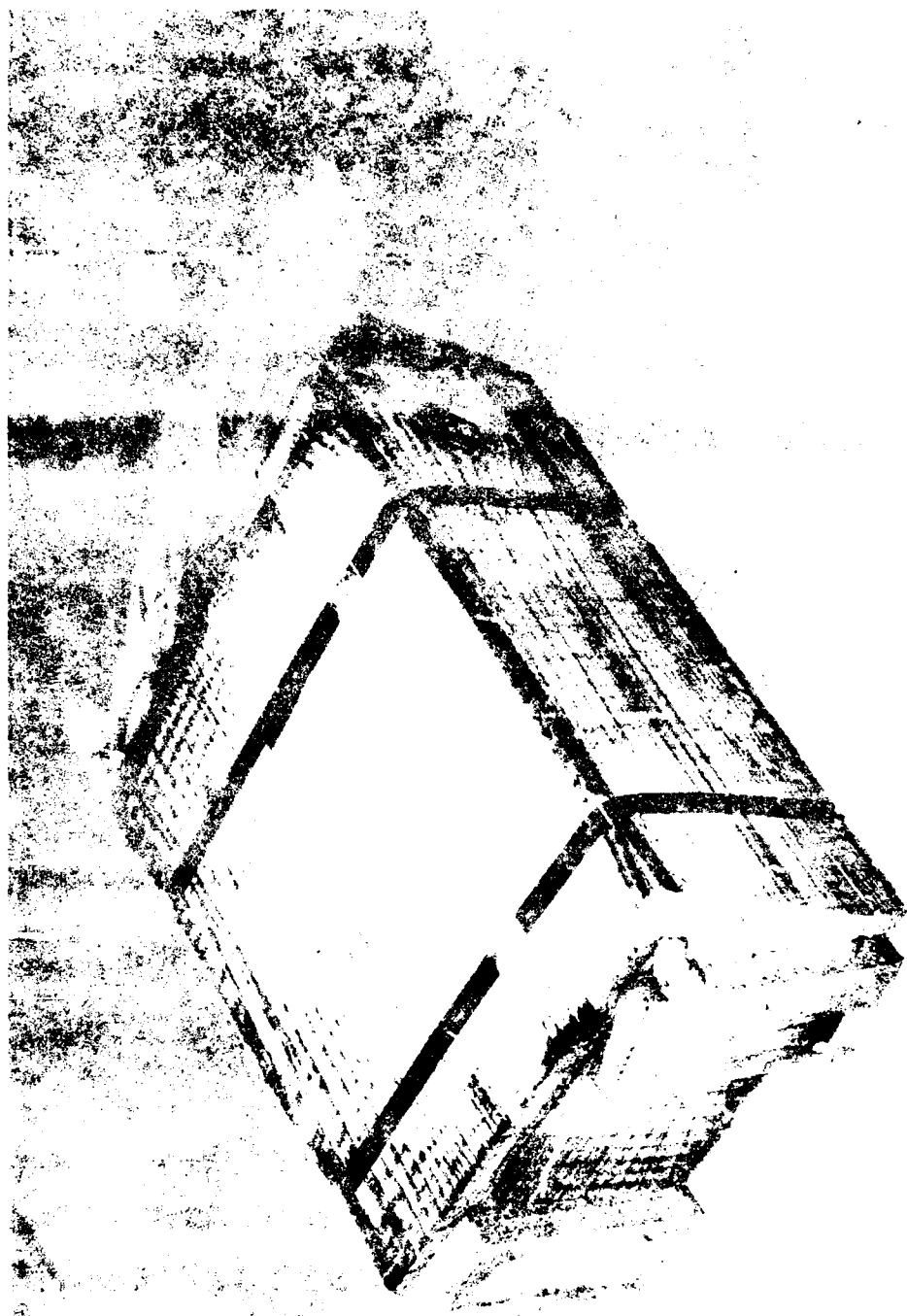
Three containers were individually tested. Each container was visibly inspected after the 24-hour period was over. There was no leakage, distortion, or deterioration of the container as a result of this test.

### **3. Base Level Vibration Test**

Immediately following the vibration test, each container was removed from the platform, turned on its side and observed for any evidence of leakage. All containers remained securely closed and there was no evidence of leakage of contents.

## **REFERENCE MATERIAL**

Code of Federal Regulations Title 49 CFR, Parts 107-178.





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# DATA SHEET

|                                                                                                                                                                                                                     |                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| <b>CONTAINER:</b><br>PPP-B-621 Wood Box<br>for 7.62 x 39MM AK47<br>Ball Cartridge                                                                                                                                   | <b>POP MARKING:</b><br><div>u<br/>n</div> 4C1/Y24/S/**<br>USA/DOD/NAD      |
| Type: 4C1                                                                                                                                                                                                           | UN Code: 1.4S                                                              |
| Specification Number:<br>PPP-B-621                                                                                                                                                                                  | Material:<br>Wood                                                          |
| Gross Weight:<br>37 kg<br>(81.5 pounds)                                                                                                                                                                             | Dimensions:<br>.37m L x .28m W x .18m H<br>(14.75" L x 11.12" W x 7.12" H) |
| Closure (Method/type):<br>2 Steel straps                                                                                                                                                                            | Tare Weight:<br>2.0 kg<br>(4.4 pounds)                                     |
| Additional Description:<br>Twenty cartridges are packed in a fiberboard box in accordance with Drawing 19200-11738714. Fifty fiberboard boxes are packed in the wood box in accordance with Drawing 19200-11738715. |                                                                            |
| <b>PACKAGED COMMODITY:</b><br>7.62 X 39MM AK47 Ball Cartridge<br>A102, 1305-00-182-3096                                                                                                                             |                                                                            |
| Proper Shipping Name: Cartridges for weapons, inert projectile                                                                                                                                                      |                                                                            |
| United Nations Number: 0012                                                                                                                                                                                         |                                                                            |
| United Nations Packing Group: II                                                                                                                                                                                    |                                                                            |
| Physical State: Solid                                                                                                                                                                                               |                                                                            |
| Amount Per Container: 1000                                                                                                                                                                                          |                                                                            |
| Net Weight: 29.7 kg (65.6 pounds)                                                                                                                                                                                   |                                                                            |
| <b>PACKAGED COMMODITY USED FOR TEST:</b><br>Name: Brass weights<br>Physical State: Solid                                                                                                                            |                                                                            |
| Size :.25m L x .20m W x .04m H<br>(9.75" L x 7.75" W x 1.50" H)                                                                                                                                                     |                                                                            |
| Quantity : 3                                                                                                                                                                                                        |                                                                            |
| Net Weight: 35.0 kg (77.1 pounds)                                                                                                                                                                                   |                                                                            |
| Dunnage: Fiberboard                                                                                                                                                                                                 |                                                                            |