MEMORANDUM FOR Commander, Defense Technical Information Center, 
Building 5, Cameron Station, Alexandria, VA, 
22304-6145

SUBJECT: Release of Performance Oriented Packaging Compliance 
Reports

1. The enclosed report (DOD POP HMTR/AYD 93-016) entitled: 
"Performance Oriented Packaging (POP) Testing of Artillery Type and 
Rocket Fuzes Packed in a Wood Wirebound Box" is hereby submitted to 
the Defense Technical Information Center for formal release. Please 
send notification of formal release to:

U.S. Army Armament Research, Development and Engineering Center 
Picatinny Arsenal, NJ 07806-5000

2. If there are any problems, questions, or comments regarding 
these reports, contact Mr. Raymond Siroy at 201-724-2181 (DSN 
880-2181).

ROBERT J. KUPER
Chief, Packaging Division

Encl: 

DTIC ELECTE

93-23507
I. Report Number: DOD POP HM TR/AYD 93-016

II. Title: Performance Oriented Packaging (POP) testing of Artillery Type and Rocket Fuzes Packed in a Wood Wirebound Box

Drawing Number: 8861213

Author: Raymond J. Siroy

Performing Activity: U.S. Army Armament Research, Development and Engineering Center (ARDEC)

Address: Department of the Army
Commander, U.S. Army ARDEC
Attn: SMCAR-AEP
Picatinny Arsenal, N.J. 07806-5000

Date: August 1993

Distribution Statement A.
Approved for public release; distribution is unlimited.
Performance Oriented Packaging (POP) Testing of Artillery Type and Rocket Fuzes Packed in Wirebound Box

Raymond L. Stroy

This Performance Oriented Packaging (POP) report is for the Army Artillery Type and Rocket Fuzes Packed in accordance with drawing 8061/13. The exterior wirebound box, 12960853, contains two M2A1 metal inner containers, 7553296, containing various types of artillery and rocket fuzes with different weights. This report describes the results of testing conducted on a similar packaging which is used as an analogy for these items.
1. DATA SHEET

a. CONTAINER (Outer):

Type: Box, Wirebound
UN Code: 4C1
Part Number: 12960853
Spec Number: MIL-B-46506
Material: Wood and Wire
Capacity: 18.3 liters
Dimensions* :
   Inside: 31.11 cm x 30.64 cm x 19.21 cm
      (12 1/4 in x 12 1/16 in x 7 9/16 in)
   Outside: 37.14 cm x 32.54 cm x 21.75 cm
      (14 5/8 in x 12 13/16 in x 8 9/16 in)

* Note:
Dimensions of the wood wirebound box used by analogy is
slightly different from the actual tested box due to different
wood wirebound box specifications. PPP-B-586 is used for the
tested box and MIL-B-46506 is used for the analogy box. Both
specifications are used to packaged the same M2A1 metal
containers.

Closure (Method/Type) Wire and Loop
Tare Weight: 2.5 kg (5.5 lbs)

b. CONTAINER (Inner):

Type: Box
Model Number: M2A1
Drawing Number: 7553296
Spec Number: MIL-B-3060
Material: Metal
Capacity: 6.8 liters
Dimensions:
   Inside: 27.94 cm x 14.13 cm x 17.22 cm
      (11 in x 5 9/16 in x 6 25/32 in)
   Outside: 30.56 cm x 15.48 cm x 19.05 cm
      (12 1/32 in x 6 3/32 in x 7 1/2 in)

Weight: 2.5 kg (5.5 lbs)
Closure (Method/Type): Hinged Lid

c. PRODUCT(S): See Attachment No. 1
2. BACKGROUND, TESTS, AND RESULTS

The Department of Transportation (DOT) per Codes of Federal Regulation (CFR), Title 49, Parts 100-179, dated 1 Oct 92, requires that Hazardous Materials should be packed in a container that passes the Performance Oriented Packaging (POP) tests.

The Wood Wirebound Box reference la, is used as the shipping container for Army Artillery Type and Rocket Fuzes packed in accordance with drawing 8861213.

Reference the following documents:

b. POP Report DOD POP HMTR/AYD 92-005

Instead of testing the specific container used for the Army Artillery Type and Rocket Fuzes in accordance with drawing 8861213, the box is certified to meet the requirements of the Code of Federal Regulations (CFR), Title 49, based on a previously tested box which has the following weight and dimensions:

Gross Weight: 154 lbs (70 kg)
Dimensions:

Inside: 30.95 cm x 30.63 cm x 19.20 cm
(12 3/16 in x 12 1/16 in x 7 9/16 in)

Outside: 36.67 cm x 31.83 cm x 20.64 cm
(14 7/16 in x 12 17/32 in x 8 1/8 in)

Stacking Test, Loose Cargo Test and Four Foot Drops were conducted in accordance with Reference 2b. The results indicated no leakage or spillage of contents from the wirebound boxes following any of the tests, thus satisfying the requirements of the 49 CFR. This falls within the guidelines for analogy IAW Variation III of Para. 178.601(g)(3) of Reference 2a.

3. Based upon the above POP testing, the following POP symbol has been applied to the wirebound box in accordance with drawing 8861213.

\[4C1/Y32/S/**\]
USA/DOD/AYD

** Last two digits of year packed.
c. PRODUCT(S):

1. Name: Fuze PD M48A3
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0257
   NSN: 1390-00-935-1952
   Drawing Number: 8798219
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

2. Name: Fuze PD M51A5
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0106
   NSN: 1390-00-028-4901
   Drawing Number: 9217945
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

3. Name: Fuze PD M51A5
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0107
   NSN: 1390-00-892-4153
   Drawing Number: 9217945
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

4. Name: Fuze PD M78A1
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0107
   NSN: 1390-00-676-7837
   Drawing Number: 73-2-214
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

5. Name: Fuze PD M78A1
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0106
   NSN: 1390-00-926-3932
   Drawing Number: 73-2-214
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
PRODUCT(S) CON’T:

6. Name: Fuze Rocket M81A1
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1340-00-028-106
   Drawing Number: 73-2-251
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

7. Name: Fuze Rocket M423
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0257
   NSN: 1340-00-764-3640
   Drawing Number: 8883683
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

8. Name: Fuze Rocket M427
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1340-00-769-5304
   Drawing Number: 8883745
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

9. Name: Fuze Rocket M429
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0257
   NSN: 1340-00-926-9301
   Drawing Number: 11705900
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

10. Name: Fuze PD M519
    United Nations Proper Shipping Name: Fuzes, Detonating
    United Nations Number: 0106
    NSN: 1390-00-978-7764
    Drawing Number: 73-2-393
    Physical State: Solid
    United Nations Packing Group: II
    Amount Per Container: 8
PRODUCT(S) CON’T:

11. Name: Fuze MTSQ M520A1
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0106
   NSN: 1390-00-060-1928
   Drawing Number: 8594044
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

12. Name: Fuze PD M524E2
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-957-5719
   Drawing Number: 9205729
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

13. Name: Fuze PD M524A5
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-965-0570
   Drawing Number: 9205729
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

14. Name: Fuze PD M524A6
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-143-7008
   Drawing Number: 9205729
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

15. Name: Fuze PD M526
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-071-2482
   Drawing Number: 8800254
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
PRODUCT(S) CON’T:

16. Name: Fuze PD M526
   United Nations Proper Shipping Name: Fuzees, Detonating
   United Nations Number: 0408
   NSN: 1390-00-877-6968
   Drawing Number: 8800254
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

17. Name: Fuze Proximity M532
   United Nations Proper Shipping Name: Fuzees, Detonating
   United Nations Number: 0106
   NSN: 1390-00-764-9124
   Drawing Number: 11001028
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

18. Name: Fuze PD M535
   United Nations Proper Shipping Name: Fuzees, Detonating
   United Nations Number: 0106
   NSN: 1390-00-814-0266
   Drawing Number: 8866760
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

19. Name: Fuze MTSQ M548
   United Nations Proper Shipping Name: Fuzees, Detonating
   United Nations Number: 0257
   NSN: 1390-00-814-3422
   Drawing Number: 8596001
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

20. Name: Fuze MTSQ M548
   United Nations Proper Shipping Name: Fuzees, Detonating
   United Nations Number: 0257
   NSN: 1390-00-892-4193
   Drawing Number: 8596001
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
PRODUCT(S) CON’T:

21. Name: Fuze PD M557
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0106
   NSN: 1390-00-187-5392
   Drawing Number: 8863535
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

22. Name: Fuze PD M557
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0106
   NSN: 1390-00-892-4302
   Drawing Number: 8863535
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

23. Name: Fuze PD M557
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0257
   NSN: 1390-01-080-4171
   Drawing Number: 8863535
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

24. Name: Fuze MTSQ M564
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-889-2044
   Drawing Number: 10534285
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

25. Name: Fuze MTSQ M564
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-01-032-6130
   Drawing Number: 10534285
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
PRODUCT(S) CON'T:

26. Name: Fuze MTSQ M564
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-046-6802
   Drawing Number: 1053+285
   Physical State: Sn
   United Nations Packing Group: II
   Amount Per Container: 8

27. Name: Fuze MT M565
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0257
   NSN: 1390-00-993-5691
   Drawing Number: 10522901
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

28. Name: Fuze PD M567
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-348-0214
   Drawing Number: 92462214
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

29. Name: Fuze PD M572
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-009-5572
   Drawing Number: 8880696
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

30. Name: Fuze PD M572
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-892-4898
   Drawing Number: 8880696
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
PRODUCT(S) CON’T:

31. Name: Fuze MTSQ M577
   United Nations Proper Shipping Name: Fuzea, Detonating
   United Nations Number: 0410
   NSN: 1390-00-805-0692
   Drawing Number: 9236500
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

32. Name: Fuze MTSQ M577A1
   United Nations Proper Shipping Name: Fuzea, Detonating
   United Nations Number: 0410
   NSN: 1390-01-158-8194
   Drawing Number: 9352381
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

33. Name: Fuze MTSQ M577A1
   United Nations Proper Shipping Name: Fuzea, Detonating
   United Nations Number: 0410
   NSN: 1390-01-247-4013
   Drawing Number: 12554574
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

34. Name: Fuze MTSQ M582
   United Nations Proper Shipping Name: Fuzea, Detonating
   United Nations Number: 0408
   NSN: 1390-00-169-5864
   Drawing Number: 9236701
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

35. Name: Fuze MTSQ M582
   United Nations Proper Shipping Name: Fuzea, Detonating
   United Nations Number: 0410
   NSN: 1390-01-159-8044
   Drawing Number: 9236701
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
36. Name: Fuze MTSQ M582Al
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-01-158-8193
   Drawing Number: 9352383
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

37. Name: Fuze MTSQ M582Al
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0410
   NSN: 1390-01-247-4012
   Drawing Number: 9352383
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

38. Name: Fuze MT M592E1
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0367
   NSN: 1390-00-425-6265
   Drawing Number: 10542850
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

39. Name: Fuze ET M724
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-068-3936
   Drawing Number: 11711268
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

40. Name: Fuze Proximity M732
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-020-0096
   Drawing Number: 11716451
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
PRODUCT(S) CON’T:

41. Name: Fuze Proximity M732
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-137-5444
   Drawing Number: 11716451
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

42. Name: Fuze Proximity M732
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-202-1710
   Drawing Number: 11716451
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

43. Name: Fuze Proximity M732A2
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-01-309-6452
   Drawing Number: 11742780
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

44. Name: Fuze PD M739
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-00-574-7705
   Drawing Number: 9258605
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

45. Name: Fuze PD M739
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-080-9447
   Drawing Number: 9331995
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8
PRODUCT(S) CON'T:

46. Name: Fuze PD M739A1
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0409
   NSN: 1390-01-132-7481
   Drawing Number: 9345332
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

47. Name: Fuze ET M762
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0367
   NSN: 1390-01-282-6038
   Drawing Number: 12551000
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

48. Name: Fuze ET M767
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0408
   NSN: 1390-01-283-6532
   Drawing Number: 12550850
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8

49. Name: Fuze ET M767
   United Nations Proper Shipping Name: Fuzes, Detonating
   United Nations Number: 0367
   NSN: 1390-01-341-8659
   Drawing Number: 12934965
   Physical State: Solid
   United Nations Packing Group: II
   Amount Per Container: 8