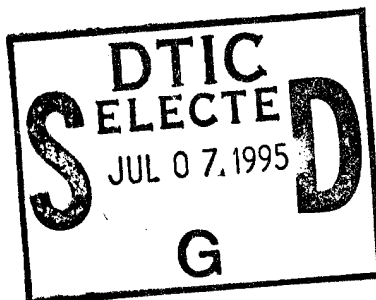


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AFPEA REPORT NO. 95-R-02  
AFPEA PROJECT NO. 93-P-101

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Development of the Nose Radome Container  
for Combat Talon II  
CNU 469/E

AFMC LSO/LOP  
AIR FORCE PACKAGING TECHNOLOGY AND ENGINEERING FACILITY  
WRIGHT PATTERSON AFB, OH 45433-5540  
MAY 1995

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**TITLE:** Development of the Nose Radome Container  
for Combat Talon II CNU 469/E

**REPORT NO:** 95-R-02

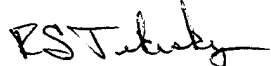
**ABSTRACT**

The Air Force Packaging Technology and Engineering Facility (AFPTEF) provided engineering support to the Combat Talon II (CTII) program. CTII is a modified C-130 aircraft designed for special operations. Through 1993 and 1994 calendar years, AFPTEF supported the CTII program by developing an overseas shipping and storage container for the nose radome. The shipping container provided by the prime contractor of the nose radome processed several handling problems. The container, an oversized wooden container, only allowed the nose radome to be shipped by surface vehicles, ships, or C-5 aircraft. The CTII required access to remote operation locations not accessible by any of these modes of transportation. Removal of the nose radome from the container required eight personnel and a minimum of four hours. Lag bolts used for securing the container to the floor at times had to be cut to open the container. The nose radome, mounted in a vertical position, had to be rotated into a horizontal position to be placed on the C-130 aircraft. In order to accomplish this task, the nose radome had to be physically rotated onto a mattress that protected the nose radome from being scratched. Then the nose radome was transferred to a handling pallet by hand. The handling pallet held the nose radome while the damaged nose radome was removed from the aircraft and placed on another handling pallet. The damaged nose radome was placed back into the container in a similar fashion.

The AFPTEF container developed is a pressure treated lumber design with an aluminum structural frame to support the nose radome, in a horizontal position, during shipping and storage. The container also houses two aluminum pallets for handling the nose radome. One pallet is used for removing the nose radome from the container and the other is used for handling the damaged nose radome and placing it back in the container. The damaged nose radome can then be shipped for repairs. With the new container, the installation procedure from start to finish requires four personnel or less and takes only two hours. This new container has enable the Air Force to reduce cost in personnel, transportation, and time while increasing productivity and readiness.

**MAN-HOURS:** 2387 Hrs

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30 MAY 1995

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**TABLE OF CONTENTS**

	<u>PAGE</u>
Abstract .....	i
Table of Contents .....	ii
Introduction .....	1
Background .....	1
Description of Container .....	1
Design .....	1
Construction .....	1
Conclusion .....	2

**APPENDICES**

Appendix 1:	Photographs .....	3
Appendix 2:	Distribution List .....	10
Appendix 3:	Report Documentation .....	16

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## INTRODUCTION

**BACKGROUND:** Aeronautical System Division (ASC/LUML), Wright-Patterson AFB OH 45433-5000 requested assistance from the Air Force Packaging Technology and Engineering Facility (AFPTEF) to design a shipping and storage container for the Combat Talon II (CTII), a modified C-130 Aircraft, Nose Radome. The \$500,000 nose radome and associated handling equipment is required to be shipped in the cargo compartment of a C-130 aircraft, see Figure 1. The nose radome measures 76 inches high, 75 inches wide and 87 inches deep. A handling pallet is used to raise the nose radome up into place. All the items are required to replace a damage nose radome on the C-130 aircraft.

The shipping container provided by the prime contractor of the nose radome processed several handling problems. The container, an oversized wooden container, see Figure 2, only allowed the nose radome to be shipped by surface vehicles, ships, or C-5 aircraft. The CTII required access to remote operation locations not accessible by any of these modes of transportation. Removal of the nose radome from the container required eight personnel and a minimum of four hours. Lag bolts used for securing the container to the floor at times had to be cut to open the container. The nose radome, mounted in a vertical position, see Figure 3, had to be rotated into a horizontal position to be placed on the C-130 aircraft. In order to accomplish this task, the nose radome had to be physically rotated onto a mattress that protected the nose radome from being scratched, see Figure 4. Then the nose radome was transferred to a handling pallet by hand, see Figures 5 & 6. The handling pallet held the nose radome while the damaged nose radome was removed from the aircraft and placed on another handling pallet. The damaged nose radome was placed back into the container in a similar fashion.

## DESCRIPTION OF CONTAINER

**DESIGN:** The AFPTEF was able to develop a new shipping and storage container that allowed transportation aboard smaller, more economical aircraft such as a C-130 or C-141. The AFPTEF also enhanced the handling of the container and decreased the time required to load and unload the nose radome. The AFPTEF design allowed the use of existing support equipment for handling the container.

**CONSTRUCTION:** The AFPTEF designed a wooden container made of copper chromate pressure treated wood with an aluminum mounting frame and two, aluminum handling pallets housed inside the container, see Figure 7. The container design is a modified version of MIL-C-104 container. The container walls are held in place by metal clips that can be removed with a common screwdriver and can be removed in less than twenty minutes.

The nose radome is mounted on the frame the same as it would be mounted on the aircraft and suspended above the floor of the container, see Figure 8. This eliminates any possibility of the nose radome being damaged by contact between the container and

itself while being shipped. Two handling pallets are housed inside the container under the radome in a specialized "E Channel" extrusion for loading and unloading of the nose radome, see Figure 9.

One handling pallet is positioned under the nose radome to support and remove the nose radome from the container, see Figure 10, while the other is used for the removal of the damaged nose radome from the aircraft and placement back into the container. The new radome can be lifted up to and mounted the aircraft, see figure 11. The horizontal mounting position of the nose radome and the handling pallets eliminated the problems of physically rotating and possible damage to the nose radome, injury to personnel handling the nose radome, and where to place and the possible further damaging of the damaged nose radome while the new nose radome was being mounted to the aircraft.

#### CONCLUSION

With the new container, the installation procedure from start to finish requires four personnel or less and takes only two hours. This new container has enable the Air Force to reduce cost in personnel, transportation, and time while increasing productivity and readiness. It also eliminates the dangerous position which personnel were exposed too, that in itself is an intangible benefit.

**APPENDIX 1**

**PHOTOGRAPHS**

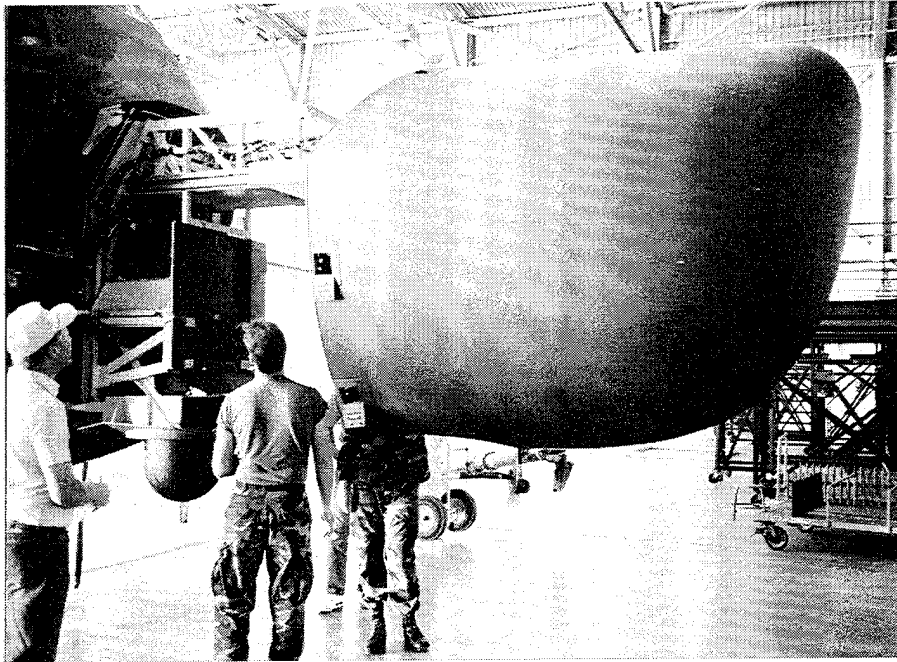


Figure 1. NOSE RADOME.

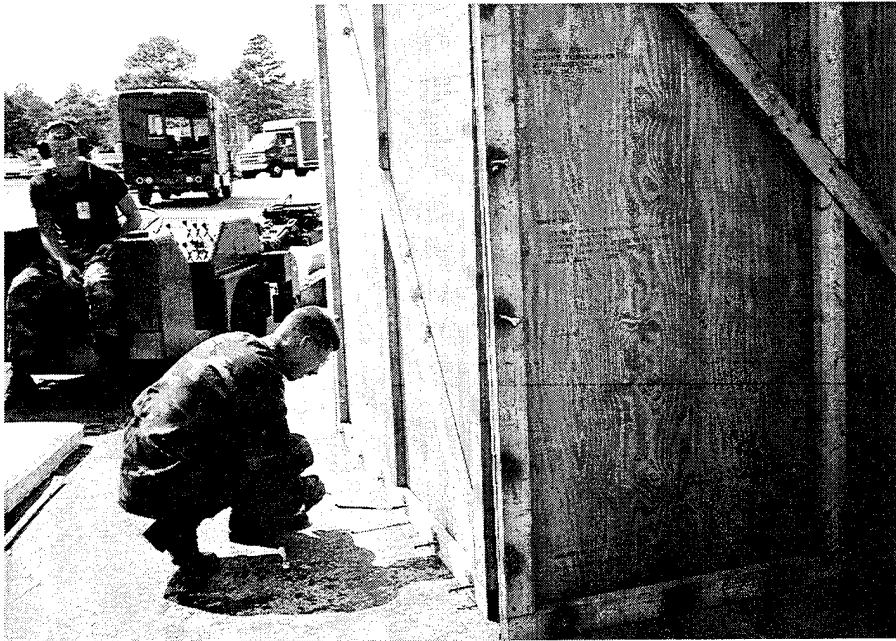


Figure 2. PRIME CONTRACTOR'S CONTAINER.

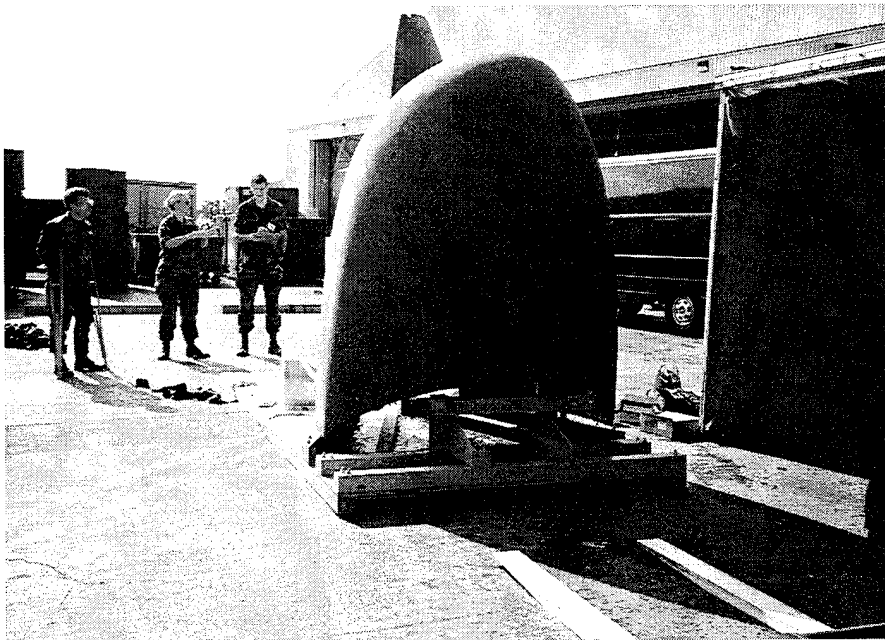


Figure 3. NOSE RADOME MOUNTED VERTICALLY.



Figure 4. MATTRESS USED TO PROTECT NOSE RADOME WHEN ROTATING.



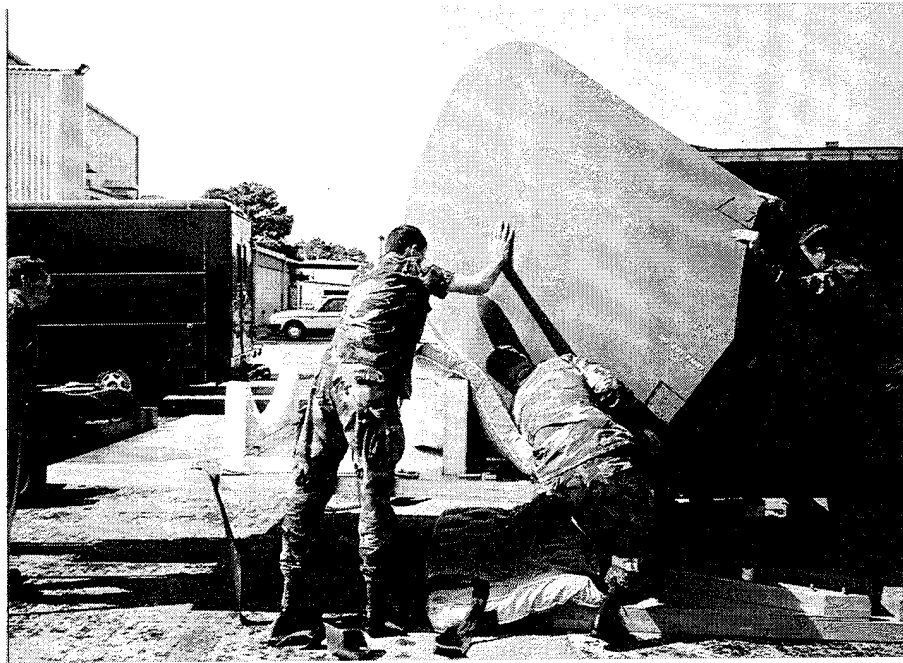


Figure 5. TRANSFER OF NOSE RADOME TO HANDLING PALLET.



Figure 6. TRANSFER OF NOSE RADOME TO HANDLING PALLET.

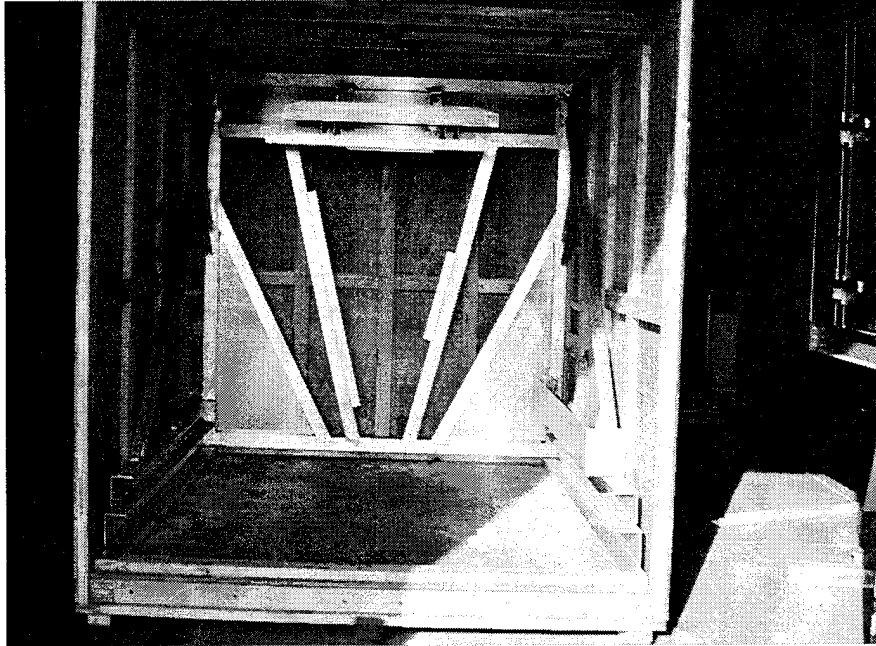


Figure 7. AFTER WOOD CONTAINER WITH SUPPORT FRAME.

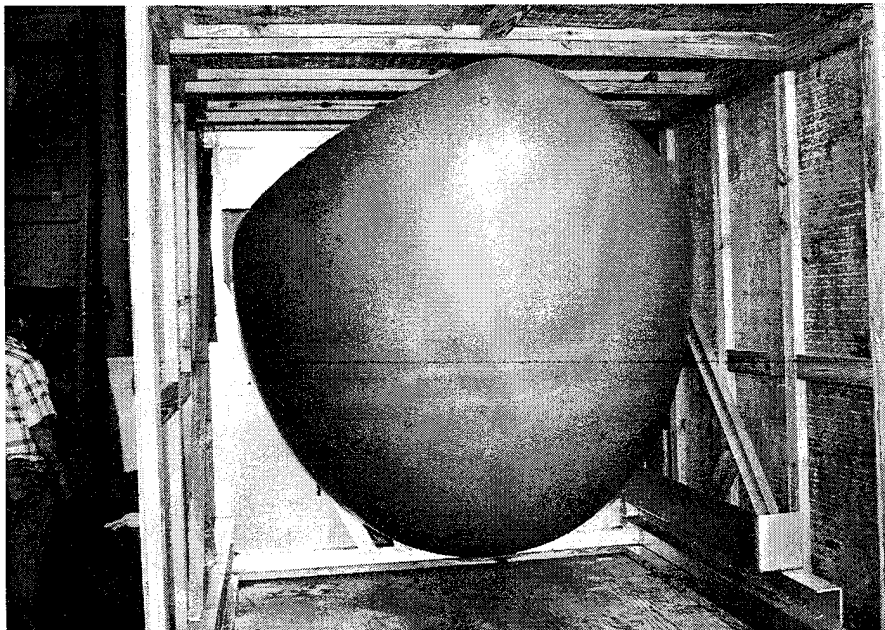


Figure 8. NOSE RADOME MOUNTED INSIDE CONTAINER.

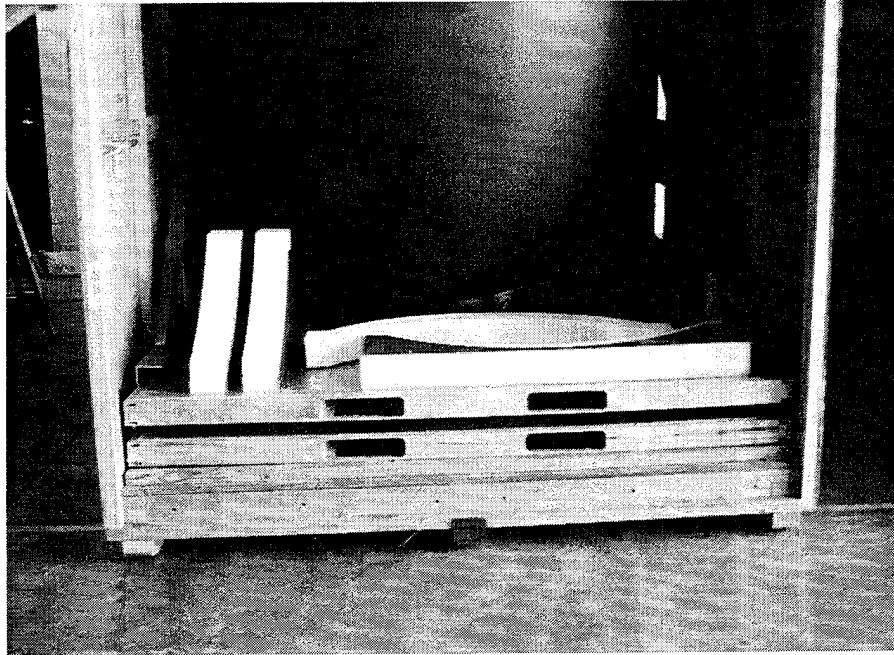


Figure 9. HANDLING PALLETS STORED INSIDE CONTAINER.

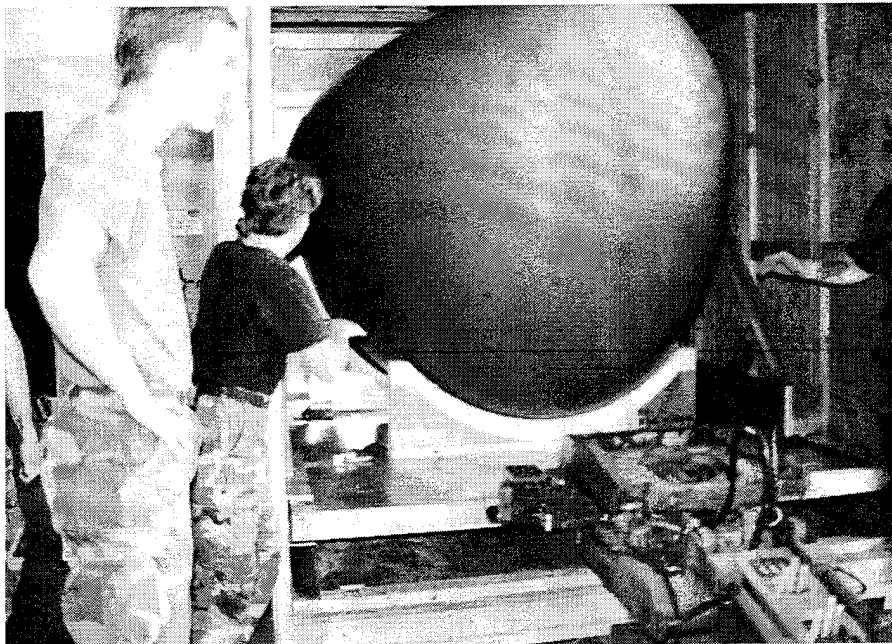


Figure 10. REMOVAL OF NOSE RADOME FROM CONTAINER.

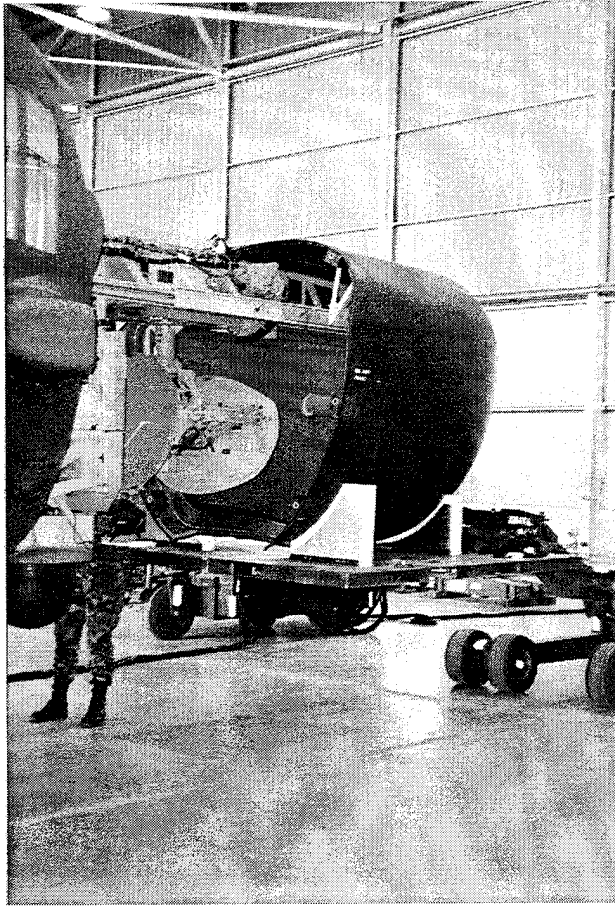


Figure 11. NOSE RADOME IN POSITION TO BE MOUNTED TO AIRCRAFT.

**APPENDIX 2**  
**DISTRIBUTION LIST**

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**APPENDIX 3**  
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# REPORT DOCUMENTATION PAGE

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<b>1. AGENCY USE ONLY (Leave blank)</b>		<b>2. REPORT DATE</b> MAY 95	<b>3. REPORT TYPE AND DATES COVERED</b> Final 06 Jan 93 - May 95	
<b>4. TITLE AND SUBTITLE</b> Combat Talon II Nose Radome Container CNU 469/E			<b>5. FUNDING NUMBERS</b>	
<b>6. AUTHOR(S)</b> Robert S. Tekesky				
<b>7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)</b> Air Force Packaging Technology and Engineering Facility (AFPTEF) AFMC LSO/LOP 5215 Thurlow St. BLDG 70 Wright-Patterson AFB OH 45433-5540			<b>8. PERFORMING ORGANIZATION REPORT NUMBER</b>  95-R-02	
<b>9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)</b>			<b>10. SPONSORING / MONITORING AGENCY REPORT NUMBER</b>	
<b>11. SUPPLEMENTARY NOTES</b>				
<b>12a. DISTRIBUTION / AVAILABILITY STATEMENT</b>  DISTRIBUTION UNLIMITED			<b>12b. DISTRIBUTION CODE</b>	
<b>13. ABSTRACT (Maximum 200 words)</b> The Air Force Packaging Technology and Engineering Facility (AFPTEF) provided engineering support to the Combat Talon II (CTII) program. AFPTEF developed an overseas shipping and storage container for the nose radome. The AFPTEF container is a pressure treated lumber design with an aluminum structural frame to support the nose radome, in a horizontal position, during shipping and storage. The container also houses two aluminum pallets for handling the nose radome. One pallet is used for removing the nose radome from the container and the other is used for handling the damaged nose radome and placing it back in the container. The damaged nose radome can then be shipped for repairs. With the new container, the installation procedure from start to finish requires four personnel or less and takes only two hours. This new container has enabled the Air Force to reduce cost in personnel, transportation, and time while increasing productivity and readiness.				
<b>14. SUBJECT TERMS</b> CNU 469/E, Wood Container, Reusable Container, Design, Container			<b>15. NUMBER OF PAGES</b> 17	
			<b>16. PRICE CODE</b>	
<b>17. SECURITY CLASSIFICATION OF REPORT</b> UNCLASSIFIED	<b>18. SECURITY CLASSIFICATION OF THIS PAGE</b> UNCLASSIFIED	<b>19. SECURITY CLASSIFICATION OF ABSTRACT</b> UNCLASSIFIED	<b>20. LIMITATION OF ABSTRACT</b> UL	