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## Westinghouse NRC Meeting

Docket No. 71-9292

December 7, 2007

Peter J. Vescovi  
Norman A. Kent



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## Purpose

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1. Discuss the results of the Quality Assurance inspection conducted on October 31, 2005.
2. Discuss the impact of inspection results on the amendment request for the Model No. PATRIOT package.
3. Provide an update to NRC on future schedules for certification activities.



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## 1. NRC QA Audit Summary

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- Conducted October 31 – November 4
- Self Identified Corrective Actions
  - (CAPS 05-286)
- One possible finding
- Corrective actions provided as follow-up



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## 2. Amendment Request for PATRIOT

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- RA-Series Package Licensing Review
- CE-B1 and PATRIOT History and License Drawing Evolution
- CE-B1 and PATRIOT Configurations



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## BWR Package Licensing Review

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- Registered users of GE RA-Series packages prior to licenses issued to individual fuel fabricators
- RA-Series package family is licensed as PATRIOT, CE-B1, SP, RA, and EMBRACE
- Westinghouse Electric Company acquired PATRIOT and CE-B1. Submitted request to convert CE-B1 to PATRIOT.



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## CE-B1 Package History

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- Manufactured by Arnold GMBH for Fabbricazioni Nucleari
- Purchased 40 type RA 3 BWR-Nuclear Fuel Transport containers from Fabbricazioni Nucleari in 1996
- Commercial Grade Dedication by ABB C-E
  - one package destructively examined to develop licensing drawing.
- Certificate of Compliance issued in 1996 for serial numbers CE-B1/001 – CE-B1/039
- Refurbished and converted to PATRIOT packages by Westinghouse Electric Company for use in 2006



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## CE-B1 AND RA-3 Shipping Packages

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- APPENDIX 2A DISCUSSION OF MINOR DIFFERENCES BETWEEN CE-B1 AND RA-3 SHIPPING PACKAGES

*"CE-B1 outer package offers approximately the same level of protection to the inner package as does the GE RA-3 outer package."*

*"Most of the differences listed above relate to the exact dimensions of the channel assembly and the angles which support the channel assembly and the inside liner of the cover. However, these differences do not affect the capability of the inner package to protect fuel rod assemblies in the event of a handling accident. The two shipping packages are very similar, and in ABB-CE's opinion, functionally equivalent."*

*"Criticality analyses for the shipping package were based on the dimensions of the CE-B1 shipping package and no credit was taken for any GE criticality analysis."*



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## CE-B1 Licensing Drawings

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- ABB LICENSE DRAWINGS
  - ABB Drawing L-9272-02 CE-B1 BWR OUTER SHIPPING CONTAINER Rev 1
  - ABB Drawing L-9272-01 CE-B1 BWR INNER SHIPPING CONTAINER Rev 1
- Westinghouse ECN No. 61214 authorized on 7/6/04 created license drawings for the PATRIOT and CE-B1 BWR shipping packages.
  - Drawing 10014E31, "CE-B1 BWR OUTER SHIPPING PACKAGE AND SAFETY ITEMS" and 10014E32 "CE-B1 BWR INNER SHIPPING PACKAGE AND SAFETY ITEMS" replace drawings L-9272-02, Rev. 1 and L-9272-01, Rev. 1, respectively



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## PATRIOT Package History

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- Manufactured for General Electric Company 1970-1980
- Transferred to Mexican federal electricity commission (CFE) to store fuel at Laguna Verde Nuclear Power Plant
- Purchased by ABB C-E from CFE in 1999 (~ 75-100)
- Prototype packages tested at ORNL during May 1999.
- New outer containers manufactured by The Champlin Company (2000)
- Inner containers refurbished by ABB CENP at facility in Chattanooga TN. Commercial Grade Dedication Program approved by ABB quality plan. (2000)
- Certificate of Compliance, Rev. 0, issued February 2, 2000
- Repaired by Eco-Pak Specialty Packaging (ESP) a division of The Columbiana Boiler Company
- Refurbished by Westinghouse Electric Company in 2005



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## PATRIOT Licensing Drawings

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- ABB LICENSE DRAWINGS
  - ABB CENP Drawing L-9292-01 Rev 2, Patriot BWR Inner Shipping Container
  - ABB CENP Drawing L-9292-02 Rev 3 Patriot BWR Outer Shipping Container
- Westinghouse ECN No. 61214 authorized on 7/6/04 created license drawings for the PATRIOT and CE-B1 BWR shipping packages.
  - Drawing 10014E27, "PATRIOT BWR OUTER SHIPPING PACKAGE AND SAFETY ITEMS" and 10014E28 "PATRIOT BWR INNER SHIPPING PACKAGE AND SAFETY ITEMS" replace drawings L-9292-02, Rev. 3 and L-9292-01, Rev. 2, respectively



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## CE-B1 and PATRIOT Configurations

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- Lid Liner
- Bolting Lugs
- Pressure Vacuum Relief Valve
- Base Basket



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## Inventory and Usage

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### Inventory

- 39 CE-B1 inner containers (being converted to PATRIOT inner containers)
- 71 PATRIOT inner containers
- 100 PATRIOT outer containers

### Anticipated BWR Package Usage

- First shipment planned for Quad Cities late January 2006
- Expect two – three shipments per year
- Anticipate replacing PATRIOT with stainless steel -96 package within 5 years



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## 3. Westinghouse Package Licensing Activity 2006 - 2007

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### PWR

<u>MCC</u>	(USA/9239/AF)	Expires 3/31/2007
<u>Traveller</u>	(USA/9297/AF-96)	Expires 3/31/2010
<u>CE-927</u>	(USA/6078/AF)	Expires 10/1/2008

### BWR

<u>PATRIOT</u>	(USA/9292/AF-85)	Expires 8/31/2010
<u>CE-B1</u>	(USA/9272/AF-85)	Expires 1/31/2007
<u>EMBRACE</u>	(S/50/IF-96)	Expires 10/31/2006

### PELLET

<u>ABB-2901</u>	(USA/9274/AF)	Expires 9/30/2007
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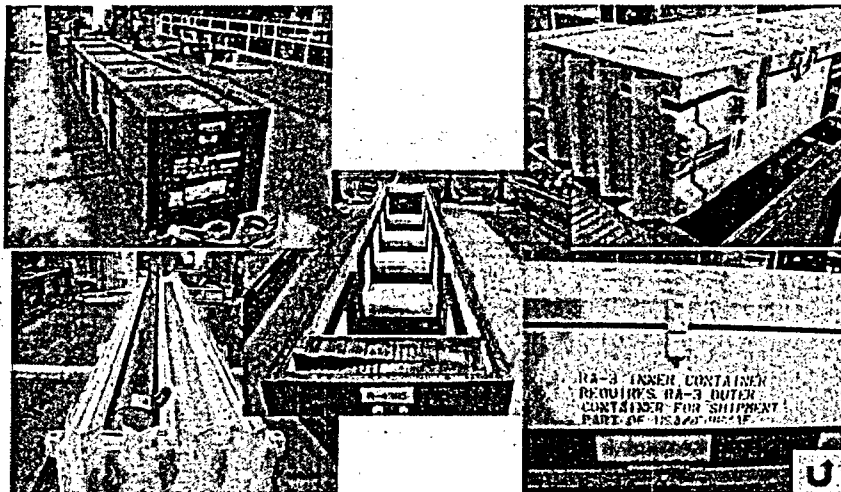
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## RA-Series Package

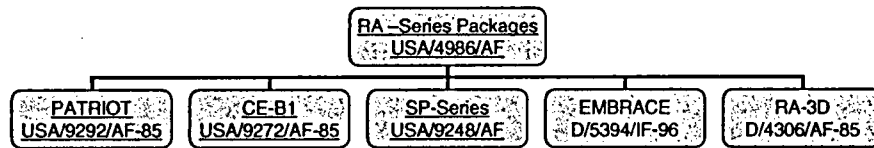


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## RA-Series Package Family



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## RA –Series Packages


Certificate Number	4986	
Revision Number	39	
Docket Number	71-4986	
Package Identification Number	USA/4986/AF	
Issued To	Global Nuclear Fuel – Americas, LLC. 1999 General Electric Company	
Title and Identification of Report or Application	General Electric Company application dated September 10, 1997, as supplemented	



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## PATRIOT Package


Certificate Number	<u>9292</u> 
Revision Number	3
Docket Number	71-9292
Package Identification Number	USA/9292/AF-85
Issued To	Westinghouse Electric Company LLC – October 2000 C-E Nuclear Power LLC – April 2000 ABB C-E Nuclear Power, Inc. – January 2000
Title and Identification of Report or Application	Westinghouse Electric Company, LLC application dated September 16, 2004 as supplemented Combustion Engineering, Inc. application dated August 23, 1999, as supplemented



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## CE-B1 Package


Certificate Number	<u>9272</u> 
Revision Number	5
Docket Number	71-9272
Package Identification Number	USA/9272/AF-85
Issued To	Westinghouse Electric Company LLC – October 2000 C-E Nuclear Power LLC – April 2000 Combustion Engineering, Inc. – January 1997
Title and Identification of Report or Application	Combustion Engineering, Inc. application dated July 30, 1996, as supplemented



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## SP-Series Packages


Certificate Number	9248	
Revision Number	18	
Docket Number	71-9248	
Package Identification Number	USA/9248/AF	
Issued To	Framatome ANP, Inc. Exxon Nuclear Company, Inc.	
Title and Identification of Report or Application	Framatome ANP, Inc. application dated September 5, 2003, as supplemented	



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## EMBRACE Package

Certificate Number		
Revision Number		
Docket Number		
Package Identification Number	D/4289/AF (BFS)	
Issued To	ABB Atom AB	
Title and Identification of Report or Application		



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# Bolting Lugs

1.800 125

2+25

NO SQUARE OR ROUND FILE TYP BOTH ENDS

1.50 27

MIN 12 GA. CORR. STEEL, MAX. THICKNESS OF STEEL (20) PLATE TYPE

**DETAIL A - LUG**  
SCALE 1/2

**CE-B1 BOLTING LUGS**  
10014E32 ITEM 18

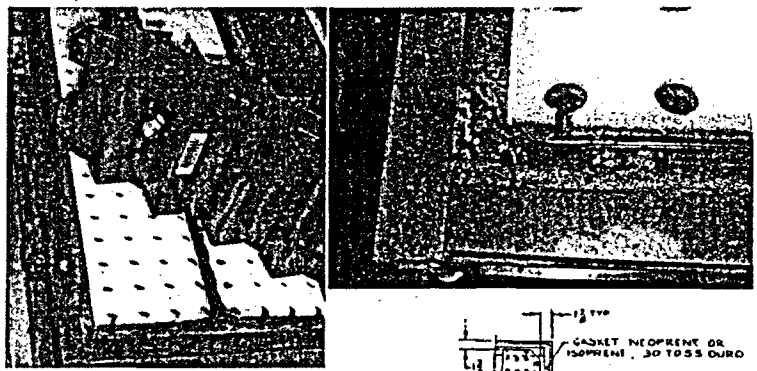
**PATRIOT BOLTING LUGS**  
10014E28 ITEM 18, DETAIL A



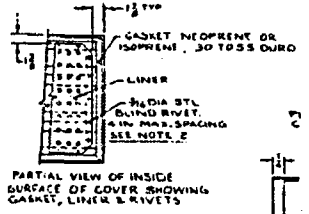
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# Lid Liner Overlaps lid frame



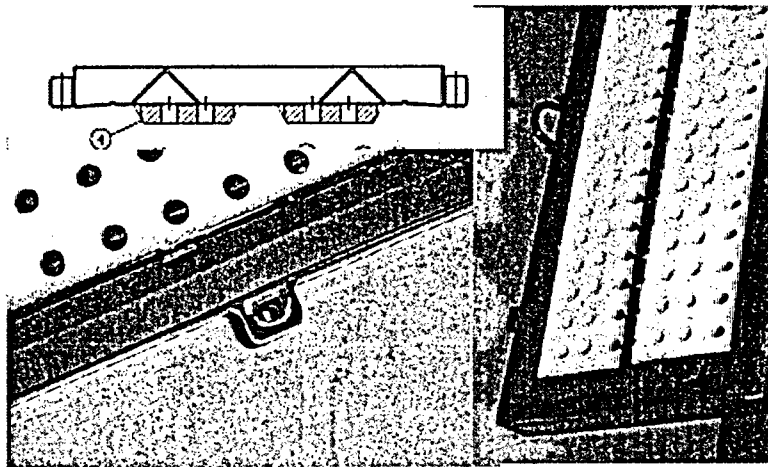
- NOTES:**
1. CHANNEL ASSY MAY BE ASSEMBLED TO BODY ASSY BY WELDING INSTEAD OF RIVETING. WELD BEADS TO BE 1/2 IN LONG AND SPACED 1/4 IN CENTER TO CENTER.
  2. COVER LINER MAY BE ASSEMBLED TO COVER ASSY BY WELDING INSTEAD OF RIVETING. WELD BEADS TO BE 1/2 IN LONG AND SPACED 1/4 IN CENTER TO CENTER.



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## Lid Liner - 2

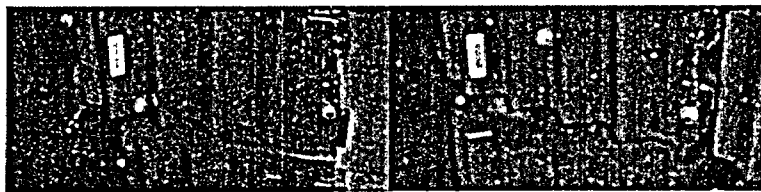
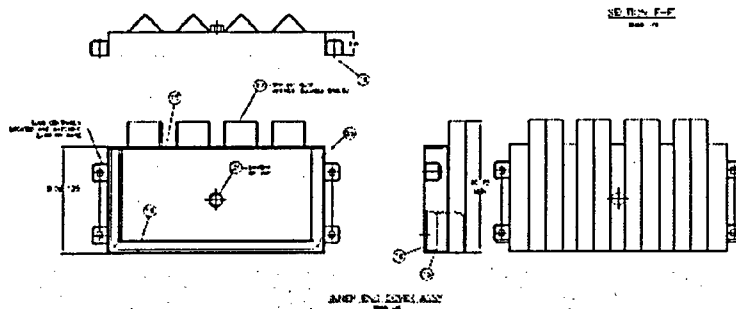


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## Pressure Vacuum Relief Valve

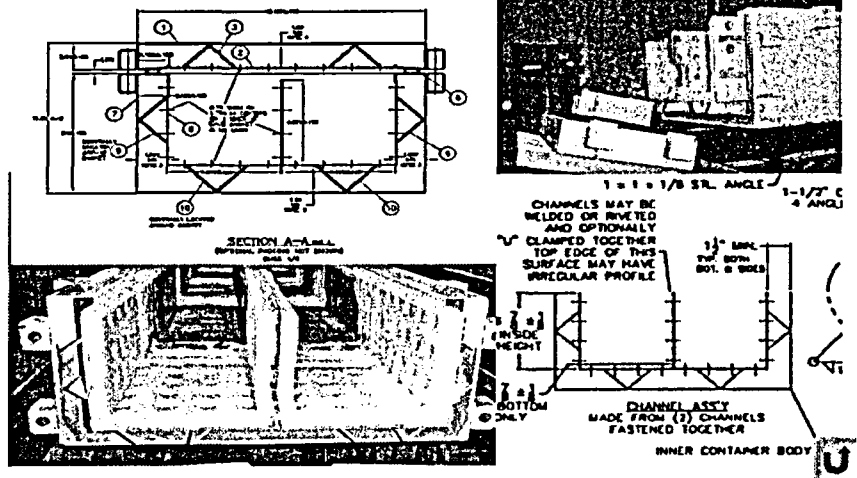


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## Base Basket



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## MCC (USA/9239/AF)

### Usage

- MCC3 and MCC4 continued use in USA through 2010, possibly 2012
- MCC3 in Taiwan and Slovenia through 2008-2010
- MCC5 (VVER-1000) in CR through 2010-2012

### 2006 Projected Licensing Needs

- 4.85 wt% enrichment in single Gd plate packages (need July 2006)
- License Renewal Application Submittal by June - July 2006
- Possible contents modification
- Possible application for air transport



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## Traveller (USA/9297/AF-96)

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### Usage

- Validated in Sweden, France, Spain, Belgium
- Applications submitted in Germany, Canada, UK
- Rod transport permitted in Sweden, Belgium, UK, Canada, USA
- VVER-1000 clamshell development to begin 2006-2007
- Licensing in Japan in progress

### 2006 Projected Licensing

- Revision to increase rod pipe weight
- Possible contents modification



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## CE-927 (USA/6078/AF)

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### Usage

- Continued use in USA through 10/1/2008

### 2006 Projected Licensing

- None



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## PATRIOT (USA/9292/AF-85)

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### Usage

- BWR shipments in USA through 2008-2010

### 2006 Projected Licensing

- Revise to include CE-B1 inner container
- Possible revise to carry loose rods, to use as rod carrier between Västerås and Columbia



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## CE-B1 (USA/9272/AF-85)

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### Usage

- Discontinue in 2006

### 2006 Projected Licensing

- Retire



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## ABB-2901 (USA/9274/AF)

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### Usage

–Very infrequent need for pellet transport

### 2006 Projected Licensing

–May Relicense as -96 package



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