

Overview Of Changes To FS1-0014159
AREVA TN-B1 Docket No. 71-9372 Safety Analysis Report

Chapter	Overview of changes to chapter¹
1 – General Information	<p>Changes to this chapter are administrative in nature to incorporate the ATRIUM^(c) 11 fuel design. Major changes include:</p> <ul style="list-style-type: none"> • Update of Table 1-2 “Quantity of Radioactive Materials (Type A and Type B) to include the ATRIUM^(c) 11 fuel design. Table was also reformatted for improved readability. • Table 1-3 “Type B Quantity of Radioactive Material” • Table 1-4 “Isotopes and A2 Fractions”
2 – Structural Information	<p>No changes have been made to the design of the TN-B1 package. Shipment of the ATRIUM 11 fuel assembly is within the weight limits and other parameters discussed within the current version of the SAR. The only identifiable difference is the use of the ATRIUM 11 fuel assemblies (11x11) , whereas the CTU’s were 10X10 assemblies, which have no impact on the results currently shown with the SAR. As such AREVA does not believe any changes to chapter 2 are required.</p> <p>While we do not believe any change is required, we did conduct analyses to provide assurance that the shipment of ATRIUM 11 fuel assemblies in the TN-B1 shipping container would not result in any unanticipated change. Specifically we contracted for independent analyses of the ATRIUM 11 shipped within the TN-B1, benchmarking against the drop tests shown in the SAR. These analyses were done to confirm that the ATRIUM 11 fuel assemblies shipped within a TN-B1 shipping container during transport can structurally withstand the free drops during Normal Conditions of Transport (NCT) and the Hypothetical Accident Condition (HAC) without breaching the containment boundary (fuel cladding) caused by structural failure or plastic instability. These analysis showed that the minimum safety factor for the ATRIUM 11 is 1.4 and there are no significant effects on the containment boundary.</p> <p>Additionally we updated the report we had previously submitted for the LTA shipments, (FS1-0015328 “Structural Analysis of the AREVA ATRIUM 11 LTA Fuel Assembly in the RAJ-II Container during Normal and Accident Transport Conditions”) to better evaluate the pitch changes of the fuel bundle after a 30 foot end drop. The updated results of this report were used as an input to Chapter 6, Criticality Evaluation.</p>

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	<p>AREVA did note during the pre-submittal meeting a question regarding fuel rod end cap weld integrity for the ATRIUM 11. Although the welding process is essentially unchanged for the ATRIUM 11 as compare to other fuel designs covered by the SAR, in order to address this concern, a representative example of a ATRIUM 11 fuel rod weld qualification report is also submitted.</p> <p>The following reports are submitted for the NRC's information and review as appropriate:</p> <ul style="list-style-type: none"> • FS1-0025122 "AREVA TN-B1 ATRIUM-11 Fuel Assembly Shipping Container Drop Analyses" • FS1-0015328 "Structural Analyses of the AREVA Atrium-11 LTA Fuel Assembly in the RAJ-II Container during Normal and Accident Transport Conditions" • 127-9222576 "Qualification Summary Report; Upset Shape Welding of ATRIUM-11 Fuel Rod – Line 2".
3 – Thermal Evaluation	<p>There are no changes to the design of the TN-B1 package. As a result there are no changes to the thermal protection provided by the package.</p> <p>While there is no change to the design of the TN-B1 package or the thermal protection of the package there are some changes to this chapter. Table 3-5 was updated to include the ATRIUM 11 and updated other designs to the current limiting design requirements.</p>
4 – Containment	<p>No changes have been made to the design of the TN-B1 package. The primary containment boundary for the TN-B1 package continues to be the fuel cladding (see discussion for Chapter 2 above). As such no changes to chapter 4 are required.</p>
5 – Shielding Evaluation	<p>No changes have been made to the design of the TN-B1 package. The TN-B1 will be used solely to ship unirradiated fuel. As such no changes to chapter 5 are required.</p>

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6 – Criticality Evaluation	<p>Added Appendix B, Section 6.12, for the criticality analysis of 11x11 fuel assemblies and rods</p> <p>Other Changes Include:</p> <ul style="list-style-type: none"> • Table 6-1 and Table 6-2, replaced theoretical density limit with a gram density, added 11x11 fuel assembly information • Section 6.1.1.1, added an option for using 9 pcf foam for the FANP 10x10 and 11x11 assemblies • Table 6-3, and 6-4 added the 11x11 fuel assembly and rod results • Corrected various typographical errors in tables.
7 – Package Operations	<p>No changes have been made to the design or operation of the TN-B1 package. As such no changes to chapter 7 are required.</p>
8 – Acceptance Tests and Maintenance Program	<p>No changes have been made to the design, acceptance tests or maintenance of the TN-B1 package. As such no changes to chapter 8 are required.</p>

Notes:

- 1) The information in this column is of a general nature only. It is intended to provide the reviewer(s) an overview of the changes to a chapter or a discussion as to why AREVA considered that no changes were required for that chapter. All changes are shown on the “Revisions” page of that SAR.