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**Evaluation of Effect of Post-Fabrication Voids on the Performance of  
C2TWP Mini-Plates**

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**ABSTRACT**

Finite element analysis (FEA) was used to evaluate potential effect of post-fabrication voids (100-200  $\mu\text{m}$ ) observed in C2TWP mini-plates to be included in the EMPIRE experiment. The Al-alloy cladding in these plates is bonded to the fuel foils using a proprietary technique (C2TWP) that is currently under development and fundamentally different from the Hot Isostatic Press method used for cladding monolithic fuel in the US. Geometrical models were developed for C2TWP mini-plates with various voids size and stresses were determined in all cases. FEA results revealed that the presence of voids caused a relatively low increase in normal stresses near the void region compared to mini-plates having perfectly covered edges. In all cases modeled, the observed increased normal stresses are well below the ultimate strength of Al-alloys. Thus, it was concluded that the performance of the C2TWP mini-plates will not deviate significantly from the performance of the plates with perfectly covered edges.