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Tritium Technology Program TTP-1-3089 TPBAR Homogenized Composition

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EF Love



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TRITIUM TECHNOLOGY PROGRAM

TPBAR HOMOGENIZED COMPOSITION

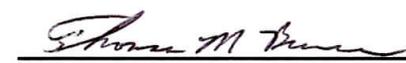
TTP-1-3089

Revision 0

TRITIUM TECHNOLOGY PROGRAM

TPBAR HOMOGENIZED COMPOSITION

Revision 0

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1.0 TPBAR HOMOGENIZATION

Homogenized TPBAR number densities contained herein have been derived for unclassified core physics calculations. The use of this information may not provide accurate, conservative or representative results and must be evaluated for applicability to the specific problem.

The homogenization represents a horizontal slice through a neutronicly active region of a TPBAR. For neutronic accuracy, the TPBAR absorber pellet is modeled explicitly. All other internals structures have been homogenized into the “cladding” region. For the homogenized model, the cladding extends from the surface of the pellet to the physically correct outside diameter (OD) of the cladding. Table 1 provides material number densities at beginning-of-life (BOL) cold conditions and are applicable over a range of 0.04 to 0.028 grams Li-6/in.

Table 1. Homogenized TPBAR Dimensions and Number Densities

Homogenized Cladding Material Dimensions	
	Mark 9.2
Homogenized Cladding OD (in)	0.381
Homogenized Cladding Inner Diameter (ID) (in)	0.302
Pellet OD (in)	0.302
Pellet ID (in)	0.223
Homogenized Cladding Material Number Densities	
	Mark 9.2
Cr (Atoms/b-cm)	8.2004E-03
Fe (Atoms/b-cm)	2.8330E-02
Ni (Atoms/b-cm)	2.7095E-02
Mo (Atoms/b-cm)	6.3490E-04
Mn (Atoms/b-cm)	6.6525E-04
Zr (Atoms/b-cm)	9.7431E-03