NON-PROPRIETARY VERSION

was not necessary to define S_m and apply it to these limits. However, Option 3 also considers the more limiting criteria of F-1440(c)(2) for the evaluation of the P_m+P_b limit used in Option 2. The P_m+P_b limit is considered to be more limiting than the P_m limit for the development of bolting patterns. Therefore, the bolting patterns developed with Option 3 will be equivalent to those developed using Option 2. As a result, the use of Option 3 is an acceptable alternative for the development of bolting patterns for elastic-plastic analysis of irradiated bolting.

The material properties developed in Table 1 excluded the material data from baffle bolts located at the top former. This was done because the yield strength, ultimate strength, and total elongation values indicate that saturated fluence has not been achieved. However, a sensitivity study was performed considering the top former bolts and also the barrel-former bolts to be irradiated or unirradiated, which indicated small changes to the limiting baffle bolt stress margins. Therefore, it is acceptable to model the top row former bolts and barrel-former bolts as either irradiated or unirradiated when evaluating reduced baffle-former bolt patterns. ~~When evaluating reduced patterns of barrel-former bolts, for doses of less than 10 dpa, the limits defined in Option 1 will be conservatively applied.~~ When evaluating reduced patterns of barrel-former bolts, for doses of less than 10 dpa, the material model used for the barrel-former bolts will account for the plant-specific dose and conservatively apply the unirradiated limits defined in Option 1.

The evaluation of the bolt stress limits at Normal / Upset conditions is only required to be performed for those plants that were designed to Section III of the ASME Code, and include Normal / Upset stress limits in the design basis. The same justification as provided in Section 2.2 for replacement bolting also applies to the evaluation of irradiated bolting.