a) No new data has been developed relative to Reference 4-3 which would invalidate the bases for asserting that clad collapse analyses need not be performed and that augmentation factors are negligible.

b) The fuel rod manufacturing process is either the same as that used to demonstrate no interpellet gaps or, if changed, not changed in a way that would adversely affect the clad collapse and augmentation factor analysis results.

C-E has performed a review to address these items and has concluded that there is no new data that invalidates the bases of Reference 4-3 and that the fuel types to be inserted in Cycle 2 were manufactured using the performance specifications equal to or better than those used on the fuel that demonstrated no interpellet gap formation. Since the provisions of the NRC's concurrence have been satisfied, no cycle specific clad collapse analysis was performed for Cycle 2. Since clad collapse has been removed as an issue for modern C-E fuel, discussion of clad collapse will not be included in the Reload Analysis Report in subsequent fuel cycles.

4.2 GUIDE TUBE WEAR

Twenty of the fuel assemblies that had CEA's located in them during Cycle 1 at Palo Verde Unit 1 were inspected for guide tube wear. That inspection was part of the required licensing procedures required by the NRC for all plants after the first cycle of operation (References 4-9, 4-10, and 4-11). A similar program was also performed on Unit 2 during the first refueling outage (Reference 4-12 and 4-13). The number of assemblies inspected for guide tube wear was determined based on the results of the Unit 1 inspection. The inspections revealed that guide tube wear was minor and will not adversly affect the fuel assembly performance and no guide tube wear measurements are necessary.

4.3 THERMAL DESIGN

The thermal performance of composite fuel pins that envelope the pins of fuel batches B, C and D present in Cycle 2 have been evaluated using the FATES3A version of the C-E fuel evaluation model (References 4-5 and 4-6) as approved by the NRC (Reference 4-7). FATES3A is the version of FATES3 that incorporates the grain size restriction given in Reference 4-7. The analysis was performed using a power history that enveloped the power and burnup levels representative of the peak pin at each burnup interval, from beginning of cycle to end of cycle burnups. The burnup range analyzed is in excess of that expected at the end of Cycle 2.

4.4 CHEMICAL DESIGN

The metallurgical requirements of the fuel cladding and the fuel assembly structural members for the Batch D fuel are identical to those of the fuel batches included in Cycle 1. Thus, the chemical or metallurgical performance of the Batch D fuel will remain unchanged from the performance of the Cycle 1 fuel (Reference 4-8).

4.5 SHOULDER GAP ADEQUACY

Measured shoulder gap data (references 4-11 and 4-13) acquired from post Cycle 1 inspection of fuel assemblies at PVNGS Units 1 and 2 indicate that the fuel has adequate shoulder gap for Cycle 2 operation. Based on these measurements of EOC1 fuel assemblies at Units 1 and 2, no shoulder gap measurements are necessary at EOC1 for Unit 3.