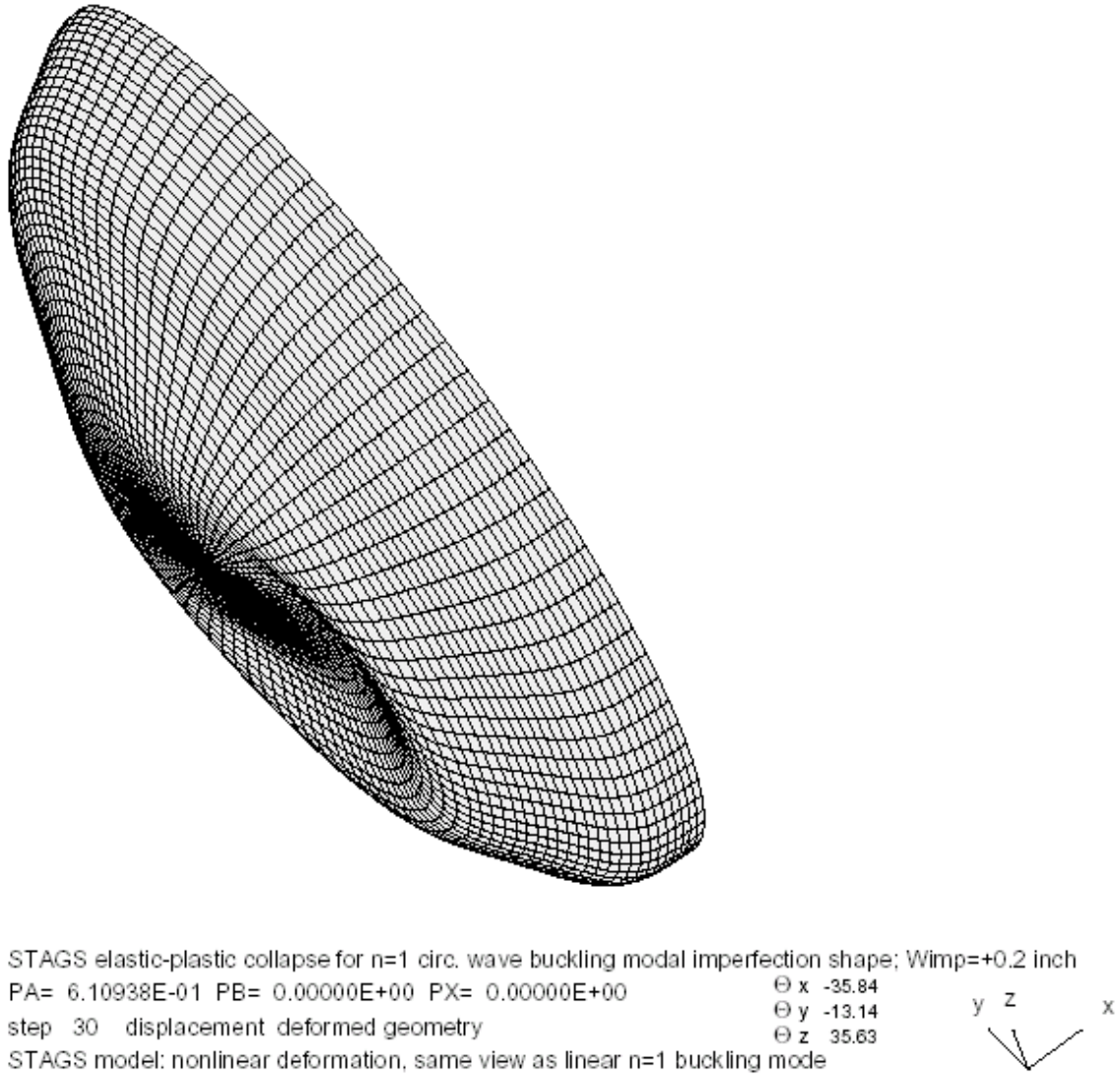

Fig. 163 Elastic-plastic analysis of the **optimized unstiffened equivalent ellipsoidal shell with thick apex, t(apex)=0.4 in; Wimp=0.2 inch; the optimum design is listed in Table 78.** This is the post-collapse deformation corresponding to the last data point in the third from last trace in Fig. 161. The uniform external pressure in psi is the load factor, PA, times 460 psi. **Note that, while this shell is still under-designed, the most critical collapse load factor, PA(max) shown in Fig. 161, for the optimum design listed in Table 78 is significantly higher than that displayed in Fig. 94, which pertains to the optimum design labeled "unstiffened, imperfect" in Table 33. (See the fifth trace in Fig. 94). It may well be that when a higher lower bound of the uniform thickness, t(apex), is used than the lower bound, t(apex) = 0.4 inch, the optimized shell will no longer be under-designed. As can be seen from the load-deflection curves plotted in Figs. 209 and 211, for which the lower bound of t(apex) is set to 0.6 inch during optimization, this is indeed the case.**