

- BIGBOSOR4 results from eqellipse.ALL6N: -mode 1 (n=0 circ. waves) imperfection shape
- STAGS elastic results for -mode 1 (n = 0 circ. waves) imperfection shape; Wimp = -0.2 inch
- △ BIGBOSOR4 results from eqellipse.ALL7N: -mode 2 imperfection shape
- + STAGS elastic results for -mode 2 (n = 0 circ. waves) imperfection shape; Wimp = -0.2 inch
- × STAGS elastic results for n=1 circ. wave buckling modal imperfection shape; Wimp = +0.2 inch
- ◇ STAGS elastic results for n=2 circ. wave buckling modal imperfection shape; Wimp = +0.2 inch
- ▽ STAGS elastic results for n=0 (+mode 3) circ. wave buckling modal imperfection shape; Wimp = +0.2 inch
- ▣ STAGS elastic results for n=0 (-mode 3) circ. wave buckling modal imperfection shape; Wimp = -0.2 inch
- × STAGS elastic results for n=3 circ. wave buckling modal imperfection shape; Wimp = +0.2 inch

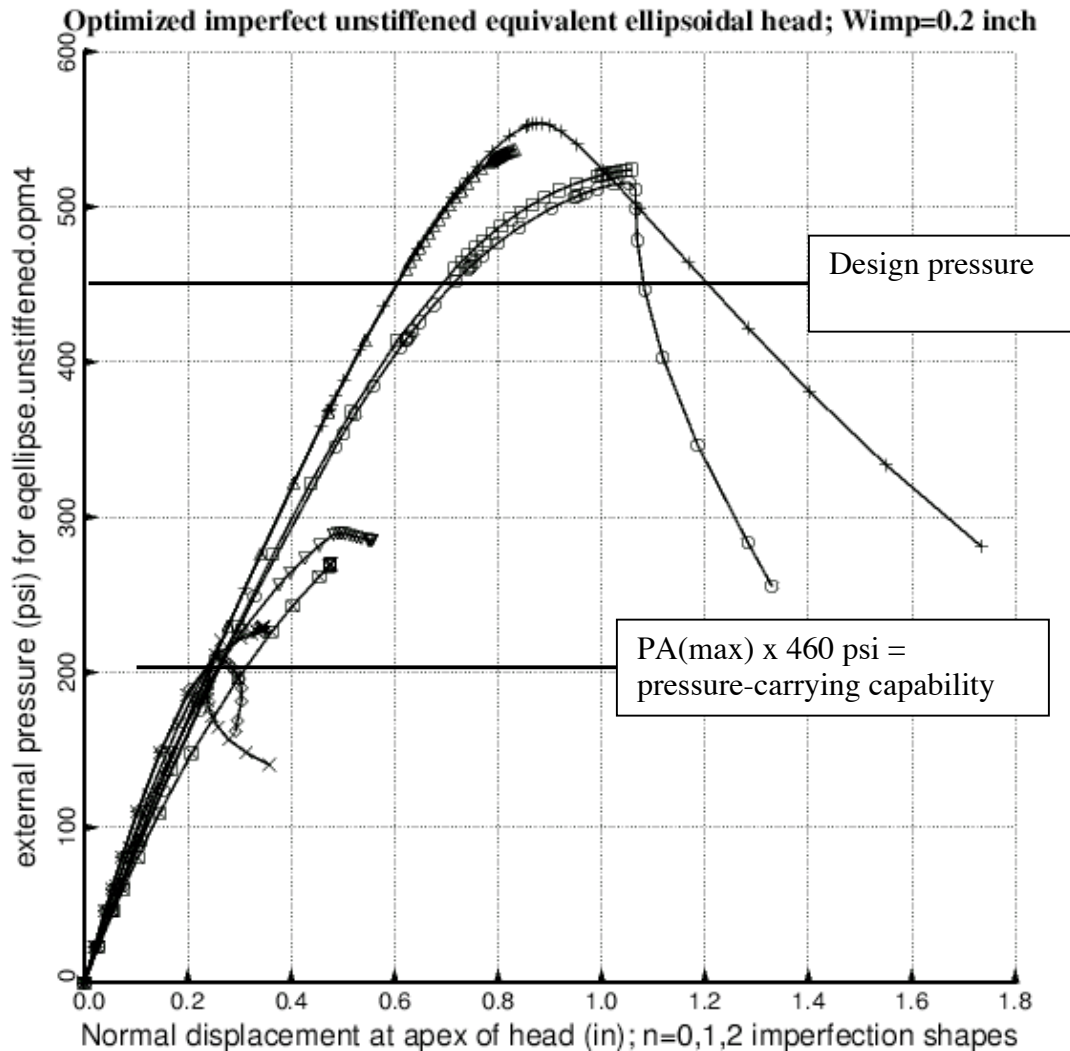


Fig. 94 Nonlinear elastic load-deflection curves for the optimized **imperfect unstiffened** equivalent ellipsoidal shell from BIGBOSOR4 (axisymmetric deformation) and from STAGS (both axisymmetric and non-axisymmetric deformation). The most significant point to be emphasized with regard to this figure is that the pressure-carrying capability of the shell, which is optimized with regard to mode 1 and mode 2 **axisymmetric** imperfections (BIGBOSOR4 models in Figs. 74 and 75), is much more sensitive to non-axisymmetric imperfections (buckling modal imperfections with $n = 1$ and $n = 2$ circumferential waves) with the same amplitude, $W_{imp} = 0.2$ inch. **The optimized unstiffened shell is therefore under-designed.** Compare with the results for the “thick apex” optimized unstiffened shells plotted in Figs. 161 and 237.