



Optimized thick-apex unstiffened equivalent ellipsoidal shell with inward $\cos(\theta)$ line load from $\theta=0$ to 90°
 PA= 0.0; PB= 1992.40; 480 finite elements are used; crude model
 step 35 displacement w contours at maximum PB
 nonlinear w; $\cos(\theta)$ point loads at junction between Shell Segments 3 and 4 (see Fig.2)
 subroutine usrfab.soccerball.plastic.src is used with NGCP = 1

Θx -0.00
 Θy 0.00
 Θz -0.00

9.900E+00 x

Fig. 183 Elastic-plastic analysis of the **optimized unstiffened equivalent ellipsoidal shell with the thick apex with $t(\text{apex}) = 0.4$ inch; Wimp=0.2 inch; the optimum design is listed in Table 78.** State of the shell at load set B (PB) step no. 35 at the end of Run 5. (See Fig. 180). Load set B consists of a number of concentrated inward directed normal **loads** applied along the junction of Shell segments 3 and 4 (Figs. 2, 169, 181, 190, 191) distributed as $\cos(\theta)$ from $\theta = 0$ to 90° degrees in the circumferential coordinate along Row no. 5 in Shell Units 11 and 12. (See Table a40, except the input datum LT is +1 instead of -1). This load distribution is used because it generates a dent that locally resembles the deformation in Fig. 179, that is, the linear buckling modal imperfection with $n = 1$ circumferential wave.