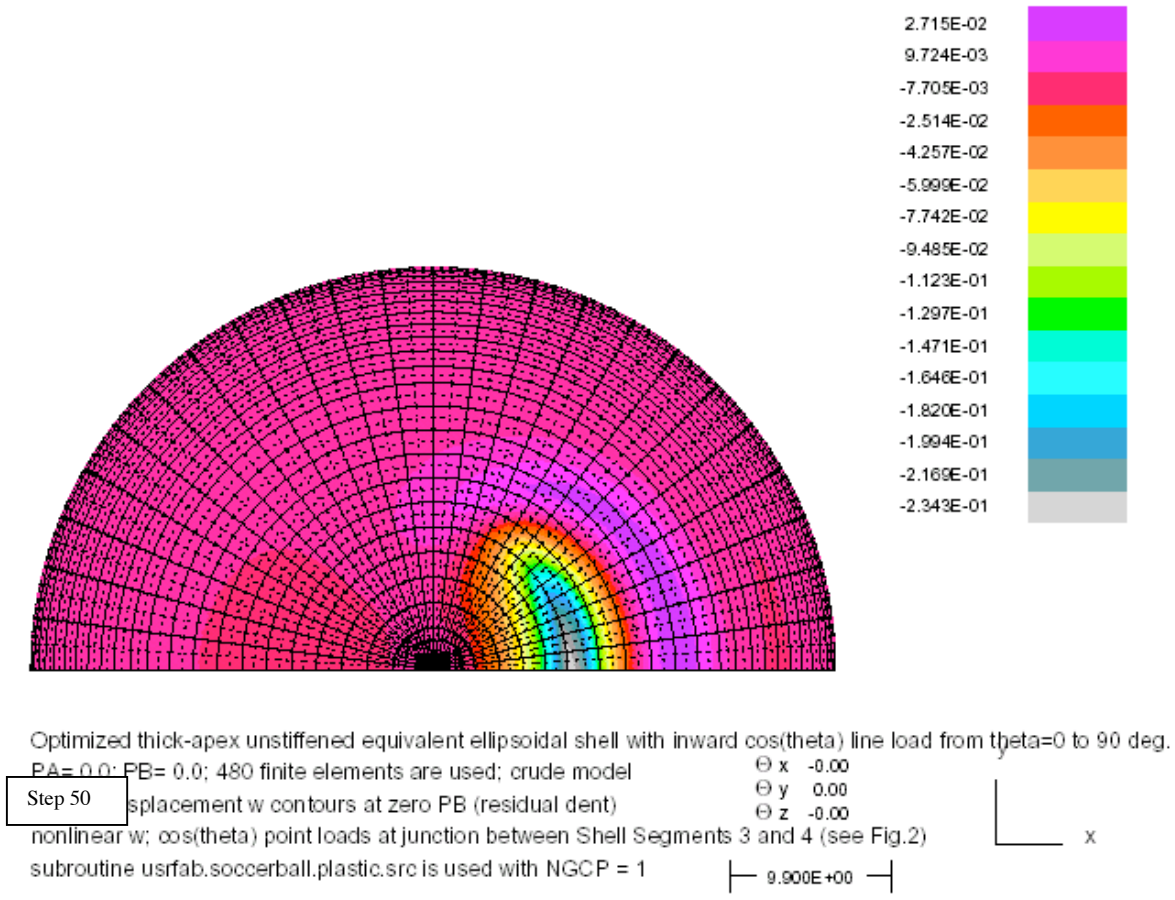

Fig. 186 Elastic-plastic analysis of the **optimized unstiffened equivalent ellipsoidal shell with the thick apex with t(apex) = 0.4 inch; Wimp=0.2 inch; the optimum design is listed in Table 78.** State of the shell at load set B (PB) step no. 50 at the end of Run 8. (See Fig. 180). This is the **residual dent** in the shell that remains after load set B has been removed, that is, when both PA and PB are zero. (The shell is unloaded). The depth of the dent, 0.2343 inch, is somewhat higher than the correct amplitude, Wimp = 0.2 inch, of the axisymmetric linear buckling modal imperfection in the presence of which the shell was optimized. Compare with Fig. 197, for which the loading that produces the residual dent is by "cos(theta)" imposed normal inward displacements rather than by "cos(theta)" imposed normal inward-directed concentrated loads, as is the case here. Also, compare with Fig. 171 for which the residual dent is produced by a single concentrated load in the form of normal inward-directed pressure applied to a single finite element. The shape of the residual dent shown here is more harmful than that shown in Fig. 171, as is demonstrated in Fig. 188, because the "cos(theta)" residual dent **locally** more closely resembles the negative of the linear buckling mode with n = 1 circumferential wave displayed in Fig. 179.