Statement of Work

NASA GSFC seeks bids to process two pieces of fused quartz for the purpose of making replication mandrels. These fused quartz slabs have the geometry and dimensions as show in Figure 1. The blanks will be supplied by NASA GSFC. This contract covers only the grinding and polishing of their outer surfaces into conical shapes described by the following equation:

$$\rho = \rho_0 + z \bullet \tan\theta \ ,$$

where (ρ,ϕ,z) are the standard cylindrical coordinates, θ is the half-cone angle describing the conical surface. The blanks supplied by NASA have the following nominal specifications (outer surface): $\rho_0 = 750mm$, $-150mm < z < 150mm$, and $-30^0 < \phi < 30^0$.

Technical Requirements:

Mandrel#1: ρ_o = 751.40432 mm +/- 0.5mm;
θ = 0.53589297 degrees +/- 10 arc - seconds
Mandrel#2: ρ_o = 745.78079 mm +/- 0.5mm;
θ = 1.6117037 degrees +/- 10 arc - seconds

Tolerance: Within the central area defined by $-20^o < \theta < 20^o$ and $-120mm < z < 120mm$, the surface deviation from the above mathematical prescription should be no more than 2 μm (10^{-6} meter). All corners and edges should be reasonably rounded to avoid shipping.