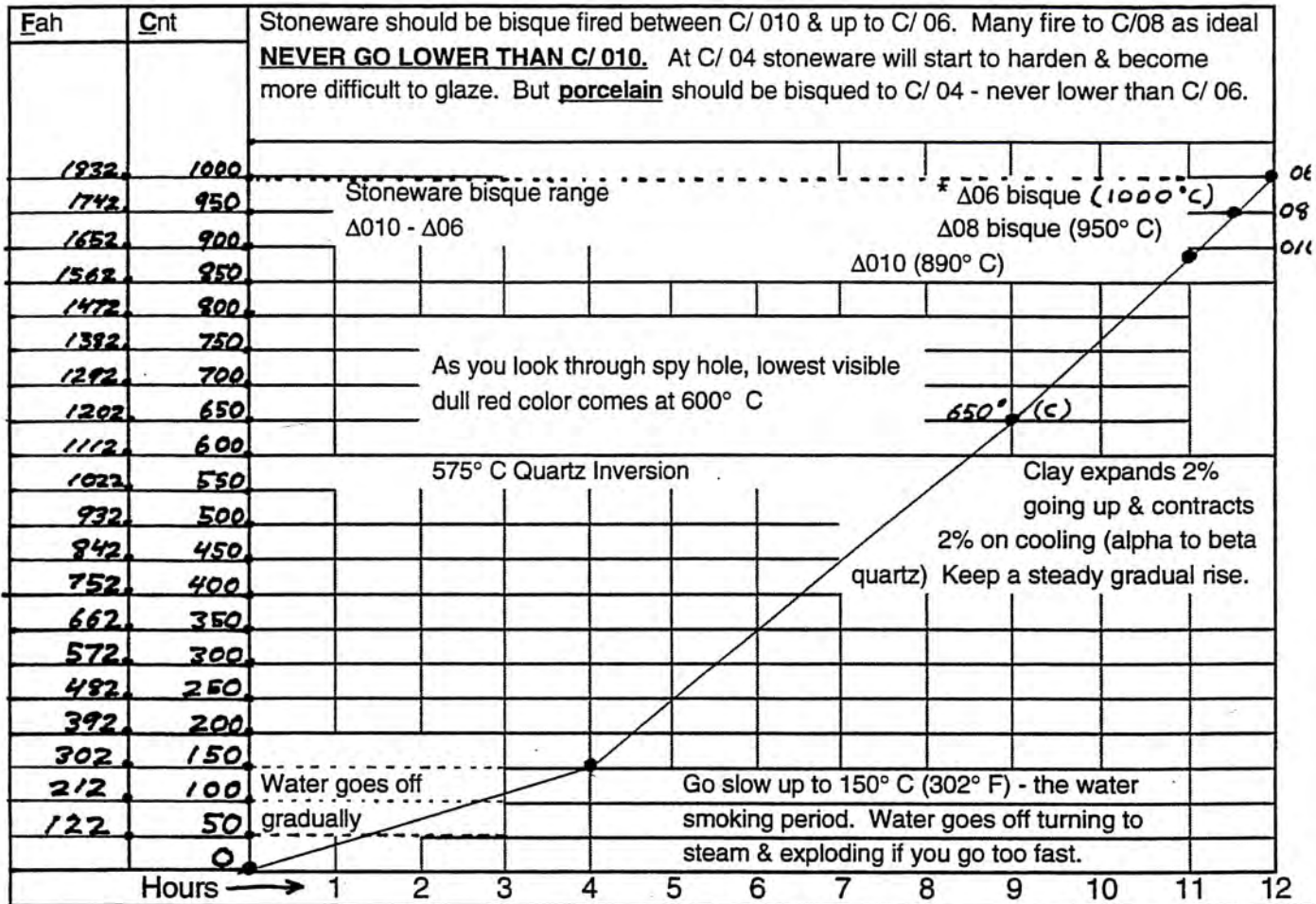


## \* BISQUE FIRING \* by Val Cushing



**C/06 bisque fire** (1015° C / 1860° F) -- a 12 hour fire from 0° to 1015° C. Smaller thinner wares can be fired faster (8 - 10 hours). Larger thicker pieces may take longer. Overnight candle flame on gas kilns is a very safe (but expensive) system. 0° to 150° C is when pieces explode if fired too fast.

**0° C to 150° C** "Water smoking" period. Water of plasticity/pore water is driven off. Ware explodes if water turns to steam too fast. Go slowly. Most bisque problems are in this range. Even if ware seems bone dry, go slowly from 0° to 302° F.

**100° to 200° C** The "film" water goes off as does the organic carbonaceous matter in clay. The slowest part of the bisque should go on until 200° C (392° F).

**350° C to 600° C** "Dehydration period." Chemically combined water goes out and a new ceramic material is formed. Clay will no longer slake down and be plastic after firing to 600° C or higher. At 600° C clay is very fragile.

**575° C to 600° C** "Quartz inversion" -- a reversible  $\pm 2\%$  volume increase on heating and decrease on cooling. Alpha to beta quartz crystal increase. Go at a gradual rise and **gradual cool** down or you get cracking.

**600° C / 1112° F** Dull color starts to appear in kiln - rising slowly up to this point and cooling slowly below it can help avoid cracking problems.

**200° C to 900° C** Oxidation of all impurities: carbonates, sulphur, etc. All goes off as gas and vapor. Do not reduce a bisque or you get bloating and black coring. Above 900° C bodies begin slow and gradual vitrification.