.99 and now has a C-14 content of .7500. This compares with wood with an initial C-14 content of .975 (dC13 of –25 per mil) and we must use these values to determine the decimal value of wood that corresponds with the .7500 sample value. Mathematically we say:

$$\frac{.99}{.975} = \frac{.7500}{X}, \text{ Hence } X = \frac{.975(.7500)}{.99}$$

Therefore X = .7386 and we must use this value when the C-14 content is referenced instead of the .7500 value. The .7500 sample C-14 content is the same as the .7386 C-14 content of wood.

We can now use the tree-rings. We move from the outermost ring toward the center and along this radius the C-14 wood content decreases as we move toward center. We arrive at the .7386 position and find a horizontal range that matches this decimal. The .7386 position is not indicative of a particular year but rather a range of years. This is because the C-14 content of the atmosphere varies continuously and thus the C-14 content of the wood varies year by year. When taken all together any decimal will be indicative of a given range of variances and never an exact point. This range is referred to as one sigma and expresses a 68% confidence as to the historical date. A broader range is also provided (known as two sigma) and this expresses a 95% confidence as to historical date. In reality, the decimal is converted into a radiocarbon year and the comparison is made with Tree-rings to locate the one and two sigma range.