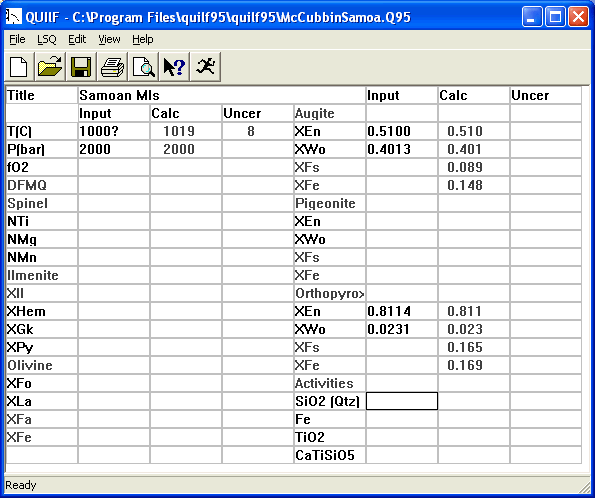
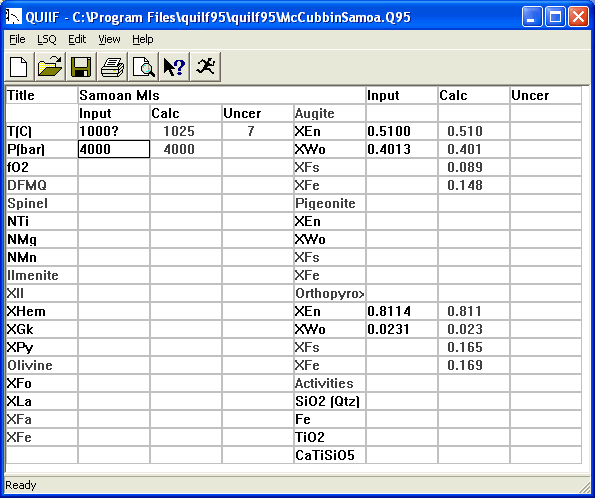
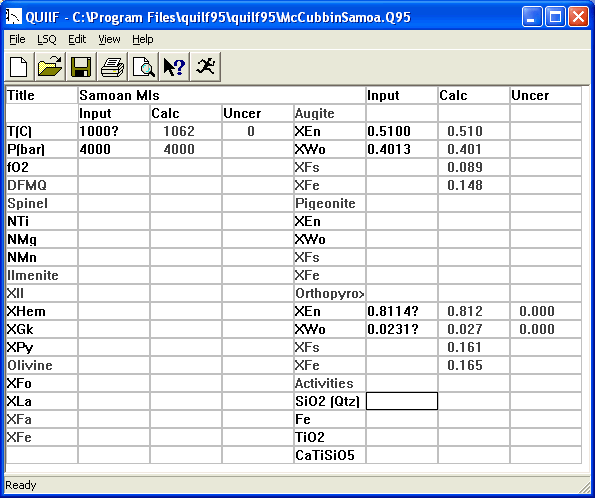
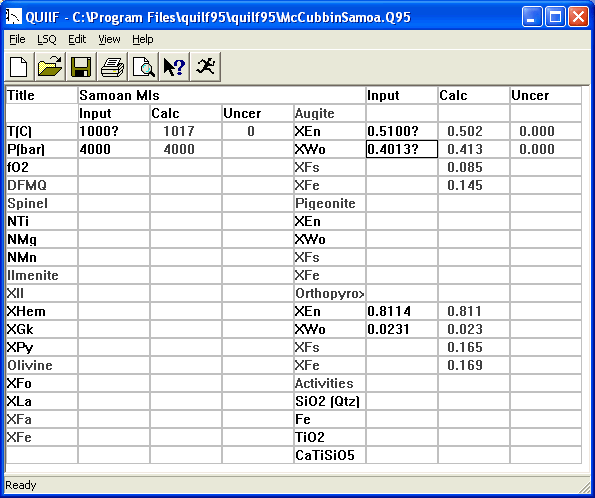
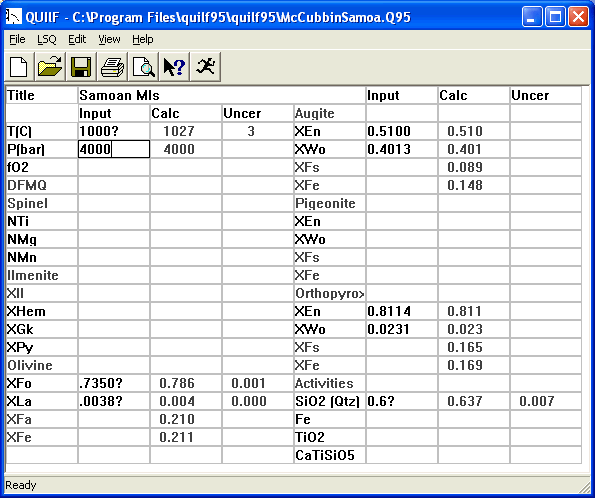
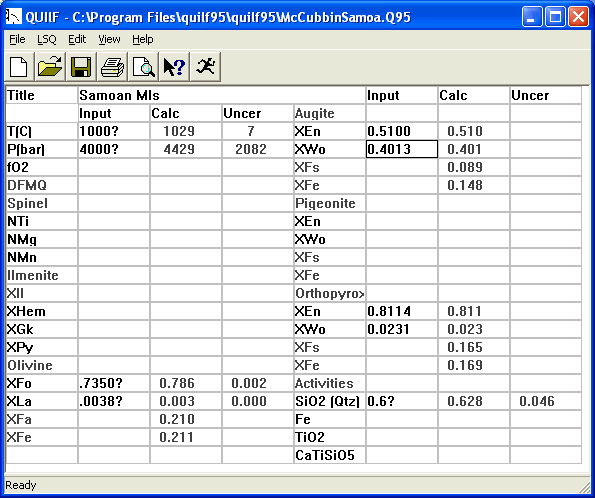
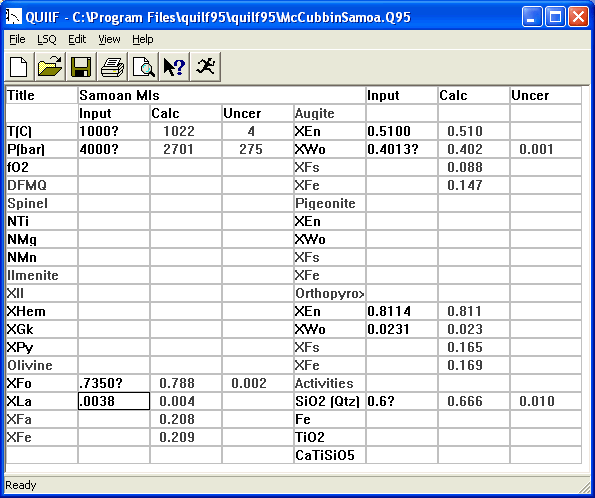
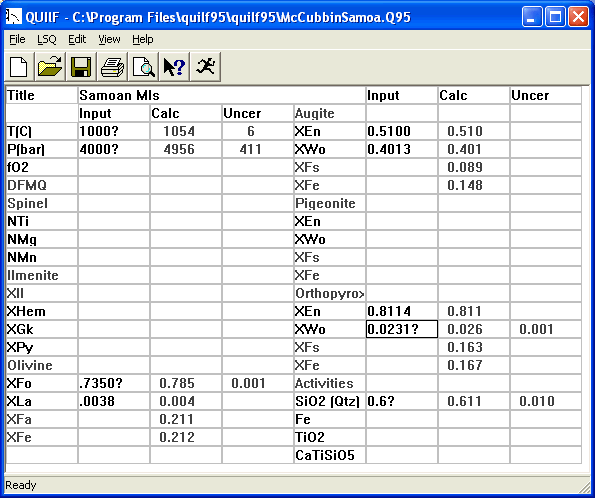
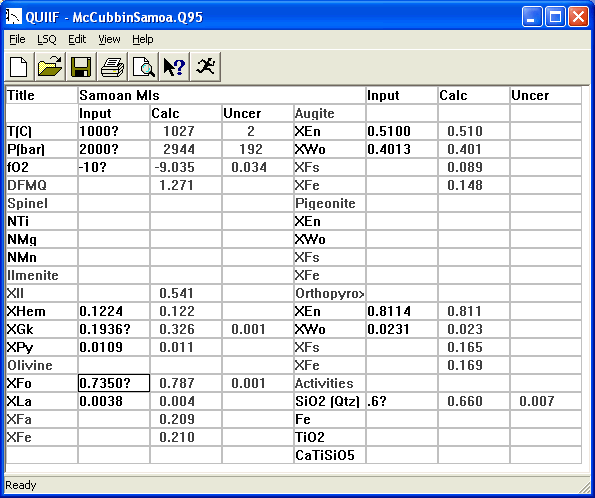
Hi Francis-   
  
First, project the Px through the Edit window of QUILF and run them alone:   
  
  
  
The very low uncertainly strongly suggests that the Px are in equilibrium.  Doubling P doesn't make much difference:   
  
Note that if the Uncer values were not extremely low, I would query first the Opx and then the Aug compositions to test how far they were from equilibrium.  For example:   
  
No change in XEn, but slight increase in XWo for Opx.  Now let Aug vary:   
  
Very little change in Aug - certainly unchanged within analytical uncertainty.  The "Uncer" values have gone to zero; this ONLY means that I have allowed enough compositions to change that the thermodynamic models within QUILF have been matched exactly.  It does NOT mean the calculated T is exact!!!  (See why I wanted David to use a different term there?)  But we're definitely getting a picture of T lying somewhere between, say, 1010 and 1060 deg. C.   
  
Now, bring in the olivine, but query its values to test for  equilibrium with the Px:   
  
  
The olivine is not in good Fe-Mg eqm with the Px, but the La content is good.  I would bet that the olivine is zoned, and that you might well find a MgO content that corresponds to XFo =~.78 or.79.  Because Ol-Opx and Ol-Aug each define silica activity, we can solve for aSiO2,  And since Ol-Px-SiO2 is a barometer (displaced Fa-Fs-Q equilibrium), we can also solve for P!!   
  
Again, if we accept that there is some olivine more magnesian that what you analyzed, we get a reasonable value of aSiO2 and a P around 4 kbar - but that's not very robust.  For Fun, fix XLa and let the XWo values vary.  First XWo Aug:   
  
XWo (aug) barely changed, but calc'd P is halved!  Now XWo (Opx):   
  
Calc'd XWo doesn't change much, but P zooms upwards.  We just don't have a very good barometer!  I think it's probably because our compositions are so far from the iron-rich ones on which the barometer is based.   
  
Now, at last, add the Ilm, querying its XGk to test for Fe-Mg exchange equilibrium:  We can now also solve for fO2.   
  
The ilmenite, like the olivine, is not in Fe-Mg exchange equilibrium with the Px.  Once again, I would check whether the Ilm is zoned.  Note that fO2 is above FMQ.  That's very consistent with the projected Fe3+ contents of the pyroxenes.   
  
Hope this helps!   
  
Cheers,   
  
Don