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within Que Rv Shale in BRD-05 (0.33-0.39%). No similar lavas to this Group are recorded from BRD-01. Basalts in MCH-1 immediately below the dacite (uppermost lava unit in MCH-1) show strong similarities to those of Group 2, but again the single P2O5 analysis for one of these basalts (0.53%) is well above the low P2O5 abundances in MAC-27 Group 2 rocks.

Thus, no basaltic to andesitic lava unit chemically distinguished in the other holes I have studied can be confidently correlated with the Group 2 lavas in MAC-27, based mainly on the very low P2O5 abundances of the latter.

GROUP 3

The characteristic geochemical features of these lavas are low P2O5 (0.13-0.15%) and high Ti/Zr (38-40). The only lava units in the holes I am familiar with that compositionally approach these, especially in having Ti/Zr >35, are the uppermost basalts (immediately below the Que Rv Shale) in BRD-01. However, again the P2O5 contents of the MAC-27 Group 3 lavas are significantly lower (0.21-0.30% P2O5 for BRD-01 uppermost basalts). Basalts with Ti/Zr values >35 are not known from BRD-05 and BRD-02, and those with Ti/Zr >35 in MCH-1 (which occur immediately below the Mixed Sequence) are invariably quite evolved, with Cr < 70ppm and P2O5 around 0.35%. In BRD-01, basalts with Ti/Zr values >30 occur both above and below the low-Ti basalts perhaps correlated with Group 1 herein. Thus there are no lava units in any of the regional drillholes for which data are available to me that are obviously correlated with the basalts with high Ti/Zr Group 3 unit in MAC-27.

GROUP 4:

Without more detailed geochemical study, it is difficult to distinguish between various dacitic lava units in the Que-Hellyer stratigraphy. Dacites form the uppermost lava unit in MCH-1 (imm. below the Que Rv Shale), but the basal lava unit (beneath 400m of basalts) in BRD-05. In BRD-01, two dacite units occur; an upper unit some 50m thick, separated by ~50m of basalts /andesites from a thicker, lower dacite unit. The upper dacite is separated from the base of the Que Rv Shale by ~350m of basalts and andesites.

SUMMARY:

I am left wondering if this approach is at all useful, and whether the P2O5 analyses you had done were reliable. Did you get a TASBAS or TASGRAN run by this method. A few more correlations would be obvious if your P2O5 values were higher, although I would not be surprized if your data were good and the correlations were absent! I am confident that we can say that an episode of unusually low-Ti basaltic magmatism, with Ti/Zr ~22-25 and low P2O5 occurred late in the history of the Hellyer basalts. It is not everywhere present. Eg: the continuous coregrinds in MCH-1 did not pick it up, nor was it picked up in the uppermost basalt section of BRD-01, although in BRD-01, a