

CORRELATION OF THE MAC-27 LAVA SEQUENCE

The data provided for the basalts and associated lavas from MAC-27 to the west of Mount Charter can be compared with data for lavas in the sequences beneath the Que River Shale from W of the Murchison Hwy, and with data for the lavas in the Mines Dept hole MCH-1 at Mt Charter.

COMPOSITIONAL GROUPING OF LAVAS IN MAC-27.

GROUP 1: SAMPLE 563711; (225.1m): Olivine+augite-phyric primitive basalt: $\text{TiO}_2=0.25\%$, $\text{MgO}=10.1\%$, $\text{Cr}=952\text{ppm}$, $\text{Zr}=60\text{ppm}$, $\text{Ti/Zr} = 25$, $\text{P}_2\text{O}_5 = 0.08\%$. This sample occurs within the basal Que River Shale and has a distinctively low TiO_2 content.

GROUP 2A: SAMPLES 563712 (415.5m) and 563713 (515.5m): These are petrographically identical sparsely plagioclase-phyric andesitic rocks (one being brecciated, the other a massive lava) that extend over at least 100m of section in MAC-27 from 415m - 515m. TiO_2 contents are 0.45%, $\text{Cr} = 68\text{-}84\text{ppm}$, $\text{MgO} = 4.4\%$, $\text{Ti/Zr} = 17\text{-}20$ and $\text{Zr ppm} = 140\text{-}160$, $\text{P}_2\text{O}_5 = 0.28\text{-}0.31\%$.

GROUP 2B: SAMPLE 563714 (607.5m) and 563716 (713.5m): 563714 is a plagioclase+ augite-phyric evolved basaltic lava breccia with 0.46% TiO_2 , $\text{Ti/Zr} = 22$, 5.1% MgO and 240ppm Cr and 0.15% P_2O_5 . 563716 is a strongly augite-phyric basalt with a few modal % of olivine phenocrysts. It has 0.44% TiO_2 , $\text{Ti/Zr}=21$ and 9% MgO , and 572ppm Cr . These basalts are probably part of the same geochemical unit, and could be broadly incorporated into a geochemical unit that included 563712 and 563713. This would be defined as a unit that contains basalts and andesites with MgO from 4-9%, with TiO_2 contents around 0.5% and $\text{Ti/Zr} = 17\text{-}22$, and low P_2O_5 contents, with the higher Ti/Zr values occurring in the more primitive members of the suite..

GROUP 3: SAMPLE 563717 (833.8m) and 563720 (882.2m): These are both olivine+ augite-phyric basalts with $\text{Ti/Zr} = 38\text{-}40$, 0.40-0.51% TiO_2 , $>390\text{ppm}$ Cr and 7.5-8.3% MgO , and P_2O_5 contents from 0.13 - 0.15%. They are clearly compositionally different from the overlying basalts, most notably in their much higher Ti/Zr values.

GROUP 4: SAMPLES 563718 (841.3m) and 563719 (865.3m): These are autobrecciated to massive dacitic lavas with sparse plagioclase phenocrysts and rare augite microphenocrysts. Their TiO_2 contents are