Supplementary Material. Petrography of zircon-bearing samples analyzed by SHRIMP

Sample 90-2-67. Medium grained quartzo-feldspathic sandstone with very sparse K-feldspar granules. Grains are angular to sub-rounded. Quartz has undulose extinction and in some instances exhibits sub-grains; thin silica overgrowths are common. Lesser amounts of feldspar include equal proportions of plagioclase (sodic andesine composition) and K-feldspar (orthoclase, perthite and microcline). Biotite and muscovite form a minor component. Heavy minerals include zircon, and trace tourmaline, garnet, and epidote. Sparse volcanic rock fragments have trachytic textures or are microcrystalline (quartzo-feldspathic) with or without microphenocrysts of quartz and feldspar. There are rare schistose metamorphic rock fragments. In addition to silica overgrowths, secondary brown phyllosilicate forms the cementing material.

Sample 11-13-3. Coarse to very coarse lithic sandstone, with abundant volcanic rock fragments. Grains are sub-angular to sub-rounded. Quartz is commonly strained and often exhibits sub-grains. Feldspar, as common as quartz, comprises altered plagioclase (oligoclase) and lesser K-feldspar (perthite and microcline). Volcanic rock fragments, many strongly altered and irresolvable, have trachytic, micro-porphyritic, and cherty textures; rare grains are flow-banded. Sparse plutonic rock fragments are quartz-feldspar aggregates or have graphic texture. Rare metamorphic rock fragments are schistose quartz-mica aggregates. The cement includes silica and zeolite.

Sample 90-14-32. Very fine grained vitric crystal tuff. Minerals include scattered angular quartz, and trace amounts of biotite (rare examples are hexagonal) and plagioclase. Abundant glass shards mainly have curved bubble wall form, although some are tricuspate; compressed pumiceous fragments are rare. Mineral grains and shards are set in a siliceous matrix that includes pale brown phyllosilicate shreds, which also replace ash particles. Irregular patches of pale brown phyllosilicate represent former rootlets.

Sample 90-17-15. Fine grained vitric crystal tuff. Scattered mineral grains consist of angular quartz and a trace of plagioclase and biotite. Abundant shards have bubble wall form and occasionally are tricuspate; compressed pumice is common. The ash matrix is siliceous but there is much secondary brown phyllosilicate.