

they may have formed as the result of disturbance of the substrate by mass flow deposition within adjacent parts of the basin.

9880
The coarser sandy deposits within this part of the sequence probably are also largely volcanic in origin, as in thin section, there is little evidence of older basement metamorphic clasts.

HL40

The units found in HL40 are similar to those found in HL62, and some cross hole correlation may be possible. However, several significant differences are also present.

The base of the URS is not represented in HL40. The basal contact appears to be a fault, indicated by the sheared and silicified nature of the contact. Almost immediately above the contact is a 14.0m thick mudstone intraclast breccia similar to those described in HL62, and probably representing a lateral correlative of one of these units. This unit is overlain by a 7.0m thick package of crystal lithic sandstone that passes upwards into a 30.0m thick black shale interval. The shale interval is broken at two places (55m and 50m) by mudstone intraclast breccias. These breccias contain small volcanic lithics and crystals, but are composed dominantly of fine grained mud and silt as matrix, and larger clasts of the same composition as framework. Rare sericitic pumice(?) patches may also be found. These units appear similar to the breccia found at 43m in HL62.

Overlying thick interval of shale is a 30m thick pumice clast breccia. A fault passes through the middle of this unit, and so it may have been structurally thickened. This unit is followed by 5m of mudstone, which is in turn overlain by another thick pumiceous breccia, which carries through to the top of the hole.

The upper part of the stratigraphy in both of these holes is quite similar in that there are two thick breccias separated by an interval of mudstone, and so they may be correlated laterally. However, the downsequence stratigraphy of the two holes is quite different. It may be that the two holes represent different parts of the overall stratigraphy, that are similar in style of deposition, but this seems unlikely as the holes are separated by only about 200m spatially. As the basal contact of the URS is not preserved in HL40, it is difficult to determine this. An alternative explanation may be that seafloor topography due to syn-depositional deformation is controlling deposition, leading to marked differences in observed facies over short lateral distances.

Overall, it is also interesting to note that there is a super-position of Que River Shale type sedimentation, with coarser sandy deposits of a most probable volcanic origin. It suggests that the main controls on sedimentation within the basin remained largely unaltered, and that the volcanic deposition is simply imposed over an already stable system, without externally altering the dynamics of the pre-