

The Owen Conglomerate sits conformably on the Tyndall Group, and both sit unconformably on the Central Sequence volcanics. The Central Sequence volcanics were folded prior to the deposition of the Tyndall Group.

At Red Hills, neither of the stratigraphic relationships can be conclusively demonstrated at outcrop scale. Quartz-pyric volcanics of the Tyndall Group occur on the western side on the flanks of the Gooseneck, and between the eastern extremity of the Central Sequence volcanics and the Owen Conglomerate east of the summit of the Red Hills. Clastic sediments correlated with the Tyndall Group have been noted by Company geologists on the flanks of Mt. Murchison.

The Central Sequence volcanics comprise flow-banded lavas, tuffs (pumice-rich (?) ash-flows and crystal-lithic ash-falls) and prominent agglomerates. They enclose lenses of laminated black slate which indicate a gross northerly strike, and dip and face west at 70°.

### 3. Alteration Types within the Central Sequence

A series of zones largely parallel to strike has been delineated. In stratigraphic order upwards, these are:

1. Grey-brown, massive to slightly sheared volcanic rock, bearing sericite and a little chlorite.
2. Pink to green, massive volcanic rocks. Weathering leaves a residual orange skin. The characteristic minerals are K-feldspar, chlorite and a chlorite-like mineral of low second-order birefringence and relatively low Mg + Fe content. Chlorite varies considerably in quantity (see below), spotted to almost completely chloritised varieties occur. Hematite replaces chlorite partly or completely in some cases, and imparts a purplish colour (as opposed to pink) locally. The distribution of hematite is not relevant to a consideration of Cambrian hydrothermal effects. The summit of the Red Hills is close to an unconformity and was weathered just prior to the deposition of the Owen Conglomerate. The hematite represents metamorphosed limonite from that episode of weathering.

This zone passes transitionally through sheared chloritic rock into zone 3.

3. Sheared grey to greenish-grey volcanics, the characteristic minerals being quartz + sericite ± chlorite. This zone encloses the black slate lenses, the massive sphalerite-galena-pyrite lens located in DDH RH5 and two main zones of silicification. The larger of these silicified zones continues northward along strike from the black slate. The smaller overlies part of the black slate.

Zone 3 passes transitionally, by increases in chlorite and albite, and a decrease in shearing, into zone 4. Another zone of silicification occurs in the transitional zone.

4. Massive, hard, pink rock with dark green patches, preserving primary features such as flow-banding and agglomerate texture. The characteristic minerals are albite + chlorite ± calcite.