TALK OUTLINE - GEOLOGY AT THE SILVER QUEEN MINE, OWEN LAKE, B.C. Craig Leitch, G.S.C. May 15, 1991

(Fig. 1, slide showing Equity and Silver Queen):

Location

-near Owen Lake, 35 km SE of Houston or 100 km SE of Smithers in Bulkley Valley region of west-central B.C.

Regional setting: part of Stikinia, mainly Jurassic Hazelton Group cut by Jurassic (Topley, Omineca, François Lake) intrusions, overlain by Cretaceous Skeena, Kasalka groups and Tip Top Hill (informal) volcanics cut by Cretaceous Bulkley intrusions. Overlain by Cretaceous-Tertiary Ootsa Lake Group, cut by Eocene Babine, Nanika, and Goosly intrusions. Overlain by Eocene Endako Group volcanics and Miocene plateau basalts. Extensional tectonics due to oblique subduction in late Cretaceousearly Tertiary (Gabrielse and Yorath).

- note lithological similarity between Tip Top Hill and Kasalka. Type section at Tahtsa Lake (also recognized at Mt Cronin by MacIntyre, formerly called Brian Boru by Tipper and Richards and Sutherland-Brown): unconformably overlie rocks containing latest Early Cretaceous, Albian fauna and are cut by intrusions of 85 Ma, <u>but</u> K-Ar (WR) at base gives 108±5 Ma (=115 actual?). Tip Top Hill are 78-79 Ma by K-Ar (WR) and 85 Ma by U-Pb (zr).

(Fig. 2, overhead showing geology after Church): Local setting: "Buck Creek basin" of Church, unpatterned units are younger Tertiary volcanic cover; coloured are Mesozoic (delineate basin boundary, inliers are important hosts to mineralization).

- Host rocks to mineralization are U. Cret. Tip Top Hill andesitic volcanics (units 4 and 5) at Silver Queen and somewhat older Skeena, Kasalka or Hazelton (unit 3/0) at Equity. Mineralization closely related to Eocene Nanika quartz monzonite intrusions (54 Ma Nadina stock at Silver Queen, 57 Ma stock at Equity), dykes of 50 Ma at Silver Queen and Equity. Note dykes are of same 50 Ma age as overlying Goosly volcanics and stocks; latter define linear from Equity to Silver Queen.

-<u>Post-mineral cover</u> of these younger Ootsa Lake volcanics (Goosly Lake: 49 Ma, Buck Creek: 48 Ma, cf. 49 Ma from Whitesail Lake area by Diakow, 56 Ma Woodsworth) seriously impedes exploration, could conceal significant deposits. Part (?Swans Lake member) may range into Endako Group (30-40 Ma Diakow, 45-40 Ma Woodsworth). <u>Further</u> complicated by Miocene columnar basalt (21 Ma).

(Fig. 3, slides, geology map, schematic section, table of units): Property geology: Mesozoic, Unit 1 basal polymictic conglomerate, sst/shale interbeds; Unit 2 felsic fragmentals (tuff, lapilli, Unit 3 breccia); Unit 4 voluminous plagioclase porphyritic andesite flows, sub-volc. intrusions, feeder dykes 78 Ma); Unit 5 Mine Hill microdiorite 79 Ma; 5a coarse plag porphyry sills, stocks; 5b qz-eye rhyolite dykes, stock 85 Ma. <u>Tertiary</u>, Unit 6 calcite amygdular premineral strongly altered dykes 51.3 Ma (not "pulaskite"); Unit 7 bladed feldspar porphyry post-mineral unaltered dykes 51.9 Ma, feeders to unit 7a trachyandesite-basalts of ?Ootsa Lake Group Goosly volcanics; Unit 8 diabase dykes 50.4 Ma, possible feeders to Endako Group basalts.