

# PROPERTY FILE

Salal Creek Assessment Report Review:  
September, 1996

AR 709: "Report on the Salal Creek Mo Deposit" 92J14: D.N. Mustard, P.E. Fox & R.A. Barker; 1965. Southwest Potash Corp option to explore with Norpax Nickel Mines and Associates. \$50,000 to October 1965.

- Mo in a young, discordant (outward dipping, shallow, epizonal), 25 square mile, granite stock cutting older intrusions in favourable structural site on east side of CPC.
- Two facies of leucogranite, (1) a coarse-grained margin and (2) a fine-grained, locally porphyritic core. The contact is gradational over a few inches. Both cut by narrow aplite, porphyry and still younger basalt dykes. Exposure variable, note some covered by volcanic rock.
- On float creek varved sediment dips under columnar basalt. Evidence of Tertiary to recent magmatism.
- Marginal facies one mile wide except in SW margin where thinner. Note biotite content and inclusion content picks up near contact.
- Mo in joints and shears. Joints on "north and south sections of the stock and are inward dipping features" Quartz/Mo stockworks in stockworks in highly fractured rock, particularly near contact of inner and outer rock units.
- Evidence of zonation, (1) hematite, (2) hematite plus magnetite plus pyrite and (3) magnetite plus pyrite zones. Most of the moly in two areas within the magnetite plus pyrite zone.
- Southern area 3.5 square miles, northern area 0.75 square miles, also several other smaller areas that may form a discontinuous ring following the rock facies boundary. Each area has zones of mineralization. Seven widespread zones around 100 to 600 feet wide. Could extend for 5000 feet under volcanic cover from from Float Creek to Cornice Creek.
- Mineralization at Mud Lake, Logan Ridge and Glacier Island form a single belt. 10000 feet long and 300 feet wide.
- Moly fine-grained in commonly banded quartz pyrite veins, quartz vein stockworks, coatings on joints and shears and as disseminated coarse-grained material. Mainly in quartz pyrite veins in highly silicified granite. Structural style changes from shears inward to quartz pyrite veins to mineralized stockworks.
- First staked by Phelps Dodge Corporation in 1960. Restaked by Pemberton Prospecting Syndicate in 1962 and optioned to Norpax.
- Two holes started (left side of lower Float Creek and base of mountain east of float creek). Neither completed. Southwest Potash optioned property in 1965.
- Stock at the intersection of lineaments (1) from Pemberton Meadows NW on N side of Lillooet River valley and (2) N/S belt of Tertiary volcanos from Squamish to Salal Creek. Also "cross faulting" 30 miles to the east of Salal Creek.

- Mineralized joints dip inwards and may be concentric to centre of stock. Strong N/S structure to the area controls later volcanic necks.
- Variable alteration to sericite, quartz and clay. Note strong correlation between silicification and mineralization. Sometimes forms selvages to small milky quartz veins.
- Gossan developed at Float Creek, Logan Ridge and head of Plug Glacier.
- Seven centres of mineralization. (1) Float Creek, main area in southern part of stock. Fine moly in shears at foot of creek and in veins and stockwork at top. (2) Float Ridge, 2500 feet north of headwater of Float Creek, largely ice covered poorly defined area. (3) Cornice Creek, area within coarse grained granite. Mineral in shears to outside of granite and stockworks and breccia zones further in, poorly exposed (4) Lost Creek, stain zones associated with mineralized shears. (5) Mud lake, east and north facing cliffs mineral in multiple easterly striking quartz pyrite veins up to two feet thick. Recommended drill target. (6) Logan Ridge 5000 feet west of Mud Lake and extension of it. mainly multiple veins. (7) Glacier Island 3000 feet west of Logan Ridge. Moly disseminated in fine grained granite.
- Note galena and sphalerite found with moly on Float Ridge. Traces of copper and only trace gold in quartz pyrite veins although "it is reported that placer gold was mined from Salal Creek".
- Eight holes drilled by Southwest Potash in 1966

AR 2741: Geological and Geochemical Surveys: Salal Creek: D.K. Mustard and C.B. Campbell 1970 for Salal Molybdenum Mines Ltd. (Norpax & Pemberton Prospectors, above) and new optionee, Cerro Mining Co of Canada.

- (1) geological mapping, (2) geochem silt, talus, (Cu,Mo) sampling (3) recce. rock (Cu,Mo,Hg,Ag,Pb,Zn,Fe,Sn,W,Mn) sampling.
- Five rock units, not two. Coarse, medium and fine-grained biotite granite, fine to medium grained porphyritic biotite granite and fine grained leucogranite. Coarse granite oldest. Fine grained variety in core intruded after crystallization of coarse. Medium grained is thought to be same age or younger than coarse grained. The porphyritic variety is a variant of the fine grained and the line leucogranite cross cuts them all. It may be a very late silicious differentiate.
- "Structural disruption of the rock overlying the core (fine-grained phase) magma produced a release of the vapour phase from the core and rapid crystallization of the core magma".
- Quartz feldspar porphyry dykes are pre, intramineral and post mineral in age. Many dykes parallel principal trend of veins. Basalt dykes post mineral.
- Two generations of quartz veins. Small veins premineral are cut by mineralized veins.
- No disseminated moly all structural control veins or joints.
- Joints in coarse grained N/S dip west, and in medium NE/SW dip NW. Fine grained is scattered but similar to medium-grained. Small shears and faults also trend NE/SW and dip NW. Aplite dykes follow this trend.
- Quartz veins strike N35-70 degrees east and dip 50 to 80 degrees to northwest.

- Suggests coarse grained granite crystallized and jointed before change in stress orientation required to produce NE/SW tensional fractures. Possibly a result of doming of the stock. If so, joints could be concentric about the core of the intrusion.
- Good quality veins with NE/SW veins around Big Creek.
- Very weak alteration. .
- Four areas of stream/talus anomaly
- Recce rock sampling to look for zonation for blind deposit. Fresh samples should grade through Hg, Sb, Au, Ag, Pb, Fe, Mn, Zn, Cu, As, Bi, W, Mo, Sn. from outside in. Presence of Pb, Cu, Ag, Mo in fine-grained intrusion suggests closer to main deposit than coarse grained. May be able to use Hg as pathfinder for quartz vein stockworks.
- Rock samples indicate highish Hg contents indicative of shallow levels of emplacement.

AR 2878: Airborne Geophysical Survey on behalf of Silver Standard Mins Ltd. 1971.

- Helicopter magnetic survey over 26 square miles showing intense magnetic relief . Some features correlate with known showings.
- Large areas of property covered by overburden and glaciers.
- Linears oriented NW/SE, E/W, NNE and NNW probably shears.

AR 3094: Geochemical Research Report prepared by P.M.D Bradshaw for Cerro Mining of Canada. 1971

- Fractionation study K/Ca ratio etc.
- General fractionation trend from coarse to fine although part of medium grained seems similar to fine.

AR 3275: Ground Magnetometer Survey; by Cerro Mining Company on behalf of Salal Molybdenum Mines lts. 1971:

- (1) to define contacts between intrusion phases obscured by talus; (2) to determine if volcanics are flows or plugs (3) to look for major structures under talus and glacial debris.
- (1) shifts contact; (2) volcanics suggests a plug; (3) One major structure was located.

AR 3370: Geological Survey for Salal Moly Mines and Cerro Mining Co. D.K Mustard and C.B.Campbell, 1971.

- Stock assumed to be U Cret to Lower Tert. age. No chilled border, flow banding or hornfels zone but plenty of felsic dykes in surrounding CPC.
- Active erosion since glaciation.
- Descriptions of four main phases Coarse (outer, plus xenoliths), Medium (intermittent along contact between coarse and fine), fine (core) and fine grained QFP (lenses, pods and dykes).

- Foliation in CPC swings from E/W near contact with stock to NW/SE to south of stock.
- Basalt flows overlie the stock in places. Some places postdating glacial action.
- Coarse-grained phase is a quartz monzonite.
- Late linears run N20W and also NE/SW. Mineralized veins run N40-70E and dip steeply NW in the south and steeply SE in the north.
- aplite dykes concentrated with moly in south.
- Intrusion emplaced at 5 km or less depth. Vertical body widens at depth. Still eroding top of pluton.
- Wall rock alteration pronounced immediately adjacent to quartz pyrite moly veins. Mainly silica and sericite and kaolinite.
- Mineral mostly in coarse grained near fine-grained. 1) in veins and shears with quartz and or pyrite - generally NE/SW, (2) on dry joints and vein fillings and (3) as rare disseminated moly. Veintype dominant. Larger veins ribbon type with 1/16th inch ribbons of moly and quartz stringers.

"The Geology of the Salal Creek Pluton, Southwestern B.C., Canada" by Dr. G.C. Stephens, PhD Thesis at Lehigh University, 1972.

AR 5948: Drill Programme by BP Minerals 1976: D.KMustard

- 2 drill holes from one site for 1107 metres in float creek valley.

AR 5974: IP, Resistivity and Magnetic Survey for BP Minerals 1976

- Reference to 12 holes between 1964 and 1976.
- One zone identified but Moly doesn't register very well

AR 6345: Orthophoto Prepared for Utah Mines 1977

AR 6355: Drill Report: BP Minerals: 1977

- One hole drilled to depth of 2896 feet.
- drilled across recent volcanic flow and through contact between coarse-grained and fine-grained quartz monzonite.

AR 6759: Geology and Rock Geochemistry: for BP Minerals, by Utah Mines: 1977 (Bp/Utah JV)

- Complex intrusion passively intruded into foliated hornblend quartz diorites or migmatites and massive biotite quartz diorites to diorites of CPC. Pre metamorphic qfp dykes and pre and post metamorphic basalt dykes present. Post metamorphic dykes related to Garibaldi volc suite. Sharp contact between intrusion and countryrock.
- coarse, medium and fine-grained quartz monzonite plus minor phases (qfp, qfb granites and felsic to rhyolite phases) - dykes and small bodies at west end of pluton.

- Cg outer phase, no chilling, biotite decreases inward. Includes xenoliths, particularly in the Big Creek and Lost Creek areas.
- Mg discontinuous phase between Cg and Fg or as plugs and dykes within them. Contacts sharp to gradational. Locally more like porphyritic Fg. eg. large Mg plug at Float Creek.
- Fg inner phase in core to SW part of pluton. Trace biotite only.
- qfps, visible Qtz phenos. Late, gradational with Fg but occurs as plugs, pods etc.
- Rhyolite/felsic dykes. Buff to purple grey, glassy, locally flow banded.
- Poorly sorted till beneath volcanic flows at head of Float Creek. Nearest source of cpc boulders 1000 metres to west.
- Lahar deposit underlies volcs on west side of west fork of Salal Creek. Overlies cpc and intrusion. Contains mineralized fragments. Slight dip 5 to 10 degrees to SW.
- Several areas of Garibaldi volcanics. Vary from olivine basalt (Windy pass) to rhyolite (west edge of pluton) in separate centres. Extruded on a rugged topography. Came out at different elevations. Basalt dykes like flows show columnar jointing.
- Centre of plutonic activity moved from NE to SW with time. Centres become more silica rich to SW.
- Breccia predominantly/locally found in the West Fork of Salal Creek area. Narrow, structurally controlled, cemented by quartz and/or moly.
- Alteration, weak in countryrock, local zones of silicification, sericitization and pyritization. Best where near veins? 1mm to 2 - 3 metre zones with sericite, pyrite, quartz alteration with quartz veins containing moly, pyrite, hematite or magnetite. Possible controlled by cone sheeting.
- Moly "follows pre-prepared fault or shear zones, either a cone sheet type of fracture system or a fault system along the major drainage patterns. the mineralization is therefore quite sheet-like in narrow restricted zones in the cone sheet fracture set and forms narrow, almost vertical zones in the creek bottom faults" Ridges in between not fractured.
- Moly in (1) veins and shear fillings with quartz and pyrite (predominant). Larger veins may be banded (crack-seal?) and (2) on joints and in veins without gangue (lesser).
- 392 Rocks samples. Fluorine enrichment in Cg.
- Generally fracture/vein "dip angles increase as one proceeds in a northwesterly direction from the edge of the pluton to the centre ie. from 45 - 60 - 75 - 90 degrees".
- Different around west fork of Salal Creek from Waterfall Creek northwestwards. Here shallow/steep dips N to NW or S to SE. As one goes north, dip direction changes from N to NW to steep S to SE. Change possibly caused by upward pressure from a pluton below? Axial Stress Region? Possible axial trend has a north to east by northeast trend. Needs more mapping in the north to confirm this.
- Notably striking faults 2nd dominant structural feature. Suggestion that it steepens from west to east, eg. 45 - 60 - 75 and near vertical west of Float Creek.
- Next dominant direction E/W structure.
- Distinct possibility of a radial and ring qfp dyke system centred on No 1 & 2 Creeks.\*\*\*
- Located four areas in south which warrant more work plus general need for more work in north.
- Garibaldi volcs range from basalt in north to rhyolite/dacite on western edge of pluton.

AR 6999: Geology and Rock Geochemistry of the Salal Mineral Claims. BP/Utah. 1978.  
(John Deighton)

- Northern portion mapped and sampled.
- Mg is crowded porphyry in the NW part of the pluton. It occurs between the Cg and Fg phases.
- Continuation of radial and ring qfp dyking system centred on No 1&2 creek followed to north.
- Stacked quartz veins with 30 m wide zones in the cirque between No 1&2 creeks.
- Stacked quartz veins, stockworks, boxwork and breccia areas in No 1,2,3, areas suggest mineralized body at depth.
- Mineralized area in No 2 creek and between Logan Ridge and Red Mountain, covers cirque area of Windy and Plug glaciers.

AR 7557: 1979 Diamond Drilling Program on the Salal Mineral Claims: Utah/BP: 1979:  
(J.R.Deighton)

- 941.5 m hole, (50 azimuth and 70 dip) west fork of Salal Creek at 1450 m elevation. half way between #1 & #2 creeks looking for Henderson beneath area of concentric and radiating qfp dykes and geochem anomaly.
- Core assayed for Mo, Zn, Fl, W. Values increase in shattered or faulted areas where sericite alteration most extensive.
- Low Mo in Mg rock at bottom of hole. Only Fg and Mg encountered. No Cg.
- Proposed target a Henderson body related to the youngest phase of the pluton ie qfp dykes. No evidence of a late qfp at depth. Weak moly near top of hole part of main circular structure. Weak alteration down hole. Increased mineralization around faults/fractures.

AR 12798: Reanalysis of Stream Sediment Samples from Salal Group: BpMinerals:  
R.H.Wong. 1984

- 345 stream sed.
- No encouragement for gold. Moly shows up as a ring. Copper, lead, zinc & silver best to south and west. Iron, cobalt, nickel, aluminium, magnesium, barium, strontium, calcium, potassium, sodium best on north side (Possible more pyritic and deeply weathered on the north side so more feldspars destroyed RHP)