

ENDAKO

Location: 160 Km. west of Prince George Mined to date = 100 m tons

History: Disc. 1927 Mining Rate - 60,000 tpd Milling - 30,000 tpd.

Age: 140 my

Geology: in Composite Jurassic Tertiary Intr. (Francis)

- occurs in older QM (Endako)
- in plan - irreg. shape elongated 3360 m x 370 m
- N 60° W / 40° to 60° S

- major X-cutting fault offsets in northerly direc. - Main & Denak
- Qtz stkwk!

Mineralization: Qtz, MoS₂, py, mag & rare cpj-veins & frags

Alteration: Kspar + ser-py envelop. & pervasive kaolin.

Production: To date = 100 million tons

Reserves (1977) 240 m tons (incl. 35 m. tons Denak) @ 141% MoS₂
at cut-off 0.08, strip ratio 1.2:1 [Moly sul + moly oxides]

* Genesis: - restricted stkwk formed on an elongated easterly trending dome by uplift, intrusion & shearing & localized at or near intersection of regional NE + E struc.

Synthesis: → importance of several periods of uplift, collapse & dyke intr. & intersec. of regional faults.

→ antithetic (faults dip in opp. direc. to struc.) faulting & repetitive periods of frac. = alt'n + min.

~ Prod. (to end '98)
 Milled = 251,862,000 tonnes
 Moly = 173,488,231 kg.

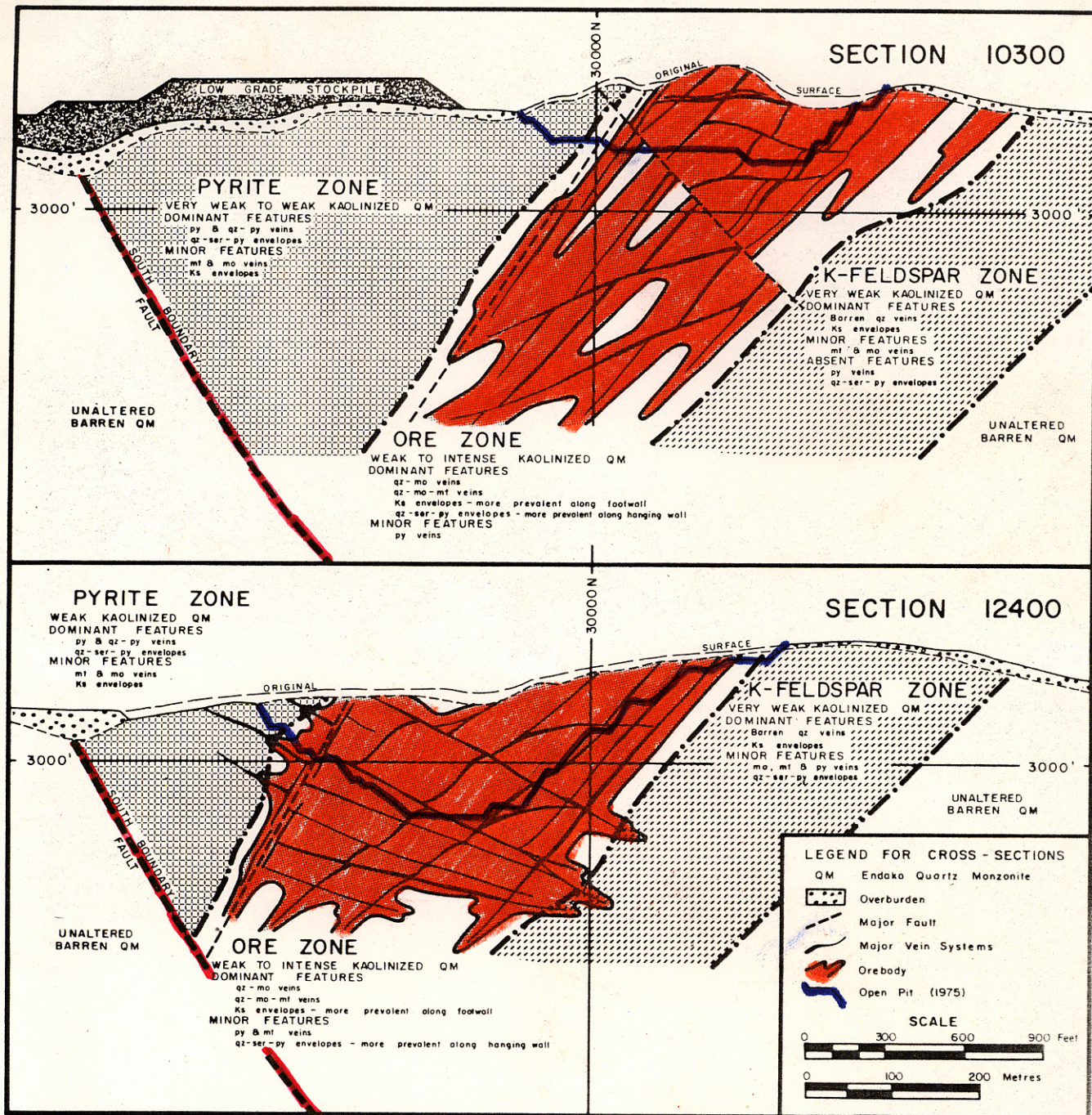


FIGURE 7— Geological cross sections showing major structures, the ore zone and a generalized distribution of hydrothermal alteration phases.

The general distribution of mineralization and hydrothermal alteration across the stockwork is shown in Figure 7. Trends of zone boundaries are inferred; it is presumed that the transition areas would be subparallel to the orebody. Certain generalizations are recognized for the spatial distribution of zones.

1. Within the orebody, K-feldspar-bearing envelopes are more commonly developed on quartz-molybdenite veins, and the frequency of occurrence increases toward the footwall of the orebody.
2. Sericitic envelopes are more commonly developed on quartz-magnetite veins, and the frequency of occurrence increases toward the hanging wall of the orebody.
3. Sericitic envelopes prevail on quartz-pyrite veins in the pyrite zone.

4. K-feldspar envelopes prevail on barren quartz veins in the footwall of the orebody.

5. There is no correlation between intensity of pervasive kaolinization and vein mineralogy. However, within the stockwork, the most common alteration type would lie between weak and moderate kaolinization. Intense kaolinization occurs as bounding zones around major vein systems and fault zones.

Chemical Controls Related to Alteration Phases

The sequential development and interrelationship of the three hydrothermal alteration phases and vein mineralogy for the Endako ore deposit are diagrammatically illustrated in Figure 8. The time element

→ ENDAKO

Thurs. Mar. 1/07

ENDAKO

- 'Explore BC' meeting pre-PDAC in Toronto with Blue Pearl Mining (Ian McDonald) [+Paul Wajdak]
- Blue Pearl just moving offices nearby
- Blue Pearl will concentrate on paying off large debt (result of Thompson (K.)/Endako takeover) via production profits @ Endako
- Pre-scoping studying examining the (maximum) potential of creating a single large 'superpit' which would involve moving the mill (i.e. ore underneath), and maybe even 'tapping' known mineralization near the existing tailings pond (W end?) Total capital costs ~ \$250M
- Recently hired a geologist for mine
- Mill upgrade to accommodate ore from Davidson
 - may bump up feed as much as 500tpd (± via rail) from Davidson
- Minimum 20 yrs. of mine life (10 'official' on books).
- Significant exploration program in '07.

22 Zone; Disc. (2002) - looking @ u/g & d
 - winter '04 dolh (just completed) - some 'interesting' results.
 2006 m of ex. [8M capital cost to drive out u/g infrastructure]
 Last week - 2 rounds of > 30 opt Au grade!
 (excellent talk!)

MUCKLEBERRY - Carl Boffaro (Chief Mine Engineer)

- no waste dumps at end of prog
i.e. all put under water back into Main Zone pit -

- \$1.05/lb Cu - re-design East Zone pit (200m deep)

- grinding problems (i.e. ^{high} Work Index)

Concentrate: 11,500 t/mo. 2003 Prod. 80 M lb (u/y) 3000000 300K kg

Employment \$87k/yr. - av. salary \$1M t Mo

Ann. Exp. = \$48M Exp 1/2 '04 \$500,000 for phase 1 - new full-time geol.

Whiting ck.: 31.6 x 10⁶ Mt @ .06% Cu, 0.112% MoS₂ - esp. NE end of pit + N. of Main Zone pit

(pre-43-101) within 123.5 Mt .06 .04 MoS₂

ENDAKO: Alan Marish - Thompson Cr. Mining (private co.) + Sojitz Noble Alloys Corp (formerly Nisskotoen - large trading co. (Japan))

- great aerial photo Main Zone 300m deep - 27,200 tpd - present capacity ~ 230 employees

- Denak West pit (not yet level) (Av. grade 12.5% MoS₂ Reaver ~ 700)

- Uses of MoS₂: * steel alloy (toughen) (i.e. 1 lb MoS₂/tonne Fe) Prod 10M lbs/yr of molybdenum oxide
* jet engines (Ni-Mo alloy)
* medical implants (Cr-Mo alloy)

In-pit crusher: saved 1/2 costs of haulage + crushing (with out) (from Island Copper)

\$ US 116 Aug to \$ 14 (Apr.) '05

Reserves: 2.5 yrs below 5 wall (main zone)



3751 Highway 16 • P.O. Box 3636, Smithers, B.C. Canada V0J 2N0
Phone (250) 847-4581 • Fax (250) 847-4878 • Reservations 1-800-663-5040
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West Denak - 2.5 yrs low grade stockpiles

Mine life - 7 yrs (i.e. 2011)

Kemess (Hard beat) - 180/102 Au
 1.5 B lbs Cu 4.1 Moz Au @ 1. Cu → 2019
 0.307 g/t Au
 Cash cost/oz US\$136/oz
 \$31M profit life mid-2009
 2005 Fore cast. 34,500 t Cu 150,000 t concs
 290,600 oz Au

HULLBERRY - Peter Ogrzylo 230 people
 6.3M lbs Cu + 450M lbs Mo
 + 25DK Ag + 10,000 oz Au
 Ann. Ex = \$48M - local \$13M
 13.9M - BC

Employ ~ 215
 Res. 19 Mt @ 53% Cu, 0.015% Mo
 End of life rate 2007
 - Mgt. focused on exp. (i) NE Target - Cu-Au target
 (ii) NW Target (Cu-Mo) 9 delh (2005)
 - up to 0.042% Mo₂ / 2005 6000m³ quot

REX (Jan Spud) 30,000 t
 1.18 Moz Au Conc. 27%
 1.85 B lbs Cu + 12 g/t Au
 → ship out of Stewart Fly in fly out

\$220M Cap Cost Provincial Revenues
 138 kV on 275 kV line
 (ie. when upgrade for Calore Ok, req'd in 2010)

2005: Construct 23km access rd.
 - power line const. start

@ Minerals North 2005
 (Stewart)
 Apr. 27-29/05

END. 1100 (God Clark) Mine Super.
 Head off. Denver Co Refinery in Pennsylvania
 Sojite - steel prod.

Denak EFW - new Res (combined now!)
 Main Endok Pit 1600m X 800m X 300m deep
 June 8/1965 - opened - \$22M cap cost (ie. 40 yrs!)

Moly roaster on site! (only 9 in world)
 1962-1965 - disc. delh → open!
 1982-1985 - roasted only; no moly (low metal prices)

Prod. (total) mined 550 Mt (pre + waste)
 ~ 300 Mt milled
 ~ 450 M lbs molyb oxide
 employ: av. 330 > 15,000 person yr
 > \$350M wages + benefits (actual)

1965: m₀ = 45/1.25/16 / \$400,000 annually to Fraser Lk. municipal tax revenue

Mil. Grades: 1965: 210% MoS₂
 2005: 0.11% MoS₂
 Capacity 1965-16,000 tpd
 2005-28,000 tpd

2005 Prod. 180 → 260 people .066% Mo
 27,000 tpd @ .11% MoS₂ grade
 78% recovery → 10M lbs/yr

- stabilize North wall (Ledra)
 150 ft wide at bottom of pit
 - South Wall - strip to access higher grade at bottom of pit (ie US \$2.10)
 - in-pit crusher

Uses - incl. lightbulbs (2 prongs - Sylvania from Endok)

Exp! - 2004 only
 Res. - 8 yrs (3-Endok pit) Mainly
 - Low grade stockpiles
 - Denak (combined)