Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As doubly terminated crystals, to 50 μm, on scholzite or as concentric zones to 200 μm within zincian collinsite.

Physical Properties: *Cleavage:* Perfect on {010} and {001}. *Fracture*: n.d. *Tenacity*: n.d. Hardness = 3.5 D(meas.) = 3.16(2) D(calc.) = 3.178 Weak greenish yellow fluorescence in SW UV. Slowly soluble in HCl.

Optical Properties: Transparent to translucent. *Color*: Colorless or gray with a bluish or greenish tint. *Streak*: n.d. *Luster*: Vitreous; silky aggregates.
Optical Class: Biaxial (+). $\alpha = 1.635(5)$ $\beta = 1.650(5)$ $\gamma = 1.667(3)$ 2V(meas.) = n.d. 2V(calc.) = 83.4°

Cell Data: *Space Group*: $P\bar{1}$. $a = 5.736(1)$ $b = 6.767(2)$ $c = 5.462(1)$ $\alpha = 97.41(2)°$ $\beta = 108.59(2)°$ $\gamma = 107.19(2)°$ $Z = 1$

X-ray Powder Pattern: Reaphook Hill, Flinders Ranges, South Australia, Australia.
2.690 (100), 3.038 (40), 3.130 (37), 6.24 (34), 3.230 (22), 1.668 (22), 3.512 (16)

Chemistry:

	(1)
Na_2O	0.11
CaO	30.36
MgO	4.34
ZnO	14.79
FeO	0.04
P_2O_5	40.85
H_2O	[10.23]
Total	100.72

(1) Reaphook Hill, Flinders Ranges, Australia; average of 15 electron microprobe analyses, H_2O from stoichiometry; corresponds to $(Ca_{1.91}Na_{0.01})_{\Sigma=1.92}(Zn_{0.64}Mg_{0.38})_{\Sigma=1.02}P_{2.03}O_8 \cdot 2.00H_2O$.

Mineral Group: Fairfieldite group.

Polymorphism & Series: Solid solution with collinsite.

Occurrence: In a gossan developed on argillaceous siltstone.

Association: Zincian collinsite, scholzite.

Distribution: From Reaphook Hill, Flinders Ranges, South Australia, Australia.

Name: Honors Dr. Roderick Hill (b. 1949) Chief of the Mineral Research Division, CSIRO at Melbourne, Australia, who described the mineral in 1973 as a potentially new species.

Type Material: Museum of Victoria, Melbourne, Australia (M46032).

References: (1) Yakubovich, O.V., W. Massa, R.P. Liferovich, P.G. Gavrilenko, A.N. Bogdanova, and P. Tuisku (2003) Hillite, a new member of the fairfieldite group: its description and crystal structure. Can. Mineral., 41, 981-988. (2) (2004) Amer. Mineral., 89, 468 (abs. ref. 1).