Crystal Data: Tetragonal (?). *Point Group:* n.d. As spherules or crusts, composed of minute matted fibers.

Physical Properties: Hardness = 5.5 D(meas.) = 2.83 D(calc.) = [2.91]

Optical Properties: Translucent. *Color:* White, pale gray, greenish; colorless in transmitted light. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Orientation:* Negative elongation. $\alpha = 1.584$ $\beta = 1.598$ $\gamma = 1.602$ 2V(meas.) = Moderate.

Cell Data: *Space Group:* n.d. $a = 7.00$–7.04 $c = 18.99$–19.07 Z = [2]

X-ray Powder Pattern: Fairfield, Utah, USA.
4.84 (100b), 2.98 (80b), 2.81 (80b), 3.09 (60b), 6.6 (40), 3.93 (30), 3.48 (30)

Chemistry:

	(1)	(2)
P_2O_5	33.8	34.75
Al_2O_3	36.3	37.45
MgO	0.2	
CaO	7.1	6.87
Na_2O	2.8	2.66
K_2O	1.7	1.73
H_2O	18.0	16.54
Total	99.9	100.00

(1) Fairfield, Utah, USA; average of two analyses, corrected by removal of wardite 5% and "davisonite" [= apatite + crandallite] 1%. (2) $(Na,K)CaAl_6(PO_4)_4(OH)_9 \cdot 3H_2O$ with Na:K = 0.7:0.3.

Occurrence: As finely banded crusts on variscite nodules (Little Green Monster mine, Utah, USA); in phosphatic laterite (Taiba mine, Senegal); as cement in weathered phosphorite (Homeland mine, Florida, USA).

Association: Wardite, apatite, crandallite (Little Green Monster mine, Utah, USA); crandallite, augelite, wavellite, turquoise (Taiba mine, Senegal); crandallite, wavellite, goethite, kaolinite, quartz (Homeland mine, Florida, USA).

Distribution: In the USA, from the Little Green Monster mine, Clay Canyon, about nine km west of Fairfield, Utah Co., Utah, and between Bartow and Fort Meade, as in the Homeland mine, Peace Valley, Polk Co., Florida. At the Taiba mine, Thiès district, Senegal. In Australia, from the Iron Monarch quarry, Iron Knob, South Australia, and on Christmas Island, Indian Ocean. From Kiluli, Rwanda.

Name: Honors F.T. Millis, of Lehi, Utah, USA, who collected the first specimens.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 941–942. (2) Owens, J.P., Z.S. Altschuler, and R. Berman (1960) Millisite in phosphorite from Homeland, Florida. Amer. Mineral., 45, 547–561.