TABLE 17.—SODIC AMPHIBOLE ANALYSES—WICHITA GRANITE GROUP

	Hale Spring Locality					
	Dike #1 Johnson, 1955	WM5 V	WM2 V	Quanah WM3 M	Lugert WW7 M	V
SiO_2	50.58	50.8	49.8	49.4	46.0	48.5
TiO_2	.82	.8	1.2	.7	.7	.2
Al_2O_3	1.40	.5	.7	.6	2.5	.2
Fe_2O_3	13.54					
FeO	19.74	32.4	34.6	34.4	32.0	27.9
MnO	.52	.9	.9	1.1	4.5	2.8
MgO	.44	.5	.2	nd	1.2	.5
CaO	.14	.2	.5	nd	5.6	14.9
Na_2O	8.50	8.5	7.4	11.81(?)	4.8	3.8
K_2O	1.49	1.7	1.6	1.48	0.9	.05
Li_2O	.44			nd	nd	
H_2O+	.48			nd	nd	
H_2O-	.04			nd	nd	
F	2.16	1.9	1.8	1.3	0.5	.07
Cl	.02	.07	.02	nd	nd	.01
	100.31	98.3	98.7	100.8	98.7	98.9
less O for F & Cl	.91	.8	.8	.6	.2	.03
	99.40	97.5	97.9	100.2	98.5	98.9

Formula: Analyzed sample from Johnson

$$(K_{.3}Na_{2.6}Ca_{.03})(Fe^{2+}_{2.6}Mg_{.1}Mn_{.1}Li_{.3})(Fe^{3+}_{1.6}Al_{.3}Ti_{.1})(Si_{7.9})O_{22}(OH)_{.5}F_{1.1}Cl_{.01}$$

Theoretical formulae: riebeckite-arfvedsonite

$$oNa_2Fe^{2+}_3Fe^{3+}_2Si_8O_{22}(OH,F)_2 - Na_3Fe^{2+}_4Fe^{3+}Si_8O_{22}(OH,F)_2$$

Hale Spring amphiboles is 0.537, which is on the high-fO_2 side of the stability range. Further, if the total pressure during intrusion of the source granite were assumed to have been low (see Gilbert, this guidebook, for a summary of the arguments), at no more than 500 bars (1.5 km overburden), then the maximum temperature possible for the pegmatite would be about 500°C.

Because the MgO content is so low, the discussion of Wones (1981, fig. 5) is pertinent as well. The reactions riebeckite = acmite + quartz + magnetite and sanidine + magnetite = annite intersect, forming a lower temperature, relatively oxidizing phase space within which the pegmatite must lie. This is completely consistent with the compositions of the coexisting feldspars, which are almost pure albite