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PLATE 9A  
JAY D. MURRAY, 1978  
CALIFORNIA INSTITUTE  
OF TECHNOLOGY

AVERAGE CHEMICAL COMPOSITIONS AND CIPW NORMATIVE MINERALS  
OF TONALITE IN THE SAN JOSÉ PLUTON AND THE INDIVIDUAL TEXTURAL UNITS

Name of Unit	Gneissose Border Tonalite		Stubby Hornblende Tonalite		Prismatic Hornblende Tonalite		Seriatic Porphyritic Tonalite		Pluton
	Average	$\sigma$	Average	$\sigma$	Average	$\sigma$	Average	$\sigma$	
# of Analyses	4		6		5		5		20
SiO <sub>2</sub>	65.75	1.26	61.31	0.72	62.31	2.62	62.64	0.96	62.02
TiO <sub>2</sub>	0.61	0.07	0.78	0.03	0.68	0.09	0.69	0.03	0.72
Al <sub>2</sub> O <sub>3</sub>	16.75	0.38	18.08	0.21	18.22	0.99	18.29	0.47	18.17
FeO <sub>t</sub> <sup>a</sup>	3.88	0.28	4.99	0.17	4.49	0.59	4.30	0.18	4.63
MgO	2.12	0.29	2.79	0.14	2.36	0.42	2.21	0.15	2.49
CaO	4.94	0.29	6.40	0.28	6.22	0.76	5.97	0.28	6.23
Na <sub>2</sub> O	4.53	0.07	4.73	0.09	4.85	0.04	4.93	0.04	4.82
K <sub>2</sub> O	1.29	0.06	0.73	0.09	0.72	0.22	0.78	0.06	0.74
P <sub>2</sub> O <sub>5</sub>	0.11	0.03	0.18	0.01	0.16	0.01	0.19	0.01	0.17
TOTAL <sup>c</sup>	99.98	--	99.99	--	100.01	--	100.00	--	99.99
FeO/(FeO+Fe <sub>2</sub> O <sub>3</sub> ) <sup>d</sup>	0.507(1)	--	0.483(3)	--	0.440(5)	--	0.478(1)	--	0.463(10)
FeO <sub>t</sub> /(FeO <sub>t</sub> +MgO) <sup>a</sup>	0.647	--	0.641	--	0.655	--	0.661	--	0.650
A/(A+F+M) <sup>e</sup>	0.492	--	0.412	--	0.448	--	0.467	--	0.438
F/(A+F+M) <sup>e</sup>	0.328	--	0.377	--	0.362	--	0.352	--	0.365
K <sub>2</sub> O/(K <sub>2</sub> O+Na <sub>2</sub> O+CaO)	0.120	--	0.062	--	0.061	--	0.067	--	0.063
Na <sub>2</sub> O/(K <sub>2</sub> O+Na <sub>2</sub> O+CaO)	0.421	--	0.399	--	0.411	--	0.422	--	0.409
Larsen Index <sup>f</sup>	12.36	--	7.06	--	8.49	--	9.26	--	8.14
Sr (ppm) <sup>d</sup>	524(4)	17	634(7)	24	685(6)	52	702(7)	34	668(24)
<u>CIPW Normative Minerals</u>									
Quartz	20.96		14.09		15.53		15.61		15.04
Orthoclase	7.61		4.30		4.24		4.60		4.36
Albite	38.25		39.90		40.91		41.60		40.67
Anorthite	21.53		25.89		25.76		25.42		25.70
Diopside	1.76		3.64		3.12		2.28		3.17
Hypersthene	5.56		6.32		4.92		5.30		5.48
Magnetite	2.91		3.94		3.85		3.43		3.81
Ilmenite	1.16		1.48		1.29		1.31		1.37
Apatite	0.26		0.43		0.38		0.46		0.41
Ab+An	59.78		65.79		66.67		67.02		66.37
An/(Ab+An)	0.360		0.394		0.386		0.379		0.387
Color Index (CI)	11.39		15.39		13.18		12.31		13.82
Differentiation Index <sup>g</sup>	66.81		58.29		60.68		61.81		60.07
Or/(Or+Ab+An)	0.113		0.061		0.060		0.064		0.062
Ab/(Or+Ab+An)	0.568		0.569		0.577		0.581		0.575
Q/(Q+Or+Ab)	0.314		0.242		0.256		0.253		0.250
Or/(Q+Or+Ab)	0.114		0.074		0.070		0.074		0.073
Q/(Q+Or+(Ab+An))	0.237		0.167		0.180		0.179		0.175
Or/(Q+Or+(Ab+An))	0.086		0.051		0.049		0.053		0.051
Q/(Q+(Ab+An)+CI)	0.227		0.148		0.163		0.164		0.158
CI/(Q+(Ab+An)+CI)	0.126		0.162		0.138		0.130		0.145

- a: FeO<sub>t</sub> denotes total Fe as FeO; where subscript is omitted, only ferrous iron is represented.
- b: Calculated from the average for each textural unit weighted in proportion to the outcrop area underlain by that unit.
- c: All averages normalized to 100% for nine oxides.
- d: Based on the number of determinations given in parentheses following the average.
- e: A = Na<sub>2</sub>O + K<sub>2</sub>O; F = total Fe as FeO; M = MgO.
- f: As defined by Larsen (1938).
- g: As defined by Thornton and Tuttle (1960).