Geological Survey of Canada
Open File 1111

SUPPLEMENTARY DATA CONCERNING "GEOLOGY OF A TRANSECT THROUGH THE SOUTHERN MARGIN OF THE FOXE FOLD BELT (MAINLY NTS 27B), CENTRAL BAFFIN ISLAND, DISTRICT OF FRANKLIN (GEOLOGICAL SURVEY OF CANADA OPEN FILE 1110)."

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TABLE OF CONTENTS

LIST OF APPENDIX FIGURES

Introduction

This open file contains supporting data for Geological Survey of Canada Open File 1110 and is designed in the form of three appendices with corresponding figures.

Tabulations of modal mineral assemblage data together with summary plots by map unit make up the first appendix.

Forty-five bulk chemical analyses conducted by the Geological Survey of Canada on mafic and ultramafic rocks from the study area form the basis of the second appendix. Individual analyses are reported on the basis of Irvine and Baragar (1971) and include elemental breakdown, normative mineralogy, normative ratios, diagnostic indices and rock name. Each analysis has been annotated with UTM location, field name and field relationships, map unit, structural setting, modal mineralogy and fabric description. Graphical representation of these analyses by rock type and map unit in addition to one figure relating to tectonic setting accompany the appendix.

The third appendix summarizes two hundred and twenty three specific gravity determinations differentiated on the basis of map unit.

Appendix A

Mineral assemblage data

Classification

Specimens have been classified according to field nomenclature. As a result, some rock types are not restricted to one group, for example, hornblende-rich rocks may be included with amphibolites, ultramafic rocks or calcareous rocks depending on their field assocation.

Abbreviations

Allanite	AL	Melt (autochthonous)	ML
Andalusite	AD	Muscovite	MU
Apatite	AP	Myrmekite	MR
Biotite	BI	Olivine	OL
Calcite	CC	Opaques	OQ
Chlorite	CH	Phlogopite	PH
Cordierite	CD	Plagioclase	PC
Cummingtonite	CM	Quartz	QZ
Diopside	DI	Serpentine	SR
Epidote	EP	Sillimanite	SI
Garnet	GA	Sphene	SP
Graphite	GR	Spinel	SN
Hematite	HM	Staurolite	ST
Hornblende	HB	Tourmaline	TO
K-feldspar	KF	Tremolite	TR
		Zircon	ZR

Only prograde minerals are listed except in cases of extreme retrogression (as noted) in which the prograde mineralogy is not recognizable. Where retrogression is less extreme, modes are based on the interpreted abundance of the prograde phase. For example, chlorite and sphene after biotite is listed as biotite, pinite and serpentine after cordierite is listed as cordierite. Where retrograde minerals form distinct new grains, their abundance has not been included. Modes may therefore not sum to 100%. All modes are visually estimated.

trace amount	tr	present	X

Basement Gneisses

Sample	QZ	KF	PC	BI	HB	CM	AP	GA	EP	MR	MU	DI	OQ	SP	ZR	SI
1-2	30	25	35	10												
9-1	20	25	35	20												
57-1	26	35	30	5			1		tr	1	1					
64-1	23	55	15	6					tr							
71-2	20	30	40	10												
123-1	20	40	25	4				tr			1					
126-1	45	44		1	5			1				1	tr	tr		
126-1	30		65	2									tr			
127-1	10		40	50												
127-1	35	50	10	2												
133-1	20	5	70	4												
133-1	19	40	35	4				tr			tr					
133-2	20		65	15												
136-2	25	40	30	4				tr					tr			
144-1	25	60	10	5						tr						
144-1	25	tr	60	15				tr								
146-4	20	38	35	6				tr		tr				tr		
193-1	35	50	8	5	1					tr	tr		1	tr		
193-2	30	30	25	15												
201-2	20	25	35	20												
209-1	20	35	37	7						tr	1					
219-2	25	20	40	11	2			tr						2		
222-2	30	35	25	10												
223-1	4	45	45							tr			1			
223-3	25	40	30	5												
223-4	35	30	25	6									4			

Sample	QZ	KF	PC	BI	HB	CM	AP	GA	EP	MR	MU	DI	OQ	SP	ZR	SI
224-1	15	35	35	15												
231-1	20	45	25	8												
235-1	25	30	35	10												
236-1	20	35	40	5					tr							
245-1	25	25	30	20												
247-1	26	40	25	5	3		tr						tr	tr	tr	
249-1	18	40	35	6	tr		tr			1			tr		tr	
258-1	15	50	30	5												
263-1	30	25	35	10				tr								
264-1	30	40	20	10												
327-1	30	30	35	5												
338-3	20	35	40	5												
349-2	20	35	35	10												
351-1	28	40	30	2						tr					tr	
367-1	25	10	55	7			tr		tr							
367-2	25	45	20	8					tr		2					
370-1	26	35	30	8			tr			1						
457-4	35		50	15			tr		tr							
457-4	30	40	29	1						tr						
457-5	30	33	30	5				2								
462-1	25	60	15													
462-1	30	5	65													
463-1	23	15	55	7			tr		tr	tr						
465-1	20	30	35	15												
475-1	30	30	35	4				1								
475-2	25	35	30	7				1		1					1	
477-1	28	5	60	tr	6		tr						1	tr	tr	
477-1	31	60	5	3	1											

Sample	QZ	KF	PC	BI	HB	CM	AP	GA	EP	MR	MU	DI	OQ	SP	ZR	SI
479-1	15	35	35	15												
479-3	25	45	30													
509-2	23	20	45	10							2					
511-1	20	25	40	15												
525-3	15		20	60	tr			tr		3						
526-1	30	35	30	5						tr						
539-1	20	35	35	10												
539-1	20	10	55	15												
543-1	20	35	35	10												
572-1	10	55	30	5												
578-1	35	30	33	2												
578-1	30	15	45	10						tr						
587-2	30		20	50	tr						tr					
790-1	30		50	8	7	5	tr		tr						tr	tr
790-2	30	10	50	10												
791-1	20	35	40	5												
792-1	25	30	35	10												
793-1	20		65	9	6			tr		tr						
794-1	30	30	30	10												
799-1	30	40	20	10												
800-1	30	25	35	10												
803-1	30	15	45	10												
803-1	30	35	30	5												
805-1	25	40	30	5												
812-1		35	5		55						2				3	
812-1		25	25	20	30						tr				tr	
821-1	25	tr	50	10	15			tr		tr					tr	
830-1	35	5	50	10												

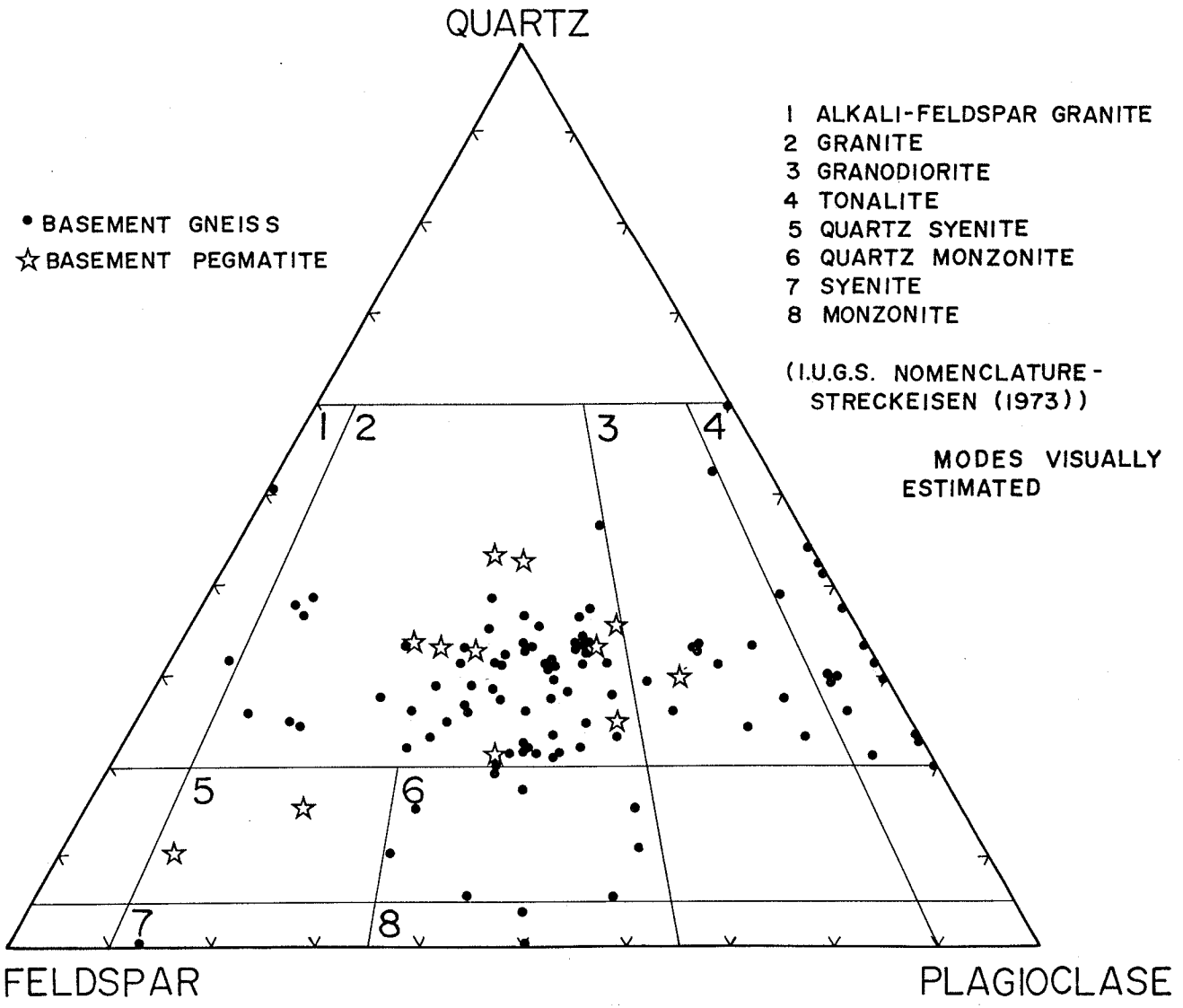


Figure A1. Mineralogical compositions of quartzofeldspathic basement complex lithologies (quartz - K-feldspar - plagioclase).

Sample	QZ	KF	PC	BI	HB	CM	AP	GA	EP	MR	MU	DI	OQ	SP	ZR	SI
836-1	30	30	35	5												
843-1	30	30	35	5												
845-1	30	20	30	14				6								
847-1	25	25	40	10												
862-2	35		45	18				tr			2					
866-1	27	30	35	8												
866-2	5	50	40	5												
866-2	5	35	50	10												
867-2	30	15	50	5												
867-3	20	10	30	40												
871-2	30	25	35	10												
874-1	25	45	25	5												
874-1	25	5	55	15												
878-1	30	30	35	3												
890-1	10	30	50	10												
891-1	35	30	30	5												
933-1	30	25	35	10												
951-1	30	30	35	4				1								
953-1	38	50	10	2												
953-1	25	5	65	5												
953-1	30	30	30	10												
954-3	35	15	26	15	5		2		tr				1	1		
958-2	25	35	35	5												
962-3	35	25	35	5												
962-7	50	5	40	5												
963-3	30	25	35	10												
964-3	30	30	30	10												
965-1	15	30	50	3					tr			2				

Ultramafic Rocks

Sample	OL	GA	DI	HB	TR	PC	CH	PH	SR	SP	OQ	CC	BI	AP	EP	SN	QZ
14-2	5				40		45										
14-3	5				83						5						
14-6					80								20				
38-7					80	5				3	12						
55-5				90							4		6				
100-1	5		5		40		40				5						
**100-2					75		19				6						
**100-2							5		80		15						
**100-2	50				tr		25		5		18	2					
100-5			10		45		40				5						
111-6					30		60				3						
111-7			5		40		45				4						
157-3		8	3		82						5						
173-2					60						5		35	tr			
174-1	30				15			25			10	20					
174-2	15				15			20			8	30					
184-1					95						5				tr		
199-5	10				75												
208-1					95						5						
265-3				85							8		6	1			
339-1	45				45			5									
339-2					85						1		14				
339-4	2				93		tr				3						
437-1					50								50		tr		
466-1	10				75									tr			

Sample	OL	GA	DI	HB	TR	PC	CH	PH	SR	SP	OQ	CC	BI	AP	EP	SN	QZ
469-2	3				70						15						
469-3	5		20		25		5									2	
472-1				97							3						
513-2			5		60						5						
513-3	10				55		20										
513-6					98							2					
513-8					97	2					1						
527-1					95		3				2		tr	tr			
595-2	15				2		68				5						
*596-1					2		18		70		10						
775-1			70	7						5	tr	10	3			5	
843-2			25	60						5	1		9				
*893-1				25			3				tr	72					
*893-1				75			10				10	5					
904-1				27		5				3			20			45	
972-5					75					tr	10		15	tr			

* highly retrograded

**first sample is matrix, second is rim of porphyroblast, third is porphyroblast.

Paragneiss, quartzite and schist

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
6-1	50	5		25	15							tr												
6-2	55	tr		35	7							tr	tr	tr										
11-3	15	20	30	35							X													
12-1	40	30	30								X													
12-1	80	10	10								X													
12-2	83	2	3	8	4						X		tr											
15-1	30		5	35	15	10	5			tr		tr					tr							
18-2	70		10	14	6						X			tr										
18-4	20		30		35	15					X	tr	tr	tr					tr					
22-4	45		25		30																			
23-1	50	7	20	5	16									2										
23-3	40	15	25	1	16									3										
24-1	10	30	30		30																			
28-1	30	5	30		35																			
28-2	30	10	30	10	20																			
38-1	15		45		35	5					X													
38-3	15	5	15		55						X						10							
51-1	15		30		40	15					X													
53-4	50	5		39	4		2				X	tr	tr											
55-2	15		25	18	30	5				tr		tr		2						tr				
63-1	40	25	20	10	5						X													
67-1	85	5	2	7	1	tr								tr										
68-1	35	25	30	2	8						X													
70-1	83	1	1	10	5						X		tr	tr							tr			
70-2	30	30	30	7	3						X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
73-1	55		25		18							1		1										
73-1	44		30		25							1												
73-4	30		52		10									5							tr			
73-5	80		15		5																			
73-5	5		70		25																			
74-3	75	10	10		5																			
83-2	75	2	2	15	5							1	tr	tr							tr			
84-1	8			70	10	5	5							2										
92-1	65	20		12										3										
94-1	68		5	20	5	tr								2										
94-3	40		10	3	20	25						tr		2										
95-1	25	25	25		25	tr																		
96-1	78			15	5	1	1					tr												
101-1	45		30	10	10							tr		1										
101-3	45		35		15																			
101-5	20	30	40	tr	10									tr										
101-5	30		60	tr	10									tr										
110-1	80	6	1	12	1							X	tr	tr	tr									
112-1	20		40		40																			
114-1	60	20	10	1	8							tr	tr	1										
114-2	35	15	30	3	17							tr									tr			
116-1	33	20	25		10																			
130-1	75		6	15	4	tr						X		tr							tr	tr		
131-1	40			55	5	tr																		
146-3	70	25		5								X												
154-3	84		6		10							tr	tr											

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
154-3	60		30		7							1		2								tr		
154-4	24	10	40	10	15									1										
159-2	15			65	18	2	tr				X		tr											
163-1	17	40	30	10	3							tr		tr										
172-4	95	tr		2	2						X			1			tr							
179-1	20	5	35		40						X													
179-2	10	35	30	5	20						X													
*179-2	90						10				X													
180-1	25		25	40	10						X													
191-1	30				70						X													
192-1	35		35		30						X													
199-1	90	10									X													
199-1	30	20	5		30		15				X													
199-3	20		40	3	30						X		2											
204-3	55		35		7	3					X		tr											
204-4	25		15	35	24						X					tr				1				
204-6	85	5	5	tr	5						X													
204-7	33		tr	60	7						X													
207-2	40	40			20						X													
207-2	40		40		20						X													
211-1	40	10	30		15	3					X						2					tr		
215-2	50		20		30						X	tr								tr				
217-1	25	15	15	10	35						X	tr												
217-2	45	10	20	10	15						X		tr			tr								
225-3	55	5	10		20	5	5				X	tr	tr											
243-1	30	30	30		10						X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
256-4	20	25	40		15						X													
256-4	30		10	30	25		5				X	tr	tr											
257-1	75	20			5						X													
257-1	5	30	40		2	23					X													
257-3	33	35	15		2	15					X													
264-2	40	20	20	10	10						X													
268-1	30	30	30		10						X													
268-2	25	33	35		5	2					X	tr	tr									tr		
268-4	5		35		20	31					X	tr		3			1							
269-1	85						10				X							5						
269-1	75	20					tr				X							5						
271-1	99						1				X													
272-1		75		1	4		15				X	tr		5										
272-2	25			60	5	5					X	tr	tr											
276-4	25		25		20	17					X	1	tr	2			10					tr		
277-2	40			15	30	10					X			5			tr							
280-1	35	30	30								X													
283-1	17		15		55		10				X		tr						3					
284-1	30		29	10	30		1				X													
285-2	55	35	5	5							X													
285-3	20	25	10	5							X	tr		10			25							
286-1	55	25	15		5						X													
290-1	30	35	20		8	7					X													
292-1	92	5					3				X													
292-2	20	30	35		5	5					X													
296-2	40	10	35		15						X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
297-1	29	30	30		5	5					X	tr	tr			1	tr				tr			
300-2	25	20	40		15						X													
303-2	15		70		10	5	tr				X		tr											
307-1	30		50		16	4					X	tr	tr											
310-1	10		20		50	5	9				X													
310-2			50		40	5					X													
314-2	25	20	20		28	5	1				X		tr											1
326-1	15	15	25	2	7	20	15				X			3										
328-1	20	35	30	2	10						X		1	1										
*328-1	60			3	2		35				X													
329-1	50	7	35		8						X													
330-1	60	20	7	6	7						X	tr												
330-3	20		45	10	25						X													
333-1	40	25	30	2	3						X													
*333-1	90						10				X													
334-1	70	25	2	1	1						X			1										
348-4	13		45		30	7					X	tr		2			1	2						
357-3	35			43	21	1					X													
361-1	25	15	41		15	2					X		tr	tr		1			1					
361-3	30		35		24	5	1				X		tr	tr										5
364-1	25	30	25		15		5				X													
366-1	20	20	55		5						X													
368-2	30	30	35	2	3						X													
376-1	25	20	35		15						X													
377-1	35	15	20		25		5				X					tr								tr
379-3	50		40		10						X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
382-1	93	5									X			2										
387-1	20	35	35		5	5					X													
401-2	40	5	38		15						X	tr		2										
416-1	40		50		10						X	tr	tr								tr			
428-1	15	35	35		15		tr				X													
434-1	20	15	35		30		tr				X		tr											tr
*434-1	20				5		75				X													
439-2	25	15	35		25						X													
444-2	30		40		23		5				X		tr			tr								2
452-1	20	5	65		10						X													
452-2	tr		90		10						X													
*453-1	25		25		25		25				X													
457-2	30	25	30	5	10						X													
*457-2	75						25				X													
459-1	73	20		2	5						X													
*459-1	95						5				X													
480-1	35	15	20		15		5				X	tr									tr			10
482-1	20	5	10		40	5	20				X													
482-2	30	5	45		10	5					X													
483-1	10		50		35	2	3				X													
493-1	25	5	25		25	20					X													
494-1	50	40	5		2	2	1				X													
516-3	55	35	3	3	1						X													
*516-3	70			25	tr		5				X													
*521-1	85			5	1		8				X		tr	1										
521-2	45	5	35	5	10						X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
523-1	30	20	35	10	5						X													
*523-1	85			5			10				X													
526-2	30	35	30	5							X													
*526-2	95						5				X													
528-1	20	10	30	22	15		3				X		tr											tr
535-1	30	40	5	5	20						X													
*535-1	95						5				X													
536-3	60	15	15	5	5						X													
549-1	40		50			5					X						5							
552-1	23	35	35		3						X		tr											
*552-1	35		15	48							X													
553-1	25		15	30	30									tr						tr				
*553-1	20			75			5																	
562-3	50		45		5						X													
564-1	35	35	15	1	11		2					tr		1										
*564-1	75			15			10																	
564-2	5	1	30	40	23		tr													1				
565-1	10	30	30	5	25															tr				
*565-1	50			20	20		10																	
*565-1				90	8		2										tr							
*565-1	50			40	10							tr												
566-1	50	4	10	20	15	1						tr	tr							tr				
567-1	40	14	16	10	20															tr				
*567-1	4			95			1																	
568-1	25	40	20	5	10														tr					
*568-1	35			60			5																	

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
571-2	45	40		5	10						X													
*571-2	80				10		10				X													
580-1	45	20	20		15						X													
*580-1	50			50			tr				X													
642-1	15	15	35		28	3					X		tr	3		1								
646-1	30	5	35		28	2					X													
646-3	25		55		20						X													
649-2	10		25		49		10				X		1											5
654-1	15		20		43	5	7				X	tr	tr	5										5
657-1	15	25	40		20						X													
658-1	20	5	50		25						X													
660-1	20	35	30		13						X	tr	tr	2								tr		
662-1	25		50		22						X	2	1											
662-4	25	25	22		10	5	3				X	1	1	2			1		tr					2
664-1	10	20	35		30	5					X													
665-2	10	30	40		17	1					X		1	1										
668-2	20	15	25		27	5	8				X													tr
669-1	45	5	40		8	2					X													
669-1	35	40	10		13	2					X													
673-2	20		30		17	7	9				X		tr			1								6
675-1	30		45		25						X		tr	tr										
681-1	35	5	40		20						X													
681-2	45	10	35		10						X													
682-1	25		48		25						X			2										
682-2	20		50		30						X													
683-1	30	14	35		8	5					X			3										5

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
683-6	30	10	10		30		10				X													10
683-7	60				30		10				X													
686-1	24		5	40		25	1				X	tr	tr						5		tr			
692-1	15			27		35		8			X		tr											15
694-1	29			40		27	3				X		1	tr							tr			
697-1	15	30	23			25	5	2			X		tr			tr					tr			
698-1	30		5	45		18	2				X													
708-1	94								1				tr	5										
708-5	80													15			5							
716-1	30			20	25	25	tr					tr		tr						tr				
716-1	40			30	15	15						tr		tr						tr				
718-1	99	1																						
718-2	24				55	5	9							5			1							
720-1	75		5		18	2								tr										
720-2	90			5			2	3																
721-1	30	15	35		20						X													
723-1	30	15	35		12	6					X		2											
734-1	60			25		15					X													
736-1	33	tr	50		15	1					X	tr	tr						1					
740-2	35	15	25		25						X													
741-2	30			35		35					X													
745-2	30	10	45		15						X													
753-1	15			75		9	tr				X													1
759-1	17	10	42		15	2	3				X		tr	1		tr								10
765-3	70	20	5		tr						X													
766-1	80	10	7		2	1					X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
766-2	15	10	10		45		20				X		tr											
767-2	65	33	2								X			tr										
767-3	25	60	5		10						X													
*767-3	40	10			30		20				X													
770-1	25		5	45		20	5				X													
773-1	30	10	30		20		4	tr			X		tr	tr										6
778-1	30		5	30		30	1	3			X		tr	tr		tr								1
781-2	35	tr	50		10		5				X													
782-2	30			50		20					X													
788-1	50	20	5		15		6				X		tr	1							tr			3
806-3	30	30	30		9						X		tr			1					1			
809-1	24	20	24		15	6	5				X		tr			tr								6
809-2	15	55	10		15	5					X													
822-1	35	32	28	2	3		tr				X		tr			tr								
822-2	40	50	10								X													
*822-2	85			tr	tr	2		13			X													
823-4				20	60		20																	
824-1	60			20		20					X													
824-3	40	10	5	25	15						X				3						2			
825-1	62	5		19	11						X		tr	2							1			
827-1	20	43	5	5	26							tr	tr	1							tr			
*827-1	20			75		5																		
828-2	25		35		35	5					X													
829-1	45	20	30		5						X													
829-3	25	35	30		10						X													
829-3	45		50		5						X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
839-2	80	5	15								X													
839-3	40		40		11	7					X		tr	2			tr							
842-1	52	8	5		30						X													
844-1	25	10	30		30						X													5
856-1	40		45		15							tr	tr	tr										
856-1	25		35		40							tr	tr	tr										
856-2	50	tr	35	15								tr		tr										
862-3	25	20	20		5	25	1	4			X													
864-1	36		35		25						X	1	tr	1					2					
865-1	70			20	5		5				X													
865-2	55		1	3	5	1	35				X													
865-3	55	30	5		10						X													
868-2	30		40		5	25						tr			tr			tr						
*868-2	4			95			1																	
868-3	15	13	20		25	25							tr	2			tr							
*868-3	45			50	5																			
871-1	60		35		5						X													
871-1	48	30	15		3	4					X					tr								
877-2	35	20	10	27	8						X	tr	tr											
882-1	70	20			8	2						tr												
882-1	67	10			20	3						tr												
882-1	55	10			15	20																		
884-1	65	20			10	5																		
885-1	50	15	15	15	5																			
892-1	65		2	25		1								7										
894-1	40	5	30		19							tr	tr	1			5		tr					

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
897-1	30	25	30		15																			
899-1	40			30	10	20												tr		tr				
902-1	45		39		11	tr														5				
906-1	35	25	25		2	10												tr		3				
908-1	45			25	25															5				
909-1	35	tr	35		30																			
912-1	60	40	tr																					
912-1	60	30		10																				
915-3	65	15	5	8	7														tr					
919-1	43		40		15	1	1				X		tr			tr								
923-1	14		50		13						X		tr	3			8	12						
927-1	40		40		20	tr					X													
931-1	40			30	10		20				X													
932-1	60	28	2		6	4					X													
932-2	30		20		50						X													
935-1	30	20	35		10	5					X													
937-1	50		30		18						X		tr								2			
945-1	20	30	30		14	2					X		tr	2										2
952-1	60	15	20		5						X													
954-1	45		30		23						X	tr		2										
955-2	35	55		5	5						X													
*955-2	80	5				15					X													
955-6	45		20	5	30						X		tr											
957-2	70	28			2						X													
*957-2	95			5	tr		tr				X													
958-1	35	25	25	5	10						X													

Sample	QZ	KF	PC	MU	BI	GA	SI	AD	CH	ST	ML	AP	EP	OQ	HM	MR	HB	CM	GR	TO	ZR	SP	CC	CD
*958-1	90			10			10				X													
960-1	50	20	20	5	5						X			tr						tr				
*960-1	60			35			5				X													
960-3	35	2	35		28						X													
962-1	25	25	25	10	15						X													
*962-1	80			10	10						X													
963-1	90	5		tr			5				X													
964-1	25	30	35		10						X													
966-1	80	15		2	3						X													
966-2	30	15	15	30	10						X	tr												
969-2	45		20		30								tr	4			1			tr				
971-1	25	30	5	3	7									30										
971-2	90	4	2	3					1					tr										
971-3	30			50	9	5							tr	2						4				
971-3	87	2	3	2	3									3										
972-2	25			35	15	5		20																
972-3	50			10	10	1	1	27						1										
978-1	50			10			10	30						tr										

* faserkiesel, sample 565-1 order is large pod core, large pod margin, small pod. Corresponding sample number is coexisting matrix.

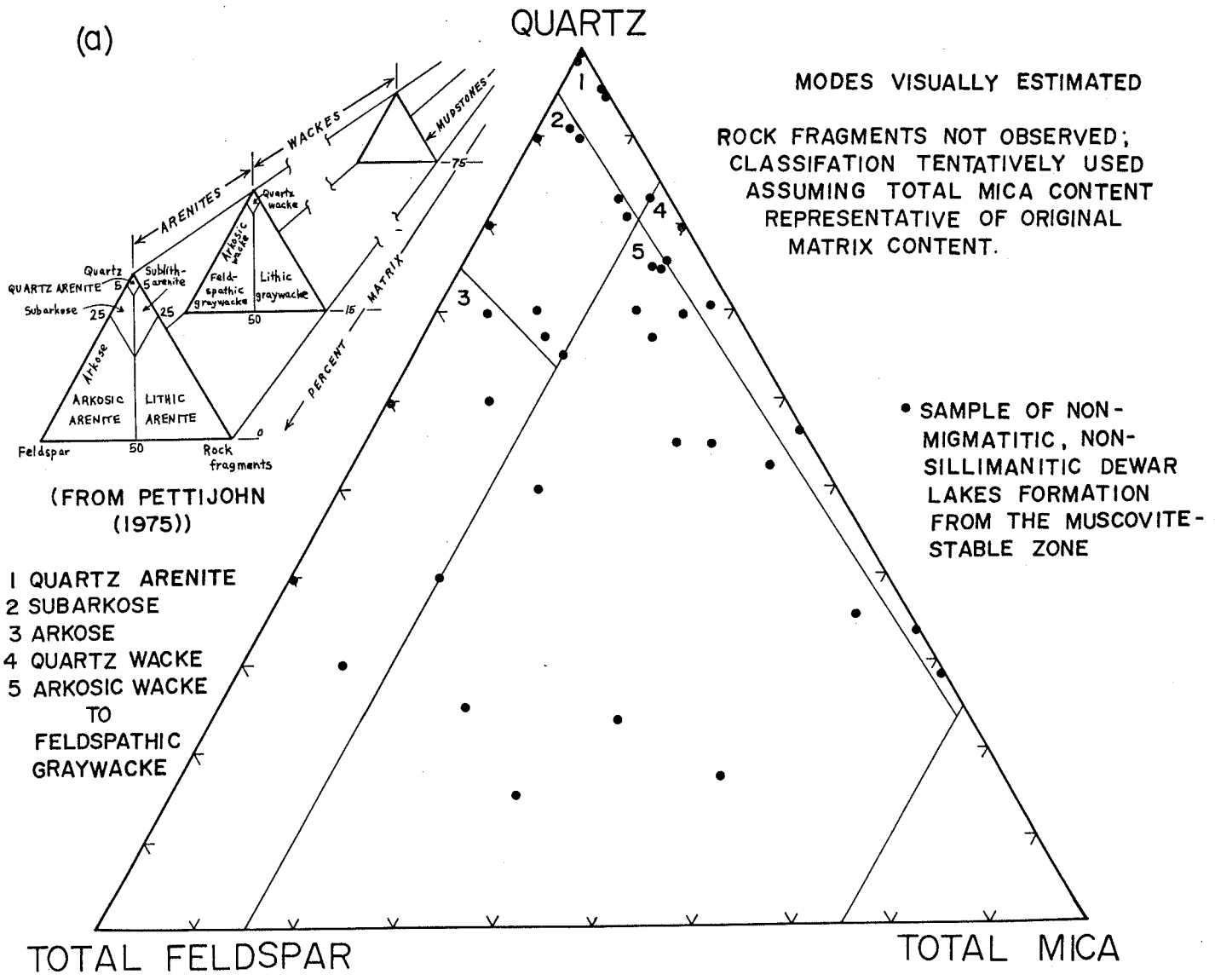


Figure A2. Mineralogical composition of metasedimentary Dewar Lakes Formation lithologies. a. quartz - total feldspar - total mica.

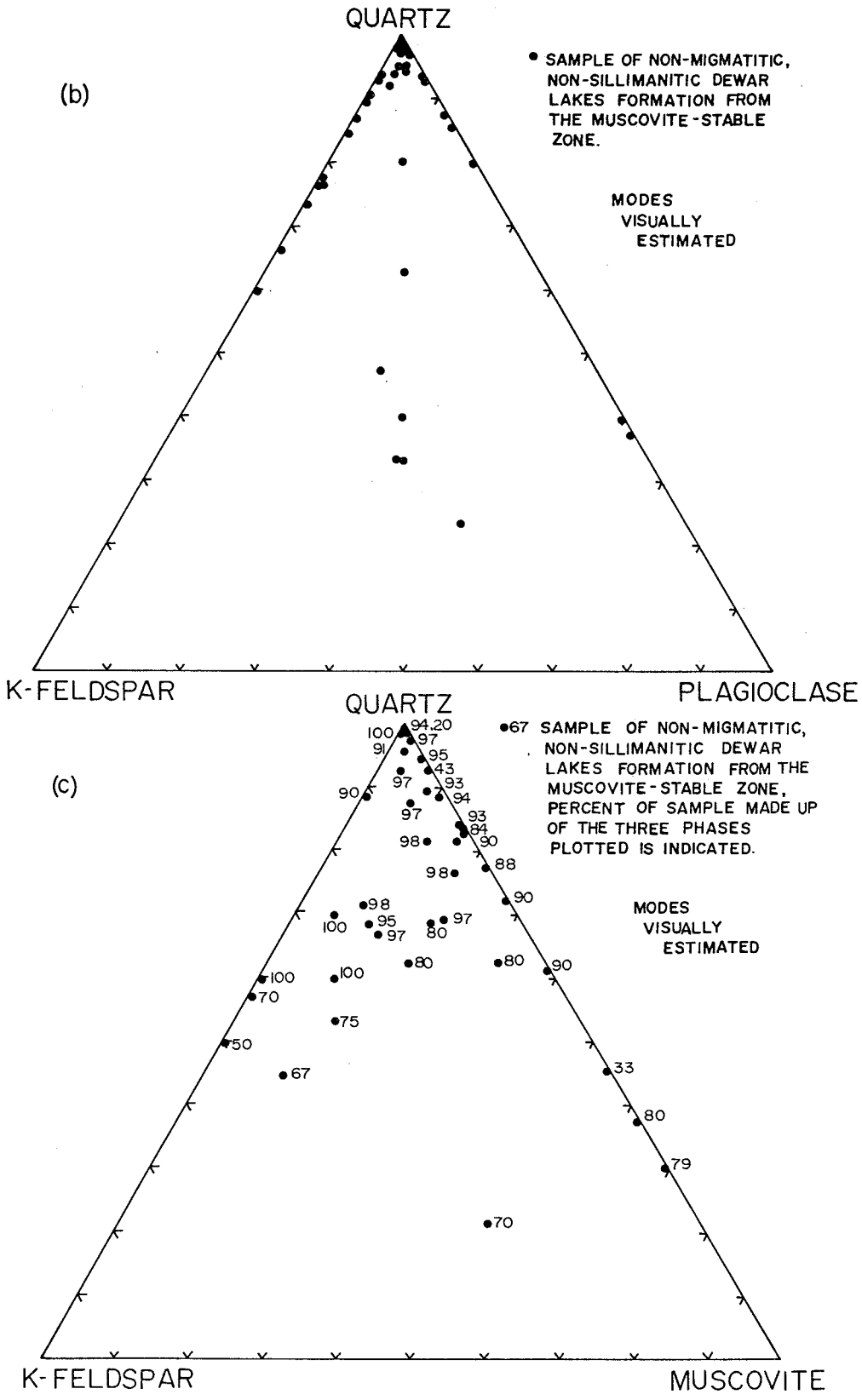


Figure A2. Mineralogical composition of metasedimentary Dewar Lakes Formation lithologies. b. quartz - K-feldspar - plagioclase. c. quartz - K-feldspar - muscovite.

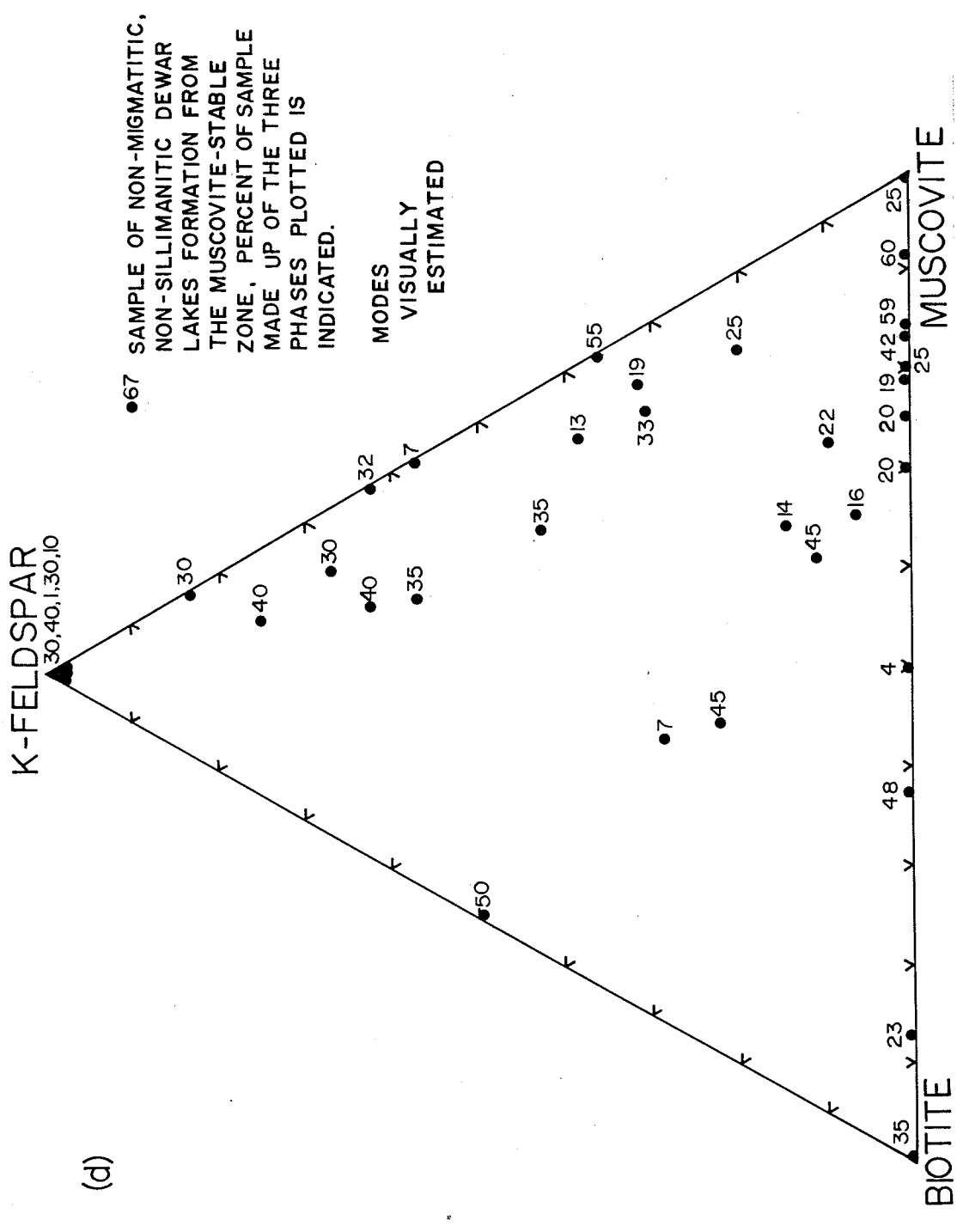


Figure A2. Mineralogical composition of metasedimentary Dewar Lakes Formation lithologies. d. K-feldspar - biotite - muscovite.

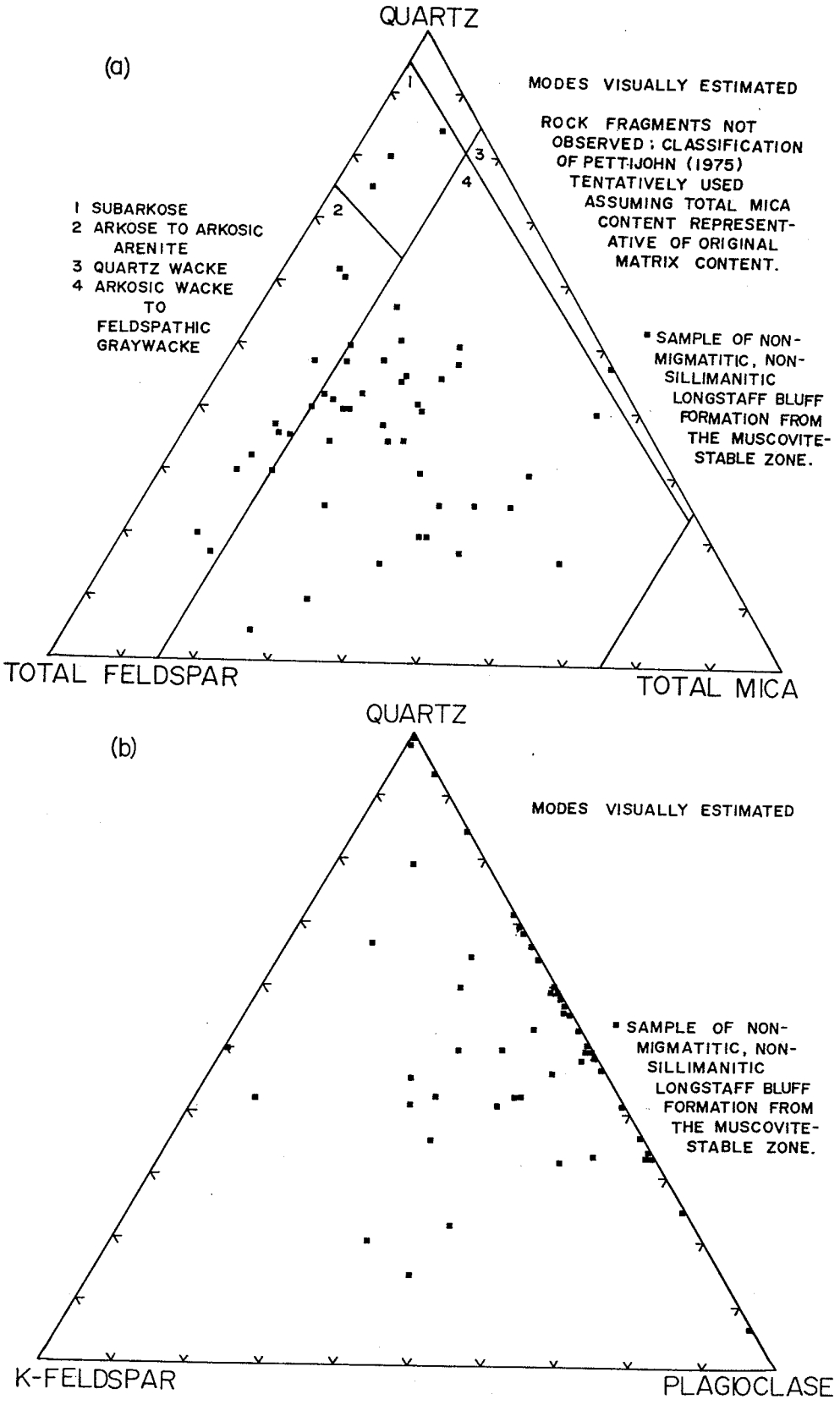


Figure A3. Mineralogical composition of metasedimentary Longstaff Bluff Formation lithologies. a. quartz - total feldspar - total mica. b. quartz - K-feldspar - plagioclase.

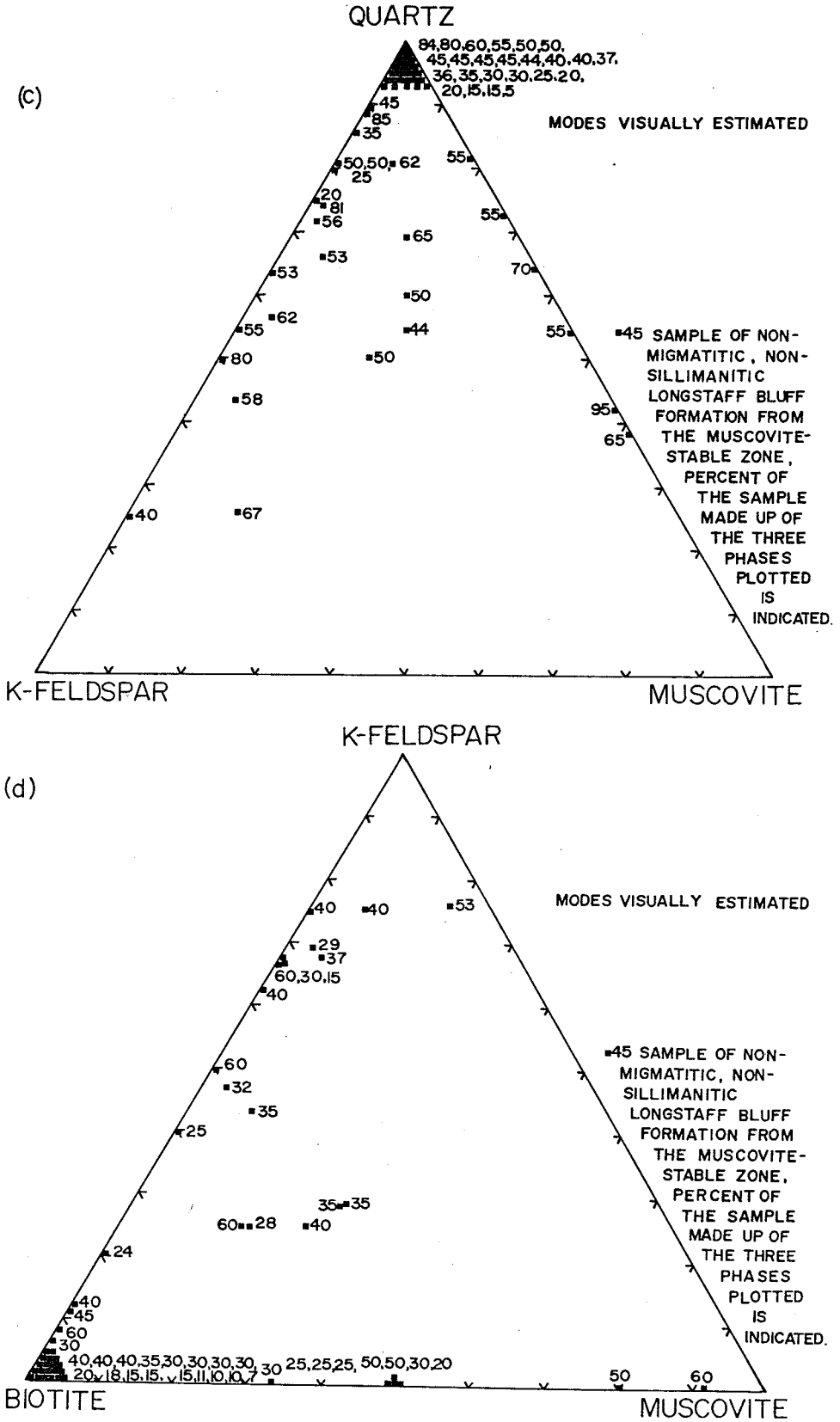


Figure A3. Mineralogical composition of metasedimentary Longstaff Bluff Formation lithologies. c. quartz - K-feldspar - muscovite. d. K-feldspar - biotite - muscovite.

Mobilizate

Sample	QZ	KF	PC	MU	GA	TO	MR	BI	OQ	EP	SI	CD	AP	SP	GR	HB
* 11-1	20	15	45													
15-1	10	25	50				15									
* 22-4	20	10	70	tr		tr			tr							
* 52-1	20	50	24	5	1											
* 53-5	40	5	55													
* 73-1	30	10	60													
* 117-1	10	75	5	10												
131-1	30	40		30												
* 136-1	15	60	20	3	2											
* 163-1	20	65	10				5									
167-1	25	30	30	10			5									
168-1	20	25	35		tr											
* 172-3	20	35	35	8	2			tr	tr							
172-11	25	25	40	8			2		tr							
* 179-1	90	5					5									
185-3	30	30	35	1			4									
187-1	30	25	35	6	2		2									
190-1	30	5	60	2	3		tr									
190-2	20	5	70	3	1		1			tr						
191-1	30		60				10									
191-4	1	30	65	2	1		1									
203-2	60	10	20	10	tr											
203-2	60		15	21	4											
204-9	35	20	35	10	tr											

Sample	QZ	KF	PC	MU	GA	TO	MR	BI	OQ	EP	SI	CD	AP	SP	GR	HB
204-9	30	10	55	5	tr											
* 207-7	10	31	55	2	1								1			
213-3	25	30	35	8	2			tr								
217-5	25	35	35	1				4	tr				tr			
219-2	25	40	30					4	1							
225-1	10	20	50					20								
227-2	15	30	45	3				7								
231-3	30	20	20													
235-1	30	20	50													
241-2	20	40	35		2			3								
245-1	15	60	20					5								
252-3	30	20	35					15								
255-4	24	35	35	4				2								
267-3	30	35	30					5								
* 269-3	15	5	65					15								
275-1	33	45	20				tr	2		tr						
283-1	15	45	25					13			1			1		
283-2	25	30	30					15								
284-1	15	35	35					15								
296-2	25	35	35					5								
303-2	25	60						15								
306-1	25	35	35		5			tr								
310-1	25	40	25					10								
310-2	20	35	35					10								
314-2	20	70	5					5								
314-4	10	75	5		5			2		tr						

Sample	QZ	KF	PC	MU	GA	TO	MR	BI	OQ	EP	SI	CD	AP	SP	GR	HB
361-3	35	25	35				2		3		tr					
363-1	20	35	35					10								
372-3	15		65					15	5							
372-4	27	51	20		2		tr									
372-4	25	53	20		1			1								
376-1	20	40	35					5								
377-1	20	60	20													
379-3	20	40	35					5								
382-2	20	15	60		tr			5								
387-1	15	80	5					tr								
387-2	35	20	35					10				tr				
406-1	20	45	30					5								
416-1	45		50					5								
424-4	25	65	5	1				4								
439-2	35		60		tr			5								
439-4	20	34	44					2								
450-2	35	30	30		3			2								
452-2	tr	45	50					5								
453-1	10	35	35					15								
480-1	25	65	7				2	1								
482-1	30	35	30					5								
483-1	10	70	15					5								
493-1	30	5	55		2			8								
493-3	35	25	35					5								
508-3	35	8	50	7												
511-2	30	40	20					3								

Sample	QZ	KF	PC	MU	GA	TO	MR	BI	OQ	EP	SI	CD	AP	SP	GR	HB
528-1	30	30	35					5								
535-1	55	25	20													
535-2	30	30	30	6				4					tr			
548-1	30	25	40	5	2											
555-2	25	30	35	5	5											
562-2	15	60	20	2				3								
571-1	20	tr	78	2	tr			tr								
646-1	43		50		1			5	1							
646-3	25	55	15					5								
654-1	15	55	15	5	5			5								
660-3	25	35	30					10								
664-1	15	70	10					5								
665-3	35	31	30		1			3		tr						
668-2	20	70	10													
670-1	30	30	30		3			7								
671-3	35	30	25		2			3				5				
673-2	20	40	30					10								
675-1	25	30	38	3	5			3		tr		1				
677-2	30	20	45					5								
677-2	20	58	20					2								
681-1	50	15	35					tr								
681-2	30	39	30					1								
682-2	43		55					2								
683-2	30	40	28					2								
683-6	5	75	4		5			10				1				
685-2	30	10	30						2	1	2	25				

Sample	QZ	KF	PC	MU	GA	TO	MR	BI	OQ	EP	SI	CD	AP	SP	GR	HB
690-2	30	20	50					tr			tr					
690-2	35	40	25								tr					
692-2	30	30	30		5			5								
694-1	30	35	35		tr											
697-2	35	10	40	5				10								
697-2	25	50	15	5				5								
698-1	30	40	25					5								
721-1	20	60	15					5								
721-2	35	25	35		tr			5								
723-1	38	25	35		2			tr								
734-1	20	40	30		5			5								
734-2	35	30	30					5								
736-1	25	55	18		tr			2								
736-3	30	25	35		3			7								
740-2	30	20	30					20								
740-3	30	30	30					5			5					
741-1	20	55	15		3			7								
745-2	65		15		5			15								
745-3	30	40	25					5								
747-3	30	30	30					10								
753-1	55		40					4			1					
753-2	30	30	35		2			3								
756-1	32	35	25		2		tr				2		3			
756-3	35	30	30		5				tr	tr						
759-1	18	75						5	2							
759-2	25	40	25		4			2			4					

Sample	QZ	KF	PC	MU	GA	TO	MR	BI	OQ	EP	SI	CD	AP	SP	GR	HB
765-4	50	35	10					5								
766-2	40	60														
770-1	30	50	10					10								
773-1	30	30	30					2	3			5				
778-1	25	40	30					5								
781-1	20	50	20		3			5			1	1				
781-2	30	55	5					10								
782-1	23	40	35					2								
782-2	30	15	50					5								
786-2	30	50	15					5								
806-3	20	58	20					1	1							
809-2	25	60	10					5								
809-5	20	15	3		57			4	1		tr					
810-1	35	5	50					10								
823-4	15	75	5					5								
824-2	30	34	30	4				1	1	tr			tr			
* 827-2	30	35	30	2				3								
* 827-3	25	40	30	2				3								
829-1	20	75	5					tr								
829-2	30	30	35					5								
830-1	30	25	35					5								
844-1	30	35	30					5								
* 856-3	30	35	30					5								
862-2	30	35	25	2	3			5								tr
865-1	30	35	25	2				8								
* 869-1	30	18	50						2							

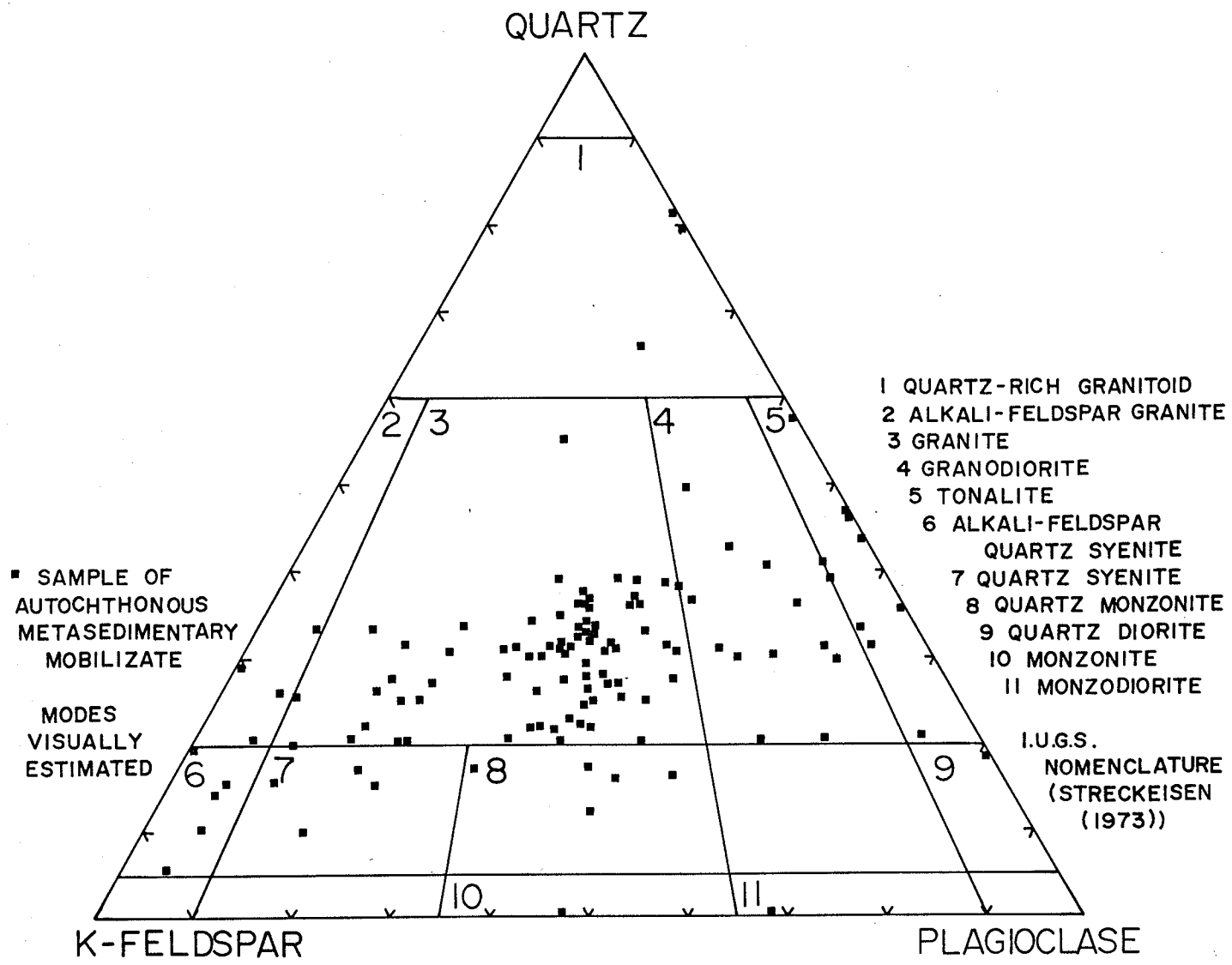


Figure A4. Mineralogical composition of autochthonous metasedimentary mobilizate from the Longstaff Bluff Formation (quartz - K-feldspar - plagioclase).

Sample	QZ	KF	PC	MU	GA	TO	MR	BI	OQ	EP	SI	CD	AP	SP	GR	HB
* 870-1	35	10	45	7				3								
* 895-1	35	5	50	4	1			5								
* 895-2	35	25	35	5	tr											
* 903-1	20	10	60	7				3								
915-2	24	27	45		3			1					tr			
917-1	30	25	42					3								
917-1	30	48	20					2								
920-2	20	25	50	3				2								
926-2	35	25	30	5				5					tr			
929-1	15	35	40	4	2			4								
931-1	35	30	30		1			4			tr					
931-2	35	10	50		5			tr								
932-2	23	35	40					2								
933-1	10	75	10					5								
935-1	28	35	35		1			1								
936-2	30	35	25		5			5								
937-1	20	20	55					5								
938-2	35	20	40	2				3								
947-1	35	5	45		tr			15								
949-2	30	35	30					5								
952-2	35	5	50	5				5								
954-3	42	30	25					3								
962-3	32	40	25	1				2								
964-1	30	30	35					5								
* 968-1	40	5	40	5	tr	10										

* allochthonous

Calcareous Assemblages

Sample	HB	GA	CC	DI	QZ	PC	BI	SP	EP	OQ	AP	PH
26-1	15	3	3		40	35		2	tr	2		
38-5		20	15	60		3		1		1		
55-1	55	10				20	10			5		
55-1	18				20	55				2		
* 76-2	5	10	29		40	15		1				
107-1	2	1		17	25	50		3		2		
152-2	2	8	25	17	45					1		
* 154-2	4	3	40	7	33	10		1		2		
* 154-3	7	4	5		45	35	tr	2		2	tr	
* 154-3	12	4			45	35		1		3		
* 160-4	25				20	50	1	2		1		
* 160-4	28				20	50		2		1		
* 172-2		3			42	50	3			tr		
172-9		23	2	50		25		tr		tr		
172-9	tr		tr	50		48		2		tr		
172-9	55			43				tr		1		
183-1	1	tr	35	25	10	30						
183-1		3		20	11	65				1		
183-1	3		3	30		64	tr	tr				
183-2	3		25	43		25		2		2		

Sample	HB	GA	CC	DI	QZ	PC	BI	SP	EP	OQ	AP	PH
207-3			50	30		17		3				
207-3			3	45		50		1		1		
207-3	80		2	6		5		5		2		
207-4	tr		30	30	30	7		3				
207-4	tr		5	25	30	35		5				
207-4	90					4		4		2		
207-6	1		15	35	18	30		5		1		
* 215-2	8				55	20	15	1	tr	1		
260-3		10	tr	80	3	5		2				
708-6				78		20		2				
708-6	90					4		3				3
708-6	18						80	2				
* 809-4		52			25	20	1			1	1	
* 826-3	15		5	21	20	35		2		2		
880-1	3			60		35		2				
880-1	4		20	11	25	40						
880-1			80	5	12			3				

* metamorphosed calcareous concretions

Plutonic Rocks

Sample	QZ	KF	PC	BI	GA	AP	ZR	MR	EP	OQ	HB	TR	AL	DI	GR	SP
498-1	33	35	25	7												
499-1	32	30	30	7	tr	tr		tr	tr	1					tr	tr
501-1	10	5	20							1						
502-1	33	15	45	5	1			1	tr							
502-2	24	35	35	3				tr	tr	tr	3				tr	
504-1	24	50	20	3		tr		tr	tr	tr	3					
505-1	30	30	30	9	1											
601-1	20	20	35	11	3	1	tr	5	1	2	1					
602-2	30	30	30	8		tr	tr	2		tr		tr				
604-1	25	15	50	8		tr			2	tr						
604-2	20	15	40	8		1		2		1	7					
605-1	40	5	50	5												
605-1	10	15	50	25												
605-2	20	20	50	8	tr	tr			tr	2	5	tr				
607-1	15	50	20	15												
611-1	25	30	30	10				5								
612-1	30	30	30	8												
612-2	7		45	35	10				1							
613-1	25	25	35	10	5											
616-1	25	43	20	9		tr		1	tr	2						
619-1	35	20	35	7	3											
619-3	30	38	30	2												
621-2	43		30		5									20		2
625-1	30	30	30	10												
*625-1	25	30	30	10	5											

Sample	QZ	KF	PC	BI	GA	AP	ZR	MR	EP	OQ	HB	TR	AL	DI	GR	SP
626-1	20	50	20	10												
627-1	15	5	50	15			1				5	tr		tr	9	
630-1	20	25	30	10	13	1		tr	tr	tr						
630-2	28		35	15			1			tr	1				10	
633-1	25	25	35	8	2											
635-1	30	8	45	15	2											
636-1	15	30	35	10	3	2	1	3	tr	1	tr					
636-2	25		40							tr	tr				30	5
636-2	20		40	15						5	20					
638-1	35		40	16	5					tr	2					
639-1	50	10	35	4	1											
639-2	18		50	15			2				5				10	
641-1	35	28	25	5	3			2		tr						
723-2	35	5	50	10		tr		tr	tr							
*725-1	25	50	20	5												
726-1	30	25	35	10												
726-1	20	55	20	2	3											
727-1	30	5	50	15												
727-2	35	40	20	5												
728-1	30	35	25	8	2											
729-1	30	15	45	10												
732-1	25	40	25	10												
732-1	25		55	20												
*732-2	35	37	25	1	2											
733-1	25	45	25	5												

Sample	QZ	KF	PC	BI	GA	AP	ZR	MR	EP	OQ	HB	TR	AL	DI	GR	SP
*757-1	25	55	15	4	1											
757-1	5	5	70	20												
757-2	20	40		28	10							2	tr			
*757-2	25	74		1												
*757-3	20	65	15													
757-3	25	20	50	3	2											
757-4	25	15	50	10												
763-3	30	35	30	5												
784-1	35	10	45	10												
*784-1	40	50	5	3	2											
785-1	25	30	35	8		tr		1	tr	tr						
939-1	30	30	35	5												
940-1	30	30	30	5							4	tr	1			
942-1	30	35	30	5												
943-1	5	3	70	22		tr				tr	tr					
944-1	20	30	40	10												
*944-1	15	65	15	5												
944-3	20	50	25	5												

* cross-cutting pegmatite

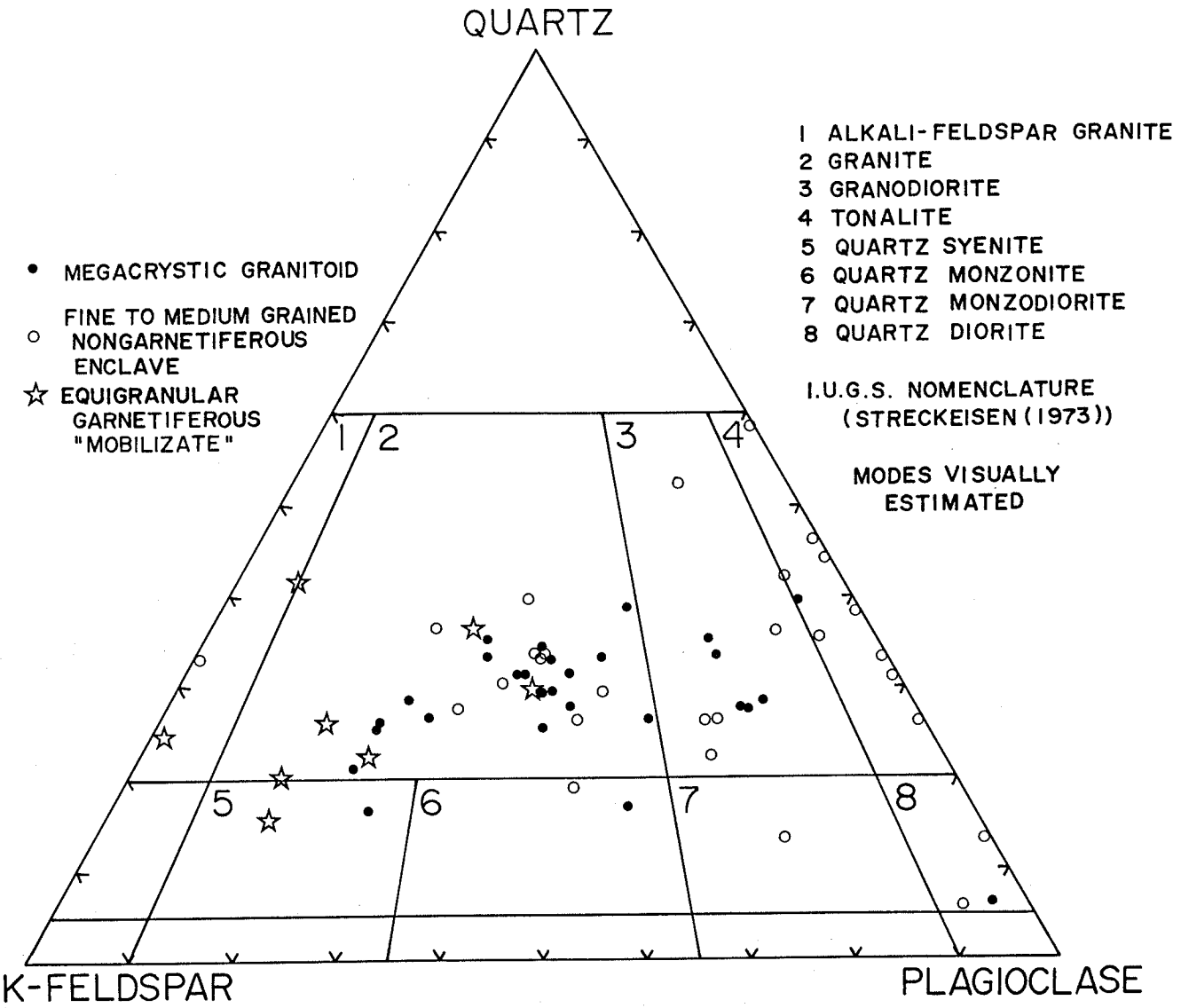


Figure A5. Mineralogical composition of phases of the southern plutonic complexes (quartz - K-feldspar - plagioclase).

Amphibolites

Sample	HB	PC	QZ	DI	BI	SP	AP	CM	OQ	KF	CH	CC	GA	MU	EP	TR
11-2	55	18	20		6	1										
14-1	75	20					1		4							
18-3	55	35	9						1							
38-1	60	20	15				tr		5							
55-6	66	30			tr		tr		4							
55-9		23	6			1		60	10							
64-3	60	32	5			tr			3							
64-4	35	40	15		7		tr		3							
73-2	55	35			5	2			3							
*78-1		35	5			2		tr		25	28					5
79-1	50	30			15	3				2						
94-4	60	25	5		1			7	2							
107-1	45	42	5			5	2		1							
125-1	5	18	5	70		2										
125-1	20	60	10	9		1	tr									
125-1	80	15	4			1										
125-2	65	15			18	2			tr							
135-1	55	30	10				tr		1							
157-1	20	30	30		15	tr	1		2							2
166-7	13	30	35		12		2		3							5
179-4	50	40	9			1										
192-2	60	20	10	5		4	1									
195-1	50	25			4	1				20						
205-2	50	35	5		4		tr		6							

Sample	HB	PC	QZ	DI	BI	SP	AP	CM	OQ	KF	CH	CC	GA	MU	EP	TR
252-1	44	50	3		2	1	tr		tr							
252-2	40	50	tr		10		tr									
268-5	42	55							3							
276-3	40	35	15	5		tr		3	2							
299-1	50	25	15	9		1	tr									
314-5	45	30	15		5		1	1	3							
318-1	40	40	15		1		tr	tr	2							
320-1	20	40	20		20											
321-1	10	50	15		10					15						
327-2	30	35	4		3		tr	25	3							
329-3	10	38	10		35					5						
329-3	20	50	11				2	15	2	tr						
336-2	5	20	9		63		tr		1							
348-3	35	40	15		1		1	3	5							
*365-4	20	13			tr	1	tr		6		60					
370-2	55	43			2	tr			tr							
382-3	50	44	5			tr			1							
390-1	20	30	20		5		1	10	4				10			
395-1	45	15	23		6		1	5	5							
462-2	60	20	10		5		tr		5							
493-5	50	40	4		1		tr		5							
508-2	55	25	15						5							
517-1	50	43	6						1							
544-1	50	30	18		tr	2	tr		tr							
578-2	55	43	tr			tr	tr		1							
645-3	40	30	20		6		tr		4							

Sample	HB	PC	QZ	DI	BI	SP	AP	CM	OQ	KF	CH	CC	GA	MU	EP	TR
651-2	60	18	15		tr				2							
671-1	40	40	10		4		tr	5	1							
681-3	1	20	25			1		25	5				20			
*683-3		5	10						5		20	tr		20	5	35
*683-4		25									35				5	35
*683-5	4	40	30		15				3		5					3
689-2	15	30	25		5								25			
689-3	45	45	5		tr			tr	5							
707-1	37	15	2		30	7			4							
708-3	15	33		40		7		5	tr							
737-1	50	40	tr		1		1	2	4							
748-1	18	40	5	19	3		tr	8	6							
764-1	60	25	5	5					5							
765-1	10	45	7					35	3							
*803-2	40	31				3		tr		25					1	
836-3	52	40	3					3	2							
879-1	30	33	5		20	2	tr			10						
880-1	50	40														
891-1	40	40			20											
918-1	50	40	7		1		tr		2							
928-1	45	30	15				tr		5							
*962-5	5		15		5	5			2	28	30			5	5	
967-3	25	45						25	5							
970-3	40	20	25		7		1		4				3			

* highly retrograded

Appendix B

Chemical, mineralogical and field data for mafic and ultramafic rocks from the study area.

Mineral abbreviations used in Appendix B

Q	- QUARTZ	LA	- LARNITE
C	- CORUNDUM	MT	- MAGNETITE
OR	- ORTHOCLASE	IL	- ILMENITE
AB	- ALBITE	CR	- CHROMITE
AN	- ANORTHITE	CC	- CALCITE
LC	- LEUCITE	HM	- HEMATITE
NE	- NEPHELINE	AP	- APATITE
KP	- KALIOPHYLITE	PY	- PYRITE
AC	- ACMITE	NS	- SODIUM METASILICATE
DI	- DIOPSIDE	KS	- POTASSIUM METASILICATE
HE	- HEDENBERGITE	RU	- RUTILE
EN	- ENSTATITE	AG	- AUGITE
FS	- FERROSILITE	HY	- HYPERSTHENE
FO	- FORSTERITE	OL	- OLIVINE
FA	- FAYALITE	PL	- PLAGIOCLASE
WO	- WOLLASTONITE		

Analyses conducted by the Geological Survey of Canada according to Irvine and Barager (1971).

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 1

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	53.31	TIO2	.82	SIO2	54.74	TIO2	.84				
AL203	13.11	P205	.06	AL203	13.46	P205	.06				
FE203	1.75	MNO	.21	FE203	1.80	MNO	.22				
FEO	8.30	S	0.00	FEO	8.52	S	0.00				
MGO	7.49	NIO	0.00	MGO	7.69	NIO	0.00				
CAO	10.38	CR203	0.00	CAO	10.66	CR203	0.00				
NA2O	.31	CO2	.10	NA2O	.32	CO2	.10				
K2O	1.54	H2O	1.40	K2O	1.58	H2O	0.00				

CATION PERCENT
SI = 51.83 AL = 15.02 FE3 = 1.28 FE2 = 6.92 CA = 10.81 MG = 10.85
NA = .58 K = 1.91 TI = .60 P = .05 S = 0.00 CR = 0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	11.559	10.944	DI	10.831	11.380	MT	2.605	1.921
C	0.000	0.000	HE	6.497	5.958	IL	1.599	1.199
OR	9.354	9.561	EN	14.133	16.015	CR	0.000	0.000
AB	2.693	2.922	FS	9.723	8.385	HM	0.000	0.000
AN	30.630	31.318	FO	0.000	0.000	AP	.143	.132
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.234	.265

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.66			.52		
AN/AN+AB		91.47			91.92		
OR/AB/AN	21.83	6.67	71.50	21.92	6.31	71.77	
Q /AB/OR	46.72	12.47	40.81	48.97	11.41	39.62	
OL/HY/AG	0.00	58.46	41.54	0.00	57.93	42.07	
Q /HY/AG	20.77	46.32	32.91	21.92	45.23	32.85	
PL/AG/HY	45.07	22.82	32.11	44.73	23.26	32.02	
AG/PL/HY+4Q	14.48	28.59	56.93	.25	27.60	58.05	
OL+/PL/Q+	26.30	49.21	24.49	26.03	48.48	25.49	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	34.74	32.91	32.35	33.92	32.85	33.22	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	3.15	32.75	32.91	31.18	2.58	34.05	32.69 30.67
RATIO OF NE*/Q*/OL*		4.58	47.60	47.82	3.73	49.12	47.15

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	23.61	23.43
COLOUR INDEX	45.39	44.86

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		15.95			17.41	
MG/FE2/NA+K	54.00	33.58	12.42	42.46	47.05	10.49
M - F - A	38.98	51.39	9.63			

POLDERVAARTS FORMULA	-15.878
MOLECULAR RATIO ALUMINA	6.018
@ OF SUGIMURA	46.934
CRYSTALLIZATION INDEX	51.366

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .826

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-11-2

Field name: dark amphibolite.

Map unit: basement complex.

Location: Dewar Lakes Dome, west of North Jackson Lake, E 411850 N 7611600.

Fabric: fine grained, no layering, faint schistosity.

Mineralogy: green-brown hornblende 55, plagioclase 18, quartz 20, biotite 6, sphene 1.

Field relationships: boudin of amphibolite in basement gneiss which appeared to be discordant to the layering in the gneiss.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 2

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.07	TIO2	1.84	SIO2	48.61	TIO2	1.86				
AL2O3	13.72	P2O5	.27	AL2O3	13.87	P2O5	.27				
FE2O3	1.96	MNO	.24	FE2O3	1.98	MNO	.24				
FEO	11.20	S	0.00	FEO	11.33	S	0.00				
MGO	7.60	NIO	0.00	MGO	7.69	NIO	0.00				
CAO	10.93	CR2O3	0.00	CAO	11.05	CR2O3	0.00				
NA2O	2.72	CO2	.10	NA2O	2.75	CO2	.10				
K2O	.24	H2O	1.40	K2O	.24	H2O	0.00				

CATION PERCENT
SI = 45.50 AL = 15.31 FE3 = 1.40 FE2 = 9.06 CA = 11.08 MG = 10.72
NA = 4.99 K = .29 TI = 1.31 P = .22 S = 0.00 CR = 0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	12.966	13.469	MT	2.874	2.094
C	0.000	0.000	HE	9.770	8.858	IL	3.534	2.620
OR	1.435	1.451	EN	5.107	5.721	CR	0.000	0.000
AB	23.271	24.955	FS	4.413	3.763	HM	0.000	0.000
AN	24.795	25.063	FO	5.620	6.739	AP	.633	.578
LC	0.000	0.000	FA	5.352	4.432	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.230	.258

NORM RATIOS (CATION EQUIVALENTS) (WEIGHT PER CENT)

MG/MG+FE2		.60				.46	
AN/AN+AB		50.11				51.59	
OR/AB/AN	2.82	48.49	48.70	2.90	47.01	50.09	
Q /AB/OR	0.00	94.51	5.49	0.00	94.19	5.81	
OL/HY/AG	25.99	22.07	51.95	25.38	22.02	52.59	
Q /HY/AG	0.00	29.81	70.19	0.00	29.51	70.49	
PL/AG/HY	61.13	27.28	11.59	59.84	28.31	11.85	
AG/PL/HY+4Q	27.28	61.13	11.59	.49	59.84	11.85	
OL+/PL/Q+	25.87	70.77	3.35	26.42	70.11	3.47	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	42.54	51.95	5.52	41.90	52.59	5.51	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	22.04	18.18	26.91	32.86	18.76	19.64	27.77	33.83
RATIO OF NE*/Q*/OL*	32.83	27.08	40.09		28.35	29.68	41.97	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	24.71	26.41
COLOUR INDEX	49.64	47.69

		(ATOMIC PERCENT)			(WEIGHT PERCENT)	
FE3/FE2+FE3		13.60			14.89	
MG/FE2/NA+K	43.11	35.65	21.24	34.93	51.47	13.60
M - F - A	32.31	55.11	12.58			

POLDERVAARTS FORMULA	.722			
MOLECULAR RATIO ALUMINA	2.898			
Θ OF SUGIMURA	32.393	FEO/(FEO+FE2O3)	(WEIGHT OF OXIDES)	.851
CRYSTALLIZATION INDEX	46.960			

ROCK NAME - THOLEIITIC BASALT
K-POOR SERIES

Sample: MZT-77-14-1

Field Name: fine grained hornblende-rich amphibolite.

Map unit: Bravo Lake Formation.

Location: south margin Dewar Lakes Dome, west of North Jackson Lake, E 410800 N 7611250.

Fabric: fine grained, slight layering, penetrative schistosity.

Mineralogy: brown hornblende 75, plagioclase 20, opaques 4, apatite 1.

Field relationships: laminated hornblende-rich rock, differential weathering shows presence of carbonate-bearing layers, underlies ultramafic rock.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 3

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	42.68	TIO2	1.02		SIO2	45.61	TIO2	1.09
AL203	6.88	P205	.08		AL203	7.35	P205	.09
FE203	3.29	MNO	.19		FE203	2.69	MNO	.20
FEO	7.80	S	0.00		FEO	9.07	S	0.00
MGO	23.86	NIO	0.00		MGO	25.50	NIO	0.00
CAO	7.35	CR203	0.00		CAO	7.85	CR203	0.00
NA2O	0.00	CO2	.50		NA2O	0.00	CO2	.53
K2O	.02	H2O	6.30		K2O	.02	H2O	0.00

CATION PERCENT
SI = 40.68 AL = 7.73 FE3 = 1.81 FE2 = 6.92 CA = 7.51 MG = 33.89
NA = 0.00 K = .02 TI = .73 P = .06 S = 0.00 CR = 0.00 CO2 = .65

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	OI	10.122	10.020	MT	3.904	2.711
C	0.000	0.000	HE	1.807	1.562	IL	2.070	1.462
OR	.126	.122	EN	29.078	31.044	CR	0.000	0.000
AB	0.000	0.000	FS	5.955	4.838	HM	0.000	0.000
AN	19.997	19.262	FO	20.827	23.796	AP	.198	.172
LC	0.000	0.000	FA	4.700	3.709	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	1.215	1.301

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.87				.78	
AN/AN+AB		100.00				100.00	
OR/AB/AN	.63	0.00	99.37	.63	0.00	99.37	
Q /AB/OR	0.00	0.00	100.00	0.00	0.00	100.00	
OL/HY/AG	36.69	47.86	15.45	35.21	48.33	16.46	
Q /HY/AG	0.00	75.60	24.40	0.00	74.60	25.40	
PL/AG/HY	28.87	17.36	53.78	29.86	17.82	52.32	
AG/PL/HY+4Q	17.36	28.87	53.78	.32	29.86	52.32	
OL+/PL/Q+	65.84	23.31	10.85	64.30	24.82	10.87	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	72.59	15.45	11.97	71.46	16.46	12.08	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	0.00	11.97	72.59	15.45	0.00	12.53	72.61	14.86
RATIO OF NE*/Q*/OL*	0.00	14.15	85.85		0.00	14.71	85.29	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	.13	.12
COLOUR INDEX	78.46	79.14

	(ATOMIC PERCENT)				(WEIGHT PERCENT)		
FE3/FE2+FE3		21.09				22.90	
MG/FE2/NA+K	83.31	16.63	.06	73.72	26.22	.06	
M - F - A	68.89	31.05	.06				

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .703

POLDERVAARTS FORMULA	-6.342
MOLECULAR RATIO ALUMINA	317.481
Θ OF SUGIMURA	45.457
CRYSTALLIZATION INDEX	71.324

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-14-2

Field name: spotted tremolite-rich material.

Map unit: Bravo Lake Formation.

Location: south margin Dewar Lakes Dome, west of North Jackson Lake, E 410800 N 7611250.

Fabric: very fine grained matrix containing 4-6 mm porphyroblasts, no layering, penetrative schistosity.

Mineralogy: tremolite-actinolite 40, chlorite 50, olivine 5, serpentine 5, opaques 2, carbonate 3; rims of serpentine and opaques around olivine, carbonate in pressure shadows, some chlorite of retrograde origin.

Field relationships: massive spotted green tremolite-rich ultramafic underlying possibly pillowed ultramafic and overlying laminated hornblende-rich amphibolite.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 4

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	44.27	TIO2	.91	SIO2	47.00	TIO2	.97				
AL2O3	7.48	P2O5	.04	AL2O3	7.94	P2O5	.04				
FE2O3	2.26	MNO	.15	FE2O3	2.40	MNO	.16				
FEO	8.30	S	.03	FEO	8.81	S	.03				
MGO	22.24	NIO	0.00	MGO	23.61	NIO	0.00				
CAO	8.37	CR2O3	0.00	CAO	8.89	CR2O3	0.00				
NA2O	0.00	CO2	.10	NA2O	0.00	CO2	.11				
K2O	.04	H2O	5.60	K2O	.04	H2O	0.00				

CATION PERCENT
SI = 42.19 AL = 8.40 FE3 = 1.62 FE2 = 6.74 CA = 8.55 MG = 31.59
NA = 0.00 K = .05 TI = .65 P = .03 S = .05 CR = 0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	14.414	14.359	MT	3.479	2.431
C	0.000	0.000	HE	2.743	2.385	IL	1.835	1.304
OR	.251	.243	EN	28.714	30.849	CR	0.000	0.000
AB	0.000	0.000	FS	6.267	5.124	HM	0.000	0.000
AN	21.544	20.884	FO	16.401	18.859	AP	.099	.086
LC	0.000	0.000	FA	3.945	3.133	PY	.066	.080
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.241	.260

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.86				.77	
AN/AN+AB		100.00				100.00	
OR/AB/AN	1.15	0.00	98.85	1.15	0.00	0.00	98.85
Q /AB/OR	0.00	0.00	100.00	0.00	0.00	0.00	100.00
OL/HY/AG	29.44	48.15	22.41	28.07	48.26	23.67	
Q /HY/AG	0.00	68.24	31.76	0.00	67.09	32.91	
PL/AG/HY	28.37	22.75	48.88	29.24	23.29	47.48	
AG/PL/HY+4Q	22.75	28.37	48.88	.42	29.24	47.48	
OL+/PL/Q+	62.11	26.49	11.41	60.60	28.03	11.38	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	65.55	22.41	12.04	64.26	23.67	12.06	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	0.00	12.04	65.55	22.41	0.00	12.63	65.73	21.63
RATIO OF NE*/Q*/OL*	0.00	15.52	84.48		0.00	16.12	83.88	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	.25	.24
COLOUR INDEX	77.80	78.45

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	19.68			21.40		
MG/FE2/NA+K	82.58	17.29	.13	72.73	27.14	.13
M - F - A	68.19	31.68	.12			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .786

POLDERVAARTS FORMULA	-6.380
MOLECULAR RATIO ALUMINA	172.584
@ OF SUGIMURA	46.728
CRYSTALLIZATION INDEX	72.484

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-14-3

Field name: typical tremolite-rich pillowed material.

Map Unit: Bravo Lake Formation.

Location: south margin Dewar Lakes Dome, west of North Jackson Lake, E 410800 N 7611250.

Fabric: very fine grained matrix with 3-8 mm porphyroblasts, no layering, no schistosity.

Mineralogy: tremolite-actinolite 83, olivine 5, chlorite 5, serpentine 2, opaques 5; serpentinization of olivine and tremolite-actinolite, some tremolite-actinolite and chlorite retrograde origin.

Field relationships: small pillow-like shapes separated by calcite-rich zones, strong preferred orientation of tremolite-actinolite parallel pillow "axes". Overlies massive spotted ultramafic.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 5

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	36.12	TIO2	4.71	SIO2	37.87	TIO2	4.94
AL2O3	9.84	P2O5	.82	AL2O3	10.32	P2O5	.86
FE2O3	1.01	MNO	.38	FE2O3	1.06	MNO	.40
FEO	11.60	S	2.19	FEO	12.16	S	2.30
MGO	8.82	NIO	0.00	MGO	9.25	NIO	0.00
CAO	13.68	CR2O3	0.00	CAO	14.34	CR2O3	0.00
NA2O	0.00	CO2	5.30	NA2O	0.00	CO2	5.56
K2O	.90	H2O	3.60	K2O	.94	H2O	0.00

CATION PERCENT
SI = 35.06 AL = 11.26 FE3 = .74 FE2 = 9.73 CA = 14.23 MG = 12.76
NA = 0.00 K = 1.12 TI = 3.44 P = .67 S = 3.98 CR = 0.00 CO2 = 7.02

Sample: MZT-77-38-7

Field name: rusty amphibolite.

Map unit: Bravo Lake Formation.

Location: Casson Lake Nappe, west of Tuktu Narrows, E 408750 N 7606850.

Fabric: faint layering, penetrative schistosity.

Mineralogy: tremolite-actinolite 80, plagioclase (?) 5, opaques 12, sphene 3; plagioclase (?) highly altered.

Field Relationships: from a complex zone of amphibolite, rusty schist, biotite schist and minor massive sulphides.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	4.191	3.874	DI	3.003	3.080	MT	1.538	1.107
C	0.000	0.000	HE	1.060	.949	IL	9.393	6.876
OR	5.590	5.578	EN	21.671	23.976	CR	0.000	0.000
AB	0.000	0.000	FS	8.771	7.385	HM	0.000	0.000
AN	25.400	25.354	FO	0.000	0.000	AP	1.997	1.799
LC	0.000	0.000	FA	0.000	0.000	PY	4.729	5.976
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	12.657	14.047

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.76				.65	
AN/AN+AB		100.00				100.00	
OR/AB/AN	18.03	0.00	81.97	18.04	0.00	81.96	
Q /AB/OR	40.99	0.00	59.01	42.65	0.00	57.15	
OL/HY/AG	0.00	88.61	11.39	0.00	88.23	11.77	
Q /HY/AG	9.87	79.87	10.26	10.83	78.67	10.50	
PL/AG/HY	41.74	6.63	51.63	42.40	6.78	50.82	
AG/PL/HY+4Q	5.29	33.26	61.46	.09	33.13	61.57	
OL+/PL/Q+	38.82	41.85	19.33	38.03	42.31	19.66	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	59.90	10.26	29.83	59.00	10.50	30.50	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	0.00	29.83	59.90	10.26	0.00	30.87	59.23	9.90
RATIO OF NE*/Q*/OL*	0.00	33.25	66.75		0.00	34.26	65.74	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	9.78	9.45
COLOUR INDEX	45.44	43.37

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	7.27			8.01		
MG/FE2/NA+K	54.78	40.43	4.79	41.37	54.41	4.22
M - F - A	39.68	56.27	4.05			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .920

POLDERVAARTS FORMULA	-15.812
MOLECULAR RATIO ALUMINA	10.090
Θ OF SUGIMURA	33.216
CRYSTALLIZATION INDEX	43.591

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 6

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	44.59	TIO2	1.90	SIO2	45.37	TIO2	1.93
AL203	10.31	P205	.15	AL203	10.49	P205	.15
FE203	2.61	MNO	.20	FE203	2.66	MNO	.20
FEO	10.00	S	0.00	FEO	10.18	S	0.00
MGO	14.98	NIO	0.00	MGO	15.24	NIO	0.00
CAO	11.49	CR203	0.00	CAO	11.69	CR203	0.00
NA2O	1.38	CO2	.10	NA2O	1.40	CO2	.10
K2O	.56	H2O	1.90	K2O	.57	H2O	0.00

CATION PERCENT
SI = 41.69 AL = 11.36 FE3 = 1.84 FE2 =7.98 CA = 11.51 MG = 20.87
NA = 2.50 K = .67 TI =1.34 P =.12 S =0.00 CR =0.00 CO2 = .13

Sample: MZT-77-55-5

Field name: foliated tremolite amphibolite.

Map unit: Bravo Lake Formation.

Location: Varley Lake Synform, west of Varley Lake, E 413800 N 7617200.

Fabric: fine grained, no layering, strong schistosity.

Mineralogy: green-brown hornblende 90, biotite 6, opques 4, chlorite tr; chlorite retrograde.

Field relationships: from a zone of amphibolites with varying amphibole contents.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	21.824	22.253	MT	3.851	2.754
C	0.000	0.000	HE	6.856	6.102	IL	3.672	2.672
OR	3.371	3.343	EN	.160	.176	CR	0.000	0.000
AB	11.881	12.507	FS	.058	.048	HM	0.000	0.000
AN	20.648	20.479	FO	19.400	22.832	AP	.354	.317
LC	0.000	0.000	FA	7.703	6.261	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.231	.255

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.78			.67		
AN/AN+AB		62.08			63.47		
OR/AB/AN	9.20	34.43	56.37	9.39	33.10	57.51	
Q /AB/OR	0.00	78.91	21.09	0.00	77.90	22.10	
OL/HY/AG	50.45	.39	49.17	48.40	.39	51.21	
Q /HY/AG	0.00	.78	99.22	0.00	.75	99.25	
PL/AG/HY	53.58	46.06	.36	52.95	46.70	.35	
AG/PL/HY+4Q	46.06	53.58	.36	.84	52.95	.35	
OL+/PL/Q+	46.97	52.94	.09	45.56	54.35	.09	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	50.74	49.17	.10	48.69	51.21	.10	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	10.69	7.21	41.69	40.40	9.06	7.75	42.83	40.36
RATIO OF NE*/Q*/OL*	17.94	12.10	69.96		15.19	12.99	71.82	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	15.25	15.85
COLOUR INDEX	63.52	63.10

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	19.02			20.70		
MG/FE2/NA+K	65.51	24.54	9.95	55.65	37.15	7.21
M - F - A	51.18	42.19	6.63			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .793

POLDERVAARTS FORMULA	1.205
MOLECULAR RATIO ALUMINA	3.584
Θ OF SUGIMURA	32.262
CRYSTALLIZATION INDEX	61.975

ROCK NAME - THOLEIITIC PICRITE BASALT
K-RICH SERIES

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 7

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	49.39	TIO2	1.68	SIO2	50.25	TIO2	1.71
AL2O3	10.01	P2O5	.23	AL2O3	10.18	P2O5	.23
FE2O3	1.59	MNO	.21	FE2O3	1.62	MNO	.21
FEO	10.00	S	0.00	FEO	10.17	S	0.00
MGO	12.13	NIO	0.00	MGO	12.34	NIO	0.00
CAO	11.14	CR2O3	0.00	CAO	11.33	CR2O3	0.00
NA2O	1.63	CO2	.10	NA2O	1.66	CO2	.10
K2O	.18	H2O	2.10	K2O	.18	H2O	0.00

CATION PERCENT
SI = 46.63 AL = 11.14 FE3 = 1.13 FE2 = 8.06 CA = 11.27 MG = 17.07
NA = 2.98 K = .22 TI = 1.19 P = .18 S = 0.00 CR = 0.00 CO2 = .13

Sample: MZT-77-55-6

Field name: laminated hornblende-plagioclase amphibolite.

Map unit: Bravo Lake Formation.

Location: Varley Lake Synform, west of Varley Lake, E 413800 N 7617200.

Fabric: fine layering, penetrative schistosity.

Mineralogy: green-brown hornblende 66, plagioclase 30, biotite tr, opaques 4, apatite tr.

Field relationships: from a zone of amphibolites with varying amphibole contents.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	19.467	20.048	MT	2.345	1.694
C	0.000	0.000	HE	8.241	7.407	IL	3.246	2.386
OR	1.083	1.085	EN	18.687	20.755	CR	0.000	0.000
AB	14.030	14.917	FS	9.073	7.669	HM	0.000	0.000
AN	19.885	19.846	FO	2.116	2.515	AP	.543	.491
LC	0.000	0.000	FA	1.132	.929	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.231	.258

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.73			.60		
AN/AN+AB		57.09			58.53		
OR/AB/AN	3.03	41.61	55.36	3.10	40.18	56.72	
Q /AB/OR	0.00	93.22	6.78	0.00	92.83	7.17	
OL/HY/AG	5.81	47.91	46.28	5.53	47.28	47.19	
Q /HY/AG	0.00	50.87	49.13	0.00	50.05	49.95	
PL/AG/HY	38.35	30.29	31.36	37.89	31.03	31.09	
AG/PL/HY+4Q	30.29	38.35	31.36	.55	37.89	31.09	
OL+/PL/Q+	37.16	52.17	10.66	37.12	52.18	10.70	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	41.74	46.28	11.98	40.99	47.19	11.82	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	12.06	17.61	33.35	36.98	10.15	18.81	34.05	37.00
RATIO OF NE*/Q*/OL*	19.13	27.94	52.93		16.11	29.85	54.04	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	15.11	16.00
COLOUR INDEX	64.31	63.40

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		12.52			13.72	
MG/FE2/NA+K	60.60	28.04	11.36	50.67	41.77	7.56
M - F - A	47.81	45.05	7.13			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .863

POLDERVAARTS FORMULA	-3.667
MOLECULAR RATIO ALUMINA	3.480
Φ OF SUGIMURA	36.745
CRYSTALLIZATION INDEX	54.484

ROCK NAME - THOLEIITIC BASALT
AVERAGE SERIES

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 8

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	44.36	TIO2	2.00	SIO2	45.07	TIO2	2.03				
AL2O3	14.58	P2O5	.16	AL2O3	14.81	P2O5	.16				
FE2O3	3.81	MNO	.30	FE2O3	3.56	MNO	.30				
FEO	11.70	S	0.00	FEO	12.17	S	0.00				
MGO	7.87	NIO	0.00	MGO	8.00	NIO	0.00				
CAO	12.22	CR2O3	0.00	CAO	12.42	CR2O3	0.00				
NA2O	.54	CO2	0.00	NA2O	.55	CO2	0.00				
K2O	.91	H2O	2.20	K2O	.92	H2O	0.00				

CATION PERCENT
SI = 43.02 AL = 16.67 FE3 = 2.55 FE2 =9.96 CA = 12.70 MG = 11.37
NA = 1.02 K = 1.13 TI =1.46 P = .13 S =0.00 CR =0.00 CO2 =0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	12.048	12.762	MT	5.156	3.831
C	0.000	0.000	HE	8.767	8.105	IL	3.859	2.917
OR	5.469	5.635	EN	10.588	12.095	CR	0.000	0.000
AB	4.642	5.076	FS	8.836	7.681	HM	0.000	0.000
AN	35.227	36.308	FO	2.621	3.204	AP	.377	.351
LC	0.000	0.000	FA	2.410	2.035	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.61			.47		
AN/AN+AB		87.73			88.36		
OR/AB/AN	11.98	10.80	77.22	12.06	10.24	77.70	
Q /AB/OR	0.00	47.39	52.61	0.00	45.91	54.09	
OL/HY/AG	11.42	43.10	45.48	11.11	42.91	45.98	
Q /HY/AG	0.00	48.66	51.34	0.00	48.27	51.73	
PL/AG/HY	50.45	25.44	24.11	49.77	25.98	24.25	
AG/PL/HY+4Q	25.44	50.45	24.11	.45	49.77	24.25	
OL+/PL/Q+	30.23	62.33	7.45	30.47	61.98	7.55	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	43.75	45.48	10.78	43.29	45.98	10.73	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	5.98	13.69	39.39	40.95	4.96	14.40	39.61 41.03
RATIO OF NE*/Q*/OL*	10.12	23.18	66.70		8.41	24.43	67.17

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	10.11	10.71
COLOUR INDEX	54.28	52.63

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		20.82			22.62	
MG/FE2/NA+K	48.96	41.81	9.22	36.96	56.24	6.81
M - F - A	32.19	61.87	5.93			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .754

POLDERVAARTS FORMULA	-4.445
MOLECULAR RATIO ALUMINA	7.779
Θ OF SUGIMURA	39.032
CRYSTALLIZATION INDEX	57.316

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-64-3

Field name: hornblende-rich amphibolite.

Map unit: Dewar Lakes Formation.

Location: north margin of Dewar Lakes Dome, southwest of Varley Lake, E 410700 N 7615850.

Fabric: medium grained, no layering, faint schistosity.

Mineralogy: turquoise-brown hornblende 60, plagioclase 32, quartz 5, opaques 3, sphene tr.

Field relationships: in muscovite schist close to contact with basement gneisses, surrounded by a 10 cm thick biotite-rich selvage.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 9

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	52.18	TIO2	.98		SIO2	52.65	TIO2	.99
AL2O3	14.49	P2O5	.16		AL2O3	14.62	P2O5	.16
FE2O3	1.33	MNO	.20		FE2O3	1.34	MNO	.20
FEO	9.60	S	.03		FEO	9.69	S	.03
MGO	6.54	NIO	0.00		MGO	6.60	NIO	0.00
CAO	10.56	CR2O3	0.00		CAO	10.66	CR2O3	0.00
NA2O	2.32	CO2	.10		NA2O	2.34	CO2	.10
K2O	.61	H2O	1.70		K2O	.62	H2O	0.00

CATION PERCENT
SI = 49.29 AL = 16.13 FE3 = .95 FE2 = 7.74 CA = 10.69 MG = 9.21
NA = 4.25 K = .74 TI = .70 P = .13 S = .05 CR = 0.00 CO2 = .13

Sample: MZT-77-73-2

Field name: amphibolite.

Map unit: Bravo Lake Formation.

Location: Varley Lake Synform, west of Varley Lake, E 413750 N 7617600.

Fabric: no layering, penetrative schistosity.

Mineralogy: green-brown hornblende 55, plagioclase 35, biotite 5, opaques 3, sphene 2.

Field relationships: from a 2-3 m layer of amphibolite enclosed in Longstaff Bluff Formation-type siltstone, well above main zone of Bravo Lake Formation.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	2.842	2.661	DI	10.735	11.153	MT	1.946	1.418
C	0.000	0.000	HE	8.748	7.933	IL	1.878	1.392
OR	3.641	3.680	EN	11.457	12.838	CR	0.000	0.000
AB	19.807	21.244	FS	10.708	9.131	HM	0.000	0.000
AN	27.571	27.872	FO	0.000	0.000	AP	.375	.342
LC	0.000	0.000	FA	0.000	0.000	PY	.062	.080
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.229	.258

NORM RATIOS (CATION EQUIVALENTS) (WEIGHT PER CENT)

MG/MG+FE2		.58				.44	
AN/AN+AB		56.75				58.19	
OR/AB/AN	6.97	40.24	52.79	7.14	38.82	54.04	
Q /AB/OR	9.65	77.01	13.34	10.81	75.34	13.85	
OL/HY/AG	0.00	53.51	46.49	0.00	53.22	46.78	
Q /HY/AG	6.09	50.25	43.66	6.39	49.82	43.79	
PL/AG/HY	54.47	21.17	24.36	53.22	21.88	24.90	
AG/PL/HY+4Q	18.93	48.72	32.35	.34	47.19	33.40	
OL+/PL/Q+	22.34	66.60	11.06	22.97	65.45	11.58	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	37.69	43.66	18.65	37.37	43.79	18.84	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	19.62	25.63	25.36	29.38	16.55	27.44	25.95	30.06
RATIO OF NE*/Q*/OL*	27.79	36.30	35.92		23.67	39.23	37.10	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	26.29	27.58
COLOUR INDEX	45.47	43.86

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		11.08			12.17	
MG/FE2/NA+K	42.28	34.83	22.89	34.29	50.34	15.36
M - F - A	32.27	53.27	14.46			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .878

POLDERVAARTS FORMULA	-4.363
MOLECULAR RATIO ALUMINA	3.237
Θ OF SUGIMURA	38.133
CRYSTALLIZATION INDEX	46.336

ROCK NAME - THOLEIITIC BASALT
AVERAGE SERIES

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 10

ANALYSIS (WEIGHT PERCENT)				ORIGINAL		ADJUSTED TO 100 PERCENT	
SIO2	44.07	TIO2	.71	SIO2	46.77	TIO2	.75
AL2O3	14.64	P2O5	.08	AL2O3	15.54	P2O5	.08
FE2O3	.39	MNO	.25	FE2O3	.41	MNO	.27
FEO	8.50	S	.03	FEO	9.02	S	.03
MGO	8.46	NIO	0.00	MGO	8.98	NIO	0.00
CAO	7.97	CR2O3	0.00	CAO	8.46	CR2O3	0.00
NA2O	1.52	CO2	4.90	NA2O	1.61	CO2	5.20
K2O	2.71	H2O	5.40	K2O	2.88	H2O	0.00

CATION PERCENT
SI = 42.44 AL = 16.62 FE3 = .28 FE2 = 7.05 CA = 8.22 MG = 12.14
NA = 2.84 K = 3.33 TI = .51 P = .07 S = .05 CR = 0.00 CO2 = 6.44

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	2.285	2.074	DI	0.000	0.000	MT	.600	.424
C	6.640	7.182	HE	0.000	0.000	IL	1.431	1.028
OR	17.011	16.665	EN	22.358	24.283	CR	0.000	0.000
AB	13.648	14.189	FS	15.406	12.734	HM	0.000	0.000
AN	8.532	8.361	FO	0.000	0.000	AP	.197	.174
LC	0.000	0.000	FA	0.000	0.000	PY	.065	.081
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	11.826	12.885

NORM RATIOS (CATION EQUIVALENTS) (WEIGHT PER CENT)

MG/MG+FE2		.66				.52	
AN/AN+AB		37.08				38.47	
OR/AB/AN	42.50	36.16	21.32		43.41	34.82	21.77
Q /AB/OR	6.30	43.09	50.61		6.94	41.43	51.64
OL/HY/AG	0.00	100.00	0.00		0.00	100.00	0.00
Q /HY/AG	5.30	94.70	0.00		5.71	94.29	0.00
PL/AG/HY	37.86	0.00	62.14		37.00	0.00	63.00
AG/PL/HY+4Q	0.00	33.23	66.77		0.00	32.10	67.90
OL+/PL/Q+	39.89	48.59	11.52		40.54	47.21	12.25 ADJUSTED FOR CORUNDUM
OL+/AG/Q+	71.02	0.00	28.98		70.72	0.00	29.28

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	15.98	31.91	52.11	0.00		13.35	33.84	52.80	0.00
RATIO OF NE*/Q*/OL*	15.98	31.91	52.11			13.35	33.84	52.80	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	32.94	32.93
COLOUR INDEX	39.80	38.47

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		3.96			4.39	
MG/FE2/NA+K	48.26	27.21	24.53	39.92	40.11	19.96
M - F - A	39.27	41.09	19.64			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .956

POLDERVAARTS FORMULA	-9.404
MOLECULAR RATIO ALUMINA	2.693
Θ OF SUGINURA	29.316
CRYSTALLIZATION INDEX	24.201

ROCK NAME - CALC-ALKALINE (HIGH ALUMINA) BASALT
K-RICH SERIES

Sample: MZT-77-78-1

Field name: amphibolite with pyrite.

Map unit: Bravo Lake Formation.

Location: Varley Lake Synform, west of Varley Lake, E 411800 N 7619750.

Fabric: very fine grained, no layering, moderate schistosity, small carbonate vein.

Mineralogy: tremolite-actinolite 5, plagioclase 35, quartz 5, chlorite 25, carbonate 28, sphene 2, opaques tr; plagioclase altered, carbonate, chlorite and sphene define schistosity.

Field relationships: green and white amphibolite crosscut by dolomite and calcite veins up to several meters long.

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 11

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	50.26	TIO2	.91	SIO2	51.88	TIO2	.94				
AL2O3	14.57	P2O5	.12	AL2O3	15.04	P2O5	.12				
FE2O3	.61	MNO	.24	FE2O3	.63	MNO	.25				
FEO	9.30	S	0.00	FEO	9.60	S	0.00				
MGO	7.79	NIO	0.00	MGO	8.04	NIO	0.00				
CAO	12.66	CR2O3	0.00	CAO	13.07	CR2O3	0.00				
NA2O	.14	CO2	.10	NA2O	.14	CO2	.10				
K2O	.17	H2O	1.20	K2O	.18	H2O	.0.00				

CATION PERCENT
SI = 49.05 AL = 16.76 FE3 = .45 FE2 =7.79 CA = 13.24 MG = 11.33
NA = .26 K = .21 TI =.67 P =.10 S =0.00 CR =0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	8.791	8.311	DI	11.371	11.931	MT	.913	.672
C	0.000	0.000	HE	7.930	7.263	IL	1.784	1.336
OR	1.038	1.060	EN	14.754	16.696	CR	0.000	0.000
AB	1.223	1.325	FS	11.802	10.164	HM	0.000	0.000
AN	39.873	40.711	FO	0.000	0.000	AP	.287	.265
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.235	.267

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.62			.48		
AN/AN+AB		96.85			97.02		
OR/AB/AN	2.46	3.07	94.47	2.46	2.90	94.63	
Q /AB/OR	77.71	12.38	9.91	79.54	11.06	9.39	
OL/HY/AG	0.08	58.32	41.68	0.00	57.91	42.09	
Q /HY/AG	15.29	49.41	35.31	16.09	48.59	35.32	
PL/AG/HY	47.72	21.79	30.49	47.26	22.20	30.54	
AG/PL/HY+4Q	15.82	34.64	49.54	.28	33.65	50.54	
OL+/PL/Q+	26.09	54.45	19.46	26.05	53.76	20.18	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	37.05	35.31	27.64	36.45	35.32	28.23	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	1.43	27.93	36.17	34.47	1.17	28.98	35.86	33.99
RATIO OF NE*/Q*/OL*		2.18	42.62	55.20	1.77	43.90	54.33	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	11.05	10.70
COLOUR INDEX	48.55	48.06

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		5.57			6.16	
MG/FE2/NA+K	58.41	39.13	2.46	44.77	53.45	1.78
M - F - A	43.40	54.87	1.73			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .938

POLDERVAARTS FORMULA	-14.134
MOLECULAR RATIO ALUMINA	35.153
@ OF SUGIMURA	50.547
CRYSTALLIZATION INDEX	61.584

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-94-4

Field name: average amphibolite.

Map unit: Bravo Lake Formation.

Location: Varley Lake Synform, southeast of Thomson Lake, E 406750 N 7620700.

Fabric: fine grained, no layering, strong schistosity.

Mineraology: green-brown hornblende 60, cummingtonite 7, plagioclase 25, quartz 5, opaques 2, biotite 1; hornblende and cummingtonite in optical continuity.

Field relationships: from zone of varying mafic mineral content.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 12

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	41.52	TIO2	.78		SIO2	44.45	TIO2	.84
AL2O3	5.78	P2O5	.01		AL2O3	6.19	P2O5	.01
FE2O3	2.64	MNO	.21		FE2O3	2.44	MNO	.22
FEO	9.60	S	.05		FEO	10.62	S	.05
MGO	25.60	NIO	0.00		MGO	27.41	NIO	0.00
CAO	6.83	CR2O3	0.00		CAO	7.31	CR2O3	0.00
NA2O	0.00	CO2	.40		NA2O	0.00	CO2	.43
K2O	.02	H2O	6.10		K2O	.02	H2O	0.00

CATION PERCENT
SI = 39.45 AL = 6.47 FE3 = 1.63 FE2= 8.05 CA = 6.95 MG = 36.25
NA = 0.00 K = .02 TI =.56 P =.01 S =.09 CR = 0.00 CO2 = .52

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	10.974	10.808	MT	3.539	2.445
C	0.000	0.000	HE	2.301	1.978	IL	1.586	1.115
OR	.127	.121	EN	21.298	22.620	CR	0.000	0.000
AB	0.000	0.000	FS	5.122	4.140	HM	0.000	0.000
AN	16.823	16.121	FO	29.343	33.354	AP	.025	.021
LC	0.000	0.000	FA	7.777	6.105	PY	.110	.134
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.974	1.038

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.85				.75	
AN/AN+AB		100.00				100.00	
OR/AB/AN	.75	0.00	99.25	.75	0.00	99.25	
Q /AB/OR	0.00	0.00	100.00	0.00	0.00	100.00	
OL/HY/AG	49.94	33.87	16.18	48.32	34.39	17.28	
Q /HY/AG	0.00	67.67	32.33	0.00	66.56	33.44	
PL/AG/HY	28.96	22.97	48.07	29.77	23.49	46.75	
AG/PL/HY+4Q	22.97	28.96	48.07	.42	29.77	46.75	
OL+/PL/Q+	72.30	19.58	8.12	70.85	20.93	8.22	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	75.35	16.18	8.47	74.12	17.28	8.60	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	0.00	8.47	75.35	16.18	0.00	8.88	75.49	15.63
RATIO OF NE*/Q*/OL*		0.00	10.10	89.90		0.00	10.52	89.48

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	.13	.12
COLOUR INDEX	81.94	82.56

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		17.14			18.69	
MG/FE2/NA+K	82.09	17.85	.05	72.03	27.91	.06
M - F - A	68.10	31.85	.05			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .784

POLDERVAARTS FORMULA	-4.488
MOLECULAR RATIO ALUMINA	266.721
@ OF SUGIMURA	44.278
CRYSTALLIZATION INDEX	72.067

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-100-1

Field name: rusty, spotted ultramafic.

Map unit: Bravo Lake Formation.

Location: Varley Lake Synform, southeast of Thomson Lake, E 405700 N 7618100.

Fabric: fine grained matrix with 1 cm porphyroblasts, no layering, moderate schistosity.

Mineralogy: tremolite-actinolite 40, clinopyroxene 5, olivine 5, chlorite 40, serpentine 5, opaques 5; olivine polygonized with a rim of serpentine, clinopyroxene fresh.

Field relationships: spotted ultramafics mixed with serpentinites, some pods of calcite, tremolite-actinolite and rutile (?).

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 13

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	49.88	TIO2	1.57	SIO2	52.22	TIO2	1.64				
AL2O3	12.94	P2O5	.19	AL2O3	13.55	P2O5	.20				
FE2O3	3.48	MNO	.20	FE2O3	3.21	MNO	.21				
FEO	10.00	S	.03	FEO	10.85	S	.03				
MGO	6.89	NIO	0.00	MGO	7.21	NIO	0.00				
CAO	6.58	CR2O3	0.00	CAO	6.89	CR2O3	0.00				
NA2O	1.33	CO2	.10	NA2O	1.39	CO2	.10				
K2O	2.37	H2O	3.60	K2O	2.48	H2O	0.00				

CATION PERCENT
SI = 49.51 AL = 15.14 FE3 = 2.29 FE2 = 8.77 CA = 7.00 MG = 10.19
NA = 2.56 K = 3.00 TI = 1.17 P = .16 S = .06 CR = 0.00 CO2 = .14

Sample: MZT-77-135-1

Field name: hornblende-plagioclase amphibolite.

Map unit: basement complex.

Location: core of Dewar Lakes Dome, northeast of North Jackson Lake, E 415350 N 7611950.

Fabric: slight layering, strong schistosity.

Mineralogy: green-brown hornblende 55, plagioclase 30, quartz 10, sphene 1, opaques 1, apatite tr, chlorite 3; chlorite retrograde.

Field relationships: from a 1-2 m thick amphibolite layer.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	5.081	4.817	DI	4.216	4.437	MT	4.660	3.440
C	0.000	0.000	HE	3.046	2.797	IL	3.122	2.344
OR	14.677	15.023	EN	16.009	18.168	CR	0.000	0.000
AB	11.781	12.798	FS	13.263	11.454	HM	0.000	0.000
AN	23.382	23.941	FO	0.000	0.000	AP	.461	.426
LC	0.000	0.000	FA	0.000	0.000	PY	.065	.084
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.238	.271

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.61				.47	
AN/AN+AB		65.17				66.50	
OR/AB/AN	29.02	24.72	46.25	29.45	23.64	46.91	
Q /AB/OR	14.76	39.21	46.03	16.11	37.35	46.54	
OL/HY/AG	0.00	80.37	19.63	0.00	80.12	19.88	
Q /HY/AG	11.56	71.08	17.36	12.21	70.34	17.45	
PL/AG/HY	49.92	9.83	40.25	49.04	10.13	40.83	
AG/PL/HY+4Q	7.79	39.56	52.65	.14	38.21	53.90	
OL+/PL/Q+	31.21	51.62	17.17	31.58	50.58	17.84	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	53.31	17.36	29.33	52.76	17.45	29.79	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	14.10	31.84	40.79	13.28	11.75	33.67	41.22	13.37
RATIO OF NE*/Q*/OL*	16.26	36.71	47.03		13.56	38.86	47.58	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	31.54	32.64
COLOUR INDEX	44.32	42.64

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		21.04			22.85	
MG/FE2/NA+K	41.84	35.32	22.84	32.88	49.46	17.66
M - F - A	29.05	55.35	15.60			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .742

POLDERVAARTS FORMULA	-10.248
MOLECULAR RATIO ALUMINA	2.721
Θ OF SUGIMURA	34.950
CRYSTALLIZATION INDEX	38.818

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 14

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	62.79	TIO2	1.00	SIO2	63.68	TIO2	1.01				
AL2O3	13.44	P2O5	.29	AL2O3	13.63	P2O5	.29				
FE2O3	1.50	MNO	.23	FE2O3	1.52	MNO	.23				
FEO	9.50	S	0.00	FEO	9.63	S	0.00				
MGO	.78	NIO	0.00	MGO	.79	NIO	0.00				
CAO	4.41	CR2O3	0.00	CAO	4.47	CR2O3	0.00				
NA2O	2.75	CO2	.20	NA2O	2.79	CO2	.20				
K2O	1.72	H2O	1.20	K2O	1.74	H2O	0.00				

CATION PERCENT
SI = 61.21 AL = 15.44 FE3 = 1.10 FE2 =7.93 CA = 4.61 MG = 1.13
NA = 5.20 K = 2.14 TI =.73 P =.24 S =0.00 CR =0.00 CO2 = .27

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	24.475	23.527	DI	0.000	0.000	MT	2.205	1.651
C	.197	.223	HE	0.000	0.000	IL	1.926	1.466
OR	10.317	10.787	EN	1.970	2.266	CR	0.000	0.000
AB	23.594	25.985	FS	15.193	13.303	HM	0.000	0.000
AN	18.979	19.702	FO	0.000	0.000	AP	.682	.639
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.461	.532

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.15			.09		
AN/AN+AB		43.12			44.58		
OR/AB/AN	18.99	46.08	34.94	19.51	44.61	35.88	
Q /AB/OR	39.07	43.15	17.78	41.92	40.41	17.67	
OL/HY/AG	0.00	100.00	0.00	0.00	100.00	0.00	
Q /HY/AG	68.18	39.82	0.00	58.78	41.22	0.00	
PL/AG/HY	74.58	0.00	25.42	71.27	0.00	28.73	
AG/PL/HY+4Q	0.00	29.41	70.59	0.00	27.01	72.99	
OL+/PL/Q+	13.86	54.12	32.02	15.35	50.78	33.86	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	29.87	0.00	70.13	30.91	0.00	69.09	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	23.96	58.10	17.94	0.00	20.06	61.73	18.22	0.00
RATIO OF NE*/Q*/OL*	23.96	58.10	17.94		20.06	61.73	18.22	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	58.39	60.22
COLOUR INDEX	21.29	18.69

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		12.44			13.64	
MG/FE2/NA+K	6.99	47.76	45.25			
M - F - A	4.84	67.39	27.76	5.29	64.41	30.31

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .864

POLDERVAARTS FORMULA	-19.534
MOLECULAR RATIO ALUMINA	2.104
@ OF SUGIMURA	41.340
CRYSTALLIZATION INDEX	20.360

ROCK NAME - THOLEIITIC ANDESITE
K-RICH SERIES

Sample: MZT-77-157-1

Field name: biotite schist or amphibolite.

Map unit: Bravo Lake Formation.

Location: south flank of Dewar Lakes Dome, east of North Jackson Lake, E 414200 N 7609850.

Fabric: very fine grained, no layering, moderate schistosity.

Mineralogy: green-brown hornblende 20, plagioclase 30, quartz 30, biotite 15, garnet 2, apatite 1, opaques 2, sphene tr.

Field relationships: not a good amphibolite, hornblende prisms randomly in S3, stratigraphically above MZT-77-157-3.

SOURCE - H. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 15

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	43.01	TIO2	.10		SIO2	44.13	TIO2	.10
AL203	2.43	P205	.17		AL203	2.49	P205	.17
FE203	.91	MNO	4.99		FE203	.93	MNO	5.12
FEO	34.40	S	.86		FEO	35.30	S	.88
MGO	5.74	NIO	0.00		MGO	5.89	NIO	0.00
CAO	3.25	CR203	0.00		CAO	3.33	CR203	0.00
NA2O	0.00	CO2	1.60		NA2O	0.00	CO2	1.64
K2O	0.00	H2O	2.00		K2O	0.00	H2O	0.00

CATION PERCENT

SI = 44.99 AL = 3.00 FE3 = .72 FE2 = 34.51 CA = 3.64 MG = 8.95
NA = 0.00 K = 0.00 TI = .08 P = .15 S = 1.69 CR = 0.00 CO2 = 2.28

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	.582	.593	DI	0.000	0.000	MT	1.354	1.074
C	.652	.784	HE	0.000	0.000	IL	.195	.157
OR	0.000	0.000	EN	14.666	17.895	CR	0.000	0.000
AB	0.000	0.000	FS	71.576	66.466	HM	0.000	0.000
AN	5.823	5.530	FO	0.000	0.000	AP	.405	.402
LC	0.000	0.000	FA	0.000	0.000	PY	1.815	2.529
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	3.733	4.570

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.21				.13	
AN/AN+AB		100.00				100.00	
OR/AB/AN	0.00	0.00	100.00	0.00	0.00	100.00	
Q /AB/OR	100.00	0.00	0.00	100.00	0.00	0.00	
OL/HY/AG	0.00	100.00	0.00	0.00	100.00	0.00	
Q /HY/AG	.70	99.30	0.00	.67	99.33	0.00	
PL/AG/HY	6.15	0.00	93.85	5.50	0.00	94.50	
AG/PL/HY+4Q	0.00	5.99	94.01	0.00	5.37	94.63	
OL+/PL/Q+	68.79	8.07	23.15	69.48	7.09	23.43	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	74.48	0.00	25.52	74.50	0.00	25.50	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	0.00	25.52	74.48	0.00	0.00	26.40	73.60 0.00
RATIO OF NE*/Q*/OL*		0.00	25.52	74.48		0.00	26.40 73.60

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	.58	.59
COLOUR INDEX	87.79	85.59

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	2.32			2.58		
MG/FE2/NA+K	22.92	77.08	0.00	14.30	85.70	0.00
M - F - A	14.01	85.99	0.00			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .974

POLDERVAARTS FORMULA	-13.528
MOLECULAR RATIO ALUMINA	0.000
Θ OF SUGIMURA	44.131
CRYSTALLIZATION INDEX	15.301

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-157-3

Field name: ultramafic (?).

Map unit: Bravo Lake Formation.

Location: south flank of Dewar Lakes Dome, east of North Jackson Lake, E 414200 N 7609850.

Fabric: slight layering, no schistosity.

Mineralogy: tremolite-actinolite 82, garnet 8, clinopyroxene 3, opaques 5, serpentine 2; serpentine alteration of garnet.

Field relationships: foliated to massive ultramafic, stratigraphically below MZT-157-1.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 16

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.09	TIO2	1.63	SIO2	48.90	TIO2	1.66
AL203	7.49	P205	.02	AL203	7.62	P205	.02
FE203	1.68	MNO	.19	FE203	1.71	MNO	.19
FEO	10.60	S	0.00	FEO	10.78	S	0.00
MGO	16.51	NIO	0.00	MGO	16.79	NIO	0.00
CAO	10.69	CR203	0.00	CAO	10.87	CR203	0.00
NA2O	1.04	CO2	.10	NA2O	1.06	CO2	.10
K2O	.31	H2O	2.10	K2O	.32	H2O	0.00

CATION PERCENT
SI = 44.92 AL = 8.25 FE3 = 1.16 FE2 = 8.43 CA = 10.70 MG = 22.98
NA = 1.88 K = .37 TI = 1.15 P = .02 S = 0.00 CR = 0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	22.934	23.382	MT	2.477	1.771
C	0.000	0.000	HE	7.655	6.812	IL	3.148	2.290
OR	1.864	1.849	EN	16.916	18.600	CR	0.000	0.000
AB	8.946	9.416	FS	6.475	5.418	HM	0.000	0.000
AN	15.103	14.983	FO	9.990	11.756	AP	.047	.042
LC	0.000	0.000	FA	4.214	3.425	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.231	.255

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.77			.66		
AN/AN+AB		61.41			62.80		
OR/AB/AN	7.84	35.07	57.08	7.19	34.52	58.28
Q /AB/OR	0.00	83.59	16.41	0.00	82.75	17.25
OL/HY/AG	21.88	34.61	43.51	20.83	34.31	44.86
Q /HY/AG	0.00	44.30	55.70	0.00	43.33	56.67
PL/AG/HY	31.04	38.41	30.55	30.82	39.20	29.98
AG/PL/HY+4Q	38.41	31.04	30.55	.70	30.82	29.98
OL+/PL/Q+	52.19	38.36	9.44	51.50	39.01	9.49 ADJUSTED FOR CORUNDUM
OL+/AG/Q+	47.84	43.51	8.65	46.56	44.86	8.58
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	7.17	12.40	42.12	38.31	6.01	13.20	42.84	37.95
RATIO OF NE*/Q*/OL*		11.62	20.10	68.28	9.69	21.27	69.04

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	10.81	11.27
COLOUR INDEX	73.81	73.45

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		12.48			13.68	
MG/FE2/NA+K	68.57	24.71	6.72	58.01	37.25	4.74
M - F - A	55.89	40.41	4.50			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .863

POLDERVAARTS FORMULA	-3.202
MOLECULAR RATIO ALUMINA	3.660
Θ OF SUGIMURA	36.855
CRYSTALLIZATION INDEX	59.882

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-184-1

Field name: black amphibolite.

Map unit: Bravo Lake Formation.

Location: northeast margin of South Jackson Lake Dome, east of Tuktu Narrows, E 409150 N 7604150.

Fabric: no layering, slight schistosity.

Mineralogy: tremolite-actinolite 95, opaques 5, epidote tr.

Field relationships: from a 10-15 m thick unit overlain by paragneiss.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 17

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	46.21	TIO2	1.71		SIO2	47.09	TIO2	1.74
AL203	15.23	P205	.10		AL203	15.52	P205	.10
FE203	2.02	MNO	.19		FE203	2.06	MNO	.19
FEO	10.70	S	0.00		FEO	10.90	S	0.00
MGO	6.54	NIO	0.00		MGO	6.66	NIO	0.00
CAO	12.02	CR203	0.00		CAO	12.25	CR203	0.00
NA2O	2.69	CO2	.10		NA2O	2.74	CO2	.10
K2O	.62	H2O	2.00		K2O	.63	H2O	0.00

CATION PERCENT
SI = 44.04 AL = 17.11 FE3 = 1.45 FE2 =8.68 CA = 12.27 MG = 9.25
NA = 4.97 K = .75 TI =1.23 P =.08 S = 0.00 CR =0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	14.117	14.652	MT	2.985	2.173
C	0.000	0.000	HE	11.722	10.619	IL	3.309	2.451
OR	3.737	3.773	EN	0.000	0.000	CR	0.000	0.000
AB	16.513	19.836	FS	0.000	0.000	HM	0.000	0.000
AN	28.178	28.458	FO	7.044	8.438	AP	.236	.215
LC	.000	.000	FA	7.392	6.115	PY	0.000	0.000
NE	2.535	3.008	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.232	.260

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.58			.44		
AN/AN+AB		58.93			60.35		
AN/AN+AB+5/3NE		53.38			55.34		
OR/AB/AN	7.25	38.10	54.66	7.41	36.71	55.88	
Q /AB/OR	0.00	84.02	15.98	0.00	83.20	16.80	
OL/HY/AG	36.54	0.00	63.46	35.84	0.00	64.16	
Q /HY/AG	0.00	0.00	100.00	0.00	0.00	100.00	
PL/AG/HY	65.65	34.35	0.00	64.37	35.63	0.00	
AG/PL/HY+4Q	34.35	65.65	0.00	.62	64.37	0.00	
OL+/PL/Q+	23.16	76.84	0.00	23.62	76.38	0.00	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	36.54	63.46	0.00	35.84	64.16	0.00	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	23.79	12.66	23.22	40.32	20.34	13.74	24.08	41.84
RATIO OF NE*/Q*/OL*	39.87	21.22	38.92		34.98	23.62	41.40	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	24.78	26.62
COLOUR INDEX	46.57	44.45

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	14.52			15.88		
MG/FE2/NA+K	39.46	36.23	24.32	31.82	52.07	16.11
M - F - A	29.24	55.96	14.80			

POLDERVAARTS FORMULA	4.472	CRYSTALLIZATION INDEX	49.339
MOLECULAR RATIO ALUMINA	2.988	FEO/(FEO+FE203) (WEIGHT OF OXIDES)	.841
Θ OF SUGIMURA	31.363		

ROCK NAME - ALKALI BASALT, SODIC SERIES

Sample: MZT-77-192-2

Field name: banded amphibolite.

Map unit: Bravo Lake Formation.

Location: northeast margin of South Jackson Lake Dome, southwest of Tullugak Lake Dome, E 412200 N 7600000.

Fabric: slightly laminated, moderate schistosity.

Mineralogy: green-brown hornblende 60, plagioclase 20, clinopyroxene 5, quartz 10, sphene 4, apatite 1.

Field relationships: from 5 m thick layer laminated on the millimeter scale.

SOURCE - H. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 18

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	41.17	TIO2	1.36		SIO2	43.48	TIO2	1.44			
AL203	8.62	P205	.08		AL203	9.10	P205	.08			
FE203	2.91	MNO	.18		FE203	3.02	MNO	.19			
FEO	8.40	S	0.00		FEO	8.92	S	0.00			
MGO	24.39	NIO	0.00		MGO	25.76	NIO	0.00			
CAO	7.18	CR203	0.00		CAO	7.58	CR203	0.00			
NA20	.20	CO2	.10		NA20	.21	CO2	.11			
K20	.11	H20	5.40		K20	.12	H20	0.00			

CATION PERCENT
SI = 38.66 AL = 9.54 FE3 = 2.02 FE2 =6.77 CA = 7.22 MG = 34.13
NA = .36 K = .13 TI =.96 P = .06 S =0.00 CR =0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	OI	8.767	8.652	MT	4.379	3.031
C	0.000	0.000	HE	1.414	1.218	IL	2.728	1.921
OR	.687	.660	EN	16.332	17.382	CR	0.000	0.000
AB	1.787	1.820	FS	3.820	2.446	HM	0.000	0.000
AN	23.547	22.612	FO	30.655	34.917	AP	.196	.170
LC	0.000	0.000	FA	6.248	4.914	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.240	.256

NORM RATIOS (CATION EQUIVALENTS)					(WEIGHT PER CENT)			
MG/MG+FE2		.88				.80		
AN/AN+AB		92.55				92.95		
OR/AB/AN	2.63	7.26	90.12		2.64	6.87	90.49	
Q /AB/OR	0.00	73.40	26.60		0.00	72.23	27.77	
OL/HY/AG	57.29	28.52	14.19		55.55	29.13	15.32	
Q /HY/AG	0.00	66.77	33.23		0.00	65.53	34.47	
PL/AG/HY	45.14	18.23	36.63		46.17	18.56	35.27	
AG/PL/HY+4Q	18.23	45.14	36.63		.34	46.17	35.27	
OL+/PL/Q+	65.05	29.05	5.89		63.02	31.05	5.93	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	78.68	14.19	7.13		77.39	15.32	7.28	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS								
NE*/Q*/OL*/AG*	1.53	7.97	76.67	13.83		1.27	8.38	77.02 13.34
RATIO OF NE*/Q*/OL*		1.78	9.25	88.98		1.46	9.67	88.87

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	2.47	2.48
COLOUR INDEX	73.54	74.48

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		23.36			25.30	
MG/FE2/NA+K	82.73	16.07	1.20	73.59	25.48	.94
M - F - A	68.29	30.85	.87			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .743

POLDERVAARTS FORMULA	-3.504
MOLECULAR RATIO ALUMINA	19.235
@ OF SUGIMURA	41.033
CRYSTALLIZATION INDEX	74.415

ROCK NAME - THOLEIITIC PICRITE BASALT
K-RICH SERIES

Sample: MZT-77-199-5

Field name: porphyroblastic ultramafic.

Map unit: Bravo Lake Formation.

Location: northeast margin of South Jackson Lake Dome, east of Tuktu Narrows, E 409300 N 7603800.

Fabric: porphyroblasts of olivine have overgrown a matrix schistosity; no layering, strong schistosity.

Mineralogy: tremolite-actinolite 75, olivine 10, chlorite 2, opaques 5, serpentine 8; rims of opaques and serpentine on olivine, as crosscutting veins as well, chlorite retrograde.

Field relationships: ultramafic associated with fine grained tremolite-rich amphibolite.

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 19

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	49.66	TIO2	2.22		SIO2	51.01	TIO2	2.28
AL2O3	12.17	P2O5	.26		AL2O3	12.50	P2O5	.27
FE2O3	3.23	MNO	.27		FE2O3	3.32	MNO	.28
FEO	13.30	S	.02		FEO	13.66	S	.02
MGO	4.65	NIO	0.00		MGO	4.78	NIO	0.00
CAO	9.24	CR2O3	0.00		CAO	9.49	CR2O3	0.00
NA2O	1.70	CO2	.10		NA2O	1.75	CO2	.10
K2O	.54	H2O	1.60		K2O	.55	H2O	0.00

CATION PERCENT

SI =	49.33	AL =	14.25	FE3 =	2.41	FE2 =	11.28	CA =	9.84	MG =	6.88
NA =	3.27	K =	.69	TI =	1.66	P =	.22	S =	.04	CR =	0.00	CO2 =	.14

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	7.959	7.698	DI	7.035	7.551	MT	4.810	3.622
C	0.000	0.000	HE	9.825	9.205	IL	4.331	3.317
OR	3.281	3.425	EN	8.632	9.993	CR	0.000	0.000
AB	14.773	16.378	FS	13.828	12.182	HM	0.000	0.000
AN	24.632	25.727	FO	0.000	0.000	AP	.619	.584
LC	0.000	0.000	FA	0.000	0.000	PY	.842	.056
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.234	.271

NORM RATIOS (CATION EQUIVALENTS) (WEIGHT PER CENT)

MG/MG+FE2		.45			.32		
AN/AN+AB		61.11			62.51		
OR/AB/AN	7.52	35.96	56.51	7.69	34.61	57.71	
Q /AB/OR	28.00	59.54	12.46	30.60	56.79	12.61	
OL/HY/AG	0.00	56.96	43.04	0.00	57.12	42.88	
Q /HY/AG	16.51	47.56	35.93	16.83	47.51	35.66	
PL/AG/HY	51.95	20.68	27.37	50.05	21.42	28.53	
AG/PL/HY+4Q	14.98	37.65	47.37	.26	35.64	49.11	
OL+/PL/Q+	23.11	58.49	18.40	24.13	56.43	19.44	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	35.67	35.93	28.40	35.63	35.66	28.71	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	15.59	31.41	26.40	26.60	12.96	33.13	26.61	27.30
RATIO OF NE*/Q*/OL*	21.24	42.80	35.96		17.83	45.58	36.60	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	26.01	27.49
COLOUR INDEX	48.46	45.87

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		17.93			19.54	
MG/FE2/NA+K	31.44	50.47	18.08	23.03	65.87	11.09
M - F - A	28.13	70.17	9.70			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .805

POLDERVAARTS FORMULA	-9.321
MOLECULAR RATIO ALUMINA	3.599
Θ OF SUGIMURA	37.948
CRYSTALLIZATION INDEX	37.716

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-205-2

Field name: hornblende-plagioclase amphibolite.

Map unit: Bravo Lake Formation.

Location: Casson Lake Nappe, north of South Jackson Lake, E 405250 N 7607850.

Fabric: fine-grained, no layering, strong schistosity.

Mineralogy: green-brown hornblende 50, plagioclase 35, biotite 4, quartz 5, opaques 6, apatite tr.

Field relationships: amphibolite from within low grade Longstaff Bluff Formation-type siltstone, well above main Bravo Lake Formation involved in Casson Lake Nappe.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 20

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.82	TIO2	.85	SIO2	49.39	TIO2	.86				
AL2O3	18.91	P2O5	.13	AL2O3	19.13	P2O5	.13				
FE2O3	.87	MNO	.15	FE2O3	.88	MNO	.15				
FEO	8.00	S	0.00	FEO	8.09	S	0.00				
MGO	6.51	NIO	0.00	MGO	6.59	NIO	0.00				
CAO	11.83	CR2O3	0.00	CAO	11.97	CR2O3	0.00				
NA2O	1.99	CO2	0.00	NA2O	2.01	CO2	0.00				
K2O	.79	H2O	1.70	K2O	.80	H2O	0.00				

CATION PERCENT
SI = 45.81 AL = 20.91 FE3 =.61 FE2 = 6.40 CA = 11.89 MG = 9.10
NA = 3.62 K = .95 TI =.60 P =.10 S =0.00 CR =0.00 CO2 = 0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	8.600	8.852	MT	1.276	.921
C	0.000	0.000	HE	5.942	5.339	IL	1.633	1.200
OR	4.727	4.733	EN	7.863	7.841	CR	0.000	0.000
AB	17.032	18.100	FS	5.597	4.728	HM	0.000	0.000
AN	40.601	40.868	FO	3.750	4.455	AP	.305	.276
LC	0.000	0.000	FA	3.275	2.687	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS) (WEIGHT PER CENT)

MG/MG+FE2		.62			.48		
AN/AN+AB		69.31			70.55		
OR/AB/AN	7.43	28.41	64.16	7.56	27.23	65.22	
Q /AB/OR	0.00	79.27	20.73	0.00	78.28	21.72	
OL/HY/AG	21.07	37.07	41.86	20.52	36.99	42.49	
Q /HY/AG	0.00	46.97	53.03	0.00	46.54	53.46	
PL/AG/HY	68.79	16.55	14.66	68.01	17.10	14.89	
AG/PL/HY+4Q	16.55	68.79	14.66	.30	68.01	14.89	
OL+/PL/Q+	21.06	74.95	3.99	21.31	74.61	4.08	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	48.87	41.86	9.27	48.26	42.49	9.25	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	20.88	19.97	31.86	27.29	17.73	21.51	32.81	27.95
RATIO OF NE*/Q*/OL*	28.72	27.46	43.82		24.61	29.86	45.53	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	21.76	22.83
COLOUR INDEX	37.13	36.02

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		8.91			9.81	
MG/FE2/NA+K	45.64	31.47	22.89	37.65	46.27	16.08
M - F - A	36.02	48.60	15.38			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .902

POLDERVAARTS FORMULA	-.766
MOLECULAR RATIO ALUMINA	4.580
@ OF SUGIMURA	39.125
CRYSTALLIZATION INDEX	58.100

ROCK NAME - CALC-ALKALINE (HIGH ALUMINA) BASALT
K-RICH SERIES

Sample: MZT-77-252-1

Field name: hornblende-plagioclase amphibolite.

Map unit: basement complex.

Location: core of South Jackson Lake Dome, west shore of South Jackson Lake, E 404250 N 7601200.

Fabric: slight layering, penetrative schistosity.

Mineralogy: green-brown hornblende 44, plagioclase 50, quartz 3, biotite 2, apatite tr, sphene 1, opaques tr.

Field relationships: layers of amphibolite in basement gneiss.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 21

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	47.75	TIO2	.57		SIO2	48.94	TIO2	.58
AL2O3	20.14	P2O5	.09		AL2O3	20.64	P2O5	.09
FE2O3	1.29	MNO	.10		FE2O3	1.32	MNO	.10
FEO	6.90	S	0.00		FEO	7.07	S	0.00
MGO	6.75	NIO	0.00		MGO	6.92	NIO	0.00
CAO	9.81	CR2O3	0.00		CAO	10.06	CR2O3	0.00
NA2O	2.08	CO2	.10		NA2O	2.13	CO2	.10
K2O	1.98	H2O	2.80		K2O	2.03	H2O	0.00

CATION PERCENT
SI = 45.01 AL = 22.38 FE3 =.92 FE2 = 5.52 CA = 9.91 MG = 9.48
NA = 3.80 K = 2.38 TI =.40 P =.07 S =0.00 CR =0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	4.110	4.194	MT	1.917	1.373
C	0.000	0.000	HE	2.313	2.060	IL	1.110	.808
OR	12.004	11.918	EN	2.067	2.275	CR	0.000	0.000
AB	18.038	19.085	FS	1.334	1.117	HM	0.000	0.000
AN	40.761	40.480	FO	9.291	10.944	AP	.214	.192
LC	0.000	0.000	FA	6.608	5.376	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.233	.257

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.67				.53	
AN/AN+AB		68.05				69.32	
OR/AB/AN	16.69	26.62	56.69	16.95	25.48	57.57	
Q /AB/OR	0.00	61.46	38.54	0.00	60.04	39.96	
OL/HY/AG	62.85	13.06	24.09	61.81	13.22	24.97	
Q /HY/AG	0.00	35.17	64.83	0.00	34.62	65.38	
PL/AG/HY	86.05	9.05	4.91	85.68	9.36	4.96	
AG/PL/HY+4Q	9.05	86.05	4.91	.16	85.68	4.96	
OL+/PL/Q+	23.82	75.11	1.07	23.62	75.29	1.09	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	72.65	24.09	3.27	71.73	24.97	3.31	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	25.36	18.79	41.95	13.91	21.72	20.43	43.57	14.28
RATIO OF NE*/Q*/OL*	29.45	21.83	48.72		25.34	23.83	50.83	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	30.04	30.92
COLOUR INDEX	28.75	28.15

	(ATOMIC PERCENT)				(WEIGHT PERCENT)		
FE3/FE2+FE3		14.40				15.75	
MG/FE2/NA+K	44.93	25.77	29.30		38.11	38.96	22.92
M - F - A	35.77	42.72	21.51				

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .842

POLDERVAARTS FORMULA	1.959
MOLECULAR RATIO ALUMINA	3.618
Φ OF SUGIMURA	35.954
CRYSTALLIZATION INDEX	55.610

ROCK NAME - CALC-ALKALINE (HIGH ALUMINA) BASALT
K-RICH SERIES

Sample: MZT-77-252-2

Field name: biotite amphibolite.

Map unit: basement complex.

Location: core of South Jackson Lake Dome, west shore of South Jackson Lake, E 404250 N7601200.

Fabric: penetrative schistosity.

Mineralogy: turquoise-brown hornblende 40, plagioclase 50, biotite 10, apatite tr, quartz tr, chlorite tr, muscovite tr; chlorite and muscovite alteration of biotite.

Field relationships: biotite-rich amphibolite appears to grade into normal quartzofeldspathic gneiss but difficult to tell.

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 22

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	38.60	TIO2	5.10		SIO2	39.51	TIO2	5.22
AL2O3	10.84	P2O5	.53		AL2O3	11.10	P2O5	.54
FE2O3	3.50	MNO	.23		FE2O3	3.58	MNO	.24
FEO	14.80	S	.08		FEO	15.15	S	.08
MGO	11.57	NIO	0.00		MGO	11.84	NIO	0.00
CAO	9.87	CR2O3	0.00		CAO	10.10	CR2O3	0.00
NA2O	.67	CO2	.20		NA2O	.69	CO2	.20
K2O	1.70	H2O	2.60		K2O	1.74	H2O	0.00

CATION PERCENT
SI = 37.63 AL = 12.46 FE3 =2.57 FE2 = 12.26 CA = 10.31 MG = 16.81
NA = 1.27 K = 2.12 TI =3.74 P =.44 S =.15 CR =0.00 CO2 = .27

Sample: MZT-77-265-3

Field name: hornblende-rich amphibolite.

Map unit: Bravo Lake Formation.

Location: Casson Lake Nappe, southwest of South Jackson Lake Dome, E 398500 N 7603700.

Fabric: no layering, slight schistosity.

Mineralogy: blue green-brown hornblende 85, opaques 8, biotite 6, apatite 1.

Field relationships: underlain by rusty spotted schist.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	12.678	13.399	MT	5.195	3.851
C	0.000	0.000	HE	6.187	5.708	IL	9.915	7.478
OR	10.293	10.583	EN	0.000	0.000	CR	0.000	0.000
AB	4.103	4.477	FS	0.000	0.000	HM	0.000	0.000
AN	22.056	22.682	FO	16.550	20.190	AP	1.259	1.168
LC	0.000	0.000	FA	10.209	8.600	PY	.168	.219
NE	.921	1.113	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.466	.532

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)		
MG/MG+FE2		.70			.57	
AN/AN+AB		83.52			84.32	
AN/AN+AB+5/3NE		78.18			79.64	
OR/AB/AN	28.04	11.86	60.10	28.24	11.26	60.51
Q /AB/OR	0.00	29.73	70.27	0.00	28.50	71.50
OL/HY/AG	60.11	0.00	39.89	58.65	0.00	41.35
Q /HY/AG	0.00	0.00	100.00	0.00	0.00	100.00
PL/AG/HY	58.70	41.30	0.00	58.10	41.90	0.00
AG/PL/HY+4Q	41.30	58.70	0.00	.74	58.10	0.00
OL+/PL/Q+	51.46	48.54	0.00	50.57	49.43	0.00 ADJUSTED FOR CORUNDUM
OL+/AG/Q+	60.11	39.89	0.00	58.65	41.35	0.00
ANALYSES RECAST IN TERMS OF 4 END MEMBERS						
NE*/Q*/OL*/AG*	7.10	3.35	53.83	35.72	5.96	3.56 54.74 35.75
RATIO OF NE*/Q*/OL*		11.05	5.21	83.74	9.27	5.54 85.19

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	15.32	16.17
COLOUR INDEX	60.73	59.23

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		17.55			19.13	
MG/FE2/NA+K	52.11	37.41	10.49	40.26	51.50	8.25
M - F - A	36.28	56.29	7.43			

CRYSTALLIZATION INDEX 51.284
FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .809

POLDERVAARTS FORMULA 1.564
MOLECULAR RATIO ALUMINA 3.682
@ OF SUGIMURA 26.748

ROCK NAME - ALKALIC PICRITE BASALT, POTASSIC SERIES

SOURCE - W. C. MORGAN PROJECT 748028 BATCH 13 - 79
SAMPLE IDENTIFIER - 23

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.37	TIO2	1.43		SIO2	49.01	TIO2	1.45			
AL2O3	17.56	P2O5	.12		AL2O3	17.79	P2O5	.12			
FE2O3	1.15	MNO	.19		FE2O3	1.17	MNO	.19			
FEO	10.70	S	0.00		FEO	10.84	S	0.00			
MGO	5.92	NIO	0.00		MGO	6.00	NIO	0.00			
CAO	12.18	CR2O3	0.00		CAO	12.34	CR2O3	0.00			
NA2O	.68	CO2	0.00		NA2O	.69	CO2	0.00			
K2O	.40	H2O	1.40		K2O	.41	H2O	0.00			

CATION PERCENT
SI = 46.54 AL = 19.92 FE3 = .83 FE2 = 8.77 CA = 12.56 MG = 8.49
NA = 1.27 K = .49 TI = 1.03 P = .10 S = 0.00 CR = 0.00 CO2 = 0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	4.197	3.986	DI	6.761	7.127	MT	1.689	1.249
C	0.000	0.000	HE	6.674	6.140	IL	2.752	2.070
OR	2.397	2.458	EN	11.802	13.416	CR	0.000	0.000
AB	5.829	6.343	FS	13.361	11.559	HM	0.000	0.000
AN	44.256	45.391	FO	0.000	0.000	AP	.282	.261
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.54				.39	
AN/AN+AB		87.74				88.36	
OR/AB/AN	4.54	11.70	83.76	4.57	11.11	84.33	
Q /AB/OR	31.17	49.60	19.22	33.78	46.92	19.30	
OL/HY/AG	0.00	65.31	34.69	0.00	65.19	34.81	
Q /HY/AG	9.44	59.14	31.42	9.81	58.80	31.39	
PL/AG/HY	57.50	14.75	27.76	56.48	15.15	28.37	
AG/PL/HY+4Q	12.53	48.84	38.63	.22	47.49	39.77	
OL+/PL/Q+	23.21	64.11	12.68	23.76	63.04	13.20	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	44.36	31.42	24.23	44.10	31.39	24.51	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	7.84	26.29	38.56	27.31	6.46	27.50	38.55 27.49
RATIO OF NE*/Q*/OL*		10.78	36.16	53.06		8.91	37.92 53.17

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	12.42	12.79
COLOUR INDEX	43.04	41.56

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		8.82			9.70	
MG/FE2/NA+K	45.81	45.66	9.33	33.45	60.45	6.10
M - F - A	31.60	62.64	5.76			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .903

POLDERVAARTS FORMULA	-10.249
MOLECULAR RATIO ALUMINA	11.315
Θ OF SUGIMURA	44.853
CRYSTALLIZATION INDEX	59.288

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-276-3

Field name: amphibolite with diopside (?).

Map unit: Bravo Lake Formation.

Location: south of Kakiartok Rapids Dome, E 397550 N 7572700.

Fabric: faint layering, strong schistosity.

Mineralogy: green-brown hornblende 40, cummingtonite 3, plagioclase 35, clinopyroxene 5, quartz 15, opaques 2, sphene tr; hornblende and cummingtonite in optical continuity, developed only marginal to clinopyroxene.

Field relationships: 2 to 4 m thick layer near contact of the Dewar Lakes and Longstaff Bluff Formations.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 24

ANALYSIS (WEIGHT PERCENT)				ORIGINAL		ADJUSTED TO 100 PERCENT	
SIO2	45.49	TIO2	.85	SIO2	46.12	TIO2	.86
AL2O3	14.72	P2O5	.06	AL2O3	14.92	P2O5	.06
FE2O3	1.25	MNO	.19	FE2O3	1.27	MNO	.19
FEO	11.00	S	0.00	FEO	11.15	S	0.00
MGO	13.96	NIO	0.00	MGO	14.15	NIO	0.00
CAO	9.33	CR2O3	0.00	CAO	9.46	CR2O3	0.00
NA2O	1.26	CO2	0.00	NA2O	1.28	CO2	0.00
K2O	.52	H2O	1.98	K2O	.53	H2O	0.00

CATION PERCENT
SI = 42.22 AL = 16.10 FE3 = .87 FE2 = 8.69 CA = 9.28 MG = 19.31
NA = 2.27 K = .62 TI = .59 P = .05 S = 0.00 CR = 0.00 CO2 = 0.00

Sample: MZT-77-299-1

Field name: hornblende amphibolite.

Map unit: Longstaff Bluff Formation.

Location: east of Kakiartok Rapids Dome, near Johnson Lake, E 402650 N 7573800.

Fabric: fine grained, good layering, good schistosity.

Mineralogy: green-brown hornblende 50, plagioclase 25, clinopyroxene 9, quartz 15, sphene 1, apatite tr.

Field relationships: amphibolite at least 5-8 m long in paragneiss.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	7.302	7.418	MT	1.837	1.310
C	0.000	0.000	HE	3.318	2.942	IL	1.637	1.187
OR	3.118	3.082	EN	7.793	8.539	CR	0.000	0.000
AB	10.808	11.336	FS	4.061	3.386	HM	0.000	0.000
AN	33.431	33.051	FO	16.867	19.779	AP	.141	.126
LC	0.000	0.000	FA	9.687	7.844	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.72			.59		
AN/AN+AB		74.46			75.57		
OR/AB/AN	6.49	23.88	69.63	6.58	22.82	70.59	
Q /AB/OR	0.00	78.62	21.38	0.00	77.61	22.39	
OL/HY/AG	55.35	23.89	20.76	54.16	24.18	21.66	
Q /HY/AG	0.00	53.51	46.49	0.00	52.75	47.25	
PL/AG/HY	66.57	15.54	17.89	66.31	15.92	17.77	
AG/PL/HY+4Q	15.54	66.57	17.89	.28	66.31	17.77	
OL+/PL/Q+	43.57	52.88	3.55	42.89	53.53	3.59	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	73.27	20.76	5.97	72.30	21.66	6.04	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	11.11	12.27	59.71	16.92	9.32	13.06	60.73	16.90
RATIO OF NE*/Q*/OL*	13.37	14.77	71.86		11.21	15.72	73.07	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	13.93	14.42
COLOUR INDEX	52.50	52.41

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		9.28			10.20	
MG/FE2/NA+K	62.83	27.78	9.38	52.21	41.14	6.66
M - F - A	50.10	43.51	6.39			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .898

POLDERVAARTS FORMULA	-1.284
MOLECULAR RATIO ALUMINA	5.585
Φ OF SUGIMURA	37.706
CRYSTALLIZATION INDEX	63.061

ROCK NAME - THOLEIITIC PICRITE BASALT
K-RICH SERIES

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 25

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	53.75	TIO2	1.65	SIO2	54.67	TIO2	1.68				
AL2O3	13.88	P2O5	.24	AL2O3	14.12	P2O5	.24				
FE2O3	1.56	MNO	.23	FE2O3	1.59	MNO	.23				
FEO	11.90	S	.03	FEO	12.10	S	.03				
MGO	4.67	NIO	0.00	MGO	4.75	NIO	0.00				
CAO	8.80	CR2O3	0.00	CAO	8.95	CR2O3	0.00				
NA2O	.47	CO2	.10	NA2O	.48	CO2	.10				
K2O	1.03	H2O	2.00	K2O	1.05	H2O	0.00				

CATION PERCENT

SI = 52.86	AL = 16.09	FE3 = 1.15	FE2 = 9.98	CA = 9.27	MG = 6.84		
NA = .90	K = 1.29	TI = 1.22	P = .20	S = .06	CR = 0.00	CO2 = .13	

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	16.078	15.537	DI	3.156	3.387	MT	2.301	1.732
C	0.000	0.000	HE	4.308	4.035	IL	3.188	2.441
OR	6.197	6.468	EN	10.366	11.996	CR	0.000	0.000
AB	4.045	4.480	FS	16.227	14.290	HM	0.000	0.000
AN	33.282	34.749	FO	0.000	0.000	AP	.566	.534
LC	0.000	0.000	FA	0.000	0.000	PY	.063	.083
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.231	.269

NORM RATIOS (CATION EQUIVALENTS)					(WEIGHT PER CENT)			
MG/MG+FE2		.46				.32		
AN/AN+AB		88.58				89.16		
OR/AB/AN	14.15	9.80	76.04		14.24	9.29	76.47	
Q /AB/OR	58.66	16.92	24.42		61.08	15.37	23.55	
OL/HY/AG	0.00	77.98	22.02		0.00	78.08	21.92	
Q /HY/AG	31.55	53.38	15.07		32.06	53.05	14.89	
PL/AG/HY	53.79	10.17	36.04		52.29	10.46	37.25	
AG/PL/HY+4Q	5.49	29.04	65.47		.09	27.51	66.98	
OL+/PL/Q+	24.32	48.40	27.28		24.93	46.66	28.40	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	40.03	15.07	44.90		39.79	14.89	45.32	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS								
NE*/Q*/OL*/AG*	5.08	44.49	36.70	13.81	4.07	45.90	36.18	13.86
RATIO OF NE*/Q*/OL*	5.81	51.62	42.58		4.72	53.28	42.00	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	26.31	26.49
COLOUR INDEX	39.55	37.88

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	10.55			11.59		
MG/FE2/NA+K	36.37	52.00	11.63	25.84	65.86	8.30
M - F - A	23.98	68.32	7.70			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .884

POLDERVAARTS FORMULA	-21.227
MOLECULAR RATIO ALUMINA	7.347
@ OF SUGIMURA	48.277
CRYSTALLIZATION INDEX	43.703

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-314-5

Field name: biotite amphibolite.

Map unit: Longstaff Bluff Formation.

Location: southern migmatitic paragneiss zone, east of Lismer Lake, E 399700 N 7580350.

Fabric: no layering, moderate schistosity.

Mineralogy: green-brown hornblende 45, cummingtonite 1, plagioclase 30, quartz 15, biotite 5, opaques 3, apatite 1; hornblende and cummingtonite in optical continuity.

Field relationships: followed biotite amphibolite along strike, quite continuous.

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 26

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	53.40	TIO2	1.31	SIO2	54.68	TIO2	1.34				
AL2O3	14.36	P2O5	.18	AL2O3	14.70	P2O5	.18				
FE2O3	1.14	MNO	.22	FE2O3	1.17	MNO	.23				
FEO	10.80	S	0.00	FEO	11.06	S	0.00				
MGO	5.48	NIO	0.00	MGO	5.61	NIO	0.00				
CAO	7.74	CR2O3	0.00	CAO	7.93	CR2O3	0.00				
NA2O	.99	CO2	.10	NA2O	1.01	CO2	.10				
K2O	1.94	H2O	3.00	K2O	1.99	H2O	0.00				

CATION PERCENT
SI = 52.08 AL = 16.51 FE3 =.84 FE2 = 8.99 CA = 8.09 MG = 7.97
NA = 1.87 K = 2.42 TI =.96 P = .15 S =0.00 CR = 0.00 CO2 =.13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	18.311	9.822	DI	3.091	3.267	MT	1.692	1.255
C	0.000	0.000	HE	3.384	3.122	IL	2.548	1.922
OR	11.758	12.082	EN	12.541	14.297	CR	0.000	0.000
AB	8.577	9.359	FS	15.747	13.662	HM	0.000	0.000
AN	29.699	30.549	FO	0.000	0.000	AP	.428	.397
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.233	.266

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.51				.37	
AN/AN+AB		76.55				77.59	
OR/AB/AN	23.24	18.00	58.76	23.49	17.14	59.37	
Q /AB/OR	31.42	29.94	38.65	33.66	27.99	38.35	
OL/HY/AG	0.00	81.40	18.60	0.00	81.37	18.63	
Q /HY/AG	22.24	63.30	14.47	22.88	62.76	14.37	
PL/AG/HY	53.74	8.60	37.65	52.40	8.87	38.73	
AG/PL/HY+4Q	5.63	35.15	59.22	.10	33.49	60.84	
OL+/PL/Q+	26.99	51.37	21.64	27.60	49.79	22.61	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	47.47	14.47	38.06	47.07	14.37	38.57	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	10.49	38.40	39.17	11.94	8.65	40.16	39.15	12.05
RATIO OF NE*/Q*/OL*	11.91	43.60	44.48		9.83	45.66	44.51	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	30.64	31.26
COLOUR INDEX	39.00	37.53

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		8.67			9.55	
MG/FE2/NA+K	37.82	41.82	20.36	28.53	56.22	15.25
M - F - A	27.08	58.44	14.48			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .905

POLDERVAARTS FORMULA	-15.421
MOLECULAR RATIO ALUMINA	3.849
Φ OF SUGIMURA	42.470
CRYSTALLIZATION INDEX	41.579

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-318-1

Field name: amphibolite.

Map unit: Longstaff Bluff Formation.

Location: southern migmatitic paragneiss zone, east of Lismer Lake, E 401700 N 7582000.

Fabric: fine grained, no layering, moderate schistosity.

Mineralogy: green-brown hornblende 40, cummingtonite tr, plagioclase 40, quartz 15, opaques 2, biotite 1, apatite tr, chlorite tr, muscovite 2; muscovite and chlorite alteration of biotite, hornblende and cummingtonite in optical continuity.

Field relationships: from zone of amphibolite in paragneiss.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 27

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.71	TIO2	1.10		SIO2	49.26	TIO2	1.11
AL2O3	15.51	P2O5	.14		AL2O3	15.68	P2O5	.14
FE2O3	2.41	MNO	.19		FE2O3	2.44	MNO	.19
FEO	10.50	S	0.00		FEO	10.62	S	0.00
MGO	9.10	NIO	0.00		MGO	9.20	NIO	0.00
CAO	9.32	CR2O3	0.00		CAO	9.42	CR2O3	0.00
NA2O	1.67	CO2	0.00		NA2O	1.69	CO2	0.00
K2O	.24	H2O	1.90		K2O	.24	H2O	0.00

CATION PERCENT
SI = 46.05 AL = 17.28 FE3 =1.71 FE2 = 8.45 CA = 9.44 MG = 12.82
NA = 3.06 K = .29 TI =.78 P =.11 S =0.00 CR =0.00 CO2 = 0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	.152	.142	DI	5.758	5.974	MT	3.533	2.572
C	0.000	0.000	HE	3.507	3.175	IL	2.113	1.564
OR	1.435	1.449	EN	20.246	22.653	CR	0.000	0.000
AB	14.288	15.303	FS	14.140	12.840	HM	0.000	0.000
AN	34.588	34.828	FO	8.000	8.000	AP	.328	.299
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.65				.51	
AN/AN+AB		69.47				70.71	
OR/AB/AN	2.81	29.67	67.52	2.86	28.45	68.69	
Q /AB/OR	.84	90.58	8.58	.96	90.00	9.04	
OL/HY/AG	8.00	79.13	20.87	0.00	78.77	21.23	
Q /HY/AG	.32	78.88	20.80	.35	78.50	21.15	
PL/AG/HY	53.35	9.74	36.92	52.78	10.02	37.20	
AG/PL/HY+4Q	9.68	53.03	37.30	.18	52.43	37.61	
OL+/PL/Q+	30.62	59.00	10.37	30.95	58.55	10.50	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	59.16	20.80	20.04	58.88	21.15	19.97	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	15.49	25.19	43.89	15.43	12.99	26.82	44.64	15.55
RATIO OF NE*/Q*/OL*	18.31	29.79	51.90		15.38	31.76	52.86	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	15.87	16.89
COLOUR INDEX	49.30	47.98

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		17.12			18.67	
MG/FE2/NA+K	52.39	33.92	13.69	42.31	48.81	8.88
M - F - A	38.43	53.50	8.07			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .813

POLDERVAARTS FORMULA	-6.074
MOLECULAR RATIO ALUMINA	5.158
Φ OF SUGIMURA	40.145
CRYSTALLIZATION INDEX	54.447

ROCK NAME - THOLEIITIC BASALT
AVERAGE SERIES

Sample: MZT-77-327-2

Field name: foliated hornblende-tremolite amphibolite.

Map unit: basement complex.

Location: south margin of Harris Lake Dome, near the rapids between Harris Lake and Lismer Lake, E 396250 N 7591250.

Fabric: irregular layering, penetrative schistosity.

Mineralogy: blue green-brown hornblende 30, tremolite-actinolite 25, plagioclase 35, biotite 3, apatite tr, opaques 3, quartz 4, chlorite tr; chlorite retrograde, amphiboles as separate grains.

Field relationships: from a 10-15 m thick zone in biotite gneiss, associated with two 10-40 cm amphibolite with biotite-magnetite selvages.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 28

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	52.14	TIO2	.23		SIO2	53.54	TIO2	.24
AL203	5.13	P205	.01		AL203	5.27	P205	.01
FE203	1.18	MNO	.12		FE203	1.21	MNO	.12
FEO	5.20	S	0.00		FEO	5.34	S	0.00
MGO	22.25	NIO	0.00		MGO	22.85	NIO	0.00
CAO	9.36	CR203	0.00		CAO	9.61	CR203	0.00
NA2O	0.00	CO2	0.00		NA2O	0.00	CO2	0.00
K2O	1.76	H2O	2.40		K2O	1.81	H2O	0.00

CATION PERCENT
SI = 47.77 AL = 5.54 FE3 = .81 FE2 = 4.08 CA = 9.19 MG = 30.38
NA = 0.00 K = 2.06 TI = .16 P = .01 S = 0.00 CR = 0.00 CO2 = 0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	26.925	26.661	MT	1.757	1.220
C	0.000	0.000	HE	3.566	3.082	IL	.449	.317
OR	10.690	10.297	EN	33.615	35.898	CR	0.000	0.000
AB	0.000	0.000	FS	5.107	4.150	HM	0.000	0.000
AN	9.831	8.782	FO	7.569	8.651	AP	.024	.021
LC	0.000	0.000	FA	1.267	1.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.90				.83	
AN/AN+AB		100.00				100.00	
OR/AB/AN	54.20	0.00	45.80		54.21	0.00	45.79
Q /AB/OR	0.00	0.00	100.00		0.00	0.00	100.00
OL/HY/AG	12.15	50.41	37.44		11.32	49.61	39.07
Q /HY/AG	0.00	57.38	42.62		0.00	55.95	44.05
PL/AG/HY	11.09	37.89	51.02		11.54	38.97	49.49
AG/PL/HY+4Q	37.89	11.09	51.02		.71	11.54	49.49
OL+/PL/Q+	67.96	14.90	17.14		66.93	15.96	17.11 ADJUSTED FOR CORUNDUM
OL+/AG/Q+	49.96	37.44	12.60		48.53	39.07	12.40
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	0.00	12.60	49.96	37.44	0.00	13.32	50.47	36.21
RATIO OF NE*/Q*/OL*	0.00	20.15	79.85		0.00	20.89	79.11	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	10.69	10.30
COLOUR INDEX	80.25	80.98

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		16.96			18.50	
MG/FE2/NA+K	83.41	10.94	5.65	76.17	17.80	6.03
M - F - A	73.50	20.69	5.81			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .815

POLDERVAARTS FORMULA	-6.679
MOLECULAR RATIO ALUMINA	2.690
Θ OF SUGIMURA	36.871
CRYSTALLIZATION INDEX	67.084

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-339-2

Field name: tremolite-rich rock.

Map unit: basement complex.

Location: core of Harris Lake Dome, east of Harris Lake, E 400000, N 7590650.

Fabric: massive matrix with slight spotting, pseudo-porphyritic texture produced by prismatic amphibole.

Mineralogy: tremolite-actinolite 85, biotite 14, opaques 1.

Field relationships: from a 10 m thick zone of tremolite-rich ultramafic rocks, some spotted; leucocratic border phase; ultramafic assemblage appears to crosscut basement gneisses from its trend.

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 29

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	52.27	TIO2	.24	SIO2	54.40	TIO2	.25				
AL2O3	3.21	P2O5	0.00	AL2O3	3.34	P2O5	0.00				
FE2O3	1.28	MNO	.13	FE2O3	1.33	MNO	.14				
FEO	5.30	S	.03	FEO	5.52	S	.03				
MGO	24.34	NIO	0.00	MGO	25.33	NIO	0.00				
CAO	9.09	CR2O3	0.00	CAO	9.46	CR2O3	0.00				
NA2O	.06	CO2	0.00	NA2O	.06	CO2	0.00				
K2O	.14	H2O	3.30	K2O	.15	H2O	0.00				

CATION PERCENT
SI = 48.35 AL = 3.50 FE3 =.89 FE2 = 4.20 CA = 9.01 MG = 33.55
NA = .11 K = .17 TI =.17 P =0.00 S =.05 CR = 0.00 CO2 =0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	27.112	26.744	MT	1.931	1.337
C	0.000	0.000	HE	3.299	2.840	IL	.474	.334
OR	.862	.827	EN	49.799	52.979	CR	0.000	0.000
AB	.528	.538	FS	6.949	5.626	HM	0.000	0.000
AN	8.485	8.067	FO	.499	.568	AP	0.000	0.000
LC	0.000	0.000	FA	.077	.060	PY	.064	.078
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.90				.84	
AN/AN+AB		93.75				94.09	
OR/AB/AN	8.77	5.70	85.53	8.80	5.39	85.81	
Q /AB/OR	0.00	39.41	60.59	0.00	38.00	62.00	
OL/HY/AG	.71	65.98	33.31	.66	64.68	34.66	
Q /HY/AG	0.00	66.45	33.55	0.00	65.11	34.89	
PL/AG/HY	8.89	30.56	60.55	9.30	31.65	59.06	
AG/PL/HY+4Q	30.56	8.89	60.55	.58	9.30	59.06	
OL+/PL/Q+	65.72	12.68	21.60	65.11	13.48	21.41	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	50.20	33.31	16.50	49.17	34.66	16.17	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	.36	16.64	49.89	33.11	.30	17.54	50.27	31.89
RATIO OF NE*/Q*/OL*	.54	24.87	74.59		.44	25.76	73.80	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	1.39	1.36
COLOUR INDEX	90.14	90.49

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	17.85			19.45		
MG/FE2/NA+K	88.47	10.81	.72	81.57	17.76	.67
M - F - A	78.54	20.82	.65			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .805

POLDERVAARTS FORMULA	-8.648
MOLECULAR RATIO ALUMINA	12.820
Θ OF SUGIMURA	58.731
CRYSTALLIZATION INDEX	78.917

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-339-4

Field name: discordant tremolite-rich ultramafic.

Map unit: basement complex.

Location: core of Harris Lake Dome, east of Harris Lake, E 400000 N 7590650.

Fabric: very fine grained, embayed olivine porphyroblasts in a massive matrix.

Mineralogy: tremolite-actinolite 88, olivine 2, chlorite tr, opaques 3, serpentine 2; serpentinization of olivine.

Field relationships: part of a very fine grained tremolite-rich zone crosscutting coarser varieties; see sample MZT-77-339-2.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 30

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.26	TIO2	1.81		SIO2	49.43	TIO2	1.85			
AL2O3	15.41	P2O5	.15		AL2O3	15.78	P2O5	.15			
FE2O3	3.61	MNO	.21		FE2O3	3.39	MNO	.22			
FEO	12.00	S	0.00		FEO	12.56	S	0.00			
MGO	4.77	NIO	0.00		MGO	4.89	NIO	0.00			
CAO	10.34	CR2O3	0.00		CAO	10.59	CR2O3	0.00			
NA2O	.42	CO2	.20		NA2O	.43	CO2	.20			
K2O	.49	H2O	2.20		K2O	.50	H2O	0.00			

CATION PERCENT
SI = 47.90 AL = 18.03 FE3 = 2.47 FE2 = 10.36 CA = 11.00 MG = 7.06
NA = .81 K = .62 TI = 1.35 P = .13 S = 0.00 CR = 0.00 CO2 = .27

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	10.287	9.971	DI	3.921	4.218	MT	4.915	3.709
C	0.000	0.000	HE	4.949	4.646	IL	3.521	2.702
OR	2.968	3.186	EN	10.348	12.804	CR	0.000	0.000
AB	3.639	4.041	FS	14.977	13.223	HM	0.000	0.000
AN	39.651	41.502	FO	0.000	0.000	AP	.356	.337
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.466	.542

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.48			.34		
AN/AN+AB		91.13			91.59		
OR/AB/AN	6.38	8.31	85.31	6.42	7.87	85.72	
Q /AB/OR	50.25	23.61	18.14	60.89	21.54	17.57	
OL/HY/AG	0.00	74.00	26.00	0.00	74.06	25.94	
Q /HY/AG	22.63	57.25	20.12	23.13	56.93	19.94	
PL/AG/HY	57.19	11.13	31.68	55.87	11.45	32.68	
AG/PL/HY+4Q	7.42	38.11	54.48	.13	36.49	56.03	
OL+/PL/Q+	23.43	56.41	20.16	24.07	54.87	21.06	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	42.94	20.12	36.94	42.70	19.94	37.36	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	5.04	37.20	39.33	18.43	4.11	38.50	38.90	18.50
RATIO OF NE*/Q*/OL*	6.18	45.60	48.22		5.04	47.23	47.72	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	16.98	17.12
COLOUR INDEX	42.63	40.50

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		19.54			21.25	
MG/FE2/NA+K	37.80	54.55	7.66	26.58	68.35	5.07
M - F - A	22.80	72.86	4.35			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .769

POLDERVAARTS FORMULA	-17.346
MOLECULAR RATIO ALUMINA	12.613
Φ OF SUGIMURA	45.702
CRYSTALLIZATION INDEX	50.825

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-348-3

Field name: hornblende-rich garnet amphibolite.

Map unit: Bravo Lake Formation.

Location: uppermost thrust slice along the east flank of Fitzgerald Lake Dome, near Lismer Lake, E 391300 N 7588800.

Fabric: faint layering, slight schistosity.

Mineralogy: green-brown hornblende 35, cummingtonite 3, plagioclase 40, quartz 15, opaques 5, apatite 1, biotite 1, chlorite tr; chlorite alteration produced, hornblende and cummingtonite in optical continuity.

Field relationships: interlayered with biotite-garnet schist on a 1-20 cm scale.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 31

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	50.61	TIO2	.88		SIO2	51.82	TIO2	.90
AL2O3	12.43	P2O5	.10		AL2O3	12.73	P2O5	.10
FE2O3	1.25	MNO	.22		FE2O3	1.28	MNO	.23
FEO	10.00	S	.05		FEO	10.24	S	.05
MGO	8.67	NIO	0.00		MGO	8.88	NIO	0.00
CAO	11.62	CR2O3	0.00		CAO	11.90	CR2O3	0.00
NA2O	.65	CO2	0.00		NA2O	.67	CO2	0.00
K2O	1.18	H2O	2.20		K2O	1.21	H2O	0.00

CATION PERCENT
SI = 48.79 AL = 14.12 FE3 = .91 FE2 = 8.24 CA = 12.00 MG = 12.46
NA = 1.21 K = 1.45 TI = .64 P = .08 S = .09 CR = 0.00 CO2 = 0.00

Sample: MZT-77-382-3

Field name: hornblende amphibolite.

Map unit: Longstaff Bluff Formation.

Location: southern mmigmatitic paragneiss zone, northeast of Kakiartok Rapids Dome, E 400300 N 7577900.

Fabric: no layering, weak schistosity.

Mineralogy: brown hornblende 50, plagioclase 44, quartz 5, opaques 1, sphene tr.

Field relationships: from a belt of hornblende-rich amphibolites in paragneiss.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	3.855	3.630	DI	14.964	15.635	MT	1.856	1.360
C	0.000	0.000	HE	9.780	8.919	IL	1.711	1.276
OR	7.147	7.264	EN	15.171	17.095	CR	0.000	0.000
AB	5.631	6.074	FS	11.371	9.752	HM	0.000	0.000
AN	28.171	28.641	FO	0.000	0.000	AP	.238	.218
LC	0.000	0.000	FA	0.000	0.000	PY	.105	.136
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)					(WEIGHT PER CENT)			
MG/MG+FE2		.64				.50		
AN/AN+AB		82.50				83.34		
OR/AB/AN	17.30	14.47	68.23		17.45	13.75	68.80	
Q /AB/OR	21.39	35.80	42.81		23.18	33.85	42.97	
OL/HY/AG	0.00	52.23	47.77		0.00	51.75	48.25	
Q /HY/AG	6.60	48.79	44.62		6.99	48.13	44.87	
PL/AG/HY	48.31	28.51	31.18		39.73	29.08	31.19	
AG/PL/HY+4Q	24.40	34.50	41.10		.43	33.63	41.75	
OL+/PL/Q+	30.89	53.25	15.86		31.01	52.65	16.34	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	36.59	44.62	18.79		36.10	44.87	19.03	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS								
NE*/Q*/OL*/AG*	5.96	20.90	32.95	40.18	4.94	21.95	33.07	40.04
RATIO OF NE*/Q*/OL*	9.97	34.94	55.09		8.23	36.61	55.16	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	16.63	16.97
COLOUR INDEX	54.85	54.04

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		10.11			11.11	
MG/FE2/NA+K	53.72	34.77	11.51	42.29	48.78	8.93
M - F - A	40.89	51.44	8.46			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .889

POLDERVAARTS FORMULA	-8.274
MOLECULAR RATIO ALUMINA	5.295
@ OF SUGIMURA	42.946
CRYSTALLIZATION INDEX	53.767

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 32

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.41	TIO2	.39		SIO2	49.89	TIO2	.40
AL2O3	8.44	P2O5	.06		AL2O3	8.70	P2O5	.06
FE2O3	1.14	MNO	.17		FE2O3	1.17	MNO	.18
FEO	9.80	S	0.00		FEO	10.10	S	0.00
MGO	22.21	NIO	0.00		MGO	22.89	NIO	0.00
CAO	2.15	CR2O3	0.00		CAO	2.22	CR2O3	0.00
NA2O	.11	CO2	.10		NA2O	.11	CO2	.10
K2O	4.05	H2O	3.00		K2O	4.17	H2O	0.00

CATION PERCENT
SI = 44.48 AL = 9.14 FE3 = .79 FE2 = 7.66 CA = 2.12 MG = 30.42
NA = .20 K = 4.75 TI = .27 P = .05 S = 0.00 CR = 0.00 CO2 = .13

Sample: MZT-77-437-1

Field name: biotite-hornblende ultramafic.

Map unit: Longstaff Bluff Formation.

Location: southern migmatitic paragneiss zone, west of Lismer Lake, E 390600 N 7580000.

Fabric: coarse grained, massive.

Mineralogy: tremolite-actinolite 50, biotite 50, epidote tr.

Field relationships: from a concordant amphibolite-ultramafic zone within paragneiss.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	0.000	0.000	HT	1.703	1.182
C	.348	.365	HE	0.000	0.000	IL	.763	.539
OR	24.688	23.765	EN	21.640	23.094	CR	0.000	0.000
AB	.959	.980	FS	6.544	5.315	HM	0.000	0.000
AN	9.936	9.567	FO	24.781	28.303	AP	.143	.125
LC	0.000	0.000	FA	8.259	6.514	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.234	.251

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.81				.71	
AN/AN+AB		90.71				91.20	
OR/AB/AN	69.26	2.86	27.88	69.38	2.70	27.92	
Q /AB/OR	0.00	3.96	96.04	0.00	3.74	96.26	
OL/HY/AG	55.07	44.93	0.00	53.96	46.04	0.00	
Q /HY/AG	0.00	100.00	0.00	0.00	100.00	0.00	
PL/AG/HY	27.07	0.00	72.93	27.88	0.00	72.12	
AG/PL/HY+4Q	0.00	27.07	72.93	0.00	27.88	72.12	
OL+/PL/Q+	75.33	15.31	9.36	74.41	16.08	9.51	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	88.77	0.00	11.23	88.49	0.00	11.51	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	.92	11.67	87.41	0.00	.75	12.17	87.08	0.00
RATIO OF NE*/Q*/OL*	.92	11.67	87.41		.75	12.17	87.08	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	25.65	24.74
COLOUR INDEX	63.69	64.95

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		9.48			10.42	
MG/FE2/NA+K	78.91	17.56	11.54	61.40	27.09	11.50
M - F - A	59.71	29.10	11.18			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .896

POLDERVAARTS FORMULA	-5.756
MOLECULAR RATIO ALUMINA	1.847
Θ OF SUGIMURA	24.447
CRYSTALLIZATION INDEX	49.883

ROCK NAME - THOLEIITIC PICRITE BASALT
K-RICH SERIES

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 33

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	49.33	TIO2	2.00		SIO2	50.34	TIO2	2.04			
AL2O3	13.64	P2O5	.15		AL2O3	13.92	P2O5	.15			
FE2O3	2.58	MNO	.24		FE2O3	2.63	MNO	.24			
FEO	11.70	S	.10		FEO	11.94	S	.10			
MGO	5.83	NIO	0.00		MGO	5.95	NIO	0.00			
CAO	8.75	CR2O3	0.00		CAO	8.93	CR2O3	0.00			
NA2O	2.68	CO2	.20		NA2O	2.73	CO2	.20			
K2O	.80	H2O	2.10		K2O	.82	H2O	0.00			

CATION PERCENT

SI = 47.57	AL = 15.50	FE3 = 1.87	FE2 = 9.63	CA = 9.04	MG = 8.38		
NA = 5.01	K = .99	TI = 1.45	P = .12	S = .18	CR = 0.00	CO2 = .26	

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	.764	.722	OI	7.857	8.239	MT	3.817	2.808
C	0.000	0.000	HE	7.687	7.036	IL	3.876	2.901
OR	4.829	4.926	EN	11.173	12.636	CR	0.000	0.000
AB	23.138	25.049	FS	12.537	10.791	HM	0.000	0.000
AN	23.293	23.768	FO	0.000	0.000	AP	.355	.327
LC	0.000	0.000	FA	0.000	0.000	PY	.210	.271
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.464	.527

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.54				.40	
AN/AN+AB		48.69				50.17	
OR/AB/AN	9.17	46.61	44.23	9.42	45.14	45.44	
Q /AB/OR	2.35	81.60	16.05	2.66	80.53	16.81	
OL/HY/AG	0.00	60.53	39.47	0.00	60.40	39.60	
Q /HY/AG	1.83	59.42	38.75	1.91	59.25	38.84	
PL/AG/HY	55.78	17.45	26.77	54.19	18.14	27.67	
AG/PL/HY+4Q	16.90	54.00	29.11	.30	52.32	30.16	
OL+/PL/Q+	24.88	66.90	9.02	25.08	65.48	9.44	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	44.57	38.75	16.69	44.44	38.84	16.72	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	23.31	25.74	27.25	23.69	19.77	27.70	28.02	24.51
RATIO OF NE*/Q*/OL*	30.55	33.74	35.71		26.18	36.70	37.12	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	28.73	30.70
COLOUR INDEX	46.95	44.41

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		16.56			18.07	
MG/FE2/NA+K	35.19	39.63	25.18	27.75	55.69	16.56
M - F - A	24.99	58.10	14.92			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .819

POLDERVAARTS FORMULA	-2.688
MOLECULAR RATIO ALUMINA	2.586
Θ OF SUGIMURA	32.161
CRYSTALLIZATION INDEX	38.980

ROCK NAME - THOLEIITIC BASALT
AVERAGE SERIES

Sample: MZT-77-462-2

Field name: amphibolite.

Map unit: basement complex.

Location: east flank of autochtonous Fitzgerald Lake Dome, just east of Fitzgerald Lake, E 387500 N 7590250.

Fabric: no layering, moderate schistosity.

Mineralogy: green-brown hornblende 60, plagioclase 20, quartz 10, opaques 5, biotite 2, chlorite 3, apatite tr, sphene tr; chlorite and sphene retrograde after biotite.

Field relationships: from zone of gneiss and amphibolite interlayering on a cm-scale with internal laminations on a mm-scale.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 34

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	39.27	TIO2	5.27	SIO2	40.39	TIO2	5.42				
AL203	7.57	P205	.56	AL203	7.79	P205	.58				
FE203	4.00	MNO	.28	FE203	4.11	MNO	.29				
FEO	14.80	S	0.00	FEO	15.22	S	0.00				
MGO	15.06	NIO	0.00	MGO	15.49	NIO	0.00				
CAO	9.10	CR203	0.00	CAO	9.36	CR203	0.00				
NA2O	.95	CO2	.20	NA2O	.98	CO2	.21				
K2O	.17	H2O	2.80	K2O	.17	H2O	0.00				

CATION PERCENT
SI = 38.21 AL = 8.68 FE3 =2.93 FE2 = 12.27 CA = 9.49 MG = 21.84
NA = 1.79 K = .21 TI =3.86 P =.46 S =0.00 CR =0.00 CO2 = .27

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	14.772	15.509	MT	5.965	4.393
C	0.000	0.000	HE	5.389	4.938	IL	10.294	7.712
OR	1.034	1.056	EN	9.263	18.489	CR	0.000	0.000
AB	8.266	8.960	FS	3.876	3.340	HM	0.000	0.000
AN	16.342	16.695	FO	15.739	19.073	AP	1.336	1.232
LC	0.000	0.000	FA	7.257	6.073	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.468	.531

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.76			.64		
AN/AN+AB		65.08			66.41		
OR/AB/AN	3.95	33.54	62.50	4.03	32.24	63.73	
Q /AB/OR	0.00	89.45	10.55	0.00	88.88	11.12	
OL/HY/AG	42.32	23.27	34.41	40.85	23.34	35.81	
Q /HY/AG	0.00	40.35	59.65	0.00	39.46	60.54	
PL/AG/HY	42.81	34.12	23.07	42.50	34.81	22.69	
AG/PL/HY+4Q	34.12	42.81	23.07	.62	42.50	22.69	
OL+/PL/Q+	54.96	39.70	5.35	54.08	40.51	5.41	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	59.77	34.41	5.82	58.35	35.81	5.83	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	7.86	10.30	51.94	29.90	6.59	10.95	52.79	29.67
RATIO OF NE*/Q*/OL*	11.21	14.69	74.10		9.37	15.57	75.06	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	9.38	10.02
COLOUR INDEX	72.55	71.53

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3	19.56			21.28		
MG/FE2/NA+K	60.86	33.56	5.58	48.61	47.77	3.62
M - F - A	43.55	53.21	3.24			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .787

POLDERVAARTS FORMULA	-1.762
MOLECULAR RATIO ALUMINA	4.334
Θ OF SUGIMURA	29.544
CRYSTALLIZATION INDEX	53.345

ROCK NAME - THOLEIITIC PICRITE BASALT
AVERAGE SERIES

Sample: MZT-77-466-1

Field name: hornblende amphibolite.

Map unit: Bravo Lake Formation.

Location: autochtonous cover of Fitzgerald Lake Dome, east flank below the lowest thrust slice, east of Fitzgerald Lake, E 388100 N 7587250.

Fabric: slight layering, moderate schistosity.

Mineralogy: tremolite-actinolite 75, olivine 10, opaques 10, serpentine 5, apatite tr; serpentine and some opaques after olivine.

Field relationships: from thick amphibolite near the contact of basement complex and paragneiss.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 35

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.80	TIO2	.33		SIO2	51.62	TIO2	.35			
AL2O3	2.91	P2O5	.24		AL2O3	3.08	P2O5	.25			
FE2O3	2.50	MNO	.15		FE2O3	1.94	MNO	.16			
FEO	5.70	S	0.00		FEO	6.66	S	0.00			
MGO	23.30	NIO	0.00		MGO	24.65	NIO	0.00			
CAO	9.00	CR2O3	0.00		CAO	9.52	CR2O3	0.00			
NA2O	.25	CO2	1.40		NA2O	.26	CO2	1.48			
K2O	.03	H2O	5.30		K2O	.03	H2O	0.00			

CATION PERCENT
SI = 45.93 AL = 3.23 FE3 =1.30 FE2 = 5.08 CA = 9.08 MG = 32.68
NA = .46 K = .04 TI =.23 P =.19 S =0.00 CR =0.00 CO2 =1.80

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	20.068	19.816	MT	2.807	1.944
C	0.000	0.000	HE	2.950	2.543	IL	.663	.467
OR	.188	.180	EN	49.580	52.799	CR	0.000	0.000
AB	2.237	2.281	FS	8.360	6.775	HM	0.000	0.000
AN	7.119	6.840	FO	1.747	1.991	AP	.589	.511
LC	0.000	0.000	FA	.325	.256	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	3.368	3.598

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.89				.81	
AN/AN+AB		74.99				76.09	
OR/AB/AN	1.94	24.52	73.54		1.97	23.44	74.59
Q /AB/OR	0.00	92.67	7.33		0.00	92.26	7.74
OL/HY/AG	2.67	70.77	26.56		2.50	69.78	27.72
Q /HY/AG	0.00	72.71	27.29		0.00	71.57	28.43
PL/AG/HY	10.02	24.56	65.43		10.36	25.49	64.15
AG/PL/HY+4Q	24.56	10.02	65.43		.46	10.36	64.15
OL+/PL/Q+	66.15	12.86	20.99		65.63	13.49	20.88 ADJUSTED FOR CORUNDUM
OL+/AG/Q+	55.75	26.56	17.69		54.83	27.72	17.45
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	1.58	18.28	54.28	25.86	1.31	19.23	54.55 24.91
RATIO OF NE*/Q*/OL*		2.13	24.66	73.21		1.75	25.61 72.65

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	2.43	2.46
COLOUR INDEX	86.50	86.59

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		20.73			22.52	
MG/FE2/NA+K	85.71	13.00	1.29	77.99	21.07	.94
M - F - A	73.91	25.20	.89			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .695

POLDERVAARTS FORMULA	-8.945
MOLECULAR RATIO ALUMINA	6.558
Θ OF SUGIMURA	44.454
CRYSTALLIZATION INDEX	63.681

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-469-2

Field name: light brown tremolite-rich amphibolite.

Map unit: Bravo Lake Formation.

Location: east margin Fitzgerald Lake Dome in the upper thrust slice, near Lismer Lake, E 390050 N 7586550.

Fabric: moderate layering, slight schistosity.

Mineralogy: tremolite-actinolite 70, olivine 3, opaques 15, serpentine 12; serpentine after olivine and tremolite-actinolite.

Field relationships: dominates upper part of 45 + m thickness of hornblendites and amphibolites, makes up only 5% of the lower part of the outcrop, overlies sample MZT-77-469-3.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 36

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	36.34	TIO2	1.36	SIO2	39.12	TIO2	1.46				
AL203	10.24	P205	.09	AL203	11.02	P205	.10				
FE203	5.42	MNO	.24	FE203	3.08	MNO	.26				
FEO	7.80	S	0.00	FEO	10.85	S	0.00				
MGO	24.09	NIO	0.08	MGO	25.93	NIO	0.00				
CAO	6.34	CR203	0.00	CAO	6.83	CR203	0.00				
NA20	.18	CO2	1.00	NA20	.19	CO2	1.08				
K20	.07	H20	6.90	K20	.08	H20	0.00				

CATION PERCENT
SI = 34.68 AL = 11.52 FE3 =2.05 FE2 = 8.24 CA = 6.48 MG = 34.26
NA = .33 K = .09 TI =.98 P =.07 S =0.00 CR =0.00 CO2 = 1.30

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	0.000	0.000	MT	4.464	3.081
C	.941	.963	HE	0.000	0.000	IL	2.781	1.952
OR	.446	.427	EN	9.759	10.354	CR	0.000	0.000
AB	1.639	1.665	FS	2.333	1.884	HM	0.000	0.000
AN	26.421	25.292	FO	38.420	43.625	AP	.225	.194
LC	0.000	0.000	FA	10.123	7.938	PY	0.000	0.000
NE	0.000	0.000	NO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	2.448	2.606

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.85			.76		
AN/AN+AB		93.82			94.16		
OR/AB/AN	1.56	6.08	92.36	1.56	5.75	92.69	
Q /AB/OR	0.00	79.61	20.39	0.00	78.62	21.38	
OL/HY/AG	80.82	19.18	0.00	80.06	19.94	0.00	
Q /HY/AG	0.00	100.00	0.00	0.00	100.00	0.00	
PL/AG/HY	68.78	0.00	31.22	69.88	0.00	30.12	
AG/PL/HY+4Q	0.00	68.78	31.22	0.00	69.88	30.12	
OL+/PL/Q+	65.61	31.39	3.00	63.72	33.23	3.05	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	95.20	0.00	4.80	95.01	0.00	4.99	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	1.53	5.69	92.78	0.00	1.26	5.96	92.79	0.00
RATIO OF NE*/Q*/OL*		1.53	5.69	92.78		1.26	5.96	92.79

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	2.09	2.09
COLOUR INDEX	67.88	68.83

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		20.34			22.11	
MG/FE2/NA+K	80.19	18.83	.98	69.99	29.28	.73
M - F - A	65.12	34.20	.68			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .590

POLDERVAARTS FORMULA	-2.299
MOLECULAR RATIO ALUMINA	27.534
Θ OF SUGIMURA	37.415
CRYSTALLIZATION INDEX	71.680

ROCK NAME - THOLEIITIC PICRITE BASALT
K-RICH SERIES

Sample: MZT-77-469-3

Field name: amphibolite.

Map unit: Bravo Lake Formation.

Location: east margin of Fitzgerald Lake Dome in the upper thrust slice, near Lismer Lake, E 390050 N 7586550.

Fabric: coarse grained, no layering, slight schistosity with porphyroblasts.

Mineralogy: tremolite-actinolite 25, clinopyroxene 20, olivine 5, spinel 2, chlorite 5, opaques 5, serpentine 38, carbonate tr; serpentine and opaques after olivine, clinopyroxene fresh.

Field relationships: makes up 95% of lower part of outcrop, underlain by garnet-sillimanite schist and migmatitic paragneiss, well layered with boudinaged layering, see sample MZT-77-469-2.

SOURCE - W. C. MORGAN PROJECT 748020 BATCH 13 - 79
SAMPLE IDENTIFIER - 37

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	45.92	TIO2	1.42		SIO2	46.81	TIO2	1.45
AL2O3	10.36	P2O5	.04		AL2O3	10.56	P2O5	.04
FE2O3	2.43	MNO	.19		FE2O3	2.48	MNO	.19
FEO	9.60	S	0.00		FEO	9.79	S	0.00
MGO	14.19	NIO	0.00		MGO	14.46	NIO	0.00
CAO	12.51	CR2O3	0.00		CAO	12.75	CR2O3	0.00
NA2O	1.11	CO2	0.00		NA2O	1.13	CO2	0.00
K2O	.33	H2O	2.20		K2O	.34	H2O	0.00

CATION PERCENT
SI = 43.17 AL = 11.48 FE3 =1.72 FE2 = 7.70 CA = 12.60 MG = 19.88
NA = 2.02 K = .40 TI =1.00 P =.03 S =0.00 CR =0.00 CO2 =0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	24.225	24.793	MT	3.591	2.579
C	0.000	0.000	HE	8.147	7.278	IL	2.749	2.008
OR	1.998	1.981	EN	5.506	6.078	CR	0.000	0.000
AB	9.573	10.115	FS	2.124	1.784	HM	0.000	0.000
AN	22.743	22.650	FO	13.514	15.964	AP	.095	.085
LC	0.000	0.000	FA	5.744	4.686	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.77			.66		
AN/AN+AB		69.13			70.38		
OR/AB/AN	5.70	29.11	65.19	5.80	27.90	66.30	
Q /AB/OR	0.00	83.62	16.38	0.00	82.79	17.21	
OL/HY/AG	34.09	12.98	52.94	32.50	12.88	54.63	
Q /HY/AG	0.00	19.69	80.31	0.00	19.07	80.93	
PL/AG/HY	45.87	44.12	10.01	44.69	44.76	10.55	
AG/PL/HY+4Q	44.12	45.87	10.01	.80	44.69	10.55	
OL+/PL/Q+	43.32	53.47	3.21	42.19	54.58	3.22	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	43.82	52.94	3.24	42.15	54.63	3.22	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	8.58	8.50	37.55	45.36	7.24	9.11	38.43	45.22
RATIO OF NE*/Q*/OL*		15.71	15.56	68.73		13.23	16.62	70.15

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	11.56	12.10
COLOUR INDEX	65.60	65.17

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		18.55			20.20	
MG/FE2/NA+K	66.61	25.29	8.11	56.24	38.05	5.71
M - F - A	51.76	42.99	5.25			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .798

POLDERVAARTS FORMULA	-.472
MOLECULAR RATIO ALUMINA	4.745
Θ OF SUGIMURA	36.905
CRYSTALLIZATION INDEX	64.341

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-472-1

Field name: black hornblende amphibolite.

Map unit: Bravo Lake Formation.

Location: east margin of Fitzgerald Lake Dome in upper thrust slice, near Lismer Lake, E 389650 N 7585800.

Fabric: fine to medium grained, no layering, strong schistosity.

Mineralogy: green-brown hornblende 97, opaques 3.

Field relationships: from a 30-40 m thick zone with well defined compositional layering produced by the alternation of biotite-bearing layers with layers of 100% hornblende; tremolite-rich layers interlayered on the meter scale; overlies 5 m of sillimanite-garnet-quartz schist with minor amphibolite and 5-7 m of true hornblende-plagioclase amphibolite before the basement complex.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 38

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	47.34	TIO2	2.27		SIO2	48.58	TIO2	2.33			
AL2O3	12.78	P2O5	.13		AL2O3	13.12	P2O5	.13			
FE2O3	1.68	MNO	.26		FE2O3	1.72	MNO	.27			
FEO	15.40	S	.36		FEO	15.80	S	.37			
MGO	5.68	NIO	0.00		MGO	5.83	NIO	0.00			
CAO	9.43	CR2O3	0.00		CAO	9.68	CR2O3	0.00			
NA2O	1.56	CO2	0.00		NA2O	1.60	CO2	0.00			
K2O	.55	H2O	2.40		K2O	.56	H2O	0.00			

CATION PERCENT
SI = 46.61 AL = 14.83 FE3 =1.24 FE2 = 12.90 CA = 9.95 MG = 8.34
NA = 2.98 K = .69 TI =1.68 P =.11 S =.66 CR =0.00 CO2 = 0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	1.727	1.657	DI	7.050	7.506	MT	2.500	1.867
C	0.000	0.000	HE	9.946	9.242	IL	4.425	3.362
OR	3.339	3.458	EN	11.251	12.918	CR	0.000	0.000
AB	13.548	14.898	FS	18.203	15.906	HM	0.000	0.000
AN	26.940	27.988	FO	0.000	0.000	AP	.310	.289
LC	0.000	0.000	FA	0.000	0.000	PY	.760	.997
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.45				.31	
AN/AN+AB		65.21				66.54	
OR/AB/AN	7.48	32.19	60.33	7.62	30.91	61.47	
Q /AB/OR	8.28	74.43	17.29	9.28	72.78	17.94	
OL/HY/AG	0.00	63.25	36.75	0.00	63.41	36.59	
Q /HY/AG	3.51	61.03	35.46	3.58	61.14	35.28	
PL/AG/HY	48.43	18.95	32.62	46.57	19.55	33.88	
AG/PL/HY+4Q	17.63	45.05	37.32	.31	43.14	38.75	
OL+/PL/Q+	29.58	58.40	12.09	30.82	56.49	12.68	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	45.77	35.46	18.77	45.85	35.28	18.87	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	14.38	23.86	34.80	26.96	11.97	25.19	35.12	27.72
RATIO OF NE*/Q*/OL*	19.69	32.66	47.65		16.56	34.85	48.59	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	18.61	20.01
COLOUR INDEX	53.38	50.80

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		8.94			9.84	
MG/FE2/NA+K	33.76	51.37	14.86	24.49	66.41	9.10
M - F - A	22.99	68.46	8.54			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .902

POLDERVAARTS FORMULA	-5.884
MOLECULAR RATIO ALUMINA	4.042
@ OF SUGIMURA	36.956
CRYSTALLIZATION INDEX	41.875

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-493-5

Field name: normal amphibolite.

Map unit: Longstaff Bluff Formation.

Location: southern migmatitic paragneiss zone, southwest of Lismer Lake Pluton, E 391150 N 7581650.

Fabric: fine to medium grained, no layering, faint schistosity.

Mineralogy: green-brown hornblende 50, plagioclase 40, quartz 4, opaques 5, biotite 1, apatite tr, chlorite tr.

Field relationships: from a 10-15 m thickness of amphibolite in migmatitic paragneiss.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 39

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	51.61	TIO2	1.04	SIO2	53.34	TIO2	1.07				
AL2O3	13.53	P2O5	.07	AL2O3	13.98	P2O5	.07				
FE2O3	4.32	MNO	.20	FE2O3	2.62	MNO	.21				
FEO	7.60	S	.05	FEO	9.49	S	.05				
MGO	6.98	NIO	0.00	MGO	7.21	NIO	0.00				
CAO	10.72	CR2O3	0.00	CAO	11.08	CR2O3	0.00				
NA2O	.39	CO2	0.00	NA2O	.40	CO2	0.00				
K2O	.45	H2O	1.70	K2O	.47	H2O	0.00				

CATION PERCENT
SI = 50.86 AL = 15.72 FE3 =1.88 FE2 = 7.74 CA = 11.32 MG = 10.25
NA = .75 K = .57 TI =.77 P =.06 S =.09 CR =0.00 CO2 = 0.00

Sample: MZT-77-508-2

Field name: black amphibolite.

Map unit: basement complex.

Location: south margin of Harris Lake Dome, west shore of Harris Lake, E 394700 N 7592500.

Fabric: no layering, slight schistosity.

Mineralogy: turquoise-brown hornblende 60, plagioclase 30, quartz 15, opaques 5, biotite tr.

Field relationships: amphibolite layer .5 m thick and extending over 30 m, concordant with gneissosity.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	12.870	12.273	DI	9.598	10.157	MT	3.886	2.826
C	0.000	0.000	HE	6.412	5.922	IL	2.041	1.542
OR	2.751	2.832	EN	13.514	15.424	CR	0.000	0.000
AB	3.410	3.726	FS	10.354	8.993	HM	0.000	0.000
AN	34.978	36.011	FO	0.000	0.000	AP	.168	.156
LC	0.000	0.000	FA	0.000	0.000	PY	.106	.139
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.63				.49	
AN/AN+AB		90.62				91.12	
OR/AB/AN	6.65	8.75	84.60	6.69	8.29	85.02	
Q /AB/OR	65.18	19.79	15.04	67.63	17.92	14.45	
OL/HY/AG	0.00	60.30	39.70	0.00	59.85	40.15	
Q /HY/AG	23.26	46.27	30.47	24.40	45.25	30.35	
PL/AG/HY	49.53	20.84	30.43	49.04	20.46	30.50	
AG/PL/HY+4Q	12.43	30.73	56.84	.22	29.58	58.08	
OL+/PL/Q+	23.96	51.99	24.05	23.83	51.09	25.08	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	34.70	30.47	34.83	33.94	30.35	35.71	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	3.96	35.17	32.42	28.46	3.24	36.52	32.17	28.07
RATIO OF NE*/Q*/OL*		5.53	49.16	45.31		4.50	50.77	44.72

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	19.03	18.83
COLOUR INDEX	45.72	44.86

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		19.93			21.67	
MG/FE2/NA+K	53.58	39.56	6.85	41.05	54.01	4.94
M - F - A	36.19	59.46	4.35			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .638

POLDERVAARTS FORMULA	-16.779
MOLECULAR RATIO ALUMINA	11.984
Θ OF SUGIMURA	49.414
CRYSTALLIZATION INDEX	54.039

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

SOURCE - M. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 40

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	49.12	TIO2	.19		SIO2	53.10	TIO2	.21			
AL2O3	1.75	P2O5	0.00		AL2O3	1.89	P2O5	0.00			
FE2O3	4.00	MNO	.22		FE2O3	1.83	MNO	.24			
FEO	5.60	S	.15		FEO	8.28	S	.16			
MGO	30.05	NIO	0.00		MGO	32.48	NIO	0.00			
CAO	1.58	CR2O3	0.00		CAO	1.71	CR2O3	0.00			
NA2O	0.00	CO2	.10		NA2O	0.00	CO2	.11			
K2O	0.00	H2O	7.10		K2O	0.00	H2O	0.00			

CATION PERCENT

SI = 46.30 AL = 1.94 FE3 =1.20 FE2 = 6.21 CA = 1.60 MG = 42.22
NA = 0.00 K = 0.00 TI =.13 P =0.00 S =.27 CR =0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	1.816	1.757	MT	2.649	1.798
C	0.000	0.000	HE	.263	.222	IL	.390	.269
OR	0.000	0.000	EN	67.485	70.430	CR	0.000	0.000
AB	0.000	0.000	FS	11.226	8.916	HM	0.000	0.000
AN	5.163	4.861	FO	8.813	9.844	AP	0.000	0.000
LC	0.000	0.000	FA	1.616	1.246	PY	.333	.398
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.246	.257

NORM RATIOS (CATION EQUIVALENTS)					(WEIGHT PER CENT)			
MG/MG+FE2		.89				.82		
AN/AN+AB		100.00				100.00		
OR/AB/AN	0.00	0.00	100.00		0.00	0.00	100.00	
Q /AB/OR	0.00	0.00	0.00		0.00	0.00	0.00	
OL/HY/AG	12.00	85.86	2.14		11.43	86.29	2.28	
Q /HY/AG	0.00	97.57	2.43		0.00	97.43	2.57	
PL/AG/HY	5.64	2.30	92.06		6.01	2.42	91.57	
AG/PL/HY+4Q	2.30	5.64	92.06		.04	6.01	91.57	
OL+/PL/Q+	74.08	5.10	20.82		73.66	5.47	20.87	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	76.39	2.14	21.46		76.15	2.28	21.57	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS								
NE*/Q*/OL*/AG*	0.00	21.46	76.39	2.14		0.00	22.26	75.71 2.03
RATIO OF NE*/Q*/OL*	0.00	21.93	78.07		0.00	22.72	77.28	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	0.00	0.00
COLOUR INDEX	94.26	94.48

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		16.57			18.08	
MG/FE2/NA+K	87.49	12.51	0.00	79.70	20.30	0.00
M - F - A	76.61	23.39	0.00			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .583

POLDERVAARTS FORMULA	-11.376
MOLECULAR RATIO ALUMINA	0.000
Θ OF SUGIMURA	53.100
CRYSTALLIZATION INDEX	63.888

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-513-2

Field name: brown knobby ultramafic.

Map unit: basement complex.

Location: core of Harris Lake Dome, near the end of the western arm of Harris Lake, E 392000 N 7596250.

Fabric: massive.

Mineralogy: tremolite-actinolite 60, clinopyroxene 5, opaques 5, serpentine 30; all minerals crosscut by serpentine veins.

Field relationships: sample is most conspicuous rock type in a pod 50-60 m by 100 + m of a variety of mafic rock types with no internal arrangement apparent but locally some hints of layering, local development of asbestiform amphibole.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 41

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	56.10	TIO2	.15		SIO2	58.05	TIO2	.16			
AL2O3	1.85	P2O5	0.00		AL2O3	1.91	P2O5	0.00			
FE2O3	.92	MNO	.15		FE2O3	.95	MNO	.16			
FEO	7.50	S	0.00		FEO	7.76	S	0.00			
MGO	28.51	NIO	0.00		MGO	29.50	NIO	0.00			
CAO	.49	CR2O3	0.00		CAO	.51	CR2O3	0.00			
NA2O	0.00	CO2	.10		NA2O	0.00	CO2	.10			
K2O	.87	H2O	3.00		K2O	.90	H2O	0.00			

CATION PERCENT
SI = 51.12 AL = 1.99 FE3 =.63 FE2 = 5.83 CA = .48 MG = 38.72
NA = 0.00 K = 1.01 TI =.10 P =0.00 S =0.00 CR =0.00 CO2 =.12

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	3.684	3.244	DI	0.000	0.000	MT	1.380	.946
C	.257	.266	HE	0.000	0.000	IL	.295	.206
OR	5.325	5.062	EN	73.466	77.431	CR	0.000	0.000
AB	0.000	0.000	FS	13.497	10.826	HM	0.000	0.000
AN	1.861	1.770	FO	0.000	0.000	AP	0.000	0.000
LC	0.000	0.000	FA	0.000	0.000	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.235	.249

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.88				.80	
AN/AN+AB		100.00				100.00	
OR/AB/AN	74.09	0.00	25.91	74.10	0.00	25.90	
Q /AB/OR	39.05	0.00	60.95	40.89	0.00	59.11	
OL/HY/AG	0.00	100.00	0.00	0.00	100.00	0.00	
Q /HY/AG	3.54	96.46	0.00	4.06	95.94	0.00	
PL/AG/HY	1.97	0.00	98.03	2.10	0.00	97.90	
AG/PL/HY+4Q	0.00	1.72	98.28	0.00	1.80	98.20	
OL+/PL/Q+	70.58	2.59	26.83	70.13	2.68	27.19	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	72.34	0.00	27.66	71.95	0.00	28.05	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	0.00	27.66	72.34	0.00	0.00	28.58	71.42 0.00
RATIO OF NE*/Q*/OL*		0.00	27.66 72.34		0.00	28.58	71.42

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	9.01	8.31
COLOUR INDEX	88.64	89.41

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		9.94			10.93	
MG/FE2/NA+K	85.20	12.58	2.23	77.30	20.34	2.36
M - F - A	75.61	22.09	2.31			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .891

POLDERVAARTS FORMULA	-14.659
MOLECULAR RATIO ALUMINA	1.963
Θ OF SUGIMURA	34.102
CRYSTALLIZATION INDEX	53.349

ROCK NAME - ULTRAMAFIC, COLOR INDEX GREATER THAN 75

Sample: MZT-77-513-8

Field name: ultramafic with black zones.

Map unit: basement complex.

Location: core of Harris Lake Dome, near the end of the western arm of Harris Lake, E 392000 N 7596250.

Fabric: massive.

Mineralogy: tremolite-actinolite 97, plagioclase 2, opaques 1.

Field relationships: light green to brownish ultramafic, soft; see sample MZT-77-513-2.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 42

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	50.69	TIO2	1.20	SIO2	52.07	TIO2	1.23
AL203	14.99	P205	.14	AL203	15.40	P205	.14
FE203	2.83	MNO	.21	FE203	2.77	MNO	.22
FEO	8.50	S	.01	FEO	8.85	S	.01
MGO	7.74	NIO	0.00	MGO	7.95	NIO	0.00
CAO	7.92	CR203	0.00	CAO	8.14	CR203	0.00
NA2O	.68	CO2	.20	NA2O	.70	CO2	.21
K2O	2.25	H2O	3.30	K2O	2.31	H2O	0.00

CATION PERCENT
SI = 49.87 AL = 17.10 FE3 = 1.97 FE2 = 7.15 CA = 8.22 MG = 11.17
NA = 1.26 K = 2.78 TI = .87 P = .11 S = .02 CR = 0.00 CO2 = .26

Sample: MZT-77-517-1

Field name: hornblende-rich amphibolite.

Map unit: Dewar Lakes Formation.

Location: south margin of Harris Lake Dome, west of Harris Lake, E 390550 N 7593650.

Fabric: fine grained, no layering, strong schistosity.

Mineralogy: green-brown hornblende 50, plagioclase 43, quartz 6, opaques 1.

Field relationships: from an 8-10 m thick amphibolite.

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	6.543	6.166	DI	3.210	3.357	MT	4.021	2.950
C	0.000	0.000	HE	1.739	1.588	IL	2.341	1.747
OR	13.671	13.909	EN	18.312	20.655	CR	0.000	0.000
AB	5.910	6.381	FS	11.381	9.769	HM	0.000	0.000
AN	32.049	32.616	FO	0.000	0.000	AP	.334	.306
LC	0.000	0.000	FA	0.000	0.000	PY	.021	.027
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.467	.529

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.68				.54	
AN/AN+AB		83.64				84.43	
OR/AB/AN	26.29	12.06	61.65	26.48	11.45	62.07	
Q /AB/OR	23.31	24.12	52.57	25.05	22.62	52.33	
OL/HY/AG	0.00	86.02	13.98	0.00	85.71	14.29	
Q /HY/AG	14.85	73.25	11.90	15.89	72.10	12.02	
PL/AG/HY	52.44	6.65	40.91	52.28	6.82	40.90	
AG/PL/HY+4Q	4.99	39.38	55.63	.09	38.43	56.56	
OL+/PL/Q+	38.19	51.59	18.22	30.01	51.16	18.82	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	54.94	11.90	33.16	54.07	12.02	33.91	
ANALYSES RECAST IN TERMS OF 4 END MEMBERS							
NE*/Q*/OL*/AG*	7.99	34.07	47.62	10.32	6.59	35.64	47.60	10.18
RATIO OF NE*/Q*/OL*		8.91	37.99	53.10		7.33	39.68	52.99

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	26.12	26.46
COLOUR INDEX	41.00	40.07

		(ATOMIC PERCENT)			(WEIGHT PERCENT)	
FE3/FE2+FE3		22.00			23.86	
MG/FE2/NA+K	58.30	31.42	18.28	40.13	44.67	15.19
M - F - A	35.64	58.86	13.49			

FEO/(FEO+FE203) (WEIGHT OF OXIDES) .750

POLDERVAARTS FORMULA	-14.301
MOLECULAR RATIO ALUMINA	4.215
Θ OF SUGIMURA	40.921
CRYSTALLIZATION INDEX	48.093

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

SOURCE - W. C. MORGAN PROJECT 748020 BATCH 13 - 79
SAMPLE IDENTIFIER - 43

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	44.46	TIO2	1.24	SIO2	46.56	TIO2	1.30				
AL2O3	9.21	P2O5	.05	AL2O3	9.64	P2O5	.05				
FE2O3	2.47	MNO	.19	FE2O3	2.59	MNO	.20				
FEO	8.60	S	.15	FEO	9.01	S	.16				
MGO	18.22	NIO	0.00	MGO	19.08	NIO	0.00				
CAO	10.23	CR2O3	0.00	CAO	10.71	CR2O3	0.00				
NA2O	.47	CO2	.10	NA2O	.49	CO2	.10				
K2O	.10	H2O	4.30	K2O	.10	H2O	0.00				

CATION PERCENT
SI = 42.31 AL = 10.33 FE3 =1.77 FE2 = 7.00 CA = 10.43 MG = 25.84
NA = .87 K = .12 TI =.89 P =.04 S =.27 CR =0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	18.434	18.591	MT	3.751	2.653
C	0.000	0.000	HE	4.162	3.663	IL	2.466	1.775
OR	.619	.608	EN	19.021	20.688	CR	0.000	0.000
AB	4.165	4.336	FS	4.925	4.077	HM	0.000	0.000
AN	23.801	23.357	FO	13.982	16.276	AP	.121	.108
LC	0.000	0.000	FA	3.990	3.207	PY	.323	.401
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.238	.260

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.84			.74		
AN/AN+AB		84.34			85.11		
OR/AB/AN	2.15	15.32	82.53	2.17	14.57	83.26	
Q /AB/OR	0.00	87.71	12.29	0.00	87.05	12.95	
OL/HY/AG	29.30	37.24	33.46	27.86	37.12	35.02	
Q /HY/AG	0.00	52.67	47.33	0.00	51.45	48.55	
PL/AG/HY	37.07	29.79	33.15	37.53	30.33	32.14	
AG/PL/HY+4Q	29.79	37.07	33.15	.55	37.53	32.14	
OL+/PL/Q+	52.90	38.49	8.61	51.42	40.02	8.57	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	57.23	33.46	9.31	55.70	35.02	9.28	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	3.67	11.19	53.72	31.42	3.07	11.85	54.38	30.70
RATIO OF NE*/Q*/OL*		5.35	16.31	78.33	4.42	17.10	78.47	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	4.78	4.94
COLOUR INDEX	70.73	70.93

		(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		20.54			22.31		
MG/FE2/NA+K	76.74	20.33	2.94	66.52	31.40	2.08	
M - F - A	61.53	36.55	1.92				

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .777

POLDERVAARTS FORMULA	-4.204
MOLECULAR RATIO ALUMINA	10.449
Θ OF SUGIMURA	42.062
CRYSTALLIZATION INDEX	69.549

Sample: MZT-77-527-1

Field name: green amphibolite.

Map unit: Bravo Lake Formation.

Location: north margin of Harris Lake Dome, west shore of Harris Lake, E 395650 N 7597750.

Fabric: very fine grained, no layering, penetrative schistosity.

Mineralogy: tremolite-actinolite 95, opaques 2, chlorite 3, apatite tr, epidote tr.

Field relationships: from a 15 m thick zone at the contact of the Dewar Lakes and Longstaff Bluff Formations.

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 44

ANALYSIS (WEIGHT PERCENT)				ORIGINAL		ADJUSTED TO 100 PERCENT		
SIO2	50.60	TIO2	1.03	SIO2	51.45	TIO2	1.05	
AL2O3	12.18	P2O5	.23	AL2O3	12.38	P2O5	.23	
FE2O3	3.69	MNO	.24	FE2O3	2.57	MNO	.24	
FEO	8.70	S	0.00	FEO	9.90	S	0.00	
MGO	7.50	NIO	0.00	MGO	7.63	NIO	0.00	
CAO	9.57	CR2O3	0.00	CAO	9.73	CR2O3	0.00	
NA2O	2.77	CO2	.10	NA2O	2.82	CO2	.10	
K2O	1.87	H2O	1.30	K2O	1.90	H2O	0.00	

CATION PERCENT
SI = 47.96 AL = 13.61 FE3 =1.80 FE2 = 7.91 CA = 9.72 MG = 10.59
NA = 5.09 K = 2.26 TI =.73 P =.18 S =0.00 CR =0.00 CO2 = .13

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	14.948	15.466	MT	3.730	2.707
C	0.000	0.000	HE	10.137	9.154	IL	1.989	1.468
OR	11.246	11.319	EN	4.460	4.977	CR	0.000	0.000
AB	23.828	25.451	FS	3.469	2.946	HM	0.000	0.000
AN	15.530	15.635	FO	5.326	6.360	AP	.542	.493
LC	0.000	0.000	FA	4.565	3.765	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	.231	.259

NORM RATIOS (CATION EQUIVALENTS)				(WEIGHT PER CENT)			
MG/MG+FE2		.63			.49		
AN/AN+AB		38.05			39.46		
OR/AB/AN	21.60	48.57	29.84	22.22	47.09	30.69	
Q /AB/OR	0.00	69.22	30.78	0.00	67.94	32.06	
OL/HY/AG	23.73	18.57	57.70	23.05	18.48	58.47	
Q /HY/AG	0.00	24.34	75.66	0.00	24.02	75.98	
PL/AG/HY	55.80	33.44	10.76	54.38	34.66	10.96	
AG/PL/HY+4Q	33.44	55.80	10.76	.61	54.38	10.96	
OL+/PL/Q+	27.17	69.48	3.35	27.70	68.84	3.47	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	37.66	57.70	4.64	36.91	58.47	4.62	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	22.42	17.85	23.59	36.14	19.12	19.32	24.39	37.16
RATIO OF NE*/Q*/OL*	35.11	27.96	36.94		30.43	30.75	38.82	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	35.07	36.77
COLOUR INDEX	48.62	46.84

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		18.96			20.63	
MG/FE2/NA+K	41.28	30.06	28.66	34.29	44.50	21.21
M - F - A	31.06	49.73	19.21			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .702

POLDERVAARTS FORMULA	1.074
MOLECULAR RATIO ALUMINA	1.850
@ OF SUGIMURA	26.048
CRYSTALLIZATION INDEX	38.929

ROCK NAME - CALC-ALKALINE (HIGH ALUMINA) BASALT
AVERAGE SERIES

Sample: MZT-77-544-1

Field name: amphibolite.

Map unit: basement complex.

Location: core of South Jackson Lake Dome, east shore of South Jackson Lake, E 403700 N 7599650.

Fabric: no layering, slight schistosity.

Mineralogy: blue green-brown hornblende 50, plagioclase 30, quartz 18, biotite tr, sphene 2, opaques tr, apatite tr, chlorite tr; chlorite retrograde.

Field relationships: from a large expanse of amphibolite with clots richer in amphibole forming a slight lenticular layering.

SOURCE - W. C. MORGAN PROJECT 740020 BATCH 13 - 79
SAMPLE IDENTIFIER - 45

ANALYSIS (WEIGHT PERCENT)				ORIGINAL				ADJUSTED TO 100 PERCENT			
SIO2	48.56	TIO2	1.05	SIO2	49.39	TIO2	1.07				
AL2O3	15.63	P2O5	.13	AL2O3	15.90	P2O5	.13				
FE2O3	2.62	MNO	.18	FE2O3	2.59	MNO	.18				
FEO	9.20	S	0.00	FEO	9.42	S	0.00				
MGO	7.41	NIO	0.00	MGO	7.54	NIO	0.00				
CAO	10.28	CR2O3	0.00	CAO	10.46	CR2O3	0.00				
NA2O	1.42	CO2	0.00	NA2O	1.44	CO2	0.00				
K2O	1.84	H2O	2.30	K2O	1.87	H2O	0.00				

CATION PERCENT
SI = 46.31 AL = 17.57 FE3 =1.83 FE2 = 7.53 CA = 10.50 MG = 10.53
NA = 2.63 K = 2.24 TI =.75 P =.18 S =0.00 CR =0.00 CO2 = 0.00

NORM (WEIGHT PERCENT AND CATION EQUIVALENTS)

Q	0.000	0.000	DI	9.822	10.220	MT	3.761	2.745
C	0.000	0.000	HE	6.267	5.691	IL	2.028	1.506
OR	11.070	11.285	EN	11.087	12.441	CR	0.000	0.000
AB	12.220	13.127	FS	8.113	6.928	HM	0.000	0.000
AN	31.365	31.756	FO	2.193	2.633	AP	.307	.280
LC	0.000	0.000	FA	1.768	1.466	PY	0.000	0.000
NE	0.000	0.000	WO	0.000	0.000	NS	0.000	0.000
KP	0.000	0.000	LA	0.000	0.000	KS	0.000	0.000
AC	0.000	0.000	RU	0.000	0.000	CC	0.000	0.000

NORM RATIOS (CATION EQUIVALENTS) (WEIGHT PER CENT)

MG/MG+FE2		.64				.50	
AN/AN+AB		70.75				71.96	
OR/AB/AN	19.98	23.40	56.62	20.25	22.36	57.39	
Q /AB/OR	0.00	53.95	46.05	0.00	52.47	47.53	
OL/HY/AG	10.41	49.19	40.40	10.09	48.92	40.99	
Q /HY/AG	0.00	54.90	45.10	0.00	54.41	45.59	
PL/AG/HY	55.99	19.85	24.16	55.26	20.40	24.34	
AG/PL/HY+4Q	19.85	55.99	24.16	.36	55.26	24.34	
OL+/PL/Q+	27.25	65.66	7.08	27.51	65.30	7.19	ADJUSTED FOR CORUNDUM
OL+/AG/Q+	47.30	40.40	12.30	46.78	40.99	12.23	

ANALYSES RECAST IN TERMS OF 4 END MEMBERS

NE*/Q*/OL*/AG*	15.00	19.22	35.48	30.30	12.62	20.52	36.19	30.67
RATIO OF NE*/Q*/OL*	21.52	27.58	50.90		18.20	29.60	52.20	

	WEIGHT	CATION EQUIVS.
DIFFERENTIATION INDEX	23.29	24.33
COLOUR INDEX	45.04	43.63

	(ATOMIC PERCENT)			(WEIGHT PERCENT)		
FE3/FE2+FE3		19.85			21.59	
MG/FE2/NA+K	46.22	32.42	21.36	37.18	46.47	16.36
M - F - A	33.34	51.99	14.67			

FEO/(FEO+FE2O3) (WEIGHT OF OXIDES) .778

POLDERVAARTS FORMULA	-3.138
MOLECULAR RATIO ALUMINA	3.610
@ OF SUGIMURA	36.375
CRYSTALLIZATION INDEX	51.150

ROCK NAME - THOLEIITIC BASALT
K-RICH SERIES

Sample: MZT-77-578-2

Field name: amphibolite.

Map unit: basement complex.

Location: northern margin of Harris Lake Dome, east end of Harris Lake, E 399200 N 7594150.

Fabric: fine to medium grained, slightly layered, moderate schistosity.

Mineralogy: green-brown hornblende 55, plagioclase 43, quartz tr, opaques 1, apatite tr, sphene tr, chlorite 1, muscovite tr; chlorite and muscovite retrograde.

Field relationships: well layered basement gneiss containing amphibolitic layers.

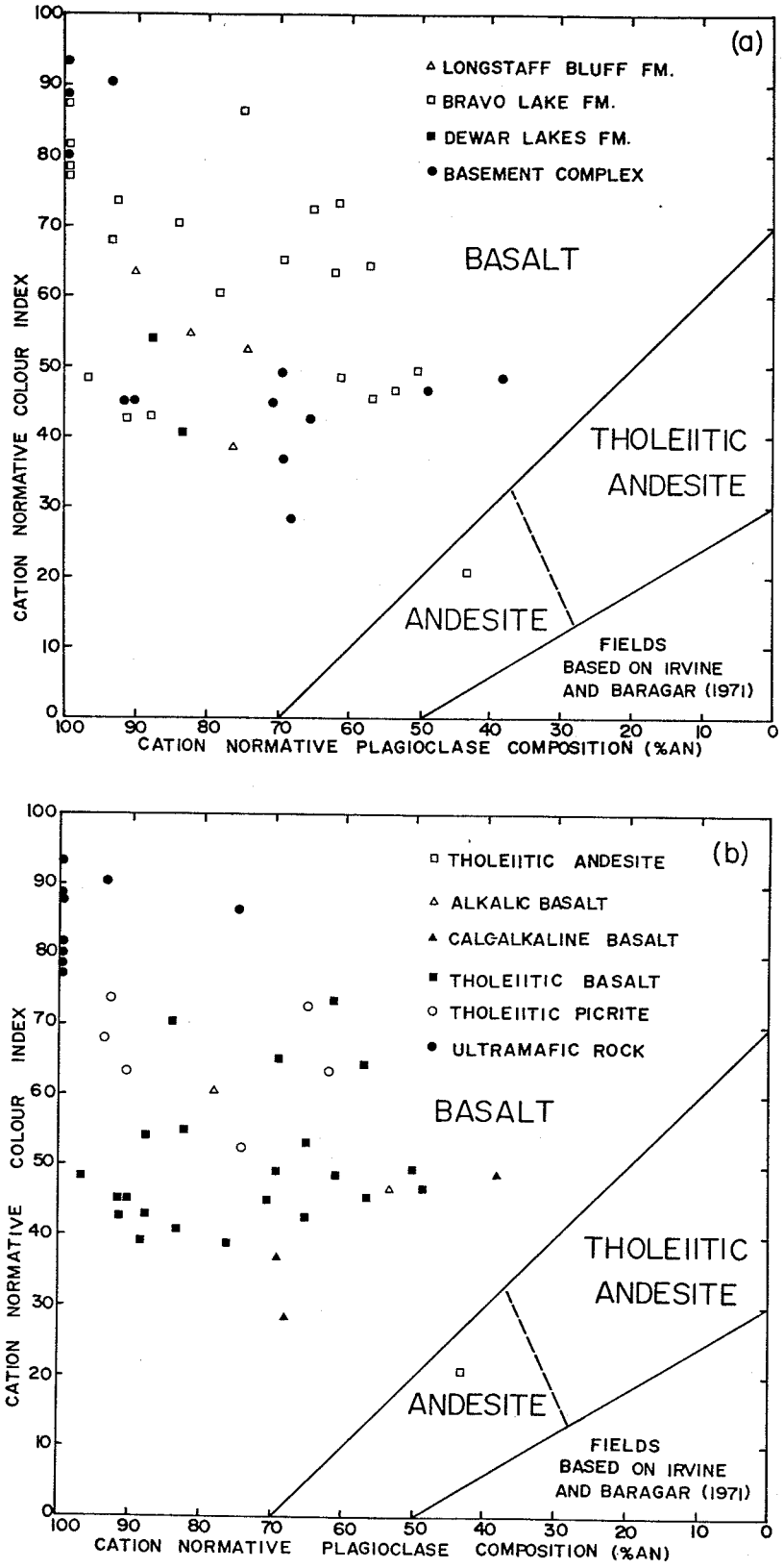


Figure B1. Cation normative plagioclase composition versus cation normative colour index for mafic and ultramafic rocks. a. by map unit. b. by rock type.

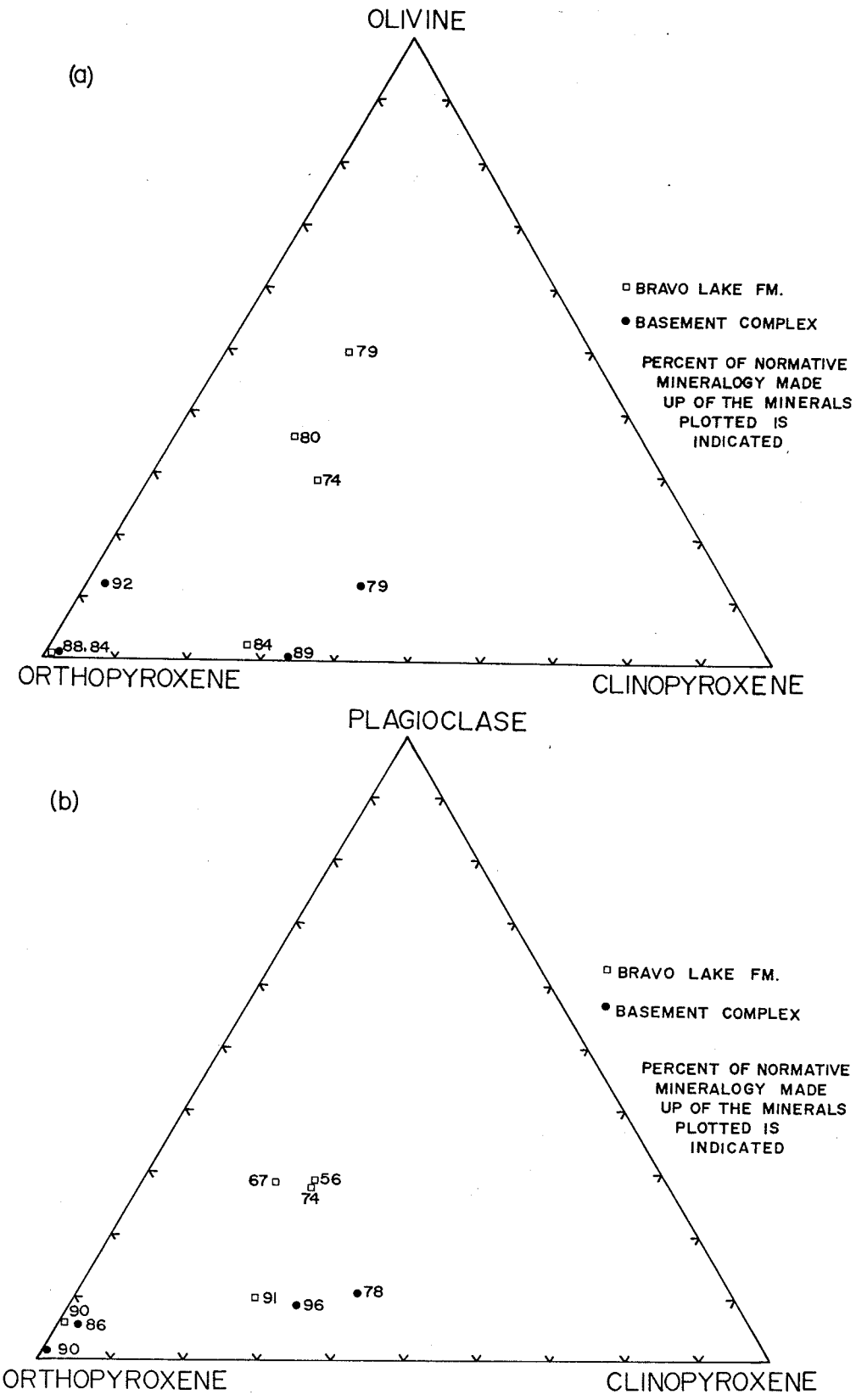


Figure B2. Normative compositions of ultramafic rocks by map unit. a. olivine - orthopyroxene - clinopyroxene. b. plagioclase - orthopyroxene - clinopyroxene.

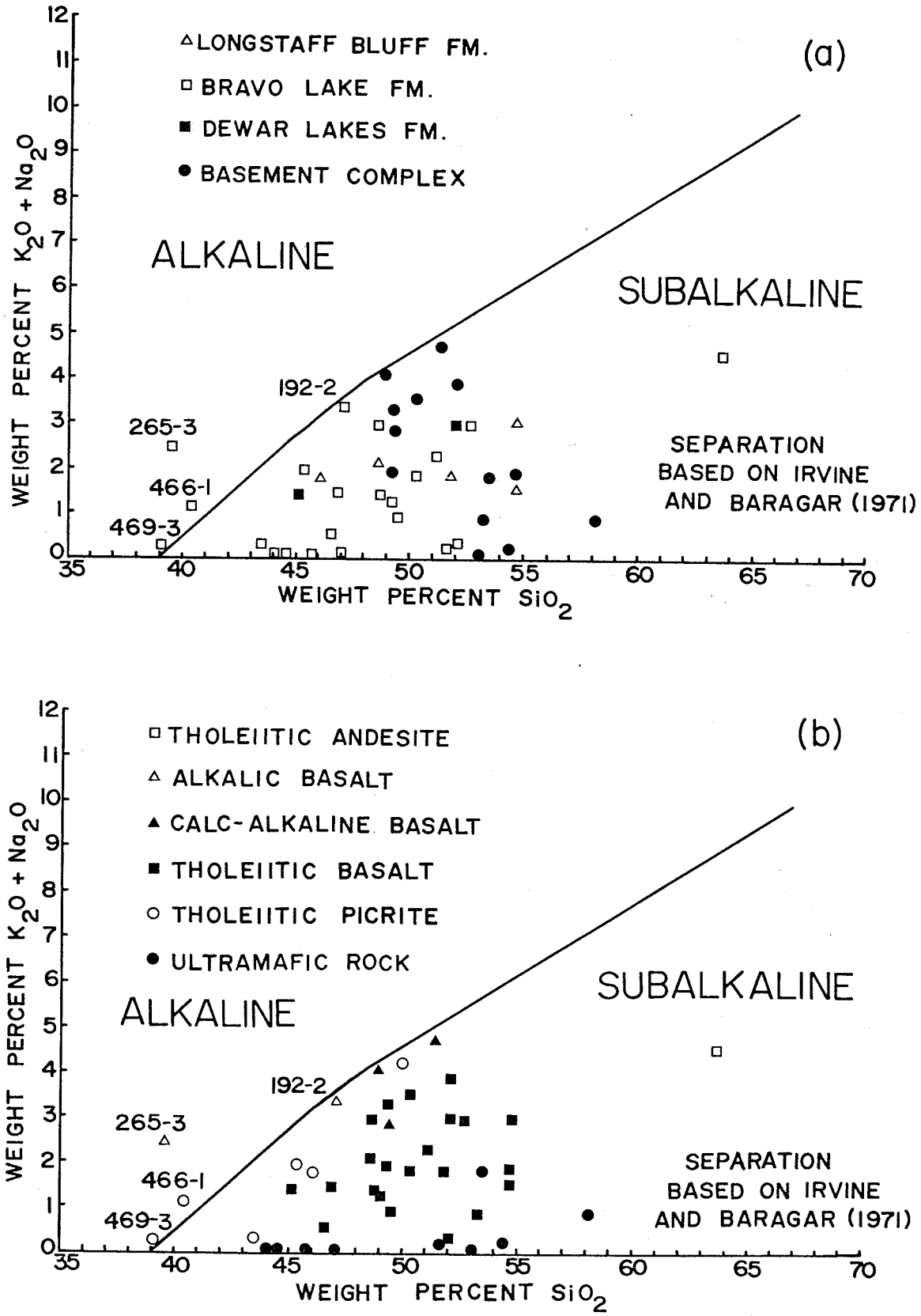


Figure B3. Weight percent $K_2O + Na_2O$ versus weight percent SiO_2 for mafic and ultramafic rocks. a. by map unit. b. by rock type.

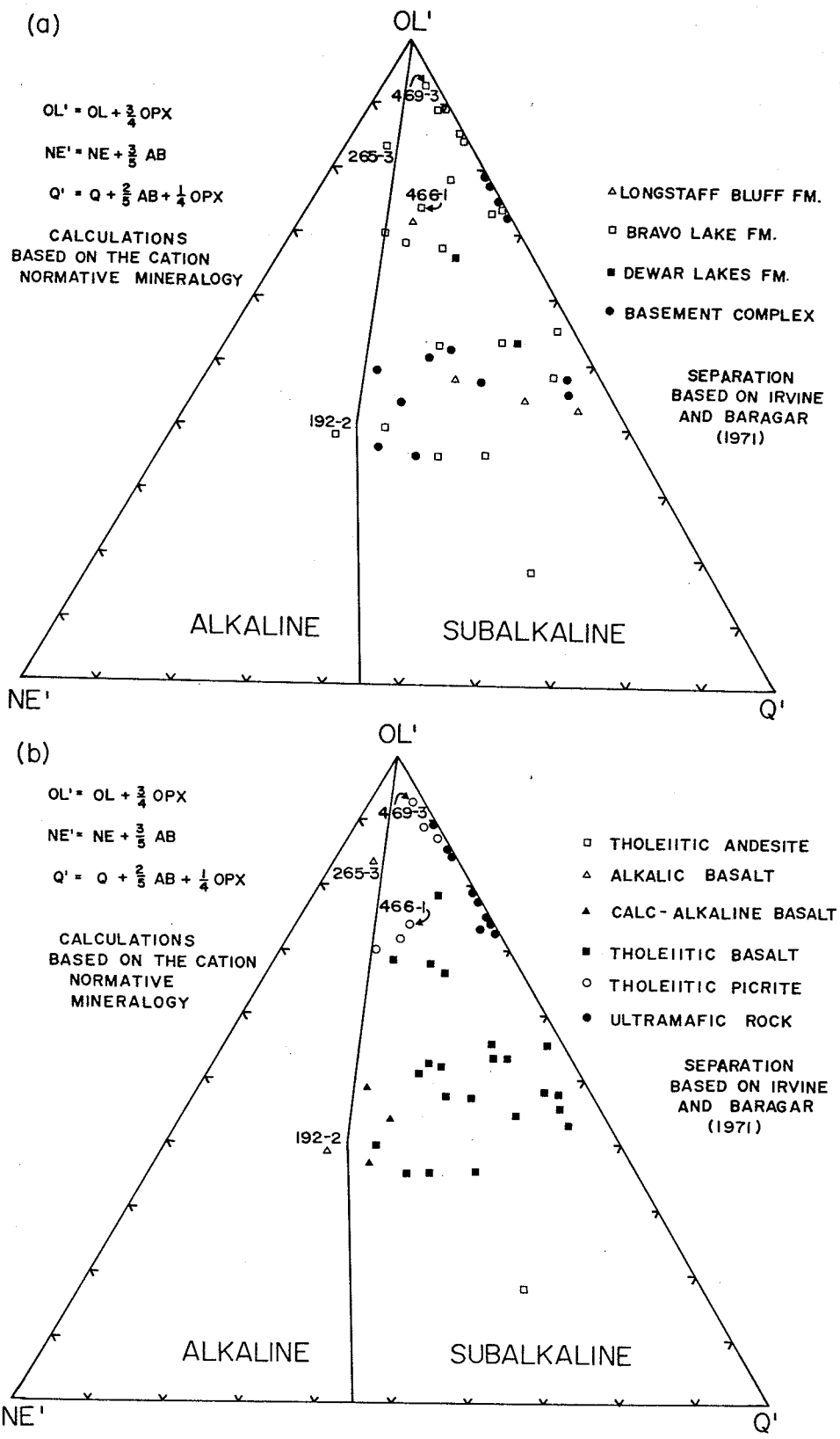


Figure B4. Adjusted normative olivine - nepheline - quartz variation of mafic and ultramafic rocks. a. by map unit. b. by rock type.

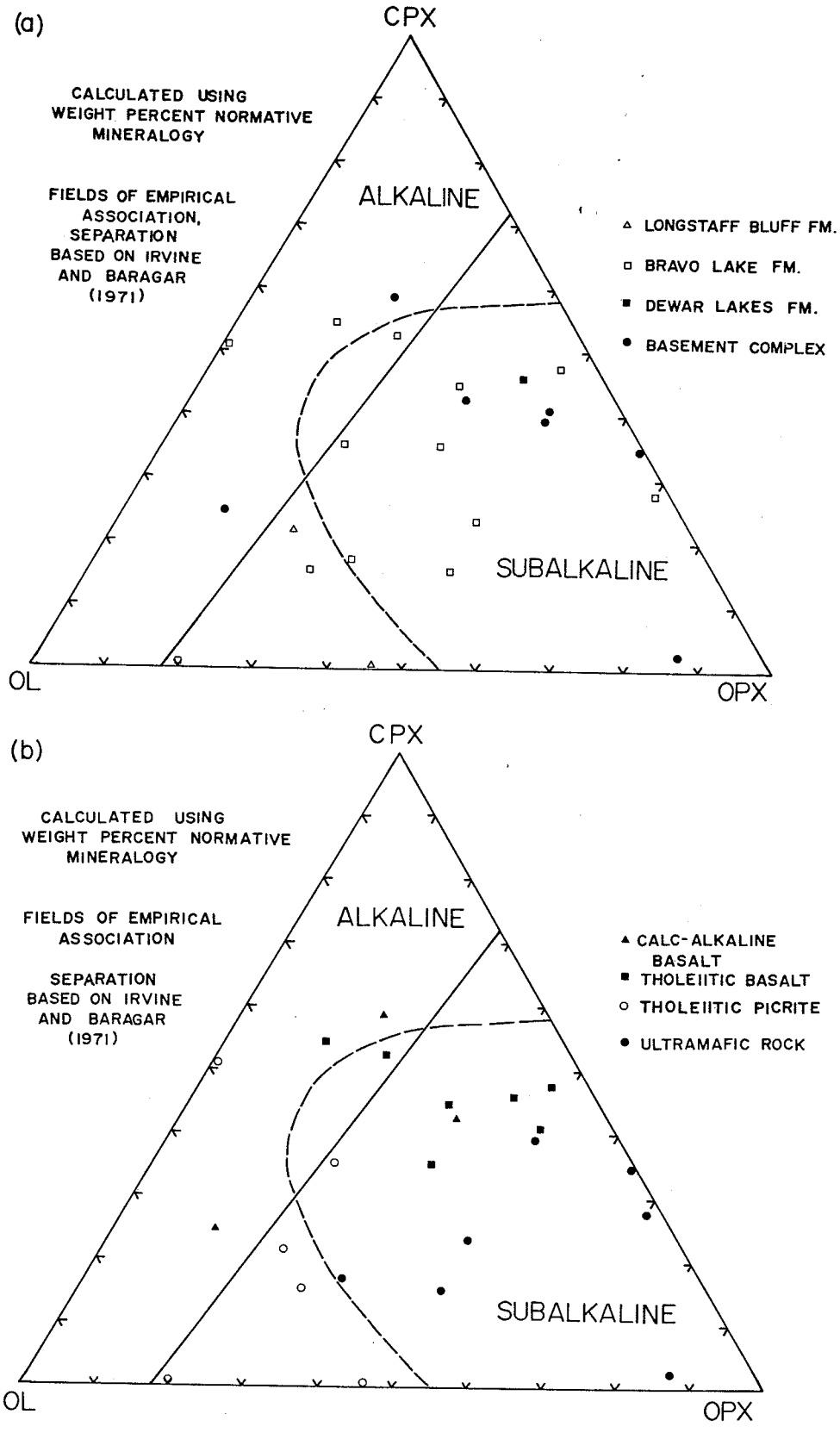


Figure B5. Normative clinopyroxene - orthopyroxene - olivine variation for mafic and ultramafic rocks. a. by map unit. b. by rock type.

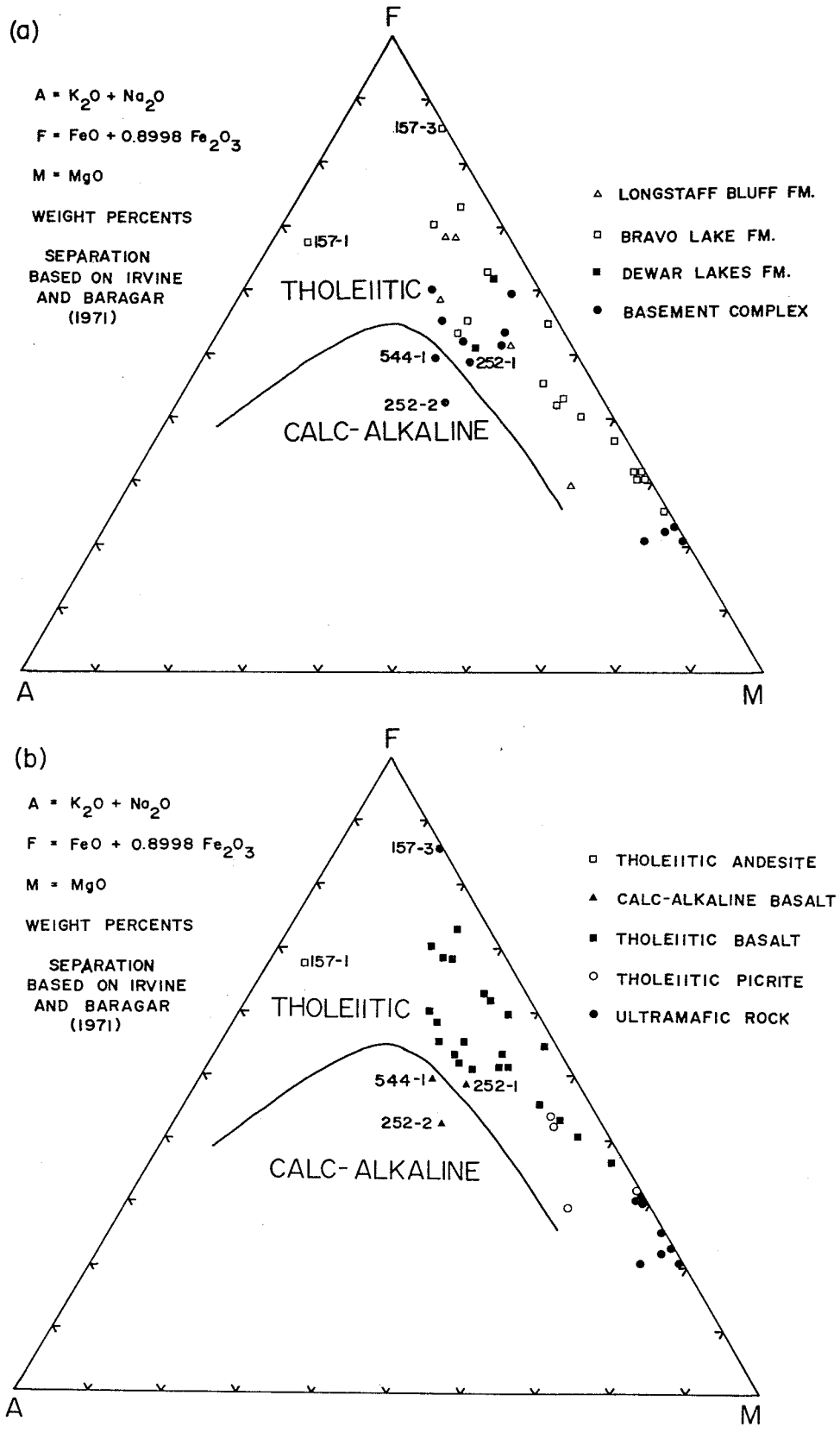


Figure B6. AFM variation of mafic and ultramafic rocks. a. by map unit. b. by rock type.

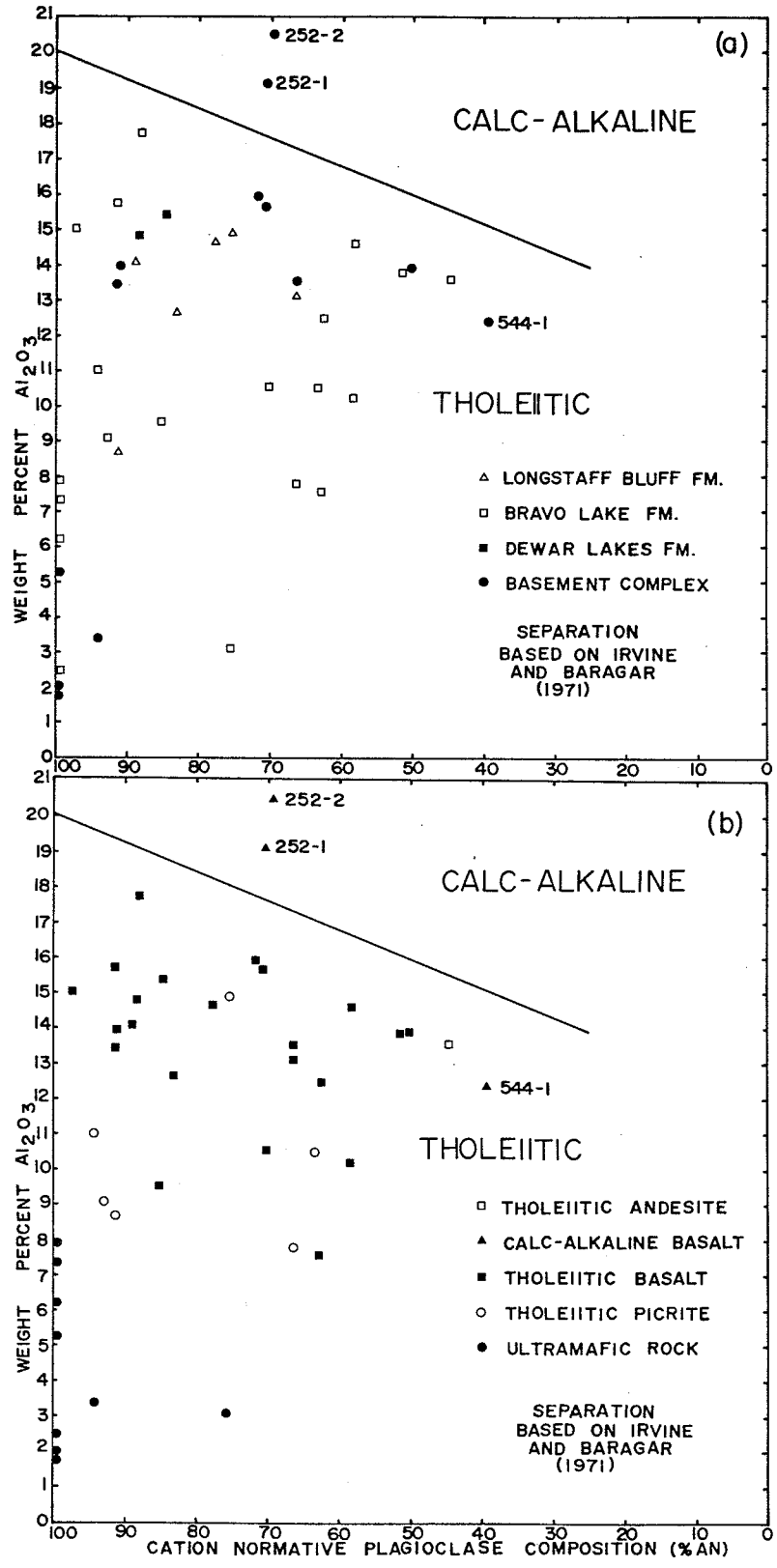


Figure B7. Cation normative plagioclase composition versus weight percent Al_2O_3 for mafic and ultramafic rocks. a. by map unit. b. by rock type.

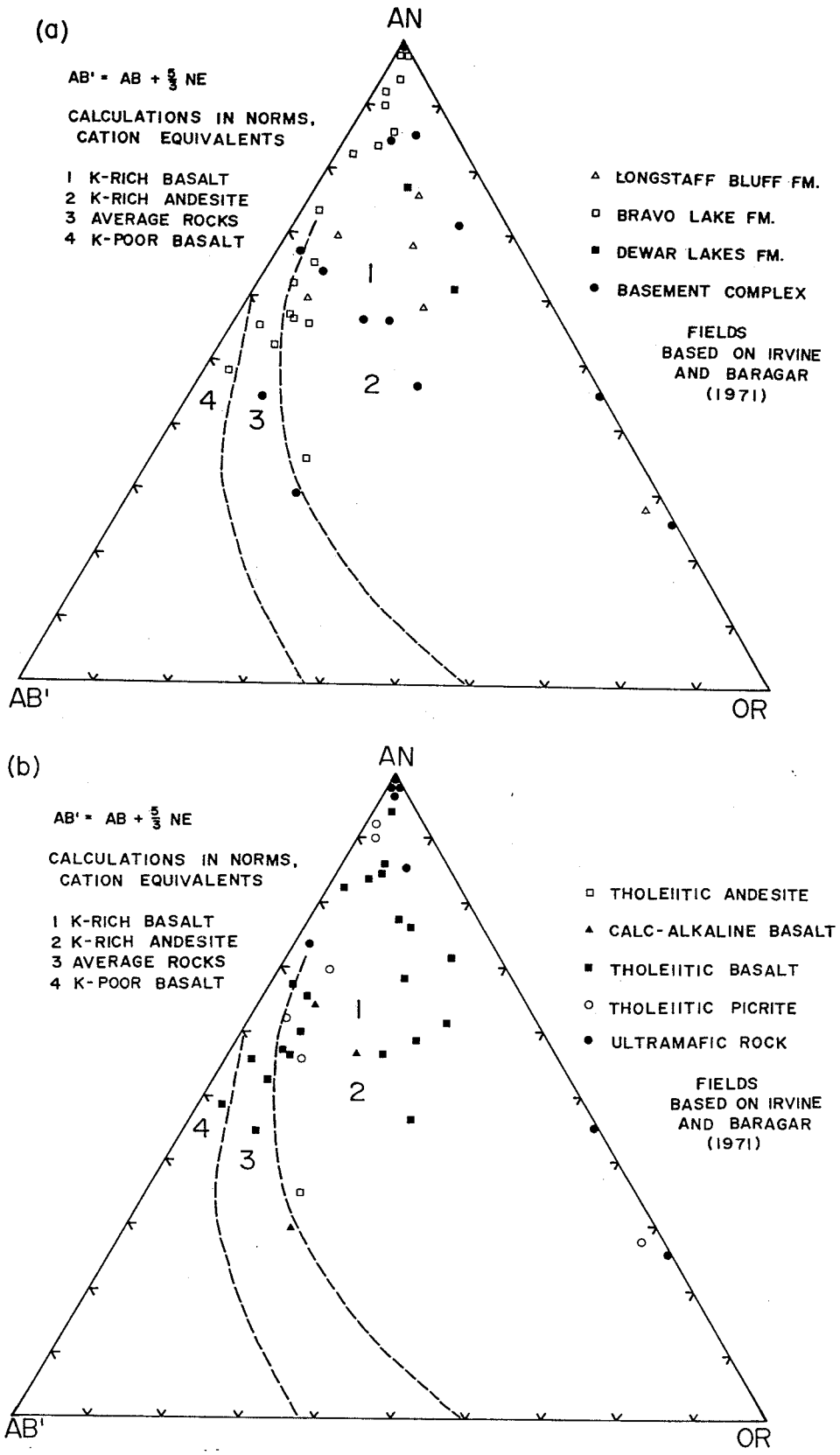


Figure B8. Adjusted cation normative variation of albite - anorthite - orthoclase for mafic and ultramafic rocks. a. by map unit. b. by rock type.

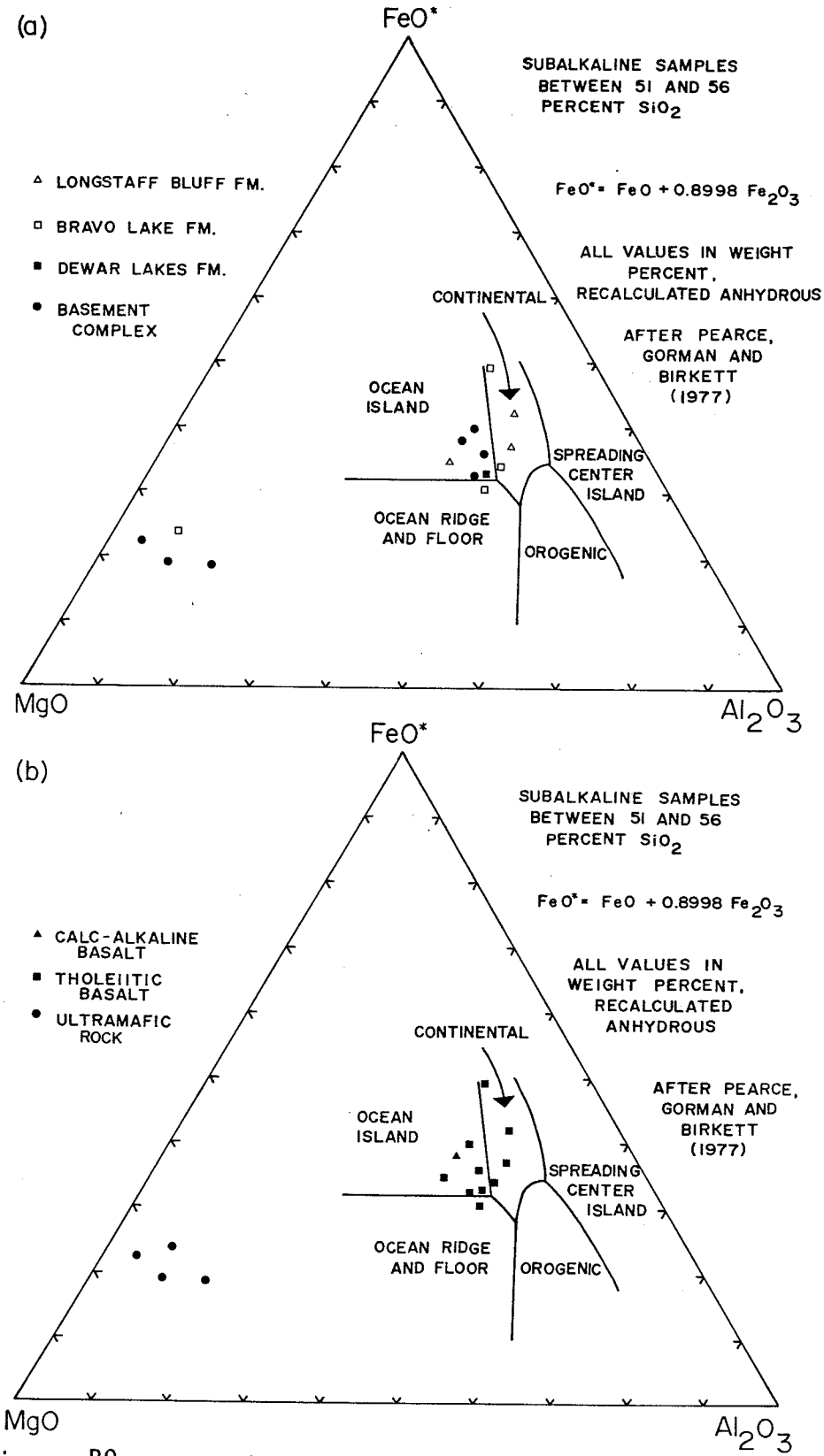
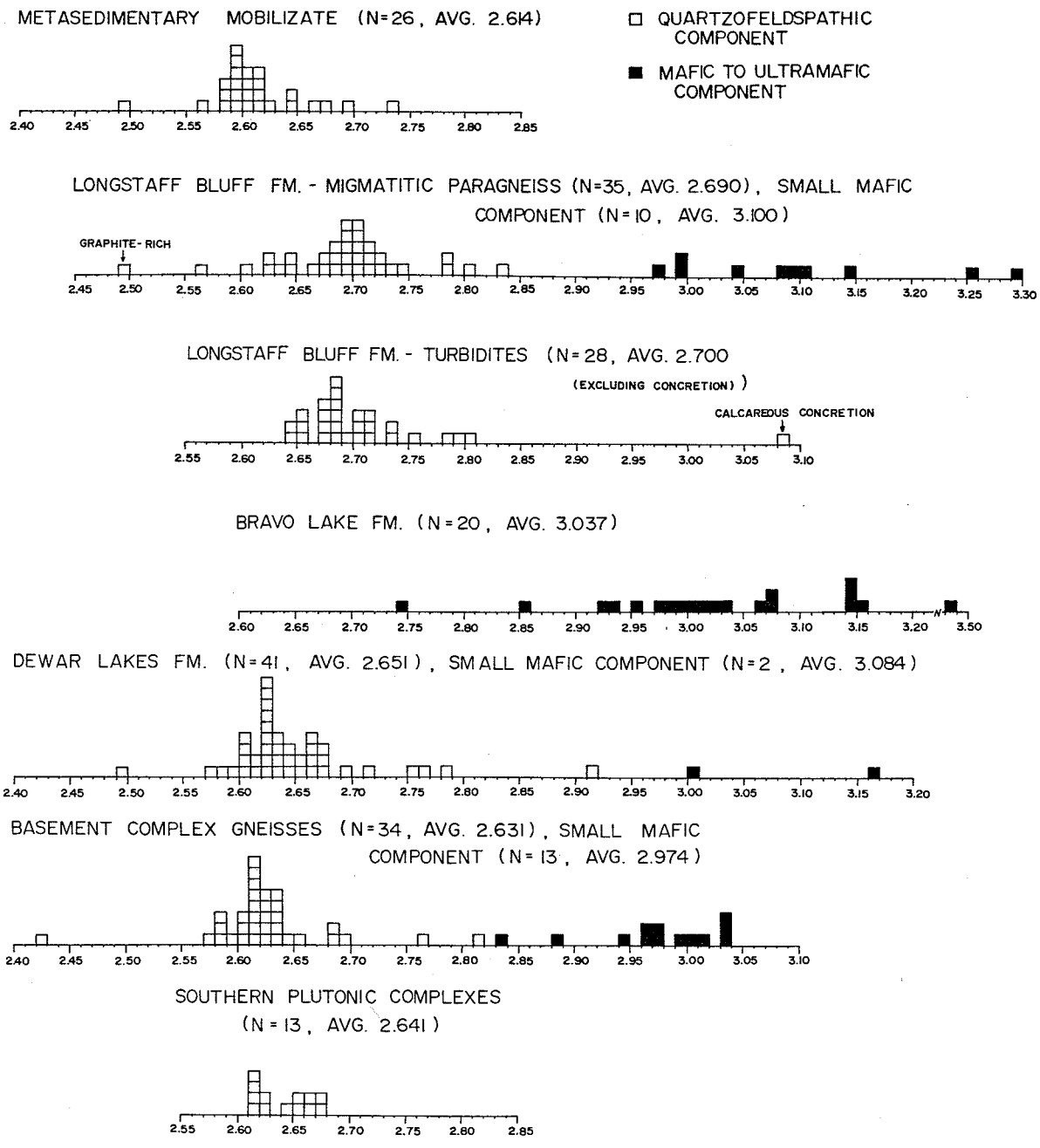


Figure B9. Tectonic setting of mafic and ultramafic rocks based on major element chemistry. a. by map unit. b. by rock type.

Appendix C

Specific gravity determinations



VALUES ARE SPECIFIC GRAVITY DETERMINATIONS

PRECISION APPROXIMATELY ± 0.005

Figure C1. Summary of specific gravity determinations.

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