

APPENDIX: A. MINERAL OCCURRENCES REVIEW

The summary given below is from Blignault and van Schalkwyk's report (1995): Exploration targets in the Jannelsepan amphibolite belt. They were consulted by Iscor to do a literature study of the Areachap sequence. The localities of the different deposits can be seen in Figure 4.

Deposit Name	Locality	Commodity & Deposit type	Mineralisation	Size & Grade Estimate
Areachap	Farm Areachap 426, 22 km NW of Upington	Cu-Zn massive sulphide; oceanic crust association	Conspicuous surface outcrop of gossan with sparse copper stains is the only outcrop in the area. Oxidation and leaching is developed down to 70 m with supergene copper enrichment (3,5% Cu & 2% Zn) between 70 and 90 m. Below 90 m the subvertical tabular sulphide body consists of both massive and disseminated sulphides mostly pyrite, pyrrhotite, chalcopyrite and sphalerite on average 5 m thick and surface strikes of 600 m with the deepest intersection at 750 m. The deposit is open-ended at depth.	8,9 Mt @ 0,47% Cu 2,24% Zn 4,6 g/t Ag 0,07 g/t Au.
Boksputs	Farms Boksputs 118 and Koegrabe 117	Minor Cu-Zn massive associated with extensive disseminated sulphides	The sulphide minerals are pyrite, pyrrhotite and magnetite. Massive sulphides with percentage values of Cu are developed in thin zones of 1 to 2 m, with wider areas of disseminated sulphides.	Not determined
Kantienpan	Kantienpan 119 and Gembok Bult 120	Cu-Zn massive sulphide	Float of gossan zones and a BIF can be seen within an amphibolite sequence of the Jannelsepan Formation.	Not determined

Deposit Name	Locality	Commodity & Deposit type	Mineralisation	Size & Grade Estimate
Kielder	Situated 12 km NW of the Prieska a/b on the farm Kielder	Zn>Cu>>Pb	Three stratabound massive sulphide bodies 2 km and 3,5 km apart; disseminated pyrite haloes	Not determined
Jacomynspan	The deposit straddles the boundary between the farms Jacomynspan 176 and Hartebeest Pan 175, west of Marydale in the Kenhardt District.	Cu-Ni sulphides in layered complex; oceanic crust association	On Jacomynspan, the main materialisation is in the form of disseminated sulphides (1 to 3%) in the biotite-tremolite schist. The hypersthene rock sporadically carries 10 to 20% total disseminated sulphides. The sulphide minerals present are pyrrhotite, chalcopyrite and pentlandite. The width of materialisation varies from 1 to 60 along a total strike length of 4 500 m.	114 Mt @ 0.25% Ni and 0.17% Cu on the Jacomynspan portion
Prieska Annex	Farm Annex Vogelstruisbult	Cu-Zn massive sulphide of oceanic crust association	Massive sulphide	1,5 Mt @ 1,5% Cu < 0,5% Zn
Witkop	Farm Eyerdoppan 58 (ptn RE)	Au-(Cu-Zn-Ag) mineralisation	Disseminated mineralisation with metamorphosed argillic alteration type. Presumably situated in the Jannelsepan Formation	One intersection resulted in 5 g/t Au over 30 m in fold nose Adjacent rock gave values of 0,69% Cu 0,10% Zn 3 g/t Ag

Deposit Name	Locality	Commodity & Deposit type	Mineralisation	Size & Grade Estimate
Long Anomaly Gossan Zone	Located on the farms Van Wyks Pan 170 and Rooi Puts 172	Barren massive sulphides	According to unconfirmed reports no significant intersections have yet been made	Probably a major resource of pyrite and pyrrhotite
Prieska Cu-Zn mine	Farm Vogelstruisbult	Cu-Zn massive sulphide; oceanic crust association	Small gossan showing in flat calcrete area, but well developed below calcrete; gossan siliceous with sparse malachite stains; substantially elevated levels of Cu, Pb, Zn, Ba & Mo; the Ni and Co values are flat. Leached zone for the first 100 m. Strike length of the tabular and stratabound sulphide body is 2000 m, 7 m wide on average and extends down to 1000 m. Massive sulphide (55% sulphide) zoned. Pyrite, pyrrhotite, chalcopyrite and silimanite. Some carbonate and barite in a/b. Sulphide body typically contains numerous inclusions or fragments. The so-called alteration zone is a schist with disseminated pyrite.	47 Mt @ 1,74% Cu, 3,87% Zn, 8 g/t Ag, 0,4 g/t Au & 50-100 g/t Mo.

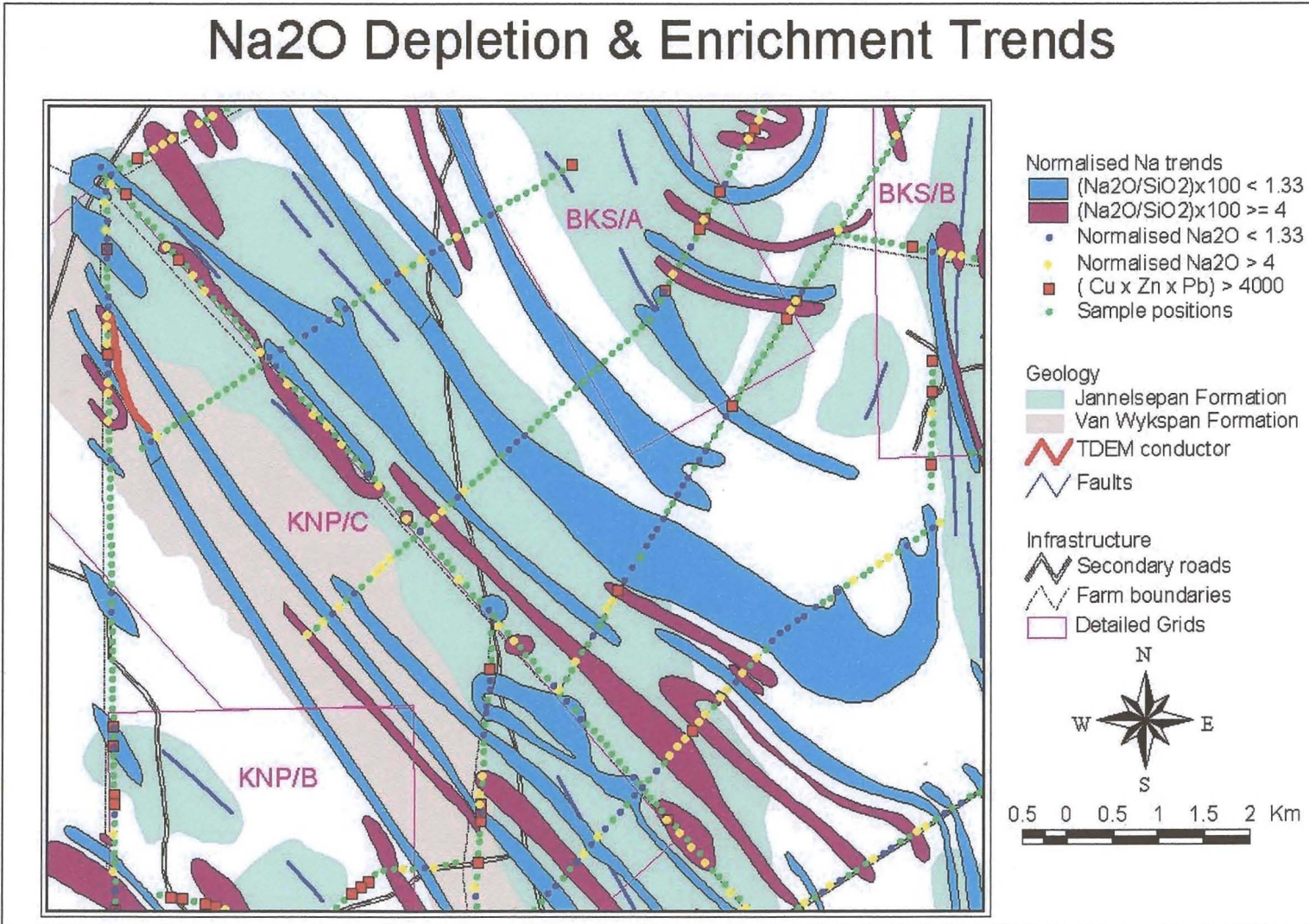
APPENDIX B. TONNAGES AND GRADES OF SOUTH AFRICAN AND WORLD WIDE VMS DEPOSITS

(Cain, 1994)

Deposit	Geological Setting	Country	Tonnage (Mt)	Zn (%)	Cu (%)	Pb (%)	g Ag/ton	g Au/ton
Average of 52	Abitibi Belt	Canada	9.20	3.43	1.47	0.07	31.7	0.31
Average of 50 (excluding Kidd Creek and Horne)	Abitibi Belt	Canada	3.98	3.43	1.47	0.07	31.7	0.31
Average of 38	Norwegian Caledonides		3.46	1.53	1.41	0.05	Na	Na
Average of 29	Bathurst camp	Canada	8.70	5.43	0.56	2.17	60.03	0.47
Average of 28 (excluding Brunswick No.12)	Bathurst camp	Canada	5.72	5.43	0.56	2.17	60.03	0.47
Average of 25 major Kuroko	Green Tuff Belt	Japan	5.81	3.86	1.63	0.92	12.17	0.37
Mr. Chalmers		Australia	3.6	0.8	1.8	0.1	0.014	0.002
Maranda	Rubbervale Formation (Copper-Zinc Line)	RSA	0.5	20	3	-	25	0.2
Romotshidi	Rubbervale Formation (Copper-Zinc Line)	RSA	0.4	20	3	-	25	0.2
Prieska	Copperton Formation	RSA	47	3.87 (2.62)	1.74 (1.11)	-	8	0.4
Areachap	Areachap Group	RSA	8.9	2.24	0.4	-	4.6	0.07

APPENDIX C. TARGET GENERATION BY USING THE VMS CONCEPTUAL MODEL (Rossouw, 1999)

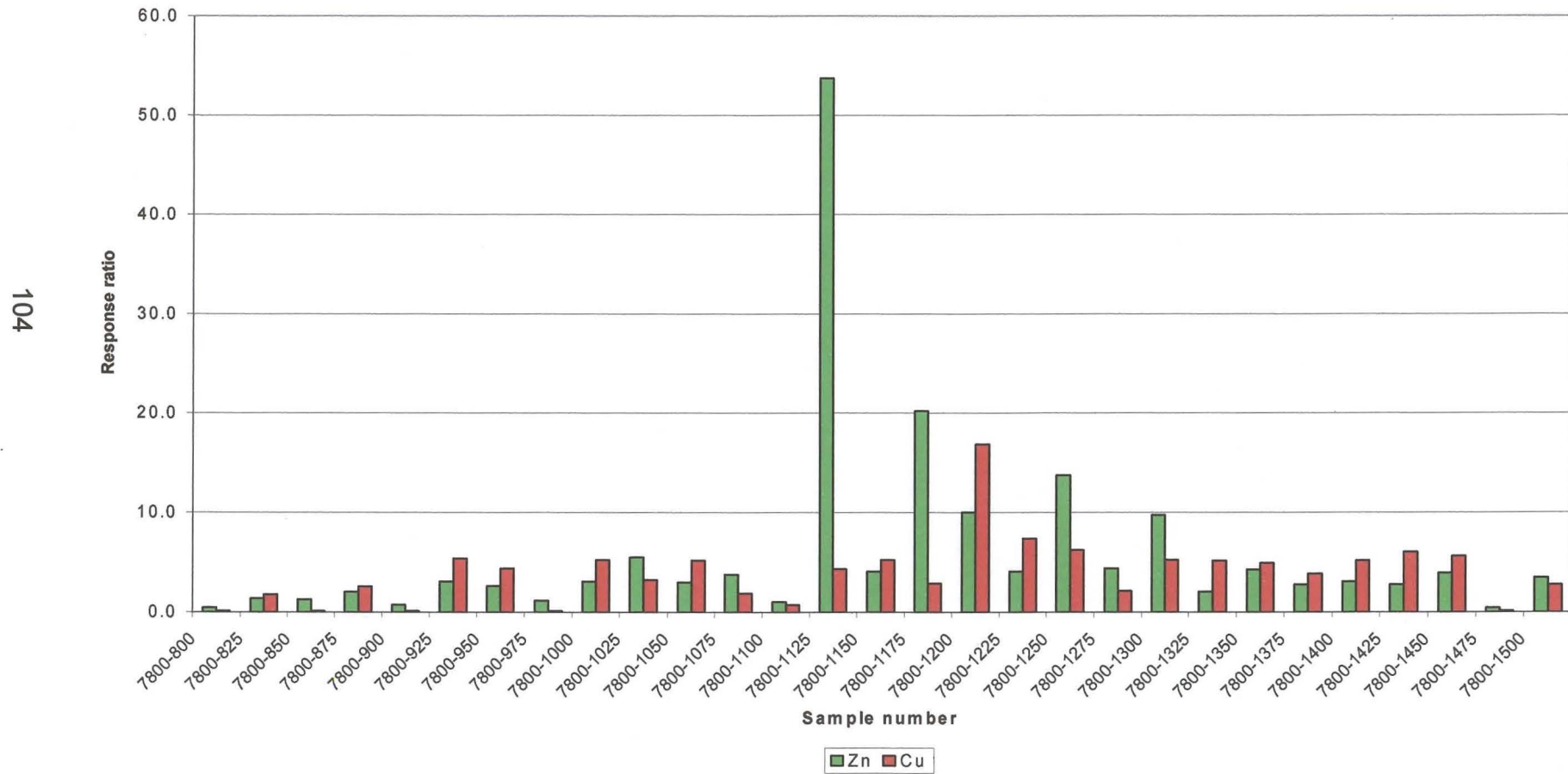
Na₂O Depletion & Enrichment Trends



APPENDIX D. MMI Graph

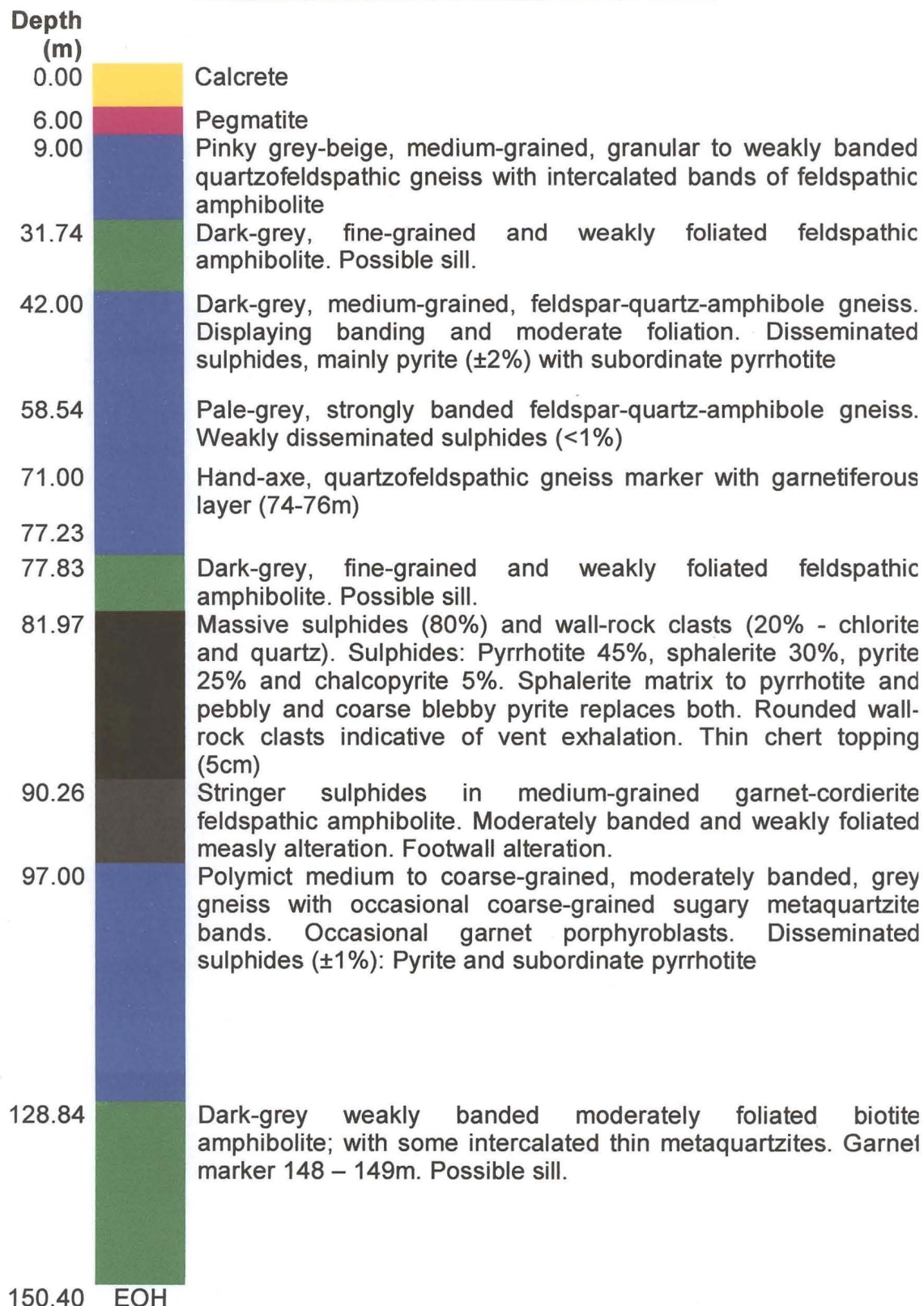
Line 7800NW crosses the TDEM conductor at station 1125 with the highest value, proving that MMI can work to test conductors for Zn and Cu content (Rossouw, 1999).

Zn and Cu Response ratios - line 7800NW



APPENDIX E. DRILL HOLE STRATIGRAPHY OF THE KANTIENPAN VMS DEPOSIT (Rossouw, 1999)

Summary borehole log of KN005



APPENDIX F. PROTOLITHOLOGY AND GEOCHEMICAL INTERPRETATION OF THE AREACHAP GROUP (MODIFIED AFTER GERINGER, 1994)

	INTERPRETATION	MAIN PETROGRAPHIC FEATURES	PLOT L	ENRICHED	CENTRAL	
AMPHIBOLITE (MASSIVE)	THOLEIITIC BASALTS DERIVATION; SOME MAY BE SEDIMENTARY	QTZ-PLAGS SEGREGATIONS (AMYGDALES)	THOLEIITIC BASALT FIELD MAINLY	SLIGHT		JANNELSEPAN FORMATION
	ARC-RELATED BASALT OR REWORKED VOLCANICS OF THOLEIITIC COMPOSITION				ARC-RELATED THOLEIITE (MORB NORMAL)	
PYROXENE-AMPHIBOLITE	HIGH K BASALT OR SHOSHONITE CALC-ALKALINE AFFINITY		BORDER OF GREYWACKE / BASALT FIELD *	LARGE	HIGH K2O	
	MARLS	INTERCALATED WITH CALC-SILICATES				
BIOTITE GNEISS (QUARRY MB) SPRIGG FORMATION	SEDIMENT FROM MAFIC SOURCE		SEDIMENTARY FIELD ***		LOW MgO, FeO AND MnO. HIGH SiO ₂ , K ₂ O. ENRICHED IN CO, V, Ni. DEPLETED IN Rb, Nb, Zr.	
	NEAR-SHELF DEPOSIT WITH CONGLOM. AS CHANNEL FILL					
QUARTZ-FELDSPAR GNEISS (SKIETBAAN MB)	RHYOLITIC TUFFS AND VOLCANICS; PARTLY REWORKED		SIMILAR TO RHYOLITE ON R1-R2****			
METAPELITE (BETHESDA FM)	REWORKED RHYOLITE / RHYODACITE	GRT-QTZ-K-FELDSPAR-PLAG-BT GN ONLY	MORB-NORMAL MINOR CORD.		VERY LOW CaO. HIGH K ₂ O AND Na ₂ O	
MASSIVE AMPHIBOLITE	LOW K THOLEIITE	"GAUBESCHIEFER" TEXTURE	ARC-RELATED THOLEIITE		MORB-NORMAL HIGHISH Zr/Ti HIGHISH SiO ₂ (TO 58%)	BOKSPUTS FORMATION
PYROXENE-AMPHIBOLITE	CALC-ALKALINE BASALT	INTERCALATED WITH Fe FORMATION	SPLIT BETWEEN BASALT AND OTHER FIELDS * CALC-ALKALINE ON JENSEN PLOT **		LOWER Zr/Ti LOW SiO ₂ (TO 51%)	
AMPHIBOLE GNEISS (KANTIENPAN FORMATION)	VOLCANIC-DERIVED SEDIMENTS FROM DACITE SOURCE	GRT-BEARING HBL GNEISS. HBL+BT AGGREGATES. SPECKY APPEARANCE. FRECKY GNEISSES "GARBESCHIEFER TYPE"	COMPARABLE TO DACITE. PLOTS OFF IGNEOUS TREND ON LEAKE + SINGH DIAGRAM		DEPLETED MgO, TiO ₂ AND K ₂ O	
QUARTZ-FELDSPAR GNEISS	FELSIC VOLCANICS OF RHYODACITE COMPOSITION		RHYODACITE TO RHYOLITE ON R1-R2 DIAGRAM		NORMALIZED MAJOR ELEMENTS AS FOR RHYODACITE	
METAPELITE (KANTIENPAN FORMATION)	REWORKED RHYOLITE / RHYODACITE	GRT-CORD-BT-GNEISS WITH SILLIMANITE	SEE BETHESDA FORMATION			
MASSIVE AMPHIBOLITE	BASIC THOLEIITIC DYKES	CROSS CUTTING		FLAT PROFILES	LOW SiO ₂ (<53%) HIGH CaO (6-10%) MgO (5-8%) Fe ₂ O ₃ (14-17%)	COPPERTON FORMATION
LAMINATED AMPHIBOLITE	THOLEIITIC LAVAS			FLAT PROFILES	HIGHER CaO THAN MASSIVE AMPHIBOLITE	
AMPHIBOLE GNEISS (SMOUSPAN GNEISS)	DACITE	IGNEOUS ZIRCONS	NEAR THE IGNEOUS TREND ON A LEAKE AND SINGH DIAGRAM			
QUARTZ-FELDSPAR GNEISS	HYDROTHERMALLY ALTERED ROCK NEAR OREBODY; DERIVED FROM SMOUSPAN GNEISS	STRUCTURALLY BENEATH HB-BT GNEISS (ANNEX)	BIRDWING □ PROFILE IN ANNEX -PCM RHYODACITE ON R1-R2 DIAGRAM		NORMALIZED MAJOR ELEMENTS SIMILAR TO DACITE	
METAPELITE (COPPERTON FM)	REWORKED RHYOLITE / RHYODACITE	QTZ-PLAG-BT-GRT + STAUROLITE	SEE BETHESDA FORMATION			
MICROBANDED AMPHIBOLITE	ARC THOLEIITE			FLAT PROFILES		ANNEX
HORNBLLENDE-BIOTITE GNEISS (AMPHIBOLE GNEISS)	DACITIC TUFFS; PARTLY REWORKED		DACITE / RHYODACITE ON R1-R2 (DE LA ROCHE DIAGRAM)	SIMILAR PROFILES TO SMOUSPAN GNEISS		