

Appendix 4G

Geological Survey of Canada  
Banks Island KIM Samples - METAMORPHOSED or MAGMATIC MASSIVE SULPHIDE INDICATOR MINERALS (MMSIM) - 0.25-0.5 mm

Sample Number	Sulphide/Arsenide + Related Minerals				Mg/Mn/Al/Cr Minerals														Phosphates		Remarks	Picked Grains
	>1 amp			<1.0 amp	>1.0 amp											<0.8 amp			>1.0 amp			
	% Cpy	Misc. Prime MMSIMs	% Py	% Gth	# Grains + Colour Spinel	Misc. Prime MMSIMs	% Red Rutile	% Ky	% Sil	% Tm	% St	% Sps	% Fay	% Opx	% Cr	% Ap	% Mz					
15SUV015	0	Tr sphalerite (2 gr) Tr barite (1 gr)	99 (~300,000 gr)	25	0	0	0	Tr	Tr	0	0	0	0	0	0	0	0	0	Siderite-goethite/marcasite assemblage. SEM checks: 4 sphalerite versus vesuvianite candidates = 2 sphalerite and 2 vesuvianite; and 2 barite candidates = 1 barite and 1 dolomite.	0.25-0.5 mm fraction: 2 sphalerite 2 vesuvianite resembling sphalerite 1 barite 1 dolomite resembling barite		
15SUV018	0	0.4% galena (10 gr) Tr barite (1 gr)	0.1 (3 gr)	95	0	0	Tr (1 gr)	15	Tr	0	0	0	0	0	0	Tr (3 gr; see KIM data)	0	0	Goethite/diopside-kyanite assemblage. SEM checks: 5 barite versus kyanite candidates = 1 barite, 3 kyanite and 1 diopside.	0.25-0.5 mm fraction: 10* galena 1 barite 1 diopside resembling barite 3 kyanite 1 red rutile 3 chromite (picked as KIMs) *(1 of 10 galena revealed by EPMA to be goethite)		
15SUV019	0	0	Tr (10 gr)	99	0	0	0	40	0	0	0	0	0	0	0	0	0	15	Goethite/diopside-kyanite-monazite assemblage.			
15SUV022	Tr (2 gr)	0	70 (~3000 gr)	Tr	0	0	0	Tr	Tr	0	0	Tr	0	0	0	Tr	Tr	Tr	Almandine-augite/marcasite-diopside assemblage.	0.25-0.5 mm fraction: 2 chalcopyrite		
15SUV023	0.5 (10 gr)	Tr sphalerite (1 gr)	50 (~1000 gr)	0	0	0	0	0	Tr	Tr	0	Tr	Tr	0	0	Tr	0	0	Almandine-augite-hematite/marcasite-diopside assemblage. SEM checks: 1 yellow sphalerite candidate = 1 sphalerite; 2 barite versus apatite candidates = 2 apatite; and 1 hercynite versus tourmaline candidate = 1 tourmaline.	0.25-0.5 mm fraction: 10 chalcopyrite 1 sphalerite 2 apatite resembling barite 1 tourmaline resembling hercynite		
15SUV024	0	0	Tr (1 gr)	1	0	0	0	Tr	0	0	0	Tr	0	0	Tr (1 gr; see KIM data)	0	Tr	0	Almandine-augite/diopside assemblage.	0.25-0.5 mm fraction: 1 chromite (picked as KIM)		
15SUV028	0	Tr barite (5 gr)	Tr (10 gr)	90	1 blue-green gahnite; 1 blue-green spinel	Tr low-Cr diopside (2 gr)	Tr (2 gr)	1	Tr	0	Tr	Tr	0	0	0	Tr	0	0	Goethite/diopside assemblage. SEM checks: 3 barite versus diopside candidates = 1 barite and 2 diopside; and 2 blue-green gahnite versus spinel candidates = 1 gahnite and 1 spinel.	0.25-0.5 mm fraction: 5 barite 2 diopside resembling barite 1 gahnite 1 spinel 2 low-Cr diopside 2 red rutile		
15SUV030	0	Tr barite (2 gr)	0	60	0	0	Tr (10 gr)	Tr	Tr	0	0	1	0	0	Tr (6 gr; see KIM data)	0	0	0	Goethite-almandine-augite/diopside assemblage.	0.25-0.5 mm fraction: 2 barite 10 red rutile 6 chromite (picked as KIMs)		
16SUV-013	Tr (7 gr)	0	0.5 (~200 gr)	30	1 blue green	0	Tr (8 gr)	0	Tr	1	Tr	Tr	0	0	Tr (2 gr)	0	0	0	Augite-goethite-almandine/diopside assemblage. SEM checks: 1 sphalerite versus titanite candidate = 1 titanite; and 1 blue-green gahnite versus spinel candidate = 1 spinel.	0.25-0.5 mm fraction: 7 chalcopyrite 1 titanite resembling sphalerite 1 spinel 8 red rutile 2 chromite		
16SUV-017	0	0	0	0	0	Tr sapphire corundum (2 gr)	0	15	2	3	60	0	0	0	0	0	0	0	Almandine/staurolite-epidote-kyanite assemblage. SEM checks: 5 white diopside versus epidote (major nonparamagnetic assemblage mineral) candidates = 5 epidote.	0.25-0.5 mm fraction: 2 sapphire corundum 5 representative epidote		
16SUV-018	0	0	3 (~200 gr)	0	2 black hercynite	Tr sapphire corundum (16 gr)	0	15	4	1	60	0	0	0	Tr (4 gr)	0	0	0	Almandine-siderite/staurolite-kyanite-epidote assemblage. *Pyrite* is mostly marcasite.	0.25-0.5 mm fraction: 2 hercynite (see KIM notes) 16 sapphire corundum 4 chromite		
16SUV-019	0	Tr sphalerite (1 gr) Tr barite (1 gr)	99 (~20,000 gr)	15	0	0	0	0	Tr	Tr	Tr	0	0	0	0	0	0	0	Siderite-almandine-hematite-goethite/marcasite assemblage. SEM checks: 1 brown sphalerite versus rutile candidate = 1 sphalerite; and 3 barite candidates = 1 barite and 2 diopside.	0.25-0.5 mm fraction: 1 sphalerite 1 barite 2 diopside resembling barite		
16SUV-020	0	Tr barite (3 gr)	99 (~40,000 gr)	10	0	0	0	0	0	Tr	Tr	0	0	0	0	Tr	0	0	Siderite/marcasite assemblage.	0.25-0.5 mm fraction: 3 barite		
16SUV-022	0	0	30 (~150 gr)	0	0	0	0	30	0	6	6	0	0	0	0	0	0	0	Almandine-ilmenite/marcasite-kyanite-leucoxene-rutile assemblage. SEM checks: 5 tourmaline candidates = 5 tourmaline; and 5 black rutile (major nonparamagnetic assemblage mineral) candidates = 5 rutile.	0.25-0.5 mm fraction: 5 representative tourmaline 5 representative rutile		
16SUV-023	0	0	Tr (3 gr)	50	4 black hercynite; 1 blue-green spinel	Tr sapphire corundum (4 gr) Tr corundum (1 gr)	Tr (5 gr)	15	1	1	2	0	0	0	Tr (10 gr)	0	0	0	Goethite-almandine/diopside-kyanite assemblage. SEM checks: 1 blue-green gahnite versus spinel candidate = 1 spinel; 1 sapphire corundum versus kyanite candidate = 1 sapphire corundum; and 1 corundum candidate = 1 corundum.	0.25-0.5 mm fraction: 4 hercynite (see KIM notes) 1 spinel 4 sapphire corundum 1 corundum 5 red rutile 5 tourmaline (see KIM notes) 10 chromite		
16SUV-024	0	0	0	0	5 blue-green gahnite	0	Tr (5 gr)	2	0	5	2	0	0	0	Tr (3 gr)	Tr	0	0	Almandine-ilmenite/zircon-rutile- leucoxene assemblage. SEM checks: 5 blue-green gahnite versus spinel candidates = 5 gahnite.	0.25-0.5 mm fraction: 5 gahnite 5 red rutile 3 chromite		
16SUV-026	Tr (9 gr)	Tr sphalerite (9 gr)	90 (~40,000 gr)	40	0	0	0	Tr	0	Tr	Tr	0	0	0	0	Tr	0	0	Siderite-goethite/marcasite assemblage. SEM checks: 1 sphalerite versus rutile candidate = 1 sphalerite. 2 chalcopyrite from 0.25-0.5 mm fraction lost in transfer to vial.	0.5-1.0 mm fraction: 1 chalcopyrite 0.25-0.5 mm fraction: 9 chalcopyrite 9 sphalerite		

\*Shading identifies Beaufort Formation samples