

Appendix 4F

Geological Survey of Canada

Banks Island KIM samples - KIMBERLITE INDICATOR MINERAL ODM PICKING FOOTNOTES

SAMPLE NO.	INPUT ASSEMBLAGE	INPUT REMARKS
15SUV001	Augite/diopside	SEM checks from 0.5-1.0 mm fraction: 3 GO versus almandine candidates = 1 almandine and 2 spessartine; 4 IM versus crustal ilmenite candidates = 2 IM and 2 crustal ilmenite. SEM checks from 0.25-0.5 mm fraction: 24 IM versus crustal ilmenite candidates = 3 IM, 8 crustal ilmenite, 11 CR and 2 andradite; 10 FO versus diopside candidates = 2 FO, 1 fayalite and 7 vesuvianite; and 5 grey-brown augite (major paramagnetic assemblage mineral) versus orthopyroxene candidates = 5 augite.
15SUV002	Augite-goethite/diopside	SEM checks from 0.5-1.0 mm fraction: 3 andradite candidates = 3 vesuvianite. SEM checks from 0.25-0.5 mm fraction: 9 CR candidates = 9 CR; 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite; and 3 barite candidates = 3 barite.
15SUV003	Goethite-orthopyroxene/diopside	SEM checks from 0.5-1.0 mm fraction: 4 CR candidates = 2 CR and 2 hercynite. SEM checks from 0.25-0.5 mm fraction: 2 GO versus almandine candidates = 2 almandine; 14 IM versus crustal ilmenite candidates = 1 IM, 2 crustal ilmenite and 11 CR; 5 FO versus diopside candidates = 5 vesuvianite; and 1 blue-green gahnite versus spinel candidate = 1 hercynite.
15SUV004	Augite-goethite/diopside-marcasite	SEM checks from 0.25-0.5 mm fraction: 1 GP versus zircon candidate = 1 GP; 1 blue-green gahnite versus spinel candidate = 1 spinel; 3 sphalerite versus rutile candidates = 3 sphalerite; 1 galena candidate = 1 galena; 5 barite versus diopside candidates = 5 barite; and 5 augite (major paramagnetic assemblage mineral) versus orthopyroxene candidates = 5 augite. Also picked an additional 6 of ~20 sphalerite from 0.25-0.5 mm fraction. (*Note, 3 of the 9 total sphalerite grains picked were subsequently identified by EPMA as vesuvianite).
15SUV005	Augite/diopside	SEM check from 0.5-1.0 mm fraction: 1 GO versus almandine candidate = 1 almandine. SEM checks from 0.25-0.5 mm fraction: 1 GO versus almandine candidate = 1 almandine; 1 CR versus tourmaline candidate = 1 CR; and 5 FO versus diopside candidates = 4 fayalite and 1 vesuvianite.
15SUV006	Augite/diopside	SEM checks from 0.25-0.5 mm fraction: 2 orange GO versus almandine candidates = 2 almandine; 3 IM versus crustal ilmenite candidates = 2 crustal ilmenite and 1 CR; 5 FO versus diopside candidates = 3 fayalite, 1 diopside and 1 bronzite; and 5 grey-brown augite (major paramagnetic assemblage mineral) versus orthopyroxene candidates = 5 augite.
15SUV008	Augite/diopside	No KIM remarks.
15SUV009	Augite-goethite/diopside	SEM check from 0.5-1.0 mm fraction: 1 CR candidate = 1 CR. SEM checks from 0.25-0.5 mm fraction: 1 GP versus almandine candidate = 1 GP; 1 GO versus almandine candidate = 1 almandine; and 1 FO versus diopside candidate = 1 FO.
15SUV010	Goethite-almandine/diopside	SEM checks from 0.5-1.0 mm fraction: 2 IM versus crustal ilmenite candidates = 2 crustal ilmenite; 5 FO versus titanite candidates = 5 vesuvianite; and 1 malachite candidate = 1 malachite. SEM checks from 0.25-0.5 mm fraction: 3 CR versus tourmaline candidates = 2 CR and 1 tourmaline; and 5 FO versus fayalite candidates = 3 fayalite and 2 vesuvianite.
15SUV014	Goethite-augite/diopside-marcasite	SEM checks from 0.25-0.5 mm fraction: 1 GP versus ruby corundum candidate = 1 GP; 3 IM versus crustal ilmenite candidates = 1 IM, 1 CR and 1 hercynite; 6 CR versus tourmaline candidates = 3 CR, 1 hercynite and 1 tourmaline; 1 FO versus vesuvianite candidate = 1 vesuvianite. Also picked 1 sphalerite from 0.5-1.0 mm fraction and 4 from 0.25-0.5 mm fraction. (*Note, sphalerite grains later confirmed by EPMA; vial with 4 sphalerite grains also contained a monazite grain)
15SUV015		No KIM remarks.
15SUV018		SEM checks from 0.25-0.5 mm fraction: 4 CR versus crustal ilmenite candidates = 3 CR and 1 crustal ilmenite. SEM checks from 0.18-0.25 mm fraction: 4 CR versus rutile candidates = 4 CR; and 2 greengahnite versus spinel candidates = 2 hercynite (1 with minor Zn)
15SUV019		SEM checks from 0.18-0.25 mm fraction: 3 GP versus almandine candidates = 2 GP and 1 almandine; 2 CR versus tourmaline candidates = 1 CR and 1 hematite; and 2 FO versus diopside candidates = 1 diopside and 1 apatite.
15SUV020	Augite-goethite-almandine/diopside	SEM checks from 0.5-1.0 mm fraction: 2 IM versus crustal ilmenite candidates = 1 IM and 1 hercynite; and 3 CR versus tourmaline candidates = 1 CR, 1 tourmaline and 1 hercynite. SEM checks from 0.25-0.5 mm fraction: 1 GO versus almandine candidate = 1 spessartine; 15 IM versus crustal ilmenite candidates = 4 IM, 8 crustal ilmenite and 3 CR; 14 CR versus hercynite candidates = 14 CR; and 7 FO versus fayalite candidates = 4 FO and 3 fayalite. Also picked 1 malachite from 0.25-0.5 mm fraction.
15SUV021		SEM checks from 0.5-1.0 mm fraction: 2 FO versus fayalite candidates = 1 fayalite and 1 hedenbergite; and 1 barite candidate = 1 barite. SEM checks from 0.25-0.5 mm fraction: 2 FO versus diopside candidates = 2 vesuvianite; 1 sphalerite candidate = 1 sphalerite; and 4 anglesite candidates = 4 pyrite + calcite. (*Note, 2 sphalerite grains were returned in vials; 1 was later confirmed by EPMA as sphalerite, the other was rejected as clinopyroxene)
15SUV022		No KIM remarks.
15SUV023		SEM checks from 0.25-0.5 mm fraction: 4 FO versus fayalite candidates = 4 fayalite.
15SUV024		SEM checks from 0.25-0.5 mm fraction: 1 GP versus almandine candidate = 1 almandine; 11 GO versus almandine candidates = 2 GO (Cr-poor pyrope), 6 almandine, 2 staurolite and 1 zircon; 10 CR versus crustal ilmenite candidates = 1 CR and 9 crustal ilmenite; and 4 FO versus vesuvianite candidates = 4 vesuvianite.
15SUV025	Goethite/diopside-marcasite	SEM checks from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite; 1 galena candidate = 1 galena. SEM checks from 0.25-0.5 mm fraction: 5 IM versus crustal ilmenite candidates = 4 crustal ilmenite and 1 CR; 3 CR versus hercynite candidates = 1 hercynite and 2 andradite; and 1 FO versus diopside candidate = 1 FO. Also picked 1 sphalerite from 1.0-2.0 mm fraction; 3 sphalerite from 0.5-1.0 mm fraction; and 8 sphalerite and 3 galena from 0.25-0.5 mm fraction.
15SUV026	Goethite-augite/diopside	SEM checks from 0.5-1.0 mm fraction: 3 IM versus crustal ilmenite candidates = 1 crustal ilmenite, 1 CR and 1 hercynite; and 1 FO versus diopside candidate = 1 vesuvianite. SEM checks from 0.25-0.5 mm fraction: 5 IM versus crustal ilmenite candidates = 1 crustal ilmenite and 4 CR; and 6 FO versus diopside candidates = 3 FO, 2 diopside and 1 vesuvianite. Also picked 1 sphalerite from 0.5-1.0 mm fraction and 2 from 0.25-0.5 mm fraction.
15SUV027	Goethite-siderite/marcasite-diopside	SEM checks from 0.5-1.0 mm fraction: 1 sphalerite candidate = 1 vesuvianite. SEM checks from 0.25-0.5 mm fraction: 5 sphalerite versus vesuvianite candidates = 5 vesuvianite.
15SUV028		SEM check from 0.25-0.5 mm fraction: 1 CR versus hematite candidate = 1 hematite.
15SUV030		SEM check from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 crustal ilmenite. SEM checks from 0.18-0.25 mm fraction: 1 FO versus diopside candidate = 1 FO.

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15SUV001	Augite/diopside	SEM checks from 0.5-1.0 mm fraction: 3 GO versus almandine candidates = 1 almandine and 2 spessartine; 4 IM versus crustal ilmenite candidates = 2 IM and 2 crustal ilmenite. SEM checks from 0.25-0.5 mm fraction: 24 IM versus crustal ilmenite candidates = 3 IM, 8 crustal ilmenite, 11 CR and 2 andradite; 10 FO versus diopside candidates = 2 FO, 1 fayalite and 7 vesuvianite; and 5 grey-brown augite (major paramagnetic assemblage mineral) versus orthopyroxene candidates = 5 augite.
SAMPLE NO.	INPUT ASSEMBLAGE	INPUT REMARKS
15SUV031	Augite/diopside	No KIM remarks.
15SUV032	Augite/diopside	No KIM remarks.
15SUV033	Augite/diopside	SEM check from 0.25-0.5 mm fraction: 1 IM versus rutile candidate = 1 crustal ilmenite.
15SUV050	Augite/diopside	SEM checks from 0.25-0.5 mm fraction: 1 CR versus crustal ilmenite andidate = 1 CR; 1 FO versus diopside candidate = 1 FO; and 5 sphalerite candidates = 1 sphalerite and 4 vesuvianite. Also picked 5 sphalerite from 0.5-1.0 mm fraction and 2 additional sphalerite from 0.25-0.5 mm fraction.
15SUV051	Augite/diopside	SEM checks from 0.5-1.0 mm fraction: 2 CR versus hercynite candidates = 1 CR and 1 hercynite. SEM checks from 0.25-0.5 mm fraction: 3 IM versus crustal ilmenite candidates = 1 IM and 2 andradite; 3 CR versus rutile candidates = 2 CR and 1 andradite; and 4 FO versus diopside candidates = 4 FO.
15SUV052	Augite-hematite/diopside-marcasite	SEM checks from 0.5-1.0 mm fraction: 3 GP versus almandine candidates = 3 almandine. Also picked 1 galena from 0.5-1.0 mm fraction and 1 from 0.25-0.5 mm fraction.
15SUV053	Augite/diopside	SEM checks from 0.25-0.5 mm fraction: 2 GP versus almandine candidates = 2 almandine.
15SUV054	Augite-hematite-almandine/diopside	SEM checks from 0.25-0.5 mm fraction: 2 CR versus rutile candidates = 2 CR; and 1 FO versus diopside candidate = 1 zoisite.
15SUV055*	Augite/diopside	SEM check from 0.25-0.5 mm fraction: 1 GO versus almandine candidate = 1 grossular (lost in transfer to vial).
16SUV-013		SEM checks from 0.25-0.5 mm fraction: 2 CR candidates = 2 CR; and 2 FO versus vesuvianite candidates = 2 vesuvianite.
16SUV-014	Augite-goethite-almandine/diopside-marcasite	SEM checks from 0.5-1.0 mm fraction: 2 IM versus crustal ilmenite candidates = 1 IM and 1 crustal ilmenite; 1 CR versus tourmaline candidate = 1 tourmaline; and 1 sphalerite versus titanite candidate = 1 sphalerite. SEM checks from 0.25-0.5 mm fraction: 10 IM versus crustal ilmenite candidates = 1 IM and 9 crustal ilmenite; 4 CR versus crustal ilmenite candidates = 2 CR and 2 crustal ilmenite; and 6 FO versus fayalite candidates = 1 FO and 5 fayalite
16SUV-015	Almandine-goethite-augite/marcasite	SEM check from 0.25-0.5 mm fraction: 1 GP versus zircon candidate = 1 zircon; and 1 IM versus crustal ilmenite candidate = 1 IM.
16SUV-016	Augite-goethite/marcasite	SEM checks from 0.25-0.5 mm fraction: 7 FO versus fayalite candidates = 7 fayalite.
16SUV-017		No KIM remarks.
16SUV-018		SEM checks from 0.25-0.5 mm fraction: 5 CR candidates = 3 CR and 2 hercynite.
16SUV-019		No KIM remarks.
16SUV-020		No KIM remarks.
16SUV-022		No KIM remarks.
16SUV-023		SEM checks from 0.25-0.5 mm fraction: 2 GO versus almandine candidates = 2 almandine; 5 GO versus staurolite candidates = 5 staurolite; 15 IM versus crustal ilmenite candidates = 9 IM, 2 crustal ilmenite and 4 tourmaline; and 12 CR versus tourmaline candidates = 7 CR, 1 tourmaline and 4 hercynite. SEM checks from 0.18-0.25 mm fraction: 4 GO candidates = 2 GO (Cr-poor pyrope), 1 almandine and 1 grossular; and 6 IM candidates = 6 IM.
16SUV-024		SEM checks from 1.0-2.0 mm fraction: 3 CR versus tourmaline candidates = 3 tourmaline. SEM checks from 0.25-0.5 mm fraction: 1 worn GP versus zircon candidate = 1 zircon; 1 CR versus tourmaline candidate = 1 CR.
16SUV-025	Goethite/marcasite-diopside	SEM checks from 0.25-0.5 mm fraction: 3 GP versus zircon candidates = 1 GP, 1 zircon and 1 fluorite.
16SUV-026		No KIM remarks.
16SUV-027	Augite-almandine/diopside	SEM checks from 0.5-1.0 mm fraction: 1 IM versus crustal ilmenite candidate = 1 IM; 6 CR versus tourmaline candidates = 3 CR, 1 tourmaline, 1 hercynite and 1 andradite; and 1 sphalerite versus titanite candidate = 1 sphalerite. SEM checks from 0.25-0.5 mm fraction: 10 IM versus crustal ilmenite candidates = 1 IM and 9 crustal ilmenite; and 10 CR versus hercynite candidates = 8 CR, 1 hercynite and 1 andradite.
16SUV-028	Augite-almandine-goethite/diopside-marcasite	SEM checks from 0.5-1.0 mm fraction: 4 GO versus almandine candidates = 1 GO (Cr-poor pyrope) and 3 almandine; and 1 IM versus CR candidate = 1 CR. SEM checks from 0.25-0.5 mm fraction: 2 GP versus almandine candidates = 1 ruby corundum and 1 spinel; 2 GO versus almandine candidates = 1 GO (Cr-poor pyrope) and 1 almandine; 5 IM versus crustal ilmenite candidates = 4 crustal ilmenite and 1 perovskite; 6 CR candidates = 5 CR and 1 crustal ilmenite; and 3 FO versus diopside candidates = 1 FO, 1 diopside and 1 andradite.
16SUV-030	Goethite-augite/diopside-marcasite	SEM checks from 1.0-2.0 mm fraction: 1 CR versus hercynite candidate = 1 hercynite. SEM check from 0.25-0.5 mm fraction: 1 CR versus hercynite candidate = 1 CR.
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15SUV017	Hornblende/titanite-zircon	SEM checks from 0.5-1.0 mm fraction: 4 IM versus CR candidates = 4 CR; 1 CR versus Cr-magnetite candidate = 1 CR; and 2 FO versus diopside candidates = 2 FO.
15SUV029	Hornblende-almandine/diopside-titanite-apatite	SEM checks from 0.5-1.0 mm fraction: 4 GO versus almandine candidates = 4 almandine; 2 IM versus crustal ilmenite candidates = 2 crustal ilmenite; 3 FO versus diopside candidates = 3 diopside; and 1 blue-green gahnite versus spinel candidate = 1 spinel.
16SUV-021	Hornblende-almandine/diopside-titanite-apatite	SEM checks from 0.5-1.0 mm fraction: 1 GP versus almandine candidate = 1 GP; 3 GO versus almandine candidates = 3 almandine; and 4 IM versus crustal ilmenite candidates = 4 crustal ilmenite. SEM checks from 0.25-0.5 mm fraction: 6 GO versus almandine candidates = 1 GO (pyrope almandine), 4 almandine and 1 grossular; 2 IM versus crustal ilmenite candidates = 2 crustal ilmenite; 2 CR candidates = 2 CR; and 6 FO versus diopside candidates = 5 FO and 1 diopside. Sole IM from 0.5-1.0 mm fraction has partial alteration mantle.
16SUV-029	Hornblende/titanite-zircon	SEM checks from 0.25-0.5 mm fraction: 1 CR candidate = 1 CR; and 3 FO versus diopside candidates = 3 FO.

*sample 15SUV019 is a field duplicate of 15SUV018; 15SUV055 is a field duplicate of 15SUV031

**Shading identifies Beaufort Formation samples