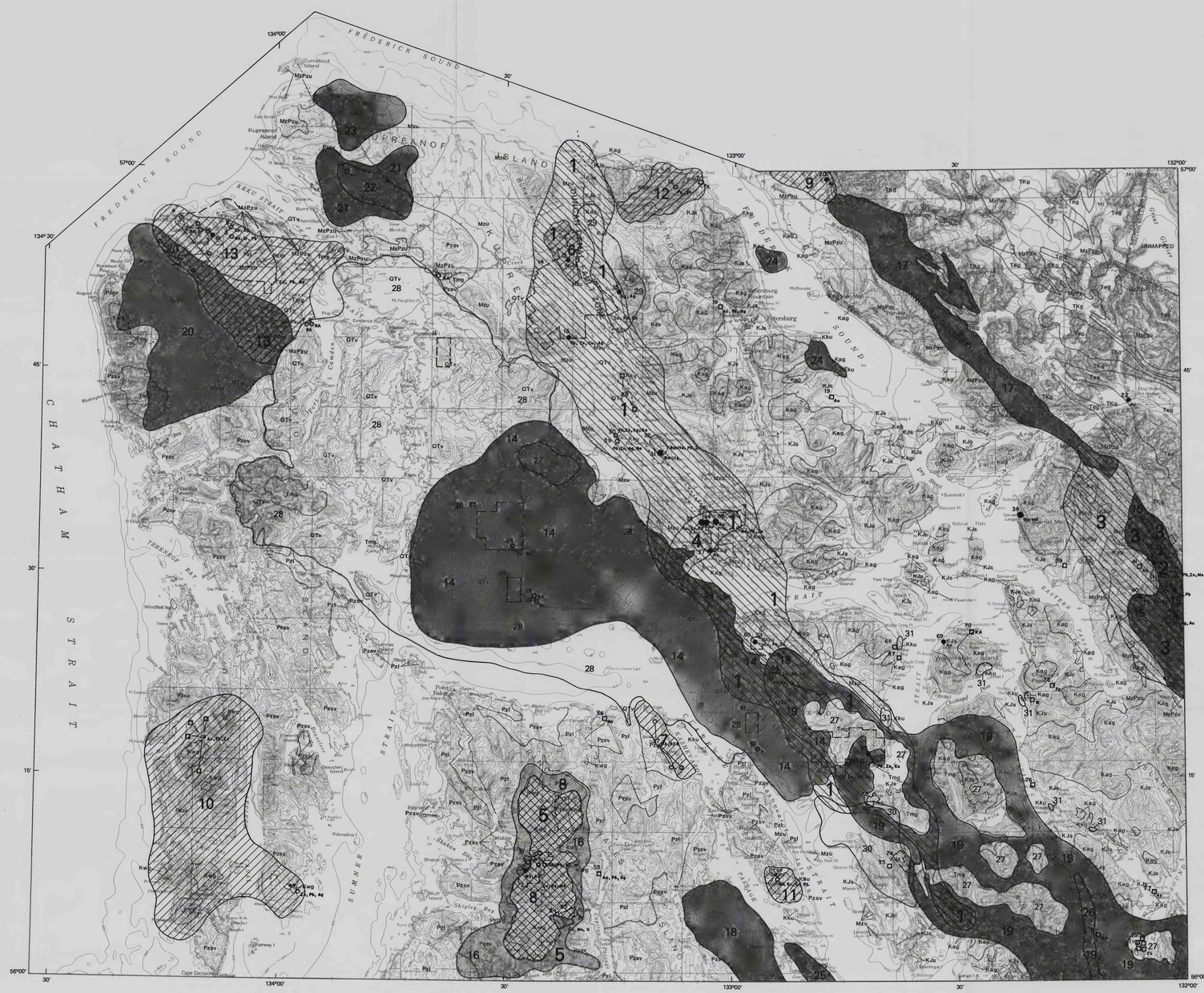
DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF–1970–B
Explanatory pamphlet accompanies map



Base from U.S. Geological Survey,
Port Alexander, Sitka, 1951; Petersburg, 1960;
Sumdum, 1961

Universal Transverse Mercator projection

Generalized geologic map prepared by D.A. Brew from Brew and others (1984); locations of mines, prospects, occurrences, and claims from Grybeck and others (1984)

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SCALE 1:250 000

5 0 5 10 15 20 MILES
5 0 5 10 15 20 25 30 KILOMETERS

CONTOUR INTERVAL 200 FEET IN THE UNITED STATES AND 250 FEET IN CANADA
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET-DATUM IS MEAN LOWER LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
1960 MAGNETIC DECLINATION AT SOUTH EDGE OF SHEET VARIES FROM 29°00' TO 29°30' EAST

MINERAL-RESOURCE MAP OF THE PETERSBURG QUADRANGLE AND PARTS OF THE PORT ALEXANDER, SITKA, AND SUMDUM QUADRANGLES, SOUTHEASTERN ALASKA

By

David A. Brew[1], Donald J. Grybeck[2], John B. Cathrall[3], Susan M. Karl[2], Richard B. Koch[1],

David F. Barnes[1], Rainer J. Newberry[4], Andrew Griscom[1], and Henry C. Berg[5]

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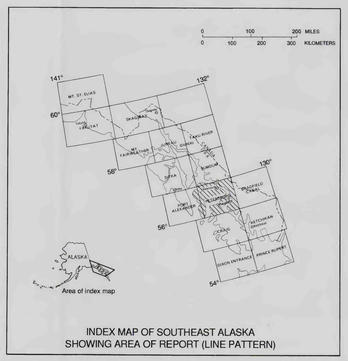
[1] USGS, Menlo Park, CA 94025.
[2] USGS, Anchorage, AK 99508.
[3] USGS, Denver, CO 80225.
[4] USGS and University of Alaska, Fairbanks, AK 99775.
[5] 115 Malvern Avenue, Fullerton, CA 92632.



INDEX MAP OF SOUTHEAST ALASKA
SHOWING AREA OF REPORT (LINE PATTERN)

RELATIONS OF MAP UNITS

SEDIMENTARY, VOLCANIC, AND METAMORPHIC ROCKS

Kuiu-Etolin belt: QTv

Gravina belt: KJs; Mzu

Mainland and Alexander belts: MzPzu

Alexander belt: Pzsv; Pzl

INTRUSIVE ROCKS

Granitic rocks: Tmg; Teg; TKg; Kag; Kwg

Mafic and ultramafic rocks: Kku

QUATERNARY
TERTIARY
MESOZOIC
PALEOZOIC

DESCRIPTION OF GENERALIZED GEOLOGIC MAP UNITS

Generalized rock unit symbol	Age and rock types (Brew and others, 1984)	Included units from detailed geologic map (Brew and others, 1984)
	Sedimentary and volcanic rocks	
QTv	Quaternary and Tertiary sedimentary and volcanic rocks of Kuiu-Etolin belt--Quaternary surficial deposits not included in this unit.	Qs, Qb, QTv, QTc, QTr, QTf, QTa, QTb, QTx, Tmd, Tmgb.
KJs	Early to mid-Cretaceous to Late Jurassic sedimentary and volcanic rocks of Gravina belt--Flysch and volcanic rocks and their metamorphic equivalents.	Tsh, Ksg, Kss, Ksp, KJsv, KJss, Ksm
Mzu	Late Mesozoic greenstone, chert, phyllite, and melange of Gravina belt--Includes exotic blocks in melange.	Mzm, Mzs, Mzl, Mzv, Mzc, Mzr, Mzp, Thp, Trhv, Trhs, Py, Dls.
MzPzu	Permian to Late Triassic sedimentary and volcanic rocks and limestone of Alexander belt and their metamorphic equivalents in Mainland belt.	TKp, TKbs, TKhs, TKmb, TKbg, TKhg, Trhh, Trhl, Trhc, Trhb, Trk, Pp, Phl, Phb.
Pzsv	Ordovician to Mississippian sedimentary and volcanic rocks and related conglomerate of Alexander belt and their metamorphic equivalents.	Cl, CDs, MDc, MDcv, Dl, DSva, DSvg, DSvb, Sbg, Sbc, Sbl, Sbv, Stpg, Stpc, SOsdg, SOtdl, Tbh, Kbh, Kdh, Koh, Kpch.
Pzl	Silurian limestone and related conglomerate of Alexander belt and their metamorphic equivalents.	Khh, Koh, Sck, Sckc, Sch, Schc, Scp, Sibo, Kch.
	Intrusive rocks	
Tmg	Late Tertiary granitic and related rocks of Kuiu-Etolin and Mainland belts--Age about 20 Ma.	Tmae, Tmge, Tmme, Tmaz, Tmgk, Tmdk, Tdr, Tag.
Teg	Middle Tertiary granitic rocks and associated migmatites of Mainland belt--Age about 50 Ma.	Tmgz, Tmgy, Tgdb, Tgdp, Tgrg
TKg	Earliest Tertiary to latest Cretaceous granitic rocks of Mainland belt--Age about 60 Ma.	Tmgx, Ttos, Tgdg
Kag	Late Cretaceous granitic rocks of Gravina and Mainland belts--Age about 90 Ma.	Kmgf, Ksef, Ksif, Ktop, Ktoc, Kqop, Kqgp, Kqo, Kdi.
Kwg	Mid-Cretaceous granitic rocks in Alexander and Gravina belts--Age about 100 Ma.	Kwgd, Kwqo, Kwan
Kku	Mid-Cretaceous ultramafic and mafic rocks rocks in Alexander and Gravina belts--Age about 100-110 Ma.	Kbdu, Kbwb, Kbgb, Kbgd, Kuk, Khb, Mzgb, Mzg, Mzum.

MINERAL-RESOURCE TRACT AND LOCALITY SYMBOLS

Boundary of mineral-resource tract--Generalized in most cases from more than one criterion; drawn to include, rather than exclude, marginal areas

6 **Tract number**--Replicate numbers used in most tracts

Ranks of mineral-resource tracts

1 **Rank I**--Contains one or more mines, with or without significant production; has permissive geology for the types of deposits inferred to be present and significant bedrock and stream-sediment geochemical anomalies; may or may not be associated with one or more significant geophysical anifffomalies

5 **Rank II**--Contains one or more prospects or metallic-mineral occurrences; has permissive geology for the types of deposits inferred to be present; has significant bedrock and stream-sediment geochemical anomalies; and may or may not be associated with one or more significant geophysical anomalies

14 **Rank III**--May have occurrences; has permissive geology for the types of deposits inferred to be present and significant bedrock and stream-sediment geochemical anomalies; may or may not be associated with one or more significant geophysical anomalies

27 **Rank IV**--Has permissive geology for the types of deposits inferred to be present

31 **Rank V**--Has one or more significant geophysical anomalies

5 1 14 **Regions of overlap of rank I, rank II, and rank III tracts**

Mines, prospects, occurrences, and claims--As defined by Grybeck and others (1984). Numbers correspond to numbered localities in Grybeck and others (1984) and to text and table in this report. Commodities of interest according to Grybeck and others (1984) are indicated at each locality (see Appendix C for explanation of abbreviations)

33 Au, Zn, Pb **Mine or prospect**

24 Cu, Mo **Metallic or non-metallic mineral occurrence**

56 Au **Claim(s)**

Claim block

GEOLOGIC MAP SYMBOLS

Contact

Fault--Dotted where concealed

Major lineament

Table 1. *Mineral-resource tract summary*
[Abbreviations explained in Appendix C]

Tract	Geology	Deposit types possibly present containing undiscovered resources (see Appendix B) (Classification of resources, see Appendix A)	Mines, prospects, occurrences, and criteria	Commodities of interest
		Rank I		
1	Triassic and Mesozoic low-grade metavolcanic and metasedimentary rocks in Duncan Canal fault zone; large blocks of Devonian carbonate rocks suggest that the major unit present before youngest faulting was a melange.	Kuroko or Medford massive sulfide; bedded barite; (hypothetical: see tract description for details).	Mine (loc. 31); Prospects (locs. 13, 15, 59, 65; occurrences (locs. 29, 30, 63, 64); scattered Cu, Pb, Ba, Mo stream-sediment anomalies and strong Ba, Zn, Pb, Cu bedrock anomalies, plus anomalies listed for tracts 4 and 6.	Pb, Zn, Cu, Ba, Ag, Au
2	Amphibolite-grade metapelitic and metavolcanic rocks are intruded by late Tertiary granite and rhyolite near Coast Range megalineament; metamorphism is Late Cretaceous to early Tertiary.	Replacement Sn; porphyry Mo(?); (hypothetical: see tract description for details).	Prospect (loc. 43); strong Sn, W, Mo stream-sediment anomalies; abundant Sn, Cu, Pb, Zn bedrock anomalies; plus those listed for areas 3 and 15.	Mo(?), Sn
3	Amphibolite-grade metapelitic and metavolcanic rocks are intruded by late Tertiary granite and rhyolite near Coast Range megalineament; metamorphism is Late Cretaceous to early Tertiary.	Sn replacement; metamorphosed massive sulfide(?); (indicated, hypothetical).	Prospects (locs. 40, 42, 44, 45); Pb, Ba stream-sediment anomalies and strong Zn, Ba, Cu, Ni, Cr bedrock anomalies plus those listed for tracts 2 and 15.	Pb, Zn, Sn, Ba, Ag, Au
4	Triassic and Mesozoic low-grade metavolcanic and metasedimentary rocks in Duncan Canal fault zone.	Au-quartz vein; (hypothetical).	Mines (locs. 35, 37); prospects (locs. 33, 34); Au stream-sediment anomalies; scattered Au, Ag, Cu, Pb, Zn bedrock anomalies; possible buried pluton.	Au, Ag
5	Contact metamorphosed hornfels and ifurble of original Paleozoic age adjoin large mid-Cretaceous granodiorite pluton.	Porphyry Cu-Mo; (inferred, hypothetical).	Mine (loc. 52); scattered Mo, W stream-sediment anomalies; scattered Mo, Cu, Bi anomalies.	Mo, Cu(?)
		Rank II		
6	Mesozoic low-grade metavolcanic and minor metasedimentary rocks in Duncan Canal fault zone.	Cu-Zn-Pb skarn; Cyprus massive sulfide; (speculative).	Prospect (loc. 12); some Zn, Pb, Cu bedrock anomalies.	Cu, Pb, Zn
7	Silurian sedimentary and minor volcanic rocks are intruded by carbonatite dikes and felsic dikes.	Felsic plutonic U; carbonaite; (speculative).	Occurrence (loc. 57); radioactivity anomalies; scattered La, Nb, Mo stream-sediment anomalies; Mo, Zn, Pb, Au, Ag, Cu, Be, La, Nb, Ba bedrock anomalies.	REE, Th, U, Cu, Pb, Zn, Mo
8	Contact metamorphosed hornfels and marble of original Paleozoic age adjoin large mid-Cretaceous granodiorite pluton.	Au-quartz vein; (speculative).	See tracts 5 and 16.	Au, Ag
9	Amphibolite-grade metapelitic and metavolcanic rocks close to Coast Range megalineament and to great tonalite sill body; metamorphism and sill are Late Cretaceous and early Tertiary age.	Au-quartz vein; (speculative).	Prospect (loc. 20); Zn, Cu, Pb, Mo, Au, Ag, As bedrock anomalies.	Au, Ag
10	Silurian turbidites intruded by scattered mid-Cretaceous granodiorite plutons.	Pelymetallic vein; (speculative).	Occurrence (loc. 49); Mo, W, Zn, Y, Nb, Mo stream-sediment anomalies; Mo, Zn, Cu, Co, Ag, As, Au, Pb, Sb bedrock anomalies.	Cu, Pb, Zn, Ag, Sb
11	Zoned mafic-ultramafic body of mid-Cretaceous age intrudes Silurian turbidites and minor volcanic rocks.	Zoned mafic-ultramafic Cr-Cu-Ni; (speculative).	Occurrence (loc. 58); Ni, Co, Cr stream-sediment anomalies; Ni, Cr, Co, Cu, Pb bedrock anomalies; aeromagnetic high.	Cr, Ni, Cu
12	Zoned mafic-ultramafic body of mid-Cretaceous age intrudes Cretaceous turbidites.	Zoned mafic-ultramafic Cr-Cu-Fe; (speculative).	Occurrence (loc. 17); Co, Ni, Cu stream-sediment anomalies; Ni, Cr, Co, Pb, Zn, Mo bedrock anomalies; aeromagnetic high.	Cr, Ni, Fe
13	Upper Paleozoic and Mesozoic sedimentary volcanic and carbonate rocks; highly faulted.	Bedded barite(?) carbonatite, Kuroko massive sulfide; (speculative).	Prospect (loc. 3); occurrences (locs. 1, 2, 5, 6); Pb, Zn, Ba, Nb stream-sediment anomalies; Cu, Zn, Pb, La, Nb, Mo, Ni, Cr bedrock anomalies; large, deep aeromagnetic anomaly.	Sr, Ba, Pb, Zn, Ag, Cr, Ni
		Rank III		
14	Middle Tertiary felsic and intermediate volcanic rocks; possible eruptive center.	Polymetallic vein, epithermal vein; (speculative).	Occurrence (loc. 24); Cu, Pb, Mo, Sn, W, La, Y, Nb, Be stream-sediment anomalies.	Cu, Pb, Zn, Mo, Au, W(?)
15	Upper greenschist and amphibolite-grade metapelitic and metavolcanic rocks are intruded by Late Cretaceous tonalite plutons and late Tertiary granite and rhyolite (see tracts 2 and 3).	Au-quartz vein; (speculative).	See tracts 2 and 3; plus Au stream-sediment anomalies and Au, Pb, Cu, Zn, Mo, Ag, As bedrock anomalies.	Au, Cu, Pb, Mo
16	Contact metamorphosed hornfels and marble of original Paleozoic age adjoin large mid-Cretaceous granodiorite pluton.	Cu-Zn-Pb-W skarn; (speculative).	See tracts 5 and 8.	Mo, W, Cu
17	Amphibolite-grade metapelitic, meta-volcanic, and metacarbonate rocks are intruded by Late Cretaceous and early Tertiary great tonalite sill.	Au-quartz vein; metamorphosed massive sulfide; (speculative).	Occurrence (loc. 21); Zn, Au, As stream-sediment anomalies and Pb, Zn, Au, Mo bedrock anomalies.	Au, Pb, Zn
18	Silurian turbidites and minor volcanic rocks.	Sedimentary exhalative Zn-Pb; (speculative).	Mo, Cu, Zn, Pb stream-sediment anomalies and Cu, Pb, Zn, Cr, Ni bedrock anomalies.	Cu, Pb, Zn, Mo
19	Middle Tertiary granitic rocks intrude Cretaceous and Mesozoic turbidites; other metasedimentary and meta-volcanic rocks.	Polymetallic vein; porphyry Mo; (speculative).	Mo, W, Ni, Cr, Pb stream-sediment anomalies and Cu, Pb, Zn, Au, Mo, Cr, Ni bedrock anomalies.	Mo, W, Cu, Pb, Zn, Au, Ag, Cr, Ni
20	Middle and upper Paleozoic turbidites and carbonate rocks.	Polymetallic vein(?); (speculative).	Occurrence (loc. 1, see tract 13); Mo, Ba stream-sediment anomalies; Cu, Pb, Zn, Mo, Ni, Cr, Co bedrock anomalies.	Cu, Pb, Zn, Mo, Cr, Ni, Co
21	Upper Paleozoic and Mesozoic fine-grained sediments, chert, and volcanic rocks.	Sedimentary exhalative Zn-Pb(?); (speculative).	Cu, Zn bedrock anomalies.	Cu, Zn
22	Upper Paleozoic and Mesozoic fine-grained sediments, chert, and volcanic rocks.	Besshi massive sulfide(?); (speculative).	Ni, Co stream-sediment anomalies and Cu, Pb, Ni, Cr, Mo bedrock anomalies.	Cu, Pb, Ni, Cr, Mo
23	Large body of mid-Cretaceous gabbro intrudes upper Paleozoic and Mesozoic fine-grained sediments, chert, and volcanic rocks.	Gabbroic Ni-Cu; zoned mafic-ultramafic Cr-Cu-Ni; (speculative).	Cu, Zn stream-sediment anomalies; Co, Cr, Cu, Pb, Zn, Mo bedrock anomalies; large aeromagnetic anomaly.	Co, Cr, Ni, Cu, Zn
24	Cretaceous turbidites and volcanic rocks are intruded by mid-Cretaceous gabbro bodies.	Zoned mafic-ultramafic Cr-Cu-Ni; gabbroic Ni-Cu; (speculative).	Co, Cr, Ni, Cu bedrock anomalies; aeromagnetic anomalies.	Co, Cr, Ni, Cu
25	Silurian turbidites and minor volcanic rocks are intruded by mid-Cretaceous granodiorite pluton.	Polymetallic vein(?); (speculative).	Cr, Ni, Cu stream-sediment anomalies; Cu, Pb, Zn, Co, Cr, Ni bedrock anomalies.	Cr, Ni, Cu
26	Fault cuts Cretaceous turbidites intruded by Late Cretaceous tonalite and middle Tertiary granite.	Polymetallic vein; (speculative).	Cu, Mo, Ni bedrock anomalies.	Cu, Mo
		Rank IV		
27	Middle Tertiary granitic rocks intrude Cretaceous and Mesozoic turbidites, other metasedimentary and metavolcanic rocks.	Felsic plutonic U; (speculative).	La, Nh, Y, Pb stream-sediment anomalies; Be, Nb, Y, Sn, Cu, Mo, La, Co, Cr bedrock anomalies; local aeroradioactivity anomalies, aeromagnetic anomalies.	U, Th, REE
28	Exposed and concealed lower Tertiary Kootznahoo Formation.	Sandstone U; (speculative).	Occurrences (locs. 7, 8, 10); U bedrock anomalies; local radioactivity anomalies.	U, Th
		Rank V		
29	Mid-Cretaceous granodiorite pluton intrudes Mesozoic turbidites, other sedimentary rocks, and volcanic rocks.	None known.	Aeromagnetic anomaly.	Cu(?)
30	Cretaceous turbidites and volcanic rocks.	None known.	Aeromagnetic anomaly.	None known
31	Cretaceous turbidites and volcanic rocks are intruded by mid-Cretaceous gabbro bodies.	None known.	Aeromagnetic anomalies.	Co, Cr, Ni, Cu

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