MAP AND TABLES DESCRIBING MINERAL RESOURCE POTENTIAL OF THE BROOKS RANGE, ALASKA

TABLES AND REFERENCE LIST TO ACCOMPANY OPEN-FILE REPORT 78-1-B

TABLE 1.--SUMMARY OF MINERAL RESOURCE DATA FOR THE BROOKS RANGE, ALASKA.

Area outlined on map	Major types of known deposits	Suspected or speculative types of deposits	Geologic controls of mineral resources	Production and identified resource data	Status of geologic information (Also see map)	Additional comments	Summary of mineral resource potential	Estimated number of deposits; percent chance that there are the number predicted or more deposits	Grade and tonnage for the deposit type; see table 2 for quantitative data
1.	Semianthracite coal	--	In Mississippian slate of the Lisburne Hills.	No data	Geology mapped in reconnaissance in sufficient detail to outline the probable extent of the coal-bearing units. Some detailed work (especially Conwell and Triplehorn, 1976; Barnes, 1967).	--	Substantial deposits of coal with excellent heating characteristics. Little detailed information about the deposits is available.	--	--
2.	Bituminous coal	--	Mainly in Lower Cretaceous sedimentary rocks in the northern foothills of the Brooks Range. Some scattered occurrences known in Lower Cretaceous and Tertiary rocks to the east of the Colville River.	Barnes (1967) indicates the total coal resources of northern Alaska as about 110 billion metric tons. Tailleur and Brosgé (1976) have indicated they may be substantially larger, perhaps three times as large. About 90% of the coal-bearing lands lie north of the area of this report.	Almost all of the area has been mapped in reconnaissance by government.		Most of the over 100 billion metric tons of coal resources in northern Alaska occur north of the area considered in this report.	--	--

3.	--	(a) Cr, asbestos, and Pt-group elements in ultramafic rocks. (b) Ni and Cu in mafic portions of the ophiolite sequence.	Associated with ultramafic and mafic portions of Jurassic-Permian ophiolite sequences that include dunite, peridotite, gabbro, and basalt.	No data	The ophiolite complexes and surrounding area have been mapped in reconnaissance only and the existence of these rocks has only recently become known. Some limited industry prospecting for chromite but details of the bodies largely unknown.	A few scattered occurrences of chromite reported in the literature. Commonly known that it occurs widely in the dunite of the ophiolite complexes--as is usual for this rock--but no major concentration known.	Worldwide, most chromite, Pt-group elements, and asbestos occur in rocks similar to those that comprise major portions of these complexes. They also commonly have significant Ni and Cu mineralization. The occurrence of significant deposits in these particular areas is speculative as so little is known of the geology in detail. Numbers of podiform chromite deposits based on outcrop area and ultramafic rocks and regression model of deposits in California and Oregon. Estimated number of deposits is only for deposits with tonnages comparable to those used in the grade-tonnage model.	90% 14	50% 50	10% chance that there are 100 deposits or more	Podiform chromite model.

4.	Cu, Zn, Barite deposits	--	Largely unknown. The major copper prospect, the Omar, may be similar to the deposit at Kennecott (area 10), a breccia filling in carbonate rocks. Much of the mineralization is in the carbonates of the Baird Group.	One prospect, the Frost, probably contains 1 million metric tons of barite and may contain 10 million tons.	Only geologic reconnaissance mapping available for much of the area. Some detailed work by industry including diamond drilling at the Omar prospect; minor detailed work at some of the other prospects.		Widespread Cu mineralization with occurrences of Zn and barite. Some work by industry but generally poorly known. One to 10 million metric tons of barite contained in one prospect.	—				—
5.	Stratiform(?) Zn-Pb-barite deposits.	--	Deposits apparently restricted to a Jurassic to Mississippian unit of black chert, shale and limestone.	Unpublished data from the U.S. Bureau of Mines indicate substantial tonnage at the Red Dog prospect but little information as to the vertical extent of the mineralization.	Area has been covered by reconnaissance geology as yet unpublished except at small scale (Grybeck and others, 1977). Tailleur, Ellersieck, and Mayfield (1977) have discussed the geology of the immediate area of the Red Dog prospect including the results of some geochemical sampling. In 1975 and 1976, portions of the area were examined in some detail by contractors for the U.S. Bureau of Mines but the results have not yet been published. Activity by industry within the last several years west of the Red Dog prospect.	The origin of the deposits has variously been indicated as syngenetic, Mississippi-Valley type, volcanogenic and hydrothermal. September 1977 press releases by General Crude Oil Co. and Houston Oil and Minerals Corp. reported that 4 diamond drill holes at a prospect northeast of the Red Dog prospect have intersected from 13 to 30 meters of Pb-Zn-Ag mineralization with ore grades ranging from 1.5 to 8.5% Pb, 5.8 to 15.5% Zn, 3 to 182 grams per metric ton Ag, and up to 0.25% Cd.	Zn-Pb-barite mineralization known that may be of substantial size. Only surface information available at the best known prospect in the area, the Red Dog. Area is currently highly active. Estimated number of deposits is only for deposits with tonnages comparable to those described in the grade and tonnage column.	90% 5	50% 8	10% 16	chance that there are deposits or more	A stratiform Zn-Pb-barite model is not listed in table 2, but examples of this type of deposit in the Yukon contain as much as 3 to 5 million metric tons of ore averaging 8 to 17% combined Pb and Zn (Carne, 1976). The Howard Pass deposit in the Yukon Territory contains 50 million metric tons of similar grade material and may contain 500 million metric tons.

6.	(a) Stratiform, volcanogenic Zn-Pb-barite deposits.	--	(a) The Bronchwater deposit which is similar to mineralization in area 5 occurs in a disrupted sequence of Mississippian dark chert, dark shale and tuff.	No data	Area has been covered by reconnaissance geology as yet unpublished except at small scale (Grybeck and others, 1977). The mineral resources of the area are currently under investigation as part of the studies on National Petroleum Reserve Alaska. Detailed studies have been undertaken at the Bronchwater deposit (Nokleberg and Winkler, in press) and most of the area has been covered by geochemical surveys. Few of the geochemical anomalies have as yet been field checked.	The Pb-Ag geochemical anomalies found in 1977 that occur in the Lower Cretaceous sedimentary rocks at the northwestern end of the area were unexpected. The anomalies suggest further work in the extensive Lower Cretaceous terrane along the north side of the Brooks Range, an area previously considered to be of little interest for its mineral resources.	The geochemical anomalies and the mineralization at Bronchwater Creek and in the Red Dog area (area 5) suggest a major metallogenic province of Pb, Zn, and barite along the north side of the Brooks Range. The knowledge of the mineral resources of the area although minimal is suggestive of such a province.	--	--
	(b) Widespread geochemical anomalies in Pb, Zn, and locally Ag.	—	(b) Uncertain. The geochemical anomalies occur in clastic and chemical sedimentary rocks that range in age from Mississippian to Early Cretaceous.						
	(c) Sedimentary barite.	—	(c) Barite nodules comprise about 10% of portions of the Siksikpuk Formation of Permian age.						
7.	Placer gold	--	No lode source known.	Total production through 1931 estimated at about 974,000 grams of gold (Cobb, 1973). Colp and Bannister, U.S. Bureau of Mines (in press) have indicated that the area has a gold potential of about 22.2 million grams.	Placer gold has been known in the area since at least 1909. Area currently active on a small scale.	—	U.S. Bureau of Mines estimates gold potential of about 22.2 million grams.	—	—

8.	Disseminated and vein-type U-Th deposits.	--	Deposits are associated with Cretaceous monzonite and syenite plutons that intrude Cretaceous to Jurassic mafic volcanic rocks.	No data.	Reconnaissance geology completed over the area. Detailed work on the plutonic belt (Miller, 1970, 1972). Detailed work on the U-Th deposits by government (Eakins, 1977; Jones and Forbes, 1977; Miller, 1977; Miller and Bunker, 1975; Miller and Elliott, 1977; and Staatz and Miller, 1976) as well as unpublished work by industry including limited diamond drilling. The Energy Research and Development Administration has recently completed an airborne radiometric and magnetic survey of the area (E.R.D.A., 1975) as well as a geochemical survey of the area as yet unpublished and is currently involved in a follow-up program on the geochemical anomalies.	Most of the prospects consist of disseminated uranium minerals in the intrusive rocks, in vein-type deposits within the intrusives, or in the country rocks, and particularly near dike swarms genetically related to the uraniferous plutons. The plutons have a very high geochemical background of U and Th. For example, samples of the Zane Hills and Selawik Hills plutons contain up to 130 ppm U and 260 ppm Th.	Much current activity and potential for high-grade U-Th deposits in the uraniferous plutons of the Selawik and Zane Hills. As yet exploration is in its infancy although the general area of interest and the geologic controls of the deposits are established. Immense resources of U and Th available if it becomes economic or necessary to mine deposits with an elevated geochemical background of those elements.	--	--

9.	--	Sandstone-type U deposits	A possibly thick Tertiary sedimentary section occurs in the Selawik Basin which is bordered on the south by a belt of uraniferous plutons (see area 8). Less evidence of Tertiary sediments in the portions to the north and east covered by Quaternary units but they are likely to be underlain by Tertiary sediments and are also near potential source rocks.	No data.	No uranium mineralization is known in the area. Area covered in various reconnaissance reports but almost entirely mapped as Quaternary units. Drilling will be necessary to test the presence of Tertiary rocks and their uranium content in this area; only one hole has been drilled and that for petroleum. The Energy Research and Development Administration has recently completed an airborne radiometric survey over most of the area at a spacing of 6 miles between flight lines (E.R.D.A., 1975). A geochemical sampling program was carried out concurrently but the results have not yet been published.	Limited exposures of Tertiary sediments along the south side of the Selawik Basin adjacent to the Selawik Hills. Nimiuk No. 1 drilled for petroleum about 56 km south of Kotzebue penetrated about 1800 meters of probably Tertiary sediments that included numerous tuffaceous layers and coal bed.	Possibly thick Tertiary host rocks favorable for the occurrence of sandstone-type U deposits adjacent to uraniferous plutons. Widely speculated upon as such but no exploration yet.	--	--
10.	(a) Hydrothermal Cu-Zn, deposits in brecciated carbonates. (b) Nephrite jade and asbestos. (c) Gold placers.	-- -- --	(a) In Devonian-Silurian Baird Group or Skajit Limestone. (b) Associated with small serpentinized ultramafic bodies.	(a) Reserve data for Bornite deposits not published but substantial. No production as of 1977. (b) Some production of jade as a gemstone for at least the last decade; currently productive. Reserves unknown but probably sufficient for sustained production at current levels. (c) Placer gold production of at least 1.5 million grams of gold. Little production currently.	The Cosmos Hills has been geologically mapped in detail by Fritts (1970). The two similar areas to the west have been mapped only in reconnaissance (Mayfield, unpubl. data). Both government and industry have carried out geochemical studies. Some detailed geophysical work. Most of the area covered by an airborne magnetic survey on a 1 mile line spacing (Hackett, 1977). The Bornite copper-zinc deposit has been extensively drilled and explored by a 326 meter shaft.	Diamond drilling has continued each summer at the Bornite deposit for the last decade. Several largely unexplored deposits of the Bornite-type also occur in the area.	A long-known mineralized area with deposits of various types. The most significant is the Bornite Cu-Zn deposit and similar less well-exposed deposits in the area. Area has produced 1.5 million grams of placer gold from numerous creeks but these are now largely inactive. Production of jade for the lapidary trade will probably continue indefinitely although its value will be relatively minor, probably less than one million dollars per year.	--	--

11.	Widespread occurrences of Cu and Pb mineralization with local occurrences of Zn and barite as disseminations and in quartz veins.	—	Uncertain. Mineralization occurs in Devonian and Mississippian clastic and calcareous rocks.	No data.	Reconnaissance geologic map published (Pessel and Brosgé, 1977). Area currently under study as part of an AMRAP program in the Ambler River quadrangle and most of the mineral occurrences in the area were found during this program (Mayfield and Tailleur, in preparation). Little detailed work in the area and almost none by industry. Area covered by reconnaissance geochemistry and aeromagnetic surveys as part of the AMRAP program.	--	Mineral resource potential of the area speculative. Area is poorly known but characterized by a number of prospects, none of significant size in themselves, but which in total suggest a metallogenic province with the possibility for one or more large deposits.	--	—

12a.	Stratiform, volcanogenic Cu-Zn deposits with Pb, Ag, and Au values.	—	Deposits associated with metarhyolite piles in a 1200 meter interval of muscovite-quartz schist, calc-mica schist, marble, chlorite schist and quartzite that occurs in a belt of low-grade metamorphic rocks that consist primarily of chlorite-muscovite schist (Smith, Proffett, Heatwole and Bakhtson, 1977).	Arctic deposit has reserves of 27-32 million metric tons of material that contains about 4% Cu, 5.5% Zn, 51 grams per metric ton Ag, 1% Pb and minor Au.	Reconnaissance geologic mapping has recently been published of this area; that portion of the area in the Ambler River quadrangle is also being covered in an AMRAP series to be published this year. That portion in the Survey Pass quadrangle began as an AMRAP project during the summer of 1977. The area has been subject to reconnaissance geochemistry by government as well as detailed work by industry in much of the area. Reconnaissance aeromagnetic surveys completed over the whole area at 1 mile spacing (Hackett, 1977). Substantial detailed ground and airborne work by industry. Moderate amount of diamond drilling in a number of the known deposits by industry in the last decade. Almost the whole area seen as favorable to mineralization. The area has been staked and work by industry is at a high level.	Surface evidence of mineralization is subtle and definite proof of mineralization usually can only be substantiated by drilling.	Clearly defined belt of volcanogenic Cu-Zn mineralization with values in Pb, Ag, and Au. One very large deposit known, Arctic, has about 30 million metric tons of reserves of 4% Cu, 5.5% Zn, 51 grams per metric ton Ag, 1% Pb and minor Au, and numerous similarly mineralized areas of unknown size and grade that are being actively explored. Excellent possibilities for additional major deposits. Estimated number of deposits is only for deposits with tonnages comparable to those used in the grade-tonnage model.	90% 15	50% 20	10% chance that there are 30 deposits or more	Felsic and intermediate volcanogenic massive sulfide model.

12b.	--	Stratiform volcanogenic Cu-Zn deposits with Pb, Ag, and Au values.	Inferred as similar to area 12a.	No data	Geology known only in reconnaissance for the most part. Limited detailed mapping and industry efforts in the area. Portions in the Chandalar and Ambler River quadrangles have been geochemically sampled in reconnaissance as part of the AMRAP projects that will be published in early 1978.	Extensions of area 12a based on continuity of favorable geologic units. Limited data on occurrences of mineralization. Estimated number of deposits is only for deposits with tonnages comparable to those used in the grade-tonnage model.	90% 3	50% 8	10% chance that there are 30 deposits or more	Felsic and intermediate volcanogenic massive sulfide model.
11c.	--	Stratiform volcanogenic Cu-Zn deposits with Pb, Ag, and Au values.	Inferred as similar to area 12a.	No data	The only geologic information is based on unpublished reconnaissance mapping by Tailleur included on another map of this series (Grybeck and others, 1977a). Some reconnaissance geochemistry by Fessel (1976) but almost no industry work.	Potentially favorable extension of the host rocks of area 12a that contain major Cu-Zn deposits but about which very little is known. Estimated number of deposits is only for deposits with tonnages comparable to those used in grade-tonnage model.	90% 1	50% 5	10% chance that there are 20 deposits or more	Felsic and intermediate volcanogenic massive sulfide model.

13.	--	Polymetallic contact metamorphic or felsic igneous association including occurrences of Pb, Zn, Ag, Cu, Sn, and Mo.	Deposits located in peripheral portions of or in host rocks adjacent to epizonal to mesozonal Cretaceous granite plutons.	No data	Only reconnaissance geology available for much of these areas. Some limited reconnaissance exploration work by industry prior to 1971 but almost no detailed work by industry on the mineralization. The few mineral deposits known were found during reconnaissance geologic mapping and geochemistry. Most of the area covered by government reconnaissance geochemistry. See Grybeck (1977a) for references to work in Survey Pass quadrangle; work in the Ambler River quadrangle is now being processed as part of an AMRAP project. Airborne magnetic survey of the area completed in 1973-1975 at 1 mile or less spacing (Mackett, 1977).	The occurrence of the polymetallic mineralization associated with the granites is largely defined by the geochemical work.	Good to excellent potential for occurrences of deposits of Pb, Zn, Cu, Sn, Mo and perhaps other elements in the border zones or adjacent to the Cretaceous granite plutons which characterize these areas. Data on the specific location of the mineralization as well as tonnage and grade almost entirely lacking.	--	--
14.	Marine phosphates with minor U, V, and fluorite content.	--	The phosphates occur in the Shublik Formation of Triassic age in the northeastern Brooks Range and a black chert and shale unit of the Alapah Limestone of the Mississippian Lisburne Group along the north side of the central Brooks Range.	Cathcart and Gulbrandsen (1973) indicate the hypothetical phosphate resources of northern Alaska as $1x10^9$ metric tons of rock that contain more than 24% P_2O_5 and "billions of tons of rock that contains at least 10% P_2O_5."	Most of the area has been mapped only at reconnaissance scale which in this case serves to limit the probable extent of the units that may contain phosphates. Some detailed work was done at specific localities by government (Patton and Matzko, 1959) but not enough to define the continuity and extent of the phosphate-bearing strata. Apparently little work by industry.	The phosphate beds contain up to 0.49% V_2O_5 and 0.021% eU.	Marine phosphate beds that contain resources of U and V occur in a belt across the central and eastern foothills of the northern Brooks Range. The beds are restricted to the Triassic Shublik Formation and Mississippian Alapah Limestone but the extent and grade of the deposits rest on limited data at a very few localities. Cathcart and Gulbertson (1973) estimate one billion metric tons of rock containing greater than 24% P_2O_5 and more tonnage at lower grades.	--	--

15.	(a) Placer gold	(b) Stratiform(?) Cu-Pb-Zn deposits.	(b) Numerous occurrences of ore minerals as disseminations or in quartz veins in Devonian-Silurian carbonates.	Production of at least 550,000 grams of placer gold in 5 creeks through 1937. Production relatively minor since then.	Reconnaissance geologic mapping completed (Brosgé and Reiser, 1960). Moderately detailed work in the vicinity of Wild Lake completed by Chipp (1972). Some geochemical exploration.	--	Widespread mineralization as small Cu, Pb, Zn occurrences and placer gold deposits. Larger deposits may be present.	--	--
16.	Placer gold deposits	--	The few identified gold quartz veins in the area probably indicate the source of the placer gold.	The gold production from the Wiseman area from 1899 to 1961 was at least 6.5 million grams. Some relatively minor production since 1961.	The placer gold deposits have been known since 1899 and have long been subject to the usual placer prospecting methods which are generally definitive and have not been greatly improved by new technology.	Extension of gold placer production into surrounding area is unlikely because of the thoroughness of the past prospecting.	It is estimated that about as much placer gold remains as has been produced to date. Most of the easily won placers have been mined and relatively little could be mined economically at 1977 prices and mining costs.	--	--

17.	(a) Porphyry Cu deposits. (b) Porphyry Mo deposit (c) Pb-Zn-Ag deposits in contact metamorphic deposits or hydrothermal veins.	(d) Stratabound Cu deposits of limited(?) extent at one locality.	(a-c) Associated with a belt of hypabyssal to mesozonal felsic to intermediate intrusive that extends for about 100 km.	No data	Reconnaissance geologic mapping completed in 1960 (Brosgé and Reiser, 1964); AMRAP projects of the Chandalar and Philip Smith Mountains quadrangles nearing completion. Detailed geologic mapping by industry in vicinity of much of the known mineralization. Reconnaissance geochemistry completed as part of the AMRAP projects; substantial detailed geochemistry by industry in the vicinity of some of the known mineralization. Some drilling on at least one of the porphyry copper deposits. Moderate level of work by industry for the last decade.	Zinc anomalies found during geochemical reconnaissance along the northeast end of the belt may be genetically related to the hydrothermal deposits or may be related to stratabound deposits of the Hunt Fork Formation (area 19).	A well-defined belt of mineralization marked by porphyry Cu deposits, a porphyry Mo deposit and Pb-Zn-Ag contact metamorphic and vein deposits--all probably associated with a belt of felsic plutons. No major deposits yet defined but good to excellent possibilities that one or more of the known deposits will prove to have substantial reserves. Chances for discovery of additional mineralization good to excellent. No major deposits yet identified but very good possibility that such deposits may be identified as extensions to known occurrences and as previously undiscovered deposits. Estimated number of deposits is only for deposits with tonnages comparable to those used in the grade-tonnage model and only applies to the Chandalar quadrangle (DeYoung, in press).	(a) 90% 50% 10% chance that there are 1 3 5 deposits or more (b) One deposit has been identified; no estimate of possibility of additional deposits.	(a) Porphyry copper model (b) Porphyry molybdenum model.

18.	(a) Au-quartz veins (b) Gold placers.	--	Gold-bearing quartz veins crosscutting phyllite and greenschists.	Reserves of at least 835,000 grams of Au at the Mikado mine.	Gold lodes known since at least 1910; detailed work includes geology and geochemistry (Chipp, 1970) as well as over 600 meters of underground work and surface trenching. The area is in the Chandalar quadrangle now being worked upon as an AMRAP project. Currently active and some Au is being mined presently.	About 1.2 million grams of placer gold produced from Little Squaw, Big and Tobin Creek from 1906 into the 1960's (DeYoung, in press).	Over 800,000 grams of lode Au reserves with current activity. Excellent potential for additional Au resources in the area of known mineralization south of Squaw Lake. Potential for major extensions to this long-known area doubtful in view of the long history of prospecting in the area.	--	--

19.	--	Syngenetic or volcanogenic stratiform Zn-Pb±Ag-Cu mineralization in the Hunt Fork Formation.	Deposits by definition are restricted to the Devonian Hunt Fork Formation which consists largely of black shale.	No data	The Hunt Fork Formation extends in a wide belt for at least 725 km along the backbone of the Brooks Range and its distribution is well established at reconnaissance scale. Recent geologic and geochemical work (Dutro, Drosgé and Marsh, 1977; J. Cathrall, oral commun.) from the Chandalar and Philip Smith Mountains quadrangles indicate scattered occurrences of Zn and Pb mineralization and extensive Zn, Pb, and locally Ag geochemical anomalies. Spotty geochemical anomalies in Pb and Zn also occur to the north in the Mississippian rocks but they have not been field checked and their significance is unclear.	Type and age of mineralization may be related to the stratiform Pb-Zn deposits recently discovered in the Selwyn Basin in Canada.	An extensive area of black shale with a few Zn-Pb-Cu occurrences as well as a high geochemical background of these metals and local anomalies. Little field work by government or industry on its mineral resource potential.	--	--
20.	--	(a) Volcanogenic Cu-Zn massive sulfide deposits? (b) Syngenetic Zn-Pb deposits? (c) Au or base-metal veins?	Uncertain	No data	Information largely limited to reconnaissance geologic mapping. No or very little work by industry.	--	Little known of the mineralization in these areas. Their potential lies in the scattered occurrences of mineralization and the general tendency of the lower Paleozoic-Precambrian metamorphic rocks throughout the Brooks Range to contain mineralization. Speculative potential for volcanogenic(?) Zn-Pb or Cu deposits similar to those recently discovered in the Selwyn Basin and elsewhere in the Yukon Territory, Canada.	--	--

21.	Sedimentary barite.	--	Barite deposits apparently restricted to the Permian Echooka Formation.	No data	Reconnaissance geology available for the area but no detailed work on the barite deposits by industry or government. Reconnaissance geochemical survey completed for the Philip Smith Mountains quadrangle (J. Cathrall, in preparation).	The geochemical sampling in the Philip Smith Mountains quadrangle in 1977 indicates that the Permian rocks are associated with strong Ba anomalies. At least one possibly large occurrence of barite known in the Permian rocks in the Atigun Canyon (Paul Metz, oral commun.). Little indication of barite was reported in these rocks prior to 1977. Also note presence of a layer of nodular barite in the Siksikpuk Formation of Permian age in the western Brooks Range (area 6).	Permian strata along the north side of the Brooks Range from at least the Atigun to Echooka Rivers contain occurrences of barite and persistent Ba geochemical anomalies that suggest possibility of barite deposits.	--	--
2.	--	Volcanogenic Cu deposits(?)	Most of the relatively few copper deposits occur in the lower Paleozoic mafic volcanic rocks.	No data	Reconnaissance geology available for all the area. A reconnaissance mineral resource assessment recently published (Brosgé and Reiser, 1976). Area is part of the Arctic National Wildlife Range and has been closed to prospecting since 1960. Almost no industry work and little detailed government work. Some scattered geochemistry.	--	Scattered Cu occurrences in lower Paleozoic rocks, especially the mafic volcanics, may be indicative of significant Cu mineralization. Area poorly known.	--	--

23.	--	Polymetallic contact metamorphic or disseminated igneous deposits including occurrences of Pb, Zn, Cu, Ag, Sn, W, and Mo.	Deposits are in the periphery of or adjacent to Paleozoic granitic plutons.	No data	Reconnaissance geology available for the area. Detailed geologic mapping around the plutons published (Sable, 1977) but most mapping completed in 1957 and 1958. Little emphasis on mineralization in any of the work and little if any exploration by industry. A mineral resource analysis of the area included in Brosgé and Reiser, 1976, but based on little new information. Some scattered geochemistry (Brosgé, Reiser, and Estlund, 1970).	A representative sample of the Okpilak granite contains 50 ppm eU (White, 1952) which suggests plutons may be uraniferous.	Scattered mineral occurrences of Pb, Zn, Ag, Cu, Sn, U, W, and Mo as well as some geochemical sampling indicate the granites are genetically related to the mineralization. Little government work and no industry work directed toward the metallic mineral resources of the area. Data on the specific location of the possible mineralization as well as its tonnage and grade are almost entirely lacking.	--	--
7	--	Sandstone-type U deposits.	Continental Tertiary units on the Arctic Coastal plain.	No data	Only reconnaissance geology available for most of the area.	Much Quaternary cover over the potential host rocks. Limited amount of data (White, 1952) suggests Okpilak granite to the south is uraniferous.	Geologic speculation suggests sandstone-type U deposits in Teritary continental strata. Sparse data indicate a potential source in uraniferous granite to the south. No known U mineralization in the area.	--	--

25.	Pb, Zn, Cu, Mo, Sn, and W deposits or geochemical anomalies.	--	In Mississippian-Devonian clastic sequence; may be related to granitic intrusive in area.	No data	Data restricted to reconnaissance geologic mapping and some scattered geochemical sampling. Area of mineralization resampled during 1976 by the USGS and USBM (Brosgé and Reiser, 1977).	Galena and sphalerite occurrences known in the area but origin enigmatic.	A potentially significant area of Pb, Zn, Cu, Mo, W and Sn mineralization largely of unknown origin and extent.	--	--
26.	Scattered Ag, Cu, barite, Pb, Zn occurrences or geochemical anomalies.	--	Uncertain; occurrences are in lower Paleozoic rocks. May be related to the large granitic pluton to the south.	No data	Data restricted to reconnaissance geologic mapping and very limited geochemical sampling. Little if any work by industry.	--	Scattered Ag, Cu, Pb, Zn, and barite occurrences in poorly known lower Paleozoic rocks that may be indicative of resources of these materials.	--	--

TABLE 2. GRADE AND TONNAGE MODELS

(metric units)

NS, not significant; *, significant at 5-percent level; **, significant at 1 percent level

Deposit Type	Variable (units)	Number of deposits used	Correlation Coefficients	90 percent of deposits have at least	50 percent of deposits have at least	10 percent of deposits have at least
Porphyry Copper	Tonnage (millions of tons)	41		20	100	430
	Average copper grade (percent)	41	with tonnage = -0.02 NS	0.1	0.3	0.55
	Average molybdenum grade (percent Mo)	41		0.0	0.008	0.031
Island Arc Porphyry Copper	Tonnage (millions of tons)	41		20	100	430
	Average copper grade (percent)	41	with tonnage = -0.07 NS	0.1	0.3	0.55
	Average molybdenum grade (percent Mo)	41		0.0	0.008	0.031
	Average gold grade-locally significant but not determined					
Porphyry Molybdenum	Tonnage (millions of tons)	31		1.6	24	340
	Average molybdenum grade (percent Mo)	31	with tonnage = -0.05 NS	0.065	0.15	0.26
Podiform Chromite	Tonnage of Cr_2O_3 (tons)	288		15	200	2,700
Copper Skarn	Tonnage (millions of tons)	38		0.08	1.4	24
	Average copper grade (percent)	38	with tonnage = -0.44**	0.86	1.7	3.6
	Average gold grade, locally significant, but not determined					
Mafic Volcanogenic	Tonnage (millions of tons)	37		0.24	2.3	22.0
	Average copper grade (percent)	37	with tonnage = -0.13 NS	1.1	2.2	4.1
	Average zinc grade excluding deposits without reported grades (percent)	19	with tonnage = 0.03 NS	0.3	1.2	8.5
	Average gold grade-locally significant but not determined					
Felsic and Intermediate Volcanogenic Massive Sulfide	Tonnage (millions of tons)	89		0.19	1.9	18.0
	Average copper grade (percent)	89	with tonnage = -0.41**	0.54	1.70	5.40
	Average zinc grade excluding deposits without reported grades (percent)	41	with tonnage = 0.25 NS	1.40	3.60	10.00
	Average lead grade excluding deposits without reported grades (percent)	14	with tonnage = -0.02 NS	0.20	0.95	4.80
	Tonnage contained gold excluding deposits without reported gold (tons)	38	with tonnage = 0.78**	0.27	2.90	32.00
	Tonnage contained silver excluding deposits without reported silver (tons)	46	with tonnage = 0.82**	5.00	80.00	1300.00
Nickel Sulfide	Tonnage (millions of tons)	48		0.23	1.20	6.90
	Average nickel grade (percent)	48	with tonnage = -0.03 NS	0.32	0.61	1.20
	Average copper grade (percent)	48	with tonnage = 0.03 NS; with nickel grade = 0.04 NS	0.18	0.47	1.20
Mercury	Tonnage of contained mercury (tons)	165		0.09	3.10	120.00
Vein Gold	Tonnage of contained gold (tons)	43		0.29	3.30	38.00
Skarn/Tactite Tungsten	Tonnage (millions of tons)	31		0.024	0.63	17
	Average tungsten grade (percent W)	31	with tonnage = -0.34 NS	0.24	0.51	1.10

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