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ALASKA GEN

Territory of Alaska
DEPARTMENT OF MINES

1944

PETROGRAPHIC DESCRIPTIONS OF ROCKS COLLECTED
DURING 1944 FIELD INVESTIGATIONS IN
NORTHWESTERN ALASKA.

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Thin sections of rocks and ores here described were prepared from specimens collected in Northwestern Alaska, during the 1944 field season.

The microscopy study of these sections was undertaken to obtain a more accurate classification of the rock specimens than megascopic examination alone can yield; to assure recognition of rare non-opaque minerals of economic importance; and to obtain information on the origin of ore deposits.

Crushing of the specimens with the accompanying heavy separation by bromoform was omitted because of insufficient time. For the same reason the feldspars were often not differentiated, some rare accessory minerals were not identified and a detailed study of paragenesis was not made.

MAR 23 1945
B. D. STEWART
Commissioner of Mines

Salmon River Kobuk-Noatak Region

Specimen: A44-232A

Location: From several miles above Kitlik River mouth, lower Salmon River. First outcrop examined on trip up Salmon. Greenstone schist containing disseminated pyrite, and pyrite and calcite veinlets. Kobuk River region.

Megascope Description: Pale-green schist; fine-grained but containing large colorless to white calcite crystals and disseminated pyrite.

Microscopic Description: Section consists of a mass of colorless, unoriented, nearly fibrous amphibole (?) crystals; some are altered to opacity. Areas of chloritic material are present, as are large crystals of calcite through which fine grains of quartz are interspersed. Quartz and calcite apparently introduced at approximately the same time with replacement relations to each other and to matrix. Pyrite finely disseminated in parts of slide.

Minerals in Order of Abundance:

- | | | |
|---------------|------------|-----------|
| 1. Amphiboles | 3. Calcite | 5. Pyrite |
| 2. Chlorite | 4. Quartz | |

Rock Name: Greenstone-schist.

Specimen A44-234D

Location: Salmon River. Only common igneous float observed on river bars from few miles below Aveyuk mouth to upper limit of travel on Salmon River. Not observed on Kamakto K. Cr. or far up other tributaries. Most probably comes from rugged range at Salmon River head.

Megascope Description: Medium to coarsely crystalline, medium basic igneous rock containing coarse pyroxenes, amphiboles and basic feldspars, dark micas, ilmenite, calcite, copper carbonates, pyrite and chalcopyrite; the four latter minerals in small amounts.

Microscopic Description: Minerals much altered. Some pyroxenes still recognizable. Feldspars unrecognizable because of extensive alteration. Pyroxenes, amphiboles and their alteration products; altered feldspars and ilmenite compose most of the slides. Feldspars were in euhedral crystals.

Minerals in Order of Abundance:

- | | | |
|---|-------------|--------------|
| 1. Pyroxenes | 4. Ilmenite | 6. Leucosene |
| 2. Amphiboles | 5. Apatite | |
| 3. Chloritic, sericitic and other alteration products | | |

Rock Name: Dioritic to gabbroic rock

- - -

Specimen: A44-235A

Location: Salmon River, short distance below timber head. Float.

Megascope Description: Fine-grained, compact rock; about epidote-green in color. Uniform except for finely disseminated, brilliant, specular hematite crystals.

Microscopic Description: Fine-grained throughout slide; about 90% of minerals opaque and unrecognizable because of alteration. Fine particles of quartz, feldspars, epidote still remaining unaltered. Calcite fairly common. Chloritic and other alteration products make up most of slide. Amphibole and pyroxene minerals also present.

Minerals in Order of Abundance:

Rock Name: Contact rock similar to "tactite".

- - -

Specimen: A44-245A

Location: Mouth of first L.L. tributary to Salmon River below Horalan base camp. See map in Salmon River report.

Megascope Description: Very finely crystalline, compact, gray silicified and partially replaced limestone. Chalcopyrite introduced along narrow seams.

Microscopic Description: Section shows uniform, finely crystalline rock composed almost entirely of calcite, quartz, and feldspars with very small amounts of sericite, pyrite and chalcopyrite.

Minerals in Order of Abundance:

- | | |
|--------------|-----------------------------------|
| 1. Calcite | 4. Sericite |
| 2. Quartz | 5. Pyrite, chalcopyrite, limonite |
| 3. Feldspars | |

Rock Name: Silicified limestone - From copper replacement deposit in limestone.

Specimen: A44-251A Jade Mt. - Kobuk River

Location: Bedrock from east slope of Jade Mt. near Hanson asbestos tunnel. Kobuk River region.

Megascopeic Description: Heavy, dense, dark, gray-green rock; appears to be cryptocrystalline except for few large crystals, probably of pyroxene.

Microscopic Description: In thin section outstanding feature is the great number of islands of olivine, separated by serpentine filled fissures. Some magnetite is visible along serpentinized fissures. Chromite and picotite are also present in small amounts. Enstatite, also altering to bastite or serpentine, is fairly common, and alters along cleavages into narrow parallel plates.

Minerals in Order of Abundance:

- | | |
|------------------------|------------------------------|
| 1. Olivine | 4. Magnetite |
| 2. Serpentine minerals | 5. Picotite and chromite (?) |
| 3. Pyroxenes | |

Rock Name: Peridotite - partially altered to serpentine.

- - -

Specimen: A44-251B Ambler River Region

Location: Sucker Creek, tributary Ambler River, tributary to Kobuk River. Bedrock specimen from near eastern foot of Jade Hills.

Megascopeic Description: Dark gray, finely crystalline dolomite containing narrow seams of almost white dolomite and magnesite bordered by magnetite. Some very small seams are filled with a green chloritic material which optically resembles garnierite. Rock gives positive though weak test for nickel.

Microscopic Description: In section, ground mass consists of large, mostly anhedral quartz crystals through which are scattered innumerable tiny, spindle-shaped crystals of dolomite. Quartz crystals have been fractured into roughly rectangular blocks. Fractures are filled with dolomite; along the edges of the fractures are narrow magnetite borders. Dolomite and magnesite spindles have grown into the quartz crystals from the fracture borders.

Specimen: A44-258A Ungalik River Region *North East*

Location: Bedrock specimen from tailings of Ungalik Syndicate dredge on Ungalik River.

Megascope Description: Very light-green, fine grained dike rock composed almost entirely of feldspars and quartz. Finely disseminated pyrite scattered thru rock. Aplite dike.

Microscopic Description: Only unaltered minerals in section are small amounts of quartz, calcite and apatite. Almost all of section made up of feldspars altered beyond recognition. A very small amount of chloritic material is present in slide as are a few small particles of pyrite, some in cubes. Feldspars commonly altered to sericite.

Rock Name: Aplite.

- - -

Specimen: A44-258A₂

Location: Bedrock specimen from tailings of Ungalik Syndicate dredge on Ungalik River.

Megascope Description: Light grey conglomeratic rock speckled with whitish feldspar crystals and dark grey to red-brown rounded inclusions of various types of country rocks. Rock weathers brownish-red on exposed surfaces.

Microscopic Description: Recognizable minerals in section are quartz and feldspars scattered thru a cryptocrystalline matrix. Areas of different types of rock can be distinguished but little other information is obtainable from the section. Many feldspars are euhedral; some show zoning.

Rock Name: Conglomerate (Ungalik)

Specimen: A44-258A₃

Location: Bonanza Creek float - common on lower parts of creek.
Also found in dredge tailings on Ungalik River.

Megascopic Description: Very fine-grained, dense, grey to green rock. Green portions appears to be epidotized. Rock contains much fine grained calcite and some large areas of pyrite.

Microscopic Description: Section consists mainly of small euhedral epidote crystals, often scattered thru larger crystals of calcite. In some parts of the slide colorless needle-like amphiboles, quartz, and chlorite are common. A sulfide, probably pyrite, and magnetite are also present.

Minerals in Order of Abundance:

- | | |
|-------------|---------------|
| 1. Calcite | 5. Amphiboles |
| 2. Epidote | 6. Pyrite |
| 3. Chlorite | 7. Magnetite |
| 4. Quartz | |

Rock Name: Epidotized rock from contact zone.

- - -

Specimen: A44-259A

Location: From knobs at head of Hopeful Gulch, tributary to Ungalik River near Bonanza Creek.

Megascopic Description: Medium to fine-grained diorite rock composed mainly of quartz, feldspars, and biotite micas. Diorite is a mottled dark grey from the large amounts of biotite present. Fine particles of pyrite are scattered thru the specimen.

Microscopic Description: Medium to large crystals of augite, biotite and plagioclase make up most of slide. Magnetite, + apatite are associated chiefly with biotite; chlorite usually is an alteration product of biotite. Orthoclase is present in very small amount.

Minerals in Order of Abundance:

- | | |
|----------------|--------------|
| 1. Plagioclase | 5. Magnetite |
| 2. Biotite | 6. Apatite |
| 3. Augite | 7. Chlorite |
| 4. Orthoclase | |

Order of Crystallization: Normal

Rock Name: Gabbro or Augite - Diorite

Specimen: A44-135A Dime Creek - Koyuk Basin

Location: From knob opposite Haycock on L.L. of Dime Creek.
Bedrock specimen. *parallel to S.*

Megascopeic Description: Porphyritic rock with black felsitic groundmass through which are scattered many euhedral crystals of plagioclase and probably pyroxene.
Andesite - porphyry

Microscopic Description: Opaque felsitic groundmass sprinkled plentifully with sub to euhedral phenocrysts of plagioclase feldspar and pyroxenes. Some magnetite particles are present. Very small particles of an opaque mineral, silver-colored in oblique reflected light, are also present.

Minerals in Order of Abundance:

Rock Name: Andesite - porphyry
- - -

Specimen: A44-135B

Location: From No. 6 above, Bench Claim; R.L. Dime Creek. Bedrock from 90' shaft sunk as lode prospect.

Megascopeic Description: Fine-grained greyish-green rock showing distinct, parallel, narrow bands of varying composition. Sedimentary rock.

Microscopic Description: Very fine quartz and feldspar particles make up most of slide. Feldspars altered. Considerable amounts of calcite.

Rock Name: Argillaceous sandstone.
- - -

Specimen: A44-137A

Location: Dime Creek; bedrock at Nels Ledstrom cabin, L.L. opposite Haycock.

Megascope Description: Fine-grained, compact, greenish grey rock. Has some appearance of layering; probably an andesite.

Microscopic Description: Finely crystalline mass of plagioclase and pyroxenes. Some of the minerals have been altered to chloritic and sericitic material.

Rock Name: Andesite.

- - -

Specimen: A44-137B

Location: Dime Creek, Bedrock specimen from a few hundred feet above Nels Ledstrom cabin. L.L. Dime Creek, opposite Haycock.

Megascope Description: Dark grey rock, mainly fine-grained, but containing some large, light colored crystals, probably felspar. Dark minerals are probably pyroxenes and chlorites.

Microscopic Description: Mass of very fine crystals, felspars and pyroxenes, with much chlorite, sericite and other alteration material. Hornblende also fairly common, as are small particles of magnetite.

Rock Name: Andesite porphyry.

Territory of Alaska
DEPARTMENT OF MINES

MINERAL ASSEMBLAGES OF NORTHWESTERN ALASKA PLACERS

Analyses of Concentrates Obtained in
1944.

The following lists of minerals occurring in placer concentrates from streams in Northwestern Alaska have been prepared in the course of mineral surveys conducted by the Territorial Department of Mines.

Bedrock exposures are uncommon in the placer mining regions of the Territory. A general knowledge of the parent rocks and types of mineralization in these areas is most easily obtained through study of the minerals found in stream concentrates. This knowledge is also of value to lode prospectors as minerals of economic importance not recognized before are identified. The presence of certain mineral assemblages also indicates the possible presence of associated economic minerals.

Gold is present in some of the samples but has been removed from many of them and in that event is not listed. Minerals of doubtful identity are followed by (?). In the samples examined there occur a number of minerals which were not identified.

In the lists the minerals are arranged from top to bottom and from left to right in the approximate order of their abundance in the sample examined. The most abundant mineral is found at the top of the left hand column, the least abundant at the bottom of the right hand column under the description of the sample. The particle sizes referred to are:

Coarse - More than 5 mm. in diameter
Medium - From 1 to 5 mm. " "
Fine - Less than 1 mm. " "

The samples here described were collected during the field season of 1944. They are listed, first according to the old arrangement of the mining precincts, and second by the name of the stream from which the sample was taken. Geographically each precinct is a more or less distinct unit.

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TERRITORY OF ALASKA
DEPARTMENT OF MINES

Seward Peninsula

Cape Nome Precinct

1944

CN-Crip-Hun

Gustafson & Swedman's 1944 cuts - Hungry Creek, ^{trib. to} Oregon Cr tributary Cripple River - concentrates from boxes. Well-concentrated. Fine, up to 5 mm. rounded to angular. About 25% magnetite removed; remainder is mainly ilmenite garnet, cassiterite and various schist particles.

- | | |
|---------------------------------|-----------------|
| 1. Magnetite (abt. 25% removed) | 9. Hornblende |
| 2. Cassiterite (est. 15-20%) | 10. Scheelite |
| 3. Garnet | 11. Bismuth |
| 4. Quartz | 12. Zircon |
| 5. Muscovite | 13. Pyrite |
| 6. Chlorite | 14. Amalgam |
| 7. Ilmenite | 15. Shot (lead) |
| 8. Limonite | 16. Tourmaline |

CN-Sol

Concentrates from Lee Brothers dredge operating in 1944 about 1 mile below mouth Shovel Creek. Fairly well concentrated. Fine, to few coarse pebbles up to 15 mm. in diameter. Larger material well rounded. Pebbles of limonite, schist and magnetite. Finer material ilmenite, garnet, etc. Concentrates contained 27.26 oz. gold; 2.95 oz. silver.

- | | |
|----------------|------------------|
| 1. Magnetite | 8. Barite |
| 2. Ilmenite | 9. Psilomelane |
| 3. Garnet | 10. Biotite |
| 4. Quartz | 11. Pyrite |
| 5. Tramp metal | 12. Scheelite |
| 6. Muscovite | 13. Arsenopyrite |
| 7. Chlorite | 14. Limonite |

CN-Sol-West

Placer concentrates from Charlie Tom's placer cut (1944) West Creek; L.L. bench $\frac{1}{2}$ mi. below forks about $2\frac{1}{2}$ mi. above mouth Solomon River. Poorly concentrated. Fine, to 10 mm. particles schist (mica) and garnet common. Material angular to rounded.

- | | |
|---------------|---------------|
| 1. Quartz | 7. Limonite |
| 2. Garnet | 8. Magnetite |
| 3. Chlorite | 9. Zircon |
| 4. Hornblende | 10. Augite |
| 5. Muscovite | 11. Scheelite |
| 6. Ilmenite | |

Seward PeninsulaFairhaven Precinct

1944

F-Can

Arctic Circle Exploration dredge concentrates from
Candle Creek dredge.

>8 mesh, picked particles. Almost all sulfides: pyrite,
lead minerals, etc. Most crystals are well-formed and
practically unworn.

- | | |
|-----------------|-----------------|
| 1. Arsenopyrite | 6. Pyromorphite |
| 2. Limonite | 7. Scheelite |
| 3. Ilmenite | 8. Quartz |
| 4. Galena | 9. Magnetite |
| 5. Pyrite | |

Seward PeninsulaKougarok Precinct

1944

K-Cof

Placer concentrates, $\frac{1}{4}$ mile below Eagle Draw, Coffee
Creek, Grant Mining Co.

As received, moderately well concentrated; composed
of large schist pebbles, quartz, limonite, etc.

Panned to about 1/6th vol. Remaining material
<5 mesh, rounded to angular, containing some schist,
garnets, limonite, etc.

- | | |
|---------------|-----------------|
| 1. Garnet | 8. Magnetite |
| 2. Limonite | 9. Gold |
| 3. Pyrite | 10. Zircon |
| 4. Rutile | 11. Glaucophane |
| 5. Apatite | 12. Scheelite |
| 6. Hornblende | 13. Tramp metal |
| 7. Quartz | 14. Ilmenite |

K-Dahl

Al Carey 1944 cut. No. 5 above, Dahl Creek, Lower
Kougarok District.

Rough concentrates from last two riffles in boxes. As
received contains rough angular particles of mica and
slaty schist, quartz, etc. Panned to about 1/8th vol.;
still poorly concentrated and containing much angular
quartz.

- | | |
|-------------|--------------|
| 1. Quartz | 5. Ilmenite |
| 2. Garnet | 6. Scheelite |
| 3. Limonite | 7. Magnetite |
| 4. Pyrite | |

Seward PeninsulaKougarok Precinct1944K-Qtz

Quartz Creek just below mouth Dahl Creek - Lower Kougarok.

Fairly well concentrated. Much rusted and iron stained. Panned to about 1/10th vol.

- | | |
|--------------|--------------|
| 1. Limonite | 6. Chlorite |
| 2. Quartz | 7. Scheelite |
| 3. Garnets | 8. Magnetite |
| 4. Ilmenite | 9. Gold |
| 5. Muscovite | |

Seward PeninsulaKoyuk Precinct1944Koy-Dime

L.L. Dime Creek, Boraska Bench. Blowings from placer concentrates. Nels Ledstrom.

Fine, most less than 20 mesh, consisting mainly of black sand with olivine.

- | | |
|-------------------|----------------------|
| 1. Magnetite | 6. Hypersthene |
| 2. Olivine | 7. Pyroxene minerals |
| 3. Chromite | 8. Quartz |
| 4. Garnet | 9. Zircon |
| 5. Chrome spinels | 10. Limonite |
| | 11. Gold |
| | 12. Platinum |

Noatak-Kobuk Precinct

NK-Amb-Agnes Jim Cross workings, Agnes Creek, tributary Isabella Creek, trib. Ambler River, trib. Kobuk River.

Well-concentrated, fine (most ~~more~~^{less} than 30 mesh) much black sand, garnet, few ilmenite and limonite pebbles as large as 5 mm. in diameter.

- | | |
|---------------|------------------|
| 1. Magnetite | 7. Scheelite |
| 2. Ilmenite | 8. Rutile (?) |
| 3. Garnet | 9. Titanite (?) |
| 4. Chloritoid | 10. Monazite (?) |
| 5. Zircon | 11. Cinnabar |
| 6. Limonite | 12. Gold |

Seward Peninsula

Noatak-Kobuk Precinct

1941

NK-Sal-Kopt 1/2 mile below mouth Koptikturok Creek, tributary Salmon River, tributary Kobuk River.
About 5 gram sample. Most material ~~less~~ than 3 mm. in diameter. Some small particles of mica schist; much pyrite, often cubed; garnet, quartz, etc. Material angular to sub-angular.

- | | |
|--------------|---------------|
| 1. Pyrite | 6. Garnet |
| 2. Quartz | 7. Apatite |
| 3. Chlorite | 8. Hornblende |
| 4. Muscovite | 9. Titanite |
| 5. Calcite | 10. Magnetite |

Beward Peninsula

Port Clarence Precinct

PC-Sun Sunset Creek, tributary Grantley Harbor - near Teller. Most material rounded, less than 1 mm. in diameter. Garnet predominant. Clear and brilliant red zircon - could be gem material if larger stones are found.

- | | |
|----------------|--------------|
| 1. Garnet | 5. Magnetite |
| 2. Quartz | 6. Ilmenite |
| 3. Muscovite | 7. Pyrite |
| 4. Pyroxene | 8. Zircon |
| 4-A. Scheelite | |

St. Michael Precinct

StM-Ung. Concentrates from Ungalik Syndicate dredge where it ceased operation in 1941, about 1/2 mile above mouth of Bonanza Creek on Ungalik River.
Fairly well-concentrated. Most material rounded and ~~less~~ than 5 mm. in diameter. Larger pebbles of rounded country rock, conglomerate and other sedimentaries.

- | | |
|--------------|---------------|
| 1. Magnetite | 9. Apatite |
| 2. Andradite | 10. Limonite |
| 3. Pyrite | 11. Felspar |
| 4. Hematite | 12. Ilmenite |
| 5. Zircon | 13. Scheelite |
| 6. Pyroxenes | 14. Gold |
| 7. Cinnabar | 15. Amalgam |
| 8. Quartz | |

GnB-R.Mt.Beach

Beach concentrates from west of Red Mountain about $\frac{1}{2}$ mile from Jerry Hunter camp.

Very well concentrated black sand. Well sorted, almost all material ~~over~~ ^{less than} 30 mesh; ~~over~~ ^{less than} 2% of non-opaque minerals in sample.

- | | |
|----------------|-------------------|
| 1. Magnetite | 6. Hornblende |
| 2. Chromite | 7. Calcite |
| 3. Pyroxenes | 8. Zircon |
| 4. Hypersthene | 9. Staurolite (?) |
| 5. Olivine | 10. Platinum (?) |

GnB-R.Mt.

Sluice box concentrate from Jerry Hunter property west of Red Mountain.

Very well concentrated; almost all black sand. Composed of two rather distinct sizes - about $\frac{2}{3}$ ~~less~~ ^{less} than $\frac{1}{30}$ in. fine black sand; about $\frac{1}{3}$ ~~angular~~ material from 2 mm. to 5 mm. in diameter, mostly magnetite and chromite.

- | | |
|----------------|------------|
| 1. Magnetite | 4. Olivine |
| 2. Chromite | 5. Garnet |
| 3. Hypersthene | 6. Zircon |

Territory of Alaska
DEPARTMENT OF MINES

MINERAL ASSEMBLAGES OF NORTHWESTERN ALASKA
PLACERS

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Coarse	Less than 5 mm. in diameter
Medium	From 1 to 5 mm. " "
Fine	Less than 1 mm. " "

The samples here described were collected during the field season of 1943. They are listed, first according to the old arrangement of the mining precincts of the area, and second by the name of the stream from which the sample was taken. Geographically each precinct is a more or less distinct unit.

ESTIL ANDERSON
Assistant Secretary of Mines

Territory of Alaska
DEPARTMENT OF MINES

Seward Peninsula

Cape Nome Precinct

1943

CN-D Picked placer pebbles from Dorothy Creek, tributary to Nome River. From A. Colgate, U. S. Roadhouse. Pebbles moderately well rounded; material all coarse. Proportions of minerals not representative.

Magnetite	Ilmenite
Scheelite	Calcite
Stibnite	Garnet
Pyrite	

CN-R Rock Creek, tributary to Snake River. Concentrates from boxes on U.S.S.R. & M. scheelite property.

Well concentrated. Most particles greater than 1 mm. in diameter. Sample consists chiefly of scheelite with mica schist particles and some very small pieces of pyrite and arsenopyrite. Material sharply angular.

Scheelite	Biotite	Cassiterite (?)
Quartz	Tourmaline	
Arsenopyrite	Rutile	
Pyrite	Titanite	
Limonite	Galena	

CN-G Glacier Creek, tributary to Snake River. Concentrates from Grover Andree cut on ridge between Glacier and Rock Creeks. Residual placer.

Well-concentrated. Very fine to about 10 mm. pebbles. Subangular to angular. Sample composed mainly of scheelite with magnetite, mica schist particles and limonite material.

Scheelite	Limonite	Tourmaline
Magnetite	Pyrite	Titanite
Cassiterite	Ilmenite	Gold and amalgam
Garnet	Muscovite	

Seward Peninsula Cape Nome Precinct (Cont'd) 1943

CN-Sol-BH Panned concentrates from Big Hurrah Creek, tributary to Solomon River. C. O. Roberts

Very well concentrated. Most particles less than 1 mm. in diameter and well-rounded. Mainly garnet, scheelite and iron oxides with a few particles of mica schist.

Garnet	Scheelite	Ilmenite
Magnetite	Titanite	Tourmaline
Muscovite	Calcite	Gold and amalgam
Chloritoid	Rutile	Barite
		?

CN-Sol-Tr Concentrates from Trilby Creek, tributary to Big Hurrah Creek, tributary Solomon River. O. A. Margraf property.

Well-concentrated. Most pieces less than 1 mm. in diameter and well-rounded.

Muscovite	Ilmenite	Magnetite
Garnet	Limonite	Quartz
Scheelite	Chloritoid	?
Pyrite	Chlorites	

Seward Peninsula Council City Precinct 1943

CC-Cr Crooked Creek, tributary to Ophir Creek, tributary to Niukluk River. L. E. Ost placer workings of 1943.

(Sample poorly concentrated. Panned to 1/4 of original volume)

Well-concentrated, fine, angular to sub-angular material. Most pieces are less than 2 mm. in diameter.

Magnetite	Muscovite and sericite
Limonite	Rutile
Ilmenite	Talc
Pyrite	

Seward Peninsula

Fairhaven Precinct

1943

F-CR Gold Run Creek, tributary to Kiwalik River. From Henry M. Xavier's placer workings. Eleven miles above mouth of creek.

Well-concentrated sample. Mainly fine material - less than 40 mesh. Some quartz and scheelite pebbles from 1 to 5 mm. in diameter.

Magnetite	Rutile	Wolframite
Scheelite	Muscovite	Gold
Garnet	Hornblende	Tourmaline
Kyanite	Ilmenite	

F-Cun Concentrates from drift mining operations on Cunningham Creek, tributary to Hannum Creek, tributary to Inmachuk River.

Well-concentrated. Most of particles are well-rounded, varying between 1 and 10 mm. in diameter. Bulk of sample consists of lead-carbonate pebbles, many with ^{galena} cores, & small proportion of limonite pebbles; possibly 10% of sample is a pale to grass-green mineral, pyromorphite. A few particles of mica schist are also present. The concentrates assayed 49.98% lead, 27.66 oz. Au, and 5.70 oz. Ag.

Many of the minerals are dirty and weathered beyond recognition.

Cerussite	Anglesite	Scheelite
Pyromorphite	Hydrocerussite	Psilomelane
Limonite	Gold	Magnetite
Galena	Tourmaline	Calcite

F-Mud Concentrates from drift mining operation on Mud Creek. O. F. Weinard.

Very well concentrated. Almost all of sample particles less than 1 mm. in diameter. Sample mainly black sand (ilmenite) with small quartz particles and some fine gold. Most of the magnetite was probably removed. The gold and most other minerals are well-rounded.

Ilmenite	Chloritoid	Magnetite
Quartz	Garnet	Cinnabar
Calcite	Muscovite	Gold
Zircon	Scheelite	Epidote

Seward Peninsula

Kougarok Precinct

1943

K-I Iron Creek, tributary to Kuzitrin River. Sample from Talbert Scott.

Picked concentrates. Practically all of sample is composed of sub-angular to rounded scheelite particles between 1 and 5 mm. in diameter. Rutile, magnetite, and ilmenite are also present as is a small amount of weathered material.

Scheelite	Rutile
Magnetite	Muscovite
Ilmenite	Corundum (?)
Zircon	

K-WG Concentrates from Wonder Gulch, tributary to Coffee Creek, tributary Kougarok River. (Ed Hoven, deceased)

Well-concentrated. Material well-rounded. Bulk of sample can be divided roughly into two distinct parts. One part is composed of fine material of less than 35 mesh; the other part consists of pebbles from 2 mm. to 5 mm. in diameter. The coarse pebbles are mainly limonite and particles of country rock.

Limonite	Arsenopyrite	Chlorite
Garnet	Cerussite	Chloritoid
Zircon	Pyromorphite	Magnetite
Muscovite	Scorodite	Gold
Quartz	Rutile	Ilmenite
Pyrite	Tourmaline	Cinnabar

K-Q Concentrates from Quartz Creek, tributary to Kougarok River. Cl. #11 Above. Charlie Yager.

Very well-concentrated. Material well-rounded. Sample is made up of a medium coarse and a very fine portion. Larger pebbles are mainly ilmenite and iron oxides. Much of the finer material is gold, well-rounded and partially coated with iron oxide.

Garnet	Rutile	Chloritoid
Ilmenite	Tourmaline	Chlorite
Magnetite	Gold	Hyperethen
Scheelite	Zircon	Apatite

?

Seward Peninsula

Koyuk Precinct

1943

Koy-Sw Concentrates from right fork of Sweepstakes Creek, tributary to Peace River, tributary to Koyuk River. Beach claims opposite Nos. 9, 10, 11. Charlie Moon..

Very fine, well-concentrated material; practically all particles are well-rounded and less than 35 mesh.

Magnetite	Muscovite	Ilmenite	Hornblende
Limonite	Scheelite	Pyrite	Apatite
Zircon	Garnet	Quartz	?
Titanite	Augite	Picotite	

Seward Peninsula

Port Clarence Precinct

1943

PC-Igloo Beach sands submitted by Wm. R. Benson, Igloo.

Unconcentrated, fine, rounded sands. Panned to 1/5 of original volume. Many minerals show considerable alteration.

Quartz	Garnets	Tourmaline
Muscovite	Chlorite	Rutile
Biotite	Titanite	?
Feldspars	Hornblende	

PC-Hum Humboldt Creek, tributary to Goodhope River. Concentrates from Sullivan property, not in operation since 1940.

Very well concentrated. Most of sample medium to coarse, well-rounded, dark-colored material. Many minerals weathered beyond recognition.

Cassiterite	Psilomalene	Pyrite
Limonite	Quartz	Scheelite
Magnetite	Muscovite	Chlorite
Ilmenite	Garnet	

Noatak - Kobuk Precinct

1943

N-K Dahl Concentrates from Fred Johnson placer cut, Dahl Creek, tributary to Kobuk River.

Most of sample lost. Sample well-concentrated - weight about two grams - consists of a few pebbles about 3 mm. in diameter. Remainder less than 35 mesh.

Magnetite	Hornblende	Scheelite
Olivine	Calcite	Gold
Garnet	Chromite	Titanite
Limonite	Hypersthene	Pyrite

N-K Pah Concentrates from old placer work of Logan Varnell, Kotzebue on Pah River, tributary to Kobuk River.

Very well-concentrates, consisting of two size fractions. Material well-rounded.

(1) Mainly iron oxide pebbles greater than 2 mm. in diameter;
(2) Less than 35 mesh portion of garnets, magnetite, and other minerals.

Garnet	Quartz	Muscovite
Magnetite	Augite	Andalusite
Hematite	Zircon	
Chloritoid	Apatite	

N-K Sh Sample taken from lower end of Shungnak River Canyon by Eskimos. Concentrate from a few pans.

Less than 5 gram sample. Well-concentrated material - less than 35 mesh and sub-angular.

Garnet	Chloritoid	Tourmaline
Magnetite	Tremolite	Scheelite
Hypersthene	Zircon	Chromite
Hornblende	Augite	?
Apatite	Rutile	

St. Michael Precinct

1943

St.M HG Concentrates from Hopeful Gulch, tributary to Ungalik River about 1½ miles above Frank Shaw residence; about 3 miles below mouth of Bonanza Creek.

Very well-concentrated. Most of particles over 1 mm. in diameter. The bulk of the sample, about 80%, consists of magnetite; most well-rounded; some octahedral crystals. Most other material well-worn and rounded. A few pebbles of country rock are included in the sample.

Magnetite	Bismuthinite	Zircon	Lead shot
Epidote	Wolframite	Feldspars	Gold
Apatite	Garnet	Chlorite	Amalgam
Scheelite	Hornblende	Augite	Calcite

St.M Bon Concentrates from Bonanza Creek, tributary to Ungalik River.

About 10 gram sample concentrated from two pans taken on bedrock about ½ mile above the mouth of Bonanza Creek. Fairly well-concentrated. Most material sub-angular and less than 35 mesh. ~~xxxi~~ Few pebbles as large as 5 mm. in diameter.

Magnetite	Apatite	Hematite
Epidote	Gold	Augite
Scheelite	Zircon	
Garnet	Hornblende	

St. Lawrence Island

1943

St.I. - Sa Concentrates from Savoonga Beach, St. Lawrence Island

Sample particles uniform in size - almost all between $\frac{1}{2}$ mm. and 2 mm. Material well-rounded and apparently well-concentrated, consists entirely of black volcanic rock particles, ~~hypersthene~~, magnetite and sea shells.

Olivine Magnetite
Tremolite

St.I. - BB Beach concentrate from Boxer Bay, St. Lawrence Island

Unusually well-concentrated; fine (less than 35 mesh) magnetite sand. Material well-worn. Picked from layer of magnetite sand several inches thick on the beach. Estimated to contain about 95% magnetite.

Magnetite	Hornblende	Cassiterite (?)
Zircon	Epidote	
Titanite	Plageoclase	
Ilmenite	Allanite (?)	

TERRITORY OF ALASKA
DEPARTMENT OF MINES

LISTS OF ORE AND ROCK SAMPLES AND PLACER CONCENTRATES COLLECTED IN NORTHWESTERN AND INTERIOR ALASKA DURING 1945 FIELD SEASON

Eskil Anderson

Territory of Alaska
DEPARTMENT OF MINES

LISTS OF ORE AND ROCK SPECIMENS
AND PLACER CONCENTRATES COLLECTED IN
NORTHWESTERN AND INTERIOR ALASKA
DURING 1945 FIELD SEASON

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
Kobuk A45-263A ₁	Arctic Circle Exploration Co. tunnel on tremolite deposit, Asbestos Mt., Dahl Creek White tremolite, strong fiber, not silky like that found at surface	For microscopic identification and testing for possible uses.
-263A ₂	Arctic Circle Exploration tunnel - Asbestos Mt. Tremolite resembling mountain leather in structure.	Identify microscopically.
-263A ₃	Arctic Circle Exploration tunnel - Asbestos Mt. - talc (steatite) from seam in tunnel.	For microscopic identification and investigation of reported uses.
-263A ₄	Arctic Circle Exploration tunnel - Asbestos Mt. - green, lustrous, bladed to fibrous serpentine-like mineral. (Identified by Fackler. Picrolite n about 1.555. Length slow. Parallel extinction.)	For microscopic examination. Specimen to Fackler. Write to McConnell, A. C. Ex. Co. PICROLITE
-264A ₁	Placer concentrates from cut of Sig Goodwick and Ted Tronstad on Dahl Creek - magnetite removed	Identify minerals. Prepare slide for microscopic examination
-264A ₂	Arctic Circle Exploration tunnel - Asbestos Mt. - yellowish white tremolite asbestos with some tensile strength	For microscopic identification and testing.
-265A	From bedrock bluff about 5 miles below Pah River mouth. Right limit of Kobuk River - finely granular, dark green rock	For thin section

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-265A ₁	Float from 1/4 mile up Niyaktovik Creek - has appearance of granitic rock. Creek is tributary of Pah River and appears to cut young sedimentary rocks.	For thin section
-265A ₂	Placer concentrates from 1/2 dozen small pans of wash of Niyaktovik Creek	Identify minerals Prepare slide for microscopic examination
-266A	Placer concentrates from bar at camp about two miles above mouth of Mauneluk River - 1 pan by Wilson Tickett	Identify minerals. Prepare slide for micro- scopic examination
-268A	Uppermost bedrock exposures on left limit of Mauneluk before entering intermontane basin - fine grained, grey to green country rock, forming bedrock of serrate Mauneluk range	For thin section
-269A	Right limit of Cosmos Creek just above canyon - chrysotile specimens for display	For display and polished specimen Specimen to Wilcox, Fackler, Glover
-269B	Cosmos Creek opposite Ferguson boiler house - jade float - saw - determine weathering effects if possible and quality	Saw and examine with Dahl and Shungnak River jade
NOATAK		
-271A	From about 1 mile below mouth of left limit head of Eli River - 2nd right limit outcrop sampled going upstream. Calcareous	For thin section
-272A	From bar at upper end of Heart Mt., Eli River. Copper and iron sulphide bearing quartz - common in region between Kobuk and Noatak	Identify sulphides - describe Assay Au-Ag To Ketchikan 11/28/45

<u>S. JIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-272A (cont'd)	Specimens for assay carry about 40% sulphide - all appears to be chalcopyrite - in milky to bluish white granular quartz. Schistose micas on seams in quartz	Polished section
-275A	Eli River bar 4 miles below first main forks - fine-grained pyrite, massive. Contains very little quartz in tiny parallel veinlets which, in general aspect, resemble remnants of sedimentary bedding planes	Examine under binocular Assay Au-Ag To Ketchikan 11/28/45
-275B	From tail of Mayumurut. Basic rock, probably is rock of which range is mainly composed	For thin section
-275C	Peter Wood samples - picked up at Fish Camp on lower Noatak #1 - Wood changed to coal #2 - Red-brown limonitic (gossan) material #3 - Dike containing fine, disseminated pyrite crystals)) Identify) Write to Wood)
CHANDALAR		
-301A	Float from upper faulted segment of Little Squaw vein - picked up on trail about 150' below outcrop. Quartz, with free Au, coarse, in partly leached scorodite	For display and examination
-302A	Heavy sulphide ore from bottom of Little Squaw shaft 58' below adit level. Arsenopyrite ore - massive with very little quartz and scorodite. Arsenopyrite is coarsely crystalline	Examine For polished section Assay Au-Ag To Ketchikan 11/28/45
-302B	High-grade from Little Squaw dump for specimens. Specimens show typical wire Au of Little Squaw vein.	For display Polished section
-302C	Jackpot vein - Adney dump - specimens on dump containing free Au. Fe stained quartz with arsenopyrite, pyrite, very fine Au	Identify sulphide For polished section

<u>SPE. MEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-302C (cont'd)	Specimen for assay representative of sulphide-bearing ore - no free Au visible. Fe stained quartz containing about 5% sulphide, arsenopyrite and very little pyrite, along distinct planes in irregular blobs.	Assay Au-Ag (1 of 2 pieces) To Ketchikan 11/28/45.
-303A	Jackpot vein - Adney tunnel - Average sample by O'Keefe from tunnel face - 20" across	Assay Au-Ag To Glover 8/13/45 6# sample (May contain coarse Au) 11/21/45 - Au - 0.33 - \$11.55
-303B	Jackpot vein - Adney dump - grab sample of fine (1/2" diam. & less) quartz taken from base of Adney dump - sample taken at random by hand moving around base of dump	Assay Au-Ag To Glover 8/14/45 - 5# sample (may contain coarse Au) 11/21/45 - Au - 0.10 - \$3.50
-303C	Dump at Grubstake vein. Fe stained quartz - not particularly well-mineralized for that district. Dense to coarsely crystalline milky quartz containing no visible sulphides - partially brown - Fe stained - also yellowish earthy oxide coating on quartz, apparently also Fe. Quartz shows striations along some planes (from vein movement)	Assay Au-Ag To Ketchikan 11/28/45
-303D	Grubstake vein - from back 15' from portal. Rough channel sample across 16" width of vein-wall to wall. By D. O'Keefe.	Assay Au-Ag To Glover 8/14/45 - 8# sample (may contain coarse Au) 11/21/45 - Au-0.10 - \$3.50
-303E	From dump at caved tunnel below Grubstake vein. Fe stained and white quartz bearing pyrite and arsenopyrite. (Quartz is milky to glassy and carries less than 3% sulphides and scorodite; almost all arsenopyrite in sample for assay)	Polished section Saw and assay piece for Au-Ag To Ketchikan 11/28/45

SPECIMEN NO.	LOCATION AND DESCRIPTION	DISPOSITION
A45-303F	<p>About 275' above Gold Gulch - 400' north of vein described as below Grubstake vein. Fe stained and white quartz bearing arsenopyrite and pyrite. Scorodite, alteration product, on some arsenopyrite - Ore mainly fresh. (Less than 5% sulphides - more pyrite than usual, probably 1/3 of sulphides - milky quartz)</p>	<p>Examine with binocular Polished section Assay remainder for Au-Ag. To Ketchikan 11/28/45.</p>
-304A	<p>From 3' Prospector vein. Quartz bearing galena, arsenopyrite and pyrite. Specimens not representative of average vein material. (Specimen for assay contains about 30% sulphides - galena predominant, arsenopyrite perhaps 10%)</p>	<p>For polished section Assay Au-Ag to determine content of galena ores. To Ketchikan 11/28/45.</p>
-304B	<p>From uppermost pit on east slope of saddle between Big and Little Squaw - opposite Grubstake vein and staked by O'Keefe as part of it. Quartz containing sulphides. Picked two pieces Piece for assay - milky to Fe stained quartz containing not more than 3% sulphides (arsenopyrite) and scorodite. Only small amount of leaching.</p>	<p>Polished section Assay Au-Ag. To Ketchikan 11/28/45</p>
-304C	<p>Tunnel on pack trail about 3000' NE of Little Squaw Mine. Sample across 2 1/2' of vein. Fairly representative - not definite channel cut</p>	<p>Assay Au-Ag To Glover 8/15/45 - 10. sample 11/21/45 - Au-0.02 \$0.70</p>
-304D	<p>Location of samples same as 304C. Heavy sulphide bearing quartz ore from vein described. (White quartz with about 60% arsenopyrite, massive to coarsely crystalline. Slight scorodite alteration on some arsenopyrite with striations from movement of vein, or from swelling upon alteration as in Kobuk serpentines</p>	<p>Identify minerals Polished section Assay Au-Ag To Ketchikan 11/28/45</p>
-305A	<p>Bluff outcrop of Drumlummon vein. Chip sample across 10' width of barren looking outcrop</p>	<p>Assay Au-Ag To Glover 8/14/45 - 8# sample 11/21/45 - Au-0.01 \$0.35</p>

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-305A	Bluff outcrop of Drumlummon vein. Chip sample across 10' width of barren looking outcrop	Assay Au-Ag To Glover 8/14/45 - 8# sample 11/21/45 - Au-0.01 \$0.35
-305B	Bluff outcrop of Drumlummon vein. Sample of fine quartz, grabbed by hand from piles of shattered, Fe stained quartz around bold Drumlummon outcrop - should give fair idea of general mineralization in quartz	Assay Au-Ag To Glover 8/14/45 - 9# sample 11/21/45 - Au-0.01 - \$0.35
-305C	Pit 80' east of Drumlummon outcrop. Sample across 2' from hanging wall to solid quartz too difficult to sample. Above average of vein - remainder less well mineralized. Vein about 8' wide - footwall not visible	Assay Au-Ag To Glover 8/14/45 - 8# - may contain coarse Au 11/21/45 - Au-0.06 - \$2.10
-305D	Location same as 305C. Specimen picked from vein by O'Keefe	Examine and describe
-305E	Drumlummon pit. Two specimens	For polished section and display
-306A	Summit claim shaft. Quartz from dump - fine material varying from about 1/4" to 1" in diam. - picked from all parts of dump. Probably representative of last ore taken from shaft.	Assay Au-Ag To Glover 8/14/45 - 6# sample - may con- tain hi-grade 11/21/45 - Au-0.25 - \$8.75
-306B	Summit claim shaft. Heavy sulphide (arsenopyrite specimen). Massive with some scorodite. Over 85% arsenopyrite with some scorodite and quartz. May give some hint as to Au content of sulphides when combined with results from other assays	Saw and save specimen for polished section Assay Au-Ag To Ketchikan 11/28/45
-306C	Mill heads in bin at ball mill on Summit claim - quartz from short tunnel on Summit claim crushed to less than 3/4" diameter	Assay Au-Ag To Glover 8/14/45 - 9# sample - may be hi-grade Au-2.90 - \$101.50

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-306D	<p>Pit at discovery post - Rex claim. White quartz with arsenopyrite and scorodite - representative in appearance of 3' of 6' Summit vein exposed on Rex claim. (2 pieces)</p> <p>White, somewhat sugary quartz, banded; sulphides irregularly distributed through some layers; bands are very thin lines of sulphides along planes marking opening of veins and redeposition; along some sections of vein are vugs containing many small euhedral quartz crystals. Only few percent sulphides</p>	<p>Polished section</p> <p>Saw and assay remainder for Au-Ag To Ketchikan 11/28/45</p>
-306E	<p>Pit 75' west of Rex discovery post. Quartz from vein in place - vein over 4' wide</p> <p>White banded quartz, somewhat green stained with scorodite; only about 2-3% sulphides, irregularly distributed and along planes marking the banding and representing opening and redeposition (or new deposition)</p>	<p>Identify minerals</p> <p>Polished section</p> <p>Assay Au-Ag To Ketchikan 11/28/45</p>
-306F	<p>From tunnel dump on Summit claim - two pieces white, milky quartz with arsenopyrite and scorodite</p> <p>White, massive quartz containing about 1% sulphides (arsenopyrite) in irregular blobs. No banding</p>	<p>Identify minerals</p> <p>Polished section</p> <p>Assay Au-Ag To Ketchikan 11/28/45</p>
-307A	<p>Dump at longest tunnel - Summit claim - also from shaft dump (Schultz tunnel). Specimen showing free Au in quartz</p>	<p>For examination and display</p> <p>Polished section</p>
-307B	<p>Summit claim - Schultz tunnel - 50' from portal - channel sample off back</p> <p>Mineralized quartz and schist sample - tunnel driven south of main vein in zone of schist and quartz stringers - 4½' - neither wall reached. Sample probably lower in value than main vein</p>	<p>Assay for Au-Ag</p> <p>Two sections to Glover 8/15/45 - 18# 11/21/45 - Au-0.16 \$5.60</p>
-307C	<p>Woodchuck shaft. Quartz from outcrop - mostly white - carries very little sulphides</p> <p>Milky white, massive to glassy, crystalline quartz. Very small percentage of sulphides - is mostly altered to scorodite</p>	<p>Identify minerals</p> <p>Assay Au-Ag</p>

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-307D	Dump at Jupiter claim - Scorodite with some quartz - comprises considerable proportion of material on dump. Pale green, earthy scorodite with green stained quartz and very fine black sulphides still remaining. Perhaps 30% scorodite	Identify mineral Assay Au-Ag To Ketchikan 11/28/45
-307E	Dump at Jupiter claim. Mineralized arsenopyrite bearing, Fe stained quartz - two pieces - For estimate of Au content of sulphides About 15% arsenopyrite in white quartz	Assay Au-Ag To Ketchikan 11/28/45
-307F	First Chance #1. Sulphide bearing quartz from more barren portion of 1st chance. Glassy to milky quartz with small irregular blobs of arsenopyrite (& scorodite). Less than 3% sulphides and scorodite	Identify minerals Assay Au-Ag To Ketchikan 11/28/45
-307G	Specimens bearing free Au found in float below Bonanza and Eneveloe veins. (Said to be from Bonanza vein)	Polished section for study of Au in sulphides
-308A	Second chance vein. Only bedrock exposure. Sample across 2' of hanging wall. Vein 6', more or less, wide with horst of schist. Footwall section of vein less well mineralized but containing sulphides.	Assay Au-Ag To Glover 8/15/45 - 9# sample (may be hi-grade) 11/21/45 - Au-2.26 - \$79.10
-308B	Second Chance dump. Specimens showing free Au - very coarse in white, granular quartz	For display and study
-308C	Bonanza float. Float bearing free Au and sulphides.	Identify minerals For display

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-308D	Star #3 vein. Chip sample - 2' on foot wall sampled (then 2 $\frac{1}{2}$ ' white quartz unsampled. 1 $\frac{1}{2}$ ' near hanging wall sampled. Sample therefore across 3 $\frac{1}{2}$ '	Assay for Au-Ag To Glover 8/15/45 - 11# sample 11/21/45 - Au-0.24 - \$8.40
-308E	Star #3 vein. Specimen containing galena, arsenopyrite, pyrite and scorodite in quartz Assay specimen contains about 10% sulphides, arsenopyrite, galena and pyrite	Describe Polished section Assay Au-Ag To Ketchikan 11/28/45
-309A	Dump at cut on Mikado claim. Grab sample of small quartz particles taken from all parts of dump. Quartz particles average less than 1/2"	Assay Au-Ag To Glover 8/15/45 - 1 $\frac{1}{2}$ # - may be hi-grade 11/21/45 - Au-3.47 - \$121.45
-309B	Mikado dump. Heavy sulphide bearing quartz. Specimen for assay: milky to glassy quartz with about 60% arsenopyrite (massive and not disseminated through the quartz)	Polished section Assay sulphide for Au-Ag To Ketchikan 11/28/45
-309C	American Eagle Lode claim - upper Big Creek (shaft on vein 20', more or less, wide. Spectacular free Au specimens taken from vein in early days. Vein richest along walls). Three specimens of quartz containing pyrite and arsenopyrite. Specimen for assay: white, milky quartz with about 8% arsenopyrite scattered through in large blotches	Polished section Assay Au-Ag To Ketchikan 11/28/45
-310A	Shamrock dump. Sample taken from finer material on dump. Dump material taken from vein as a whole without separation, according to O'Keefe	Assay for Au-Ag To Glover 8/15/45 - 8 $\frac{1}{2}$ # - may be hi-grade 11/21/45 - Au-0.03 - \$1.05
-310B	Shamrock dump. Picked specimens of arsenopyrite bearing quartz. Specimen for assay: milky quartz; Fe stained and scorodite stained; containing about 5% arsenopyrite in large irregular splotches. Weathered	Describe Identify minerals Assay Au-Ag To Ketchikan 11/28/45

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-310C	Second Chance. Ore paralleling horst of schist within vein (few inch thickness along wall). Hi-grade - not average specimen but channel sample a few inches thick and paralleling rich zone in vein	Assay Au-Ag To Glover 8/15/45 - 5 $\frac{1}{2}$ # sample, hi-grade 11/21/45 - Au-49.98 - \$1749.30
-310D	Same as 310C. Hi-grade for specimen	For display
-310E	Little Mikado. Specimen from dump - similar to most quartz on dump. (3 pieces)	For polished section and description of quartz type
-311A	Little Mikado dump. Rough average of quartz on Little Mikado dump	Assay Au-Ag To Glover 8/15/45 - 6 $\frac{1}{2}$ #, hi-grade 11/21/45 - Au-9.21 - \$323.35
-311B	Between Crystal Group and next saddle to the South. Metamorphosed dike rock. May be associated with veins. (According to Fackler - granitic rock)	For identification Thin section
-311C	Crystal Peak - slaty mica schist	For identification
-311D	Summit shaft. Arsenopyrite ore with very little quartz Specimen for assay: about 90% arsenopyrite with milky quartz and slight scorodite stain. Should give fair indication of Au content of sulphides	Examine with binoculars for free Au Assay Au-Ag To Ketchikan 11/28/45 Polished section
-312A	From main knob between Crystal Peak and Lake Creek basin - about 1/2 mile north and about 500' lower than Crystal Peak. Metamorphosed dioritic rock (2 pieces) (according to Fackler - granite gneiss)	Identify Describe For thin section
-312B	Float about 200' east of faulted portion of Little Squaw vein. Quartz with free Au, arsenopyrite, galena, scorodite, sphalerite	Identify sulphides and green mineral

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-312C	Bedrock from border of Grubstake vein. Quartz-mica schist taken to be representative of schist in Little Squaw area	Identify
-312D	Grubstake vein. Scorodite Specimen for assay: pale greenish white, earthy specimen, probably almost all scorodite	Assay Au-Ag To Ketchikan 11/28/45
-313A	Big Creek (Amero uncertain) #1 Above (by A.W.Amero). Very fine concentrates (compare with U.S.G.S. results). May be mixture of Big Creek and Little Squaw concentrates.	Identify minerals.
HEALY URANIUM A45-317A	50' north of portal of first railroad tunnel south of Healy. Sample by Drazenovich of yellowish; schistose material, much altered. Sample thrown away.	Describe
-317B	Mouth of first tunnel. Yellowish encrustation dropped from cliff above tunnel mouth. Similar to others. Rejected.	Identify
-317C	100' north of mouth of first tunnel. (Drazenovich) Identify minerals. Rejected	Identify minerals Describe
-317D	About 100' above track 4, 400' north of tunnel. Sample taken from graphitic schist - yellow mineral grown around and encrusting black, soft flakes and blocks of schist. Very similar in appearance to carnotite. Potassium, aluminum, sulphate	Identify
-317E	Location same as 317D. Sample from about 6" of black graphitic schist coated with yellow mineral	Identify
-317F	Location same as 317D. Brown-yellow powder from small pocket in bedrock	Identify
-318A	Location same as 317D. White to brown encrustation - probably aluminum salt or sulphate	Identify

<u>SPECIMEN NO.</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-318B	Location same as 317D. Yellowish encrustation	Identify
-318C	Location - see 317D. Coal like rock and encrustation	Identify
-318D	About 150' above south end of tunnel. Altered schist - red stain or mineral not recognized	Identify
-318E	Same as 318D. Mixture of yellow, red, and brown - fibrous to flaky, efflorescence (or slacked weathered bedrock) - about 1/8" thick on surface of cliffs	Identify
-318F	Location same as 318D. Yellow-mineral encrustation	Identify
-318G	Cliff at south end of first tunnel. Aluminum or sulphate salt - encrustation. White to brown and yellow - to Fackler	Identify
-318H	Location near north mouth of tunnel. Identify yellow mineral encrustation	Identify
-318I	Railroad cut 1/2 mile north of northernmost tunnel. Aluminum salt encrustations. Abundant	Identify
HOT SPRINGS-TANANA		
-319A	From Commissioner Gus Benson. Granitic rocks	Identify and write to Benson
-319B	Whiskey Jim's Garden - (Float). (James Lieske)	Identify and send identification to Jim
-319C	Barret cabin on Hot Springs Dome. Various samples from Ag, Pb, Cu, Co, Au prospect	For identification

<u>SPECIMEN NO</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-319D	Open cut west about 1/4 mile from Barret Cabin. Gossan and basic rock	Identify
-320A	From shaft and cuts about 3/8 mile northwest of Barret Cabin. From largest gossan zone. Gossan material and ore minerals - mostly galena	Identify and describe
-320A ₁	Galena, weathered to cerussite in thin layer on outside, coating of fine quartz crystals over protruding cubes of galena give unusual effect for entire mass. Some gypsum crystals coating cubes also.	For polished section Assay Pb, Ag, Au Test for Co and assay if present To Ketchikan 11/28/45
-320A ₂	Gossan	For polished section Test for Mn Assay if necessary
-320A ₃	Galena, coarsely crystalline, with malachite and Fe and Mn oxides; altered completely on outside. Probably 90% galena	Cu bearing galena ore Assay Au, Ag, Pb, Co, Cu Polished section To Ketchikan 11/28/45
-320B	Barret Cabin at Manley Hot Springs. Tourmaline in quartz	Identify minerals For specimen
RUBY A45-322A	Placer concentrates from Birch Creek	Identify minerals
-322B	Specimen from Harry Boland cabin - unusual minerals - three types	Identify
-323A	From shaft on Boland discovery claim. Much altered lead ore - limonite, cerussite, galena, and examine for other minerals. Ore is heavy but only fewpercent of galena remaining in samples	For polished section Assay Pb, Ag, Au To Ketchikan 11/28/45 Identify minerals

<u>SPECIMEN NO</u>	<u>LOCATION AND DESCRIPTION</u>	<u>DISPOSITION</u>
A45-329A	From Willow Creek lodes, Marshall district Specimen from cut Write to Ed Johanson, Box 1298, Anchorage, Alaska	Identify For thin section
-57A	Chandalar - Dike or fine grained metamorphosed igneous rock from near Little Squaw mine	For thin section
3J-268	Fred Johnson - pieces picked from boulder under F. Johnson pipeline, Dahl Creek, Kobuk Deep rich green color, massive - would not be suitable for fine jewelry but perhaps suitable for larger objects - of low unit value. Very spotty and similar to some New Zealand jade	For distribution
4J-268	Lloyd's. Most pieces too splintery; most are pale green (larger pieces cannot be cut until new saw arrives) Spotty massive variety; structure different from that of nephrite usually found in district	Identify with micro- scope to determine type
1J-268	Several types of jade from Sig and Ted's cut, Dahl Creek Massive spotty type Larger pieces of pale splintery jade not yet cut	Identify with micro- scope

*Territory of Alaska
Department of Mines*

40712

JAN 3 5 1945

U.S. GEOLOGICAL SURVEY
Department of Interior

LISTS OF ORE AND ROCK SPECIMENS AND PLACER CONCENTRATES
COLLECTED IN NORTHWESTERN ALASKA DURING 1944
FIELD SEASON.

Kiana-Nostak

	<u>Location and Description</u>	<u>Disposition</u>		
A44-232-A	Lower Salmon River - greenstone. (hornblende) schist - calcareous. From outcrop in river	Thin section and hand sample		
232-B	Location same as 232-A. Pyritized, calcareous, greenstone schist. From outcrop on river bank.	For examination.		
234-A	Float from lower middle Salmon River bars - quartz with pyrite and chalco- pyrite. Est. 50% sulfides - A ₁ mainly pyrite; A ₂ 5% pyrite	Assay A ₁ A ₂	Au. 0.08 0.02	Ag. 2.08 Nil
234-B	Float from middle Salmon River; malachite and chalcopryrite bearing quartz - est. 2% ^{Cu} - odd type of sugary dull white to pink quartz containing occasional narrow schistose and mica bearing seams	Assay	Au. 0.04	Ag. Tr.
234-C	Float from middle Salmon River; pyrite, Sphalerite - galena in quartz. Scheelite fluorescence	Au. 0.02	Ag. Tr.	Zn. 11.80%
234-D	Float from middle Salmon River; igneous rock (diorite ?)	Thin section		
234-E	L. L. Kobuk between Salmon River mouth and coal mine; Tertiary Se- quoia fossils a/c Geist.	To Juneau		
235-A	Upper Salmon River - short dist- ance below timber head. Float. Contact rock and igneous rock con- taining Cu. mineral - rock similar to 234-D	Thin section 235-A ₁ - contact rock.		
236-A	Salmon River - 3/4 mile below Haralam base camp - epidote in quartz - float	Identify green mineral		
236-B	Salmon River - 1 mi. above Haralam base camp. River float. Gem mater- ial if not too soft	Translucent green material. To U.S.G.S.		

	<u>Location and Description</u>	<u>Disposition</u>		
237-A	Copper Creek, trib. Bear River, trib Noatak River - Channel sample No. 1; Haralam-Jackson lode - 4½'; Quartz - calcite - est. 3% chalcoppyrite	Assay Au. 0.04	Ag. Tr	Cu. 0.97%
237-B	Location same as 237-A. Channel sample No. 2, 52" - quartz-chalcoppyrite-calcite (est. 3% Cu.)	0.02	Tr.	2.08%
238-A	Location same as 237-A. High grade chalcoppyrite ore. Est. 30% Cu. Quartz and calcite. A- high-Cu; A ₁ - med. Cu.; A ₂ - pyrite	A 0.04 A ₁ 0.02 A ₂ 0.02	Tr.	18.07% Tr. Nil.
239-A	Same location as 237-A; 10' channel sample; quartz, calcite, chalcoppyrite, malachite		Tr.	Nil 0.50%
239-B	1/2 mile below mouth Kanaktok Creek; float. Epidote, quartz, calcite, tourmaline, garnet.		Identify minerals and type of mineralization. To Fairbanks.	
239-C	Upper Salmon River; float (Brunton Stat. No. 9). Chalcoppyrite bearing quartz and limestone	Au. Tr.	Ag. Tr.	Est. Cu. Est. 10 to 15% chalcoppyrite
239D	Float from Kanaktok Cr. to Haralam-Jackson base camp. Black carbonaceous rock showing xl form of and ^{and} soft white mineral (gypsum)	For ident. To U.S.G.S.		
245-A	Mouth of 1st L.L. trib. to Salmon below Haralam base camp. Cu. replacement; ore in silicified l.s. For examination Quartz, chalcoppyrite (est. 60%); galena - shows some schistose structure.	Au. 0.04	Ag. Tr.	Thin section To Fairbanks
245-B	Location same as 245-A. Lead, zinc and (copper) in granular quartz float. Est. 5-10% Zn. in sample assayed. Sphalerite, galena, pyrite. Quartz contains occasional mica flakes, schistose inclusions.	Assay: Zn. 3.71% Au. 0.02	Ag. Tr.	
245-C	Mouth of R.L. Pup between Sta. #18 and 19. Pyrite with chalcoppyrite. Est. pyrite 85%; chalcoppyrite 3-5%; remainder quartz	Assay: Au. Tr.	Ag. Tr.	
246-A	1/2 mile below mouth of Kaptikturok Cr. Concentrates from 1 pan. Salmon River.		Examination. To Fairbanks.	
247-A	Mouth R.L. trib. below Aweyok mouth; quartz with unidentified black mineral. Salmon region. (Rejected Fairbanks.)		Identify mineral	
247-A ₁	About 13 miles above Kiana on Kobuk River; chrysdline calcareous greenstone.		To Juneau for identification	

Asbestos District - Jade Mt. to Kogoluktuk River

	<u>Location and Description</u>	<u>Disposition</u>
249-A	West side Jade Mt. Short fiber chrysotile - fiber shorter than it appears to be - each seam made up of very short fiber material.	<i>For testing & display.</i>
249-B	Same as 249-A. Picrolite (?) or serpentine with incipient asbestiform structure	Identification. To Juneau.
249-C	Head Jade Creek. Chert - sawed and polished by Glover - <i>fall for gem material</i>	Identify. S. To Fairbanks
249-D	Jade Creek near Hanson tunnel. Float. Igneous rock containing magnetite, pyrrhotite colorless needle-like silicate (Amphibole-actinolite)	Identify S. & rock To Fairbanks; test for Ni.
250-A	Chrysotile samples - Hanson tunnel. Fibers silky, strong - longest 3/8"	Sample sent U.S.B.M. For display. <i>Report</i>
251-A	Bedrock from Jade Mt. Hanson tunnel. Peridotite (?)	For identification Thin section.
251-B	Sucker Cr. - bedrock near eastern foot of Jade Hills. Garnierite - optically close. Test Ni. Qual. + (weak a/c Glover)	For thin section To Fairbanks for identification of green mineral
251-C	Float bedrock - Spec. ^{from} Jim X cut, Agnes Cr. Ambler River region. Contact rock - pyrox., hornblendes, garnets, molybdenite, pyrrhotite, magnetite. For spectographic analysis	Identify rock Thin section To Fairbanks.
252-A	Jim X concentrates, Agnes Creek, Ambler R. region.	To Fairbanks for slide.
252-B	Jim X - Au. in bottle. Determine fineness. Fineness 98.18; cek; only 273 mg. sample used.	
253-A	Transp. long fibers, nemalite var. of brucite. Shungnak River. Sent to U.S.G.S. for identification; also U. of Minnesota.	For identification
253-B	Shungnak River - X and inclined fiber chrysotile serpentine - elip fiber white ^{strong} strong colorless chrysotile - inclined fiber yellow silky, strong chrysotile.	To Juneau Inclined to Fairbanks
253-C	Shungnak River - asbestos with metallic mineral. Brown, woody chrysotile asbestos fibers parallel to columnly arranged crystals of magnesite and magnetite.	Ni. test. Identify To Fairbanks

	<u>Location and Description</u>	<u>Disposition</u>
254-A	Upper deposit Cosmos Creek; colorless, fibrous, brittle nemalite, variety, brucite	For Identification To Juneau
254-B	Upper deposit, Cosmos Creek - slip fiber masses of serpentine asbestos, weak fiber	Sample sent to U.S.B.M To Juneau
254-C	Shungnak Mt. opposite Shungnak River. asbestos deposit. Crystalline l.s. with green and submetallic black minerals	To Juneau
254-D	Cosmos Creek. Chrysotile - fine, silky, cross-fiber, some over 1/2" long	Entire sample sent to U.S.B.M. Report in files
255-A	California Creek - Kogoluktuk - asbestiform material with white, brittle, altered asbestos (anthophyllite) Almost transparent serpentine.	To Fairbanks
256-A	Ferguson oil residue - 1st creek north of Kivaline R., 7 miles from beach; 4 1/2 miles from lagoon	To Fairbanks (40.8 gals/Ton a/c U.S.B.M.)
256-B ₁	Ferguson - copper ore. Est. 8-10% chalcopryrite	Assay Au. Tr. Ag. Tr.
256-B	Dahl Creek - tremolite - one piece bedrock to Juneau; also one spec. talc (Fbks. Robbins)	Samples at Nome Glover College Juneau.

Ungalik River

258-A	Ungalik dredge tails - rocks, igneous and conglomerate	Thin section A ₁ - dike (?) A ₂ - conglomerate (?) A ₃ - dike (green weathering) with sulfides To Juneau Hand sample to Fbks. identify sulfides.
258-B	Ungalik dredge - concentrates	For slide To Fairbanks
258-C	Bonanza Creek; green weathering; S bearing igneous rock	To Juneau Identify minerals and rock.
258-D	Bonanza Creek - Concentrates from 2 shovels by M. J. Walsh	To Fairbanks

Location and Description

Disposition

259-A Knobs at head of Hopeful Gulch; diorite(?)
and fine-grained dark limestone

Thin section
259-A₁ dioritic rock
to Juneau.

Sinrock-Oregon Creek

125-A Sinrock River iron deposit - limonite and
pyrolusite + Pb, Zn & Cu minerals; hydro-
zincite fluorescence. Replacement rock
garnet, calcite, pyrox. etc.

For examination
To Fairbanks.

126-A Hungry Creek, trib. Oregon Cr., trib.
Cripple River. Placer concentrates &
Bl. pebbles. Cassiterite bearing con-
centrates

For slide
to Fairbanks.

Kougerok

128-A Coffee Creek concentrates

For slide
To Fairbanks

129-A Dahl Creek nuggets

129-B Dahl Creek concentrates - Carey

do. do.

129-C Quartz Creek concentrates - Nashenweng

do. do.

Inmachuk

131-A Cunningham Creek concentrates, J. H.
Johnston - Pb. minerals, pyromorphite

For thoro examination
& spectroscopic analy-
sis. To Fairbanks

131-B Hi-grade galena spec. - Harris Creek

For displays
Assay, Au. Ag.
To Fairbanks

131-C Harris Creek - quartzite with galena

Identify rock type
To Fairbanks

Kiwalik

133-A From R. L. Gillis, Candle - actinolite
crystals - glassy green actinolite needles
Small amounts - white alteration product -
talc; brown - biotite altering to chlorite -
also alteration from actinolite.

Identify
To Fairbanks

134-A Jump Creek - Bully French - Galena probably
high in Ag.? (Left in Fairbanks)

Identify - ~~Assay~~
To Fairbanks

	<u>Location and Description</u>	<u>Disposition</u>
134-B	A.C.E. Candle Creek concentrates - coarse - mostly sulfides	For identification To Fairbanks.
<u>Dime Creek</u>		
135-A	L.L. Dime Creek; knob opposite Haycock, bedrock specimen	Thin section Hand sample to Fbks. for binoc. exam.
135-B	#6 Bench Cl. (R.L.) Dime Creek; bedrock from 90' shaft. Wildcat for Au. & Pt.	Thin section To Juneau. Fairbanks
136-A	Pt.-Ledstrom & Rylander, Boraska; bench Dime Creek	In vial
136B	Placer concentrates, Dime, Boraska bench; blowings	For slide and spectroscopic analysis. To Fairbanks.
136-C	Dime Creek - Au. - Rylander	In vial with ivory.
137-A	Dime Creek - bedrock at Nels Ledstrom cabin, andesite (?)	Thin section To Juneau
137-B	Dime Creek - bedrock specimen few hundred feet above Nels Ledstrom cabin. andesite(?)	Thin section To Juneau
<u>Solomon River</u>		
139-A	Big Hurrah Creek, Quigley prospect. High grade stibnite, Disseminated stibnite in quartz - less than 5% sb.	Higrade for spec. Assay Au. 0.04 Ag. Tr.
139-B	From quartz vein near Quigley prospect, Big Hurrah Creek	Assay Au. Tr. Ag. Nil
139-C	Placer concentrates - Lee dredge below mouth Shovel Creek on Solomon River	For slide To Fairbanks
139-E	Lee dredge concentrate	Cut small sample for slide - separate free Au by panning. Assay
140-A	West Creek concentrates (Samples wrongly labeled 148)	For slide To Fairbanks
140-B	West Creek lode - chlorite mica schist, mineralized. Arsenopyrite - est. 50%; pyrite; quartz; chlorite and xxx biotite, mica schist.	Identify Ss Assay Au. 0.01 Ag. Tr.

	<u>Location and Description</u>	<u>Disposition</u>
140-C	West Creek lode - shattered quartz from vein	Assay Au. Tr. Ag. Nil
140-D	West Creek Lode - Lee sample - upper outcrop	Assay Au. 0.01 Ag. Nil
140-E	West Creek lode - types of quartz and schist - mineralized chlorite schist containing large arsenopyrite crystals	Identify Ss. Assay separately for Au. Ag.
140	Lee sample No 1-West Creek quartz	Assay Au. Tr. Ag. Tr.
	Lee sample No. 2 - West Creek mineralized schist	Identify S. Assay Au. 0.12 Ag. Tr.

Miscellaneous

39-A ₆	Placer concentrate, Sunset Creek - Frank Rice	For slide To Fairbanks
GnB-Beach	Beach concentrate from West of Red Mtn., ^{Goodwin's Bay} 1/2 mile from Jerry Hunter's camp	For slide Examination
GnB- Red Mtn.	Sluice box concentrate - Jerry Hunter- ^{Goodwin's Bay}	For slide Examination

Territory of Alaska
DEPARTMENT OF MINES

NOTE
1944
STEWART
Supervisor of Mines

LISTS OF ORE AND ROCK SPECIMENS
AND PLACER CONCENTRATES COLLECTED IN
NORTHWESTERN ALASKA DURING 1943 FIELD
SEASON

Bluff District

<u>Specimen</u>	<u>Location and Description</u>	<u>Disposition</u>
A43-102A	Bluff cinnabar lode - 4 ft. channel sample	For assay Hg. 0.12%
-102B & 102C	Picked samples of red-stained limestone from channel cut 102A	For examination and determination of coloring material.
-102D	Bluff cinnabar lode - 3 ft. channel sample taken by Mike Walsh	For assay Hg. 0.10%
-103A	Bluff cinnabar lode - specimens picked from sacked ore	For assay and thin section Hg 0.14%
-103B	Alaska Homestake Gold Mine. Hematite from quartz vein - said to be Au bearing	For examination
-103C	Bluff cinnabar lode - chips taken from large high-grade boulders near mouth of cliff tunnel	For examination and description
-103D	Bluff cinnabar lode - cinnabar with meta-cinnabar coating	" " "
-104A	Chip sample from 2' high-grade zone Bluff cinnabar lode	For assay and thin section Hg 6.76%
-104B	Bluff cinnabar lode - chip sample across 7' x 7' kidney of ore	For assay Hg 2.38%
-104C	Bluff cinnabar lode - channel sample across 10' red-stained limestone bed. Sample by Walsh and Drange	For assay Hg 0.04%
-105A	Bluff cinnabar lode - rough average of sacked ore	For assay Hg 0.55%

<u>Specimen</u>	<u>Location and Description</u>	<u>Disposition</u>
High-grade	Bluff cinnabar lode	Specimen for display at Juneau For assay Hg 6.05%
<u>St. Lawrence Island</u>		
A43-106A	Savoonga beach concentrates and bedrock specimen	For examination and identification of minerals - For slide of concentrates
-106B	Camp Kavalrok. Granitic rock similar to majority of float in area	For examination For thin section
-107A	Imuk-iauluk. Molybdenite specimen in granite	For examination and description
-107B	Imuk-iauluk. Granite specimen from molybdenite area	For examination and identification of minerals For thin section
-108A	Imuk-iauluk. Granite-molybdenite specimen	For examination
-108B	Imuk-iauluk. Granite with molybdenite, pyrite and chalcopyrite	For examination For thin sections -108B ₁ & B ₂
-108C	Channel sample across small high-grade molybdenite zone in granite	For assay MoS ₂ 0.71% Mo 0.43%
-108D	Imuk-iauluk. High-grade molybdenite-granite specimen	For display at Juneau For thin section
-108E	Imuk-iauluk. 6 ft. channel sample of molybdenite-bearing granite	For assay Mo 0.17% MoS ₂ 0.28%
-108F	Imuk-iauluk. Granite cut by aplite Basic rock (probably a segregation	For examination 108F ₂ for assay

-108F (Cont'd)	in the granite) contains tourmaline, molybdenite, etc. -108F ₁ aplite dike -108F ₂ basic	(Mo 0.02% MoS ₂ 0.03%) For thin section 108F ₁ and 108F ₂
-109A	Imuk-iauluk. Granite-molybdenite specimen	For display and examination
-109B	Imuk-iauluk. 15' channel sample	For assay Mo 0.10% MoS ₂ 0.17%
-109C	Imuk-iauluk. Dark granitic rock with molybdenite and chalcopyrite	For examination for thin section
-109E	Imuk-iauluk. Granite with pegmatitic or microlitic minerals and epidote	For identification of minerals.
-109F	Boxer Bay. Black sand, beach con- centrate	For slide and identifications For spectrographic analysis
-109G	Country rock from Boxer Bay Andesite-porphry -109G ₁ Green rock (?) volcanic -109G ₂	For identification Thin sections of 109G ₁ and 109G ₂
-110A	Granite, dike rocks, and quartz with pyrite from Mt. Gambell	For identification and assay of quartz with pyrite Gold 0.02 Silver 0.82
-110B	Rocks from creek wash. Kavalrok	For identification Thin section of basic dike with pyrite
	Beach sand from mouth of Mogoghyik Creek	For identification

Lost River District

A43-111A	Various specimens from wolframite-topaz tunnel -111A ₁ - limestone tremolite (?) needles -111A ₂ - fresh topaz-galena-wolframite, etc. ores -111A ₃ - fresh topaz ore -should also show altered topaz and altered limestone inclusion in vein -111A ₄ - Topaz ore - should show limestone inclusion	For identification of ore and gangue minerals For thin section -111A ₁ to 111A ₄
-111B	Southern Cross Tunnel. Lead-tungsten bearing dike	Assay for W, Sn, Pb, Ag
-111C	From knob immediately south of Southern Cross tunnel. Limonite with mimetite	For identification
-111D	1" x 6" x 14" channel sample - wolframite topaz lode	For assay WO ₃ 0.08% Sn ³ 0.27% Pb 4.17% Au Nil Ag 9.34 oz.
-111E	Wolframite topaz lode - country rock from between main vein and stringers and from between stringers (at 24' sample cut)	For examination and determination of alteration
-112A	Wolframite topaz lode. Walls of tunnel at 24' cut. Country rock	Determine if limestone
-112B	Wolframite topaz lode - 1" x 6" x 16" sample at 44' from portal	For assay WO ₃ 0.92% Sn ³ 0.77% Pb 4.66% Au Tr. Ag 9.30 oz
-112C	Wolframite topaz lode - 60' from portal; chips across vein	For assay WO ₃ 0.32% Sn ³ 0.83%
-113A	Fluorite impregnated horsts. Wolframite topaz lode	For examination and thin section

- | | | |
|-------|--|---------------------------------|
| -113B | Wolframite topaz lode - topaz and stannite | Identify copper stained mineral |
| -113C | Topaz fluorite float | For examination |
| -113D | Lost River slope of Knob SW of Southern Cross tunnel | Identify |

Upper Fish River

- | | | |
|---------------|---|---|
| A43-115A | Dike on nose between Boston and Baker Creeks where streams emerge from foothills, above limestone outcrops at bottom of ridge | For thin section |
| -116A | Specimens of country rock adjacent to Oregon Creek muscovite | For examination and description
Gneiss for thin section |
| -116B | Dike rock from muscovite dike
-116B ₁ - quartz, feldspar, tourmaline, garnet rock
-116B ₂ - Mica, quartz, feldspar rock | Identify minerals; check for uncommon ones.
For thin section
-116B ₁ -116B ₂
For spectrographic analysis |
| -116C | Picked high-grade - Brookins stibnite - Foster Creek, tributary to Camp Creek, tributary Niukluk River | For examination and description |
| John L. Olson | Biotite or phlogopite - Etchepuk River | For microscopic determination of mica type |

Kobuk River Region

- | | | |
|----------|---|---|
| A43-201A | 1st outcrop of asbestos above the mouth of Stockley Creek, tributary to Dahl Creek; asbestos from $\frac{1}{2}$ " seam & roughly representative of several seams in outcrop | Specimens sent to U. S. Bureau of Mines and to Juneau |
| -202A | Asbestos and parallel columnar white magnesite from Asbestos Mt., Dahl Creek | For identification and thin sections across and parallel to fibers. |

A43-202B	Asbestos from float specimen 6" thick & 2' square - showing country rock - Top Asbestos Mt.	For examination and description
-203A	Top of Asbestos Mt. - Long fibered, silky, weak asbestos from 6" vein in place - tremolite. Robbins - McConkel prospect	For microscopic examination and determination. To U. S. Bureau of Mines; Hoyt; Juneau
-203B	Top of Asbestos Mt. Inclusions in asbestos veins, pieces of Antigorite schist	For examination and description
-203C	Johnson cut, middle Dahl Creek, placer concentrates	For slide
-204A & -204B	Quartz crystals, right limit of Dahl Creek on saddle between and heads of Wesley and Ruby Creeks - and from outcrop on limestone escarpment	Specimen to Juneau To U.S.G.S. via Coats
-204C	Asbestos Mt. - serpentine typical of asbestos-bearing rock	For examination For thin section
-204D	Aragonite and copper bearing limestone - Dahl Creek	For examination and description

Kobuk - Klana

A43-206A	Jade float - Shungnak River	For thin section For display
-207A	Shungnak Mt. Scale-fiber overburden	Determination of asbestos For examination.
-207B	Serpentine, asbestos, magnetite from 207A location	For examination and identification of minerals.
-207C	Fibrous material from weathered float - Shungnak Mtn.	For examination
-207D	Jade - Shungbak River	For display
-208A	1 mile above mouth Jade Creek, right limit Kobuk River Coal	To U.S. Bureau of Mines. Analysis received

A43-208B	Specimen from Jade Mtn. -208 B ₁ - basic intrusive of jade mt. area -208 B ₂ - rock mined for jade at one time -208 B ₃ - Asbestos and jade	Thin sections -208B ₁ -208B ₂ -208B ₃
	Jade Mountain - serpentine with cross-fibre asbestos	For thin section
-209A	High quality asbestos and mountain leather from head of Hunt River	For examination
-209B	Rocks from head of Hunt River	For thin section and identification of minerals.
-209C	Specimen from extreme head of Hunt River	For identifications

Candle - Kiwalik and Kugruk River

A43-210A	Placer concentrates, 11 miles above mouth of Gold Run Creek, tributary Kiwalik River, Henry M. Xavier Also kyanite and smoky quartz as- sociated with kyanite	For slide For thin section
-211A	Average coal sample - Wallin Mine, Kugruk River	Sent to U.S. Bureau of Mines, Anchor- age. Analysis received
-212A	Hard siliceous material, Wallin coal mine, Kugruk River	For identification
-214A	Country rock from both sides of Kugruk - lead-silver deposit	For description and identification
-214B	Ore from dump, Kugruk, Pb - Ag	For assay #1 { Pb 19.11% nAu Tr. Ag 27.20 oz. Weinard { Pb 22.15% Au Tr. Ag 24.00 oz.

Nome Area

A43-215A	Prospect Creek - quartz, galena, limonite specimen	For examination
-215B	McDuffee stibnite, Steep Creek - soft, mica schist in which Sb_2S_3 lenses occur	For examination and description
-216A	Breen property - high grade stibnite ore	For examination For Assay Au 0.52 oz. Ag 1.18 oz. Sb 15.98%
-216B	Breen stibnite - average of high-grade stibnite ore on dump	For assay Au 0.44 oz. Ag 1.40 oz. Sb 21.10%
-216C	Low grade stibnite ore; Breen prospect	For examination and assay Au 0.07 oz. Ag 0.56 oz. Sb 12.36%
-216D	Breen pit - sample across schist	For assay Au 0.21 oz. Ag 1.06 oz. Sb 1.77%
217A	Breen pit - sample quartz with only traces of stibnite and pyrite	For assay Au 0.06 oz. Ag Tr. Sb 1.18%
-217B	Breen pit - average sample from 28" quartz-stibnite boulder - small pieces of ore	For assay Sb 11.64% Au 0.78 oz. Ag 0.98 oz.
-217C	Breen pit - quartz with no stibnite	For assay Au 0.06 oz. Ag Tr.
-217D	High-grade stibnite ore. From 217B	For examination
-217E	Breen-Walsh sample of outcrop or large stibnite boulder in pit; more high-grade in sample than average of out-crop	For assay Au 0.81 oz. Ag 2.06 oz. Sb 15.79%

A43-217F	Right limit of Grouse Creek at $\frac{1}{2}$ mile above mouth of Gold Creek	For assay Au 0.03 oz. Ag 6.02 oz.
-218A	Fresh bedrock, Rock Creek, scheelite	For thin section
-218B	Quartz-scheelite vein specimen - Rock Creek. Est. 2% WO_3	For examination
-218C	Concentrates from one pan - Olie Hay - Rock Creek	For examination
-218D	Representative sample from rotted quartz vein - Rock Creek	For assay 2.28% WO_3 a/c U.S.B.M. Nome

Miscellaneous

J. B. Johnston Deering	High-grade galena ore, Cunningham Creek	For assay Au Tr. Ag 8.64 oz. Pb 71.50%
	Quartzite country rock as- sociated with galena	For examination
	Placer concentrates, Cunningham Creek	For slide For assay Au 27.66 oz. Ag. 5.70 oz. Bb 49.98% For spectrographic analysis
O. F. Weinard Candle	Quartz material from shaft on Mud Creek	For identification
	Placer concentrates, Mud Creek	For slide and identification
Sullivan & Walsh (A42-23C)	Placer concentrates from Hum- boldt Creek	do. do.
Ed Hoven, Nome (A42-23B)	Concentrates from Wonder Gulch, tributary to Coffee Creek, trib- utary Kougarok River	For slide
L. E. Ost Council	Concentrates from Crooked Creek, tributary to Ophir Creek, Council District	do. do.
Charlie Yaeger Nome	Concentrates from Quartz Creek, tributary Kougarok River. Cl. #11 above	do. do.
A42-23A	Concentrates from C. O. Roberts, Big Hurrah Creek, Solomon River	do. do.
O. A. Margraf Nome	Concentrates from Trilby Creek	do. do.
Tolbert Scott Nome	Scheelite particles from Iron Creek	do. do
Carl Reynish Candle	Scheelite particles from Twin Mt. Creek	For examination

McConaghy	Placer pebbles - identify	For examination
Colgate	Dorothy Creek, tributary to Nome River	do. do.
A43-21A	Hematite - Kivalina T. Morris	do. do.
George Varnell Kotzebue	Pah River - concentrates	For slide
Shungnak River	Concentrates - Territorial Department of Mines	do. do.
C. O. Roberts	Big Hurrah concentrates from near mouth of Little Hurrah	do. do.
Grover Andree	Glacier Creek, placer concentrates	do. do.
Wm. R. Benson Igloo	Sand - identify all minerals - send report to Benson	do. do.

Ungalik Trip

A43-219A	Frank Shaw - basic igneous rock	For identification
-219B	Bonanza Creek - concentrate	For slide
-219C	Specimen of greenish - probably epidote - float; resembling some varieties of tactite	For identification
-219D	Bedrock specimen - Ungalik River	do. dp.
-220A	Placer concentrates - Hopeful Gulch. Send list of mineral content to Frank Shaw	For slide
-220B	Large specimen of type 219C	For identification
-220C	Dike rock from cliff below mouth of Bonanza.	do. do.

Territory of Alaska
DEPARTMENT OF MINES

FAIRBANKS ASSAYS

December 5, 1943

	<u>MoS₂</u>	<u>Au</u>	<u>Ag</u>	<u>Pb</u>	<u>WO₃</u>	<u>Sn</u>	<u>Sb</u>	<u>As</u>
A43-108C	0.71%							
108E	0.28%							
108F	0.03%							
109B	0.17%							
Heide	0.17%							
A43-110A		0.02	0.82(Tr)					
-111D		N11	9.34	4.17%	0.92%	0.77%		
112B		Tr	9.30	4.66	0.08	0.27%		
112C					0.83%	0.32%		
214B		Tr	27.20	19.11%				
Weinard		Tr	24.00	22.15%				
216A		0.52	1.18				15.98%	
216B		0.44	1.40				21.10	
216C		0.07	Tr				12.36	
216D		0.21	1.06				1.77	
217B		0.78	0.98				11.64	
217A		0.06	Tr				1.18	
217C		0.06	Tr					
217E		0.81	2.06				15.79	
217F		0.03	6.02					
F-Cun		27.66	5.70	49.98%				
Galena-Cun		Tr	8.64	71.50%				
Koy-Sw		86.48	23.66					
Big Hurrah qtz.		0.96	1.00		0.73%			
tails		0.21	Tr					
Rock Creek								0.07%

Eskil Anderson

ALASKA GEN.

Territory of Alaska
DEPARTMENT OF MINES

PETROGRAPHIC DESCRIPTIONS

The thin sections of rocks and ores here described were prepared from specimens collected in Northwestern Alaska during the 1943 field season. Each specimen was taken from a strategic mineral deposit which was examined and on which a brief report is to be written.

The microscopic study was undertaken with a three-fold purpose: (1) to provide a more accurate classification of the rock specimens than megascopic examination alone can yield; (2) to assure recognition of rare non-opaque minerals of economic value; (3) to obtain information on the origin of the ore deposits.

Crushing of the specimens with the accompanying heavy mineral separation by bromoform was omitted because of insufficient time. For the same reason the feldspars were often not differentiated, some rare accessory minerals were not identified, and a detailed study of paragenesis was not made.

Bluff Cinnabar Deposit

Specimen: A43-103A

Location: Bluff cinnabar deposit - specimen from sacked ore

Megascopic Description: Fine-grained, red and yellow-brown colored crystalline limestone intersected by a few narrow, white, calcite veinlets.

Microscopic Description: The section consists chiefly of fine-grained calcite with small particles of iron oxide dust between and within the grains. Some areas of fresh, large crystals of vein calcite are present and do not show the dusting by iron oxide particles common in the older calcite. A small amount of sericite was observed.

Some of the later, recent calcite veinlets contain small euhedral quartz crystals. Other areas contain much quartz, in anhedral and broken crystals. Calcite fills the spaces between and cracks within the quartz crystals, and in some cases is replacing the quartz.

A few particles of cinnabar are present.

Texture: Hypidiomorphic.

Handwritten notes and stamps in the bottom right corner, including a date stamp that appears to be "MAY 1944".

Minerals in Order of Abundance:

- | | | |
|------------|-------------|-------------|
| 1. Calcite | 3. Hematite | 5. Cinnabar |
| 2. Quartz | 4. Sericite | |

Rock Name: Crystalline limestone impregnated with cinnabar

Specimen: A43-104A

Location: Bluff Cinnabar Property. From 7' x 7' kidney about 5 feet E. of cliff portal. Assay across 2' width in kidney 6.76% Hg.

Megascope Description: Fine grained crystalline limestone stained yellow-brown by iron oxides but also showing tiny veinlets of cinnabar as well as occasional specks scattered throughout the specimen. Some metacinnabar is present on weathered surfaces.

Microscopic Description: The section is made up almost entirely of very small calcite crystals, dusted and dirty from iron oxides. Large particles of cinnabar, some associated with sericite, are also present.

Minerals in Order of Abundance:

- | | |
|--------------------------|-------------|
| 1. Calcite | 4. Sericite |
| 2. Hematite and limonite | 5. Quartz |
| 3. Cinnabar | |

Rock Name: Cinnabar ore. Limestone somewhat brecciated and impregnated with cinnabar.

St. Lawrence Island

Specimen: A43-106B

Location: Camp Kavalrok, about 12 miles southwest of Gambell, St. Lawrence Island.

Megascope Description: Coarse-grained granitic rock composed largely of pink feldspars, biotite and quartz with some pyrite. A basic segregation included in the specimen is more fine-grained and is composed of biotite and feldspars.

Microscopic Description: Coarse-grained portion of slide composed mainly of subhedral silicic plagioclases with anhedral quartz, sub- to euhedral biotite and hornblendes. Accessories are dominately euhedral crystals of titanite, magnetite and apatite with some pyrite and ilmenite. The composition of the basic segregation is similar; the ferromagnesian minerals are more dominant and the grains finer.

Order of Crystallization: Normal

Minerals in Order of Abundance:

- | | |
|----------------|--------------------------------|
| 1. Plagioclase | 5. Titanite |
| 2. Biotite | 6. Iron oxides - magnetite and |
| 3. Hornblendes | 7. Apatite ilmenite |
| 4. Quartz | 8. Pyrite |

Texture: Hypidiomorphic

Rock Name: Quartz-diorite a/c Kemp p. 23

- - -

Specimen: A43-107B

Location: Granite bedrock at Imuk-iauluk, West coast of St. Lawrence Island. From beach exposure.

Megascopic Description: In the hand specimen coarse pink and white feldspars are most common with some quartz and considerable biotite also present. A fine grained more basic segregate is included in the hand sample.

Microscopic Description: Coarse grained feldspars in the section are much altered, biotites and hornblendes often chloritized, and quartz clear. The fine grained basic segregate is fresher and contains biotite, hornblende and magnetite equal to about 1/3 of the feldspar and quartz content.

Minerals in Order of Abundance:

- | | |
|----------------|----------------------------------|
| 1. Plagioclase | 5. Chloritic alteration products |
| 2. Quartz | 6. Titanite |
| 3. Biotite | 7. Magnetite |
| 4. Hornblende | 8. Apatite |

Order of Crystallization: Normal

Rock Name: Quartz-diorite

Specimen: A43-108B

Location: Granitic specimen from molybdenite area near Imuk-
lauluk, West coast of St. Lawrence Island.

Megascopic Description: Medium grained granitic rock. The
chief constituents are pink and pale green feldspars
with smaller amounts of quartz and biotite. Hand
specimens contain fine particles of pyrite and chalcoc-
pyrite.

Microscopic Description: Many of the feldspars show considerable
alteration. Feldspars are mainly medium plagioclases with
some labradorite. Biotite is altering to chlorite. Some
graphic intergrowths of quartz and feldspars were observed.

Minerals in Order of Abundance:

- | | |
|----------------|---------------------------|
| 1. Plagioclase | 6. Chlorite |
| 2. Orthoclase | 7. Iron oxides and pyrite |
| 3. Quartz | 8. Titanite |
| 4. Biotite | 9. Apatite |
| 5. Hornblende | 10. Zircon |
| | 11. Sericite. |

Order of Crystallization: Normal

Rock Name: Quartz-diorite

- - -

Specimen: A43-108B₂

Location: Same as 108B. Not observed in place.

Megascopic Description: Greenish-black rock composed of medium
to fine grained pyroxenes and hornblendes with occasional
fine particles of pyrite.

Microscopic Description: Most of the minerals are altered beyond
recognition. Pyroxenes and hornblendes are very common.
Plagioclase feldspars are also present in considerable
quantity. Anhedral magnetite in large blobs is scattered
throughout the slide. Pyrite is also present in small
particles. Occasional apatite crystals were observed.

Minerals in Order of Abundance:

- | | |
|------------------------------|--------------------------|
| 1. Pyroxenes | 5. Chlorite and sericite |
| 2. Hornblendes | 6. Pyrite |
| 3. Plagioclase feldspars | 7. Apatite |
| 4. Magnetite and iron oxides | |

Rock Name: Altered pyroxenite

Specimen: A43-108D

Location: Same as 108B,

Megascopic Description: Medium grained granitic rock. Pink and whitish-green feldspars with about 10% of biotite comprise the bulk of the hand specimen. Large flakes of molybdenite and small particles of pyrite and chalcopyrite are scattered through the specimens. The molybdenite and chalcopyrite are associated in space and probably in genesis.

Microscopic Description: The section consists mainly of plagioclase and orthoclase with smaller amounts of quartz and biotite. The feldspars show considerable alteration. Some biotites are partially altered to chlorite. Occasional crystals of hornblende are present. Other accessory minerals are magnetite, apatite, titanite and zircon. Molybdenite and chalcopyrite appear to have an affinity for biotite and hornblende. The latter minerals are altered to chlorite when associated with the former.

Minerals in Order of Abundance:

- | | |
|----------------|-----------------|
| 1. Plagioclase | 6. Magnetite |
| 2. Orthoclase | 7. Titanite |
| 3. Quartz | 8. Chalcopyrite |
| 4. Biotite | 9. Apatite |
| 5. Hornblende | 10. Zircon |

Order of Crystallization: Normal

Texture: Hypidiomorphic

Rock Name: Quartz-monzonite

Specimen: A43-108F

Location: Molybdenite area near Imuk-iauluk, west coast of St Lawrence Island.

Megascopic Description: Fine-grained dike rock. Ground mass of fine, pink feldspars with quartz. Occasional phenocrysts of biotite and white feldspars.

Microscopic Description: In section the rock is composed almost entirely of quartz and feldspars in small anhedral crystals. Both plagioclase and orthoclase are present. Some biotite and iron oxides were observed. Alteration products of

feldspar cloud the section. Some biotite crystals have been completely altered to chlorite.

Minerals in Order of Abundance:

- | | |
|----------------|----------------------------------|
| 1. Plagioclase | 4. Biotite |
| 2. Orthoclase | 5. Sericite, kaolinite, chlorite |
| 3. Quartz | 6. Magnetite |

Order of crystallization: Normal for dike rock

Rock name: Felsite

- - -

Specimen: A43-108F₂

Location: Molybdenite area near Imuk-iauluk on northwest coast of St. Lawrence Island.

Megascopic Description: Fine-grained greenish rock. Some areas are mainly pyroxenes (or hornblende) with occasional specks of pyrite or molybdenite. Small streaks of pink and white feldspars are present in the hand specimen.

Microscopic Description: Ferromagnesian minerals almost entirely altered to chlorite. Much fresh quartz and some pyroxenes, titanite, and magnetite are present. Radial tourmaline (?), magnetite, and apatite very common in some parts of the slide. Feldspars altered beyond recognition.

Rock Name: Hydrothermally altered dike rock.

- - -

Specimen: A43-109C

Location: Granite from high-grade molybdenite zone near Imuk-iauluk, west coast of St. Lawrence Island.

Megascopic Description: Medium to coarse grained rock composed chiefly of pink and greyish green feldspars in about equal proportions with smaller amounts of quartz and biotite. Rock appears fresh and some biotite is altered to hornblende and chlorite. A few large flakes of molybdenite are present in the hand specimen. Some very fine molybdenite particles can be seen in and associated with chlorite.

Microscopic Description: In section most of the feldspars are much altered. Quartz particles are clear and anhedral.

Graphic intergrowths of quartz and feldspar (myrmekite) are present. Biotite, hornblende, and molybdenite are common, the molybdenite apparently being associated with both. Apatite, titanite, and chloritic alterations of the ferromagnesian minerals are also present.

Biotite, hornblende, apatite, titanite, and molybdenite are abundant in localized areas.

Order of Crystallization: Normal. Molybdenite apparently is a later introduction. Ferromagnesian minerals show alteration in contact with it.

Minerals in Order of Abundance:

- | | |
|---------------|----------------|
| 1. Feldspars | 5. Titanite |
| 2. Quartz | 6. Molybdenite |
| 3. Biotite | 7. Chlorite |
| 4. Hornblende | 8. Apatite |
| | 9. Zircons |

Texture: Hypidiomorphic

Rock Name: Quartz-monzonite - Iddings

- - -

Specimen: A43-109G₁

Location: From cliff on northwest shore of Boxer Bay, St. Lawrence Island.

Megascopic Description: Volcanic with fine-grained, purple-grey ground mass and abundant medium to large feldspar phenocrysts.

Microscopic Description: Fine-grained ground mass very much altered - most minerals unrecognizable. Phenocrysts of plagioclase and orthoclase feldspars are clouded by alteration products. Quartz and hornblende are much less altered.

Rock Name: Andesite-porphyry

- - -

Specimen: A43-109G₂

Location: Boxer Bay, St. Lawrence Island.

Megascopic Description: Dense, fine-grained, dark green volcanic rock. Small amounts of pyrite are sprinkled throughout the hand specimen.

Microscopic Description: Dense, fine-grained aggregate of much altered minerals. Many minerals were ferromagnesian. Remnants of pyroxenes and hornblendes still recognizable. Fresh pyrite and calcite are present in small amounts. Feldspars mainly plagioclase, most altered beyond recognition.

Rock Name: Andesite.

Specimen: A43-110A

Location: From creek at Camp Kavalrok. Float specimen.

Megascopic Description: Medium fine-grained mixture of evenly distributed feldspars and pyroxenes or hornblendes with occasional irregular blobs of pyrite.

Microscopic Description: Sub to euhedral laths of plagioclase and hornblende crystals make up almost the entire slide. The feldspars are fresh; some of the hornblendes are altered to chlorite. A few titanite and pyrite particles are present. Feldspars are calcic to soda calcic.

Minerals in Order of Abundance:

- | | |
|----------------|-------------|
| 1. Plagioclase | 4. Pyrite |
| 2. Hornblende | 5. Titanite |
| 3. Chlorite | |

Rock Name: Diorite.

Wolframite - Topaz Lode

Specimen: A43-111A

Location: From dump at Wolframite-Topaz lode, Lost River.

Megascopic Description: Fine-grained gray limestone through which small, white needles of tremolite are disseminated.

Microscopic Description: Very fine crystals of calcite with long needles of tremolite scattered sparsely throughout comprise most of the slide. A small proportion of the calcite is in larger crystals and some veinlets of large crystals are present.

Minerals in Order of Abundance:

- | | | |
|------------|--------------|-----------------|
| 1. Calcite | 2. Tremolite | 3. Iron oxides. |
|------------|--------------|-----------------|

Rock Name: Partially metamorphosed limestone

Specimen: A43-111A₂

Location: Ore from dump at wolframite-topaz lode, Lost River.

Megascopic Description: Gangue is white radial topaz in coarse to fine crystals. Hand specimen is speckled with shiny, brown-black particles of stannite.

Microscopic Description: The gangue is almost all radial colorless topaz, sometimes altered to sericite. The topaz is arranged in radial aggregates; the periphery of some of these radial crystal groups is bordered by small amounts of fluorite and opaque ore minerals.

Minerals in Order of Abundance:

- | | |
|-------------|----------------------------|
| 1. Topaz | 3. Stannite and wolframite |
| 2. Fluorite | 4. Sericite. |

Rock Name: Fissure filling of topaz-wolframite-stannite-galena fluorite and stibnite.

- - -

Specimen: A43-111A₃

Location: Ore from wolframite-topaz lode, Lost River.

Megascopic Description: The gangue is white topaz in coarse to fine needle-like crystals arranged in radial groups. The hand specimen contains much galena and stannite and unaltered limestone inclusions. The specimen is more altered than 111A₂. Some of the topaz is in veinlets.

Microscopic Description: The gangue is almost all radial topaz, colorless in section, and showing considerable alteration to sericite. One of the ore minerals, probably wolframite, is sometimes arranged in acicular crystals and sometimes is massive. It also fills spaces between fluorite crystals and is scattered through the crystals in needle-like forms. The ore minerals are later than most topaz and fluorite.

Minerals in Order of Abundance: -

- | | |
|---------------------------------|-------------|
| 1. Topaz | 4. Fluorite |
| 2. Galena, stannite, wolframite | 5. Calcite |
| 3. Sericite | |

Rock Name: Tungsten-tin ore - fissure filling of topaz-wolframite, stannite, galena, etc.

Specimen: A43-111A₄

Location: Ore from wolframite-topaz lode, Lost River.

Megascopeic Description: Similar to 111A₂ and 111A₃. Ore minerals more common.

Microscopic Description: Similar to 111A₂ and A₃. The topaz is more cloudy from alteration products. Less sericite is present. Larger amounts of opaque ore minerals are present.

Rock Name: Fissure filling of topaz, galena, wolframite, stannite, stibnite and fluorite. Ore of tin, tungsten, lead and silver.

- - -

Specimen: A43-113A

Location: Wolframite-topaz lode; altered limestone borst taken from vein.

Megascopeic Description: Fine-grained purplish gray rock with texture similar to that of limestone bedrock but different color.

Microscopic Description: The ground mass is very fine grained and almost all minerals are altered beyond recognition. Impregnation of the original limestone by fluorite in minute veinlets and in small particles scattered through the slide is the cause of the purplish tinge in the hand specimen. Several topaz veinlets cut across the slide. The borders of these veinlets show alteration of the limestone to a fine grained and almost opaque material.

Small crystals of opaque ore minerals are present in the fluorite veinlets.

Minerals in Order of Abundance:

1. Altered material
2. Fluorite
3. Topaz

Rock Name: Metamorphosed limestone.

Muscovite Deposits, Bendeleben Mountains

Specimen: A43-115A

Location: From dike on nose between Boston and Baker Creeks, tributaries to head of Fish River.

Megascopeic Description: Pegmatite composed mainly of glassy quartz and large muscovite flakes with minor amounts of red garnets.

Microscopic Description: Slide consists mainly of large, anhedral quartz crystals with subhedral muscovite, in very large crystals. A few large euhedral crystals of garnet and apatite are also present. Feldspars are altered beyond recognition. A clear, colorless mineral present in occasional large crystals was not identified.

Minerals in Order of Abundance:

- | | |
|--------------|-----------|
| 1. Quartz | 4. Garnet |
| 2. Muscovite | 5. ? |
| 3. Feldspars | |

Rock Name: Mica pegmatite.

- - -

Specimen: A43-116A

Location: Moses muscovite deposit, Bendeleben Mountains.

Megascopeic Description: Fine-grained dike rock with a marked parallelism of structure evident in the hand specimen. Quartz, feldspars, black tourmaline, red garnets and muscovite recognizable megascopically.

Microscopic Description: In the section anhedral quartz, subhedral plagioclases somewhat altered, and muscovite are most common. Blue and brown tourmalines are also present in quantity. A small amount of biotite was observed. Cloudy alteration products have formed in small irregular fissures cutting the section.

Minerals in Order of Abundance:

- | | |
|--------------|---------------|
| 1. Quartz | 4. Tourmaline |
| 2. Feldspars | 5. Biotite. |
| 3. Muscovite | |

Rock Name: Gneissic dike rock.

Specimen: A43-116B

Location: Moses muscovite deposit, Bendeleben Mountains.

Megascope Description: Coarse grained pegmatite. Hand specimen composed mainly of quartz, feldspar, muscovite, black tourmaline and red garnets.

Microscopic Description: In the section anhedral quartz and large subhedral muscovite, plagioclase and blue to brown tourmaline crystals are common. The feldspars show considerable alteration. A colorless needle-like mineral (tremolite) and a small amount of biotite are present. Garnets, common in the hand specimen, were not visible in the section. Albite is the most abundant feldspar. There is evidence of replacement in the relation of the muscovite flakes to the enclosing quartz.

Minerals in Order of Abundance:

- | | |
|----------------|--------------|
| 1. Muscovite | 5. Tremolite |
| 2. Quartz | 6. Biotite |
| 3. Plagioclase | 7. ? |
| 4. Tourmaline | |

Rock Name: Metamorphic mica pegmatite.

- - -

Specimen: A43-116B

Location: Moses muscovite deposit, Bendeleben Mountains

Megascope Description: Small book of muscovite flakes. The only impurity visible to the eye is a small amount of quartz or feldspar between flakes.

Microscopic Description: The section is cut at right angles to the flakes in the muscovite book. Over 90% of the section is muscovite. Alteration products of feldspars are present. A large garnet crystal enclosed in the book bends and breaks the flakes surrounding it. Garnets are pink and euhedral; quartz is present in flat flakes between the sheets of mica.

Rock Name: Muscovite book from a pegmatite dike.

Kobuk River

Specimen: A43-202A

Location: Asbestos Mountain, Dahl Creek, tributary to the
Kobuk River.

Megascopeic Description: Over half of the hand specimen is white magnesite arranged in narrow parallel columns. The magnesite grades into high-grade chrysotile asbestos with columns of magnesite between and parallel to the fibers, and then to a mass of chrysotile with the parallel arrangement maintained throughout the specimen. A few flakes of green serpentine are present. The chrysotile is brown.

Microscopic Description: Three slides were prepared. One is cut across the structure, one parallel to it, and one inclined. The section out across the columns of magnesite is almost all magnesite and serpentine. In the section out parallel to the structure the columns of magnesite are clearly visible. Fibers of chrysotile arranged parallel to and between the magnesite columns are common. Serpentine (antigorite, etc.), magnetite, and pyrite comprise less than 5% of the minerals in the section.

Minerals in Order of Abundance:

- | | |
|---------------|--------------|
| 1. Magnesite | 4. Magnetite |
| 2. Chrysotile | 5. Pyrite |
| 3. Serpentine | |

Rock Name: Ore of chrysotile asbestos.

- - -

Specimen: A43-202A₂

Location and description: See A43-202A

- - -

Specimen: A43-204C

Location: From basic intrusive outcrop on Asbestos Mt., Dahl Creek, tributary to Kobuk River

Megascopeic Description: Massive drak-green rock which appears to be a completely serpentized phase of the asbestos-bearing, basic, intrusive rocks of Dahl Creek. A few small particles of magnetite are visible in the hand specimen.

Microscopic Description: Completely serpentized rock. The original minerals are not recognizable. Some small magnetite particles are present in the section.

Rock Name: Serpentine

- - -

Specimen: A43-206A

Location: Nephrite float from lower end of Shungnak River canyon.

Megascopeic Description: Light-green, fine-grained, tough, splintery, jade-like material. Hard, sub-translucent low grade variety of jade.

Microscopic Description: In thin section the entire field is colorless and uniform. A few small, wavy seams, dusted with iron oxide minerals are visible. Under crossed nicols the nephrite appears as a mass of intricately interlaced needles and fibers with low extinction angles.

Rock Name: Nephrite.

- - -

Specimen: A43-208B

Location: From basic intrusive on Jade Mt., head of Jade Creek, tributary to the Kobuk River.

Megascopeic Description: Heavy, dense, green-black, almost completely serpentized rock. Some magnetite is visible and occasional needles of a green (amphibole?) mineral can be seen.

Microscopic Description: In the thin section a mass of olivine, fissured and altered to serpentine along the fissures, comprises almost the entire slide. The serpentization has left a great number of islands of olivine, separated by serpentine-filled fissures. Some magnetite dust is visible along the fissures. Picotite and magnetite particles are scattered throughout the section.

Minerals in Order of Abundance:

- | | |
|---------------|--------------------|
| 1. Olivine | 3. Magnetite |
| 2. Serpentine | 4. Picotite |
| | 5. <i>Pyroxene</i> |

Rock Name: Partially serpentized peridotite.

Specimen: A43-208B₂

Location: Jade-like material from summit of Jade Mt., head of Jade Creek, tributary to Kobuk River.

Megascopeic Description: Somewhat schistose, flaky, gray-green, jade-like serpentine.

Microscopic Description: See 206A. Material is ~~serpentine~~ nephrite. It occurs in smaller needles and fibers than in 206A.

Rock Name: ~~serpentine~~. Nephrite

- - -

Specimen: A43-208B₃

Location: Jade Mt., head of Jade Creek, tributary to the Kobuk River.

Megascopeic Description: Light grey-green ^{nephrite} serpentine with a seam of green-gray, cross-fibre asbestos about 3/4 inch wide cutting through the hand specimen.

Microscopic Description: The section shows a mass of very fine particles of ~~serpentine~~ ^{nephrite} cut by a wide seam of cross-fibre asbestos. The boundaries between the more or less featureless ^{nephrite} ~~serpentine~~ and the asbestos are distinct. The asbestos has the indices of amphibole (with the parallel extinction of chrysotile.) It probably is an amphibole asbestos.

Rock Name: ~~serpentine and cross-fiber tremolite~~. Nephrite and ~~a~~ cross-fiber tremolite of considerable tenacity

Specimen: A43-208X

Location: Float from Jade Creek, tributary to the Kobuk River.

Megascopeic Description: The hand specimen is made up of a dark green serpentine alteration of a basic rock in one half and a light green serpentine in the other. The contact between the two types of serpentine is definite. Small veinlets of chrysotile asbestos roughly parallel the contact in the light green serpentine giving it a banded effect.

Microscopic Description: In the section the darker half of the specimen shows as a mass of serpentine and opaque alteration products with some iron oxide minerals. The lighter green portion is also serpentine; fewer oxidation products and iron oxides are present. Occasional narrow (less than 5 mm) seams

of cross-fiber chrysotile asbestos can be seen in the slide.

Rock Name: Serpentine and asbestos. (chrysotile)

- - -

Specimen: A43-209B

Location: Extreme head of Hunt River, tributary to the Kobuk near Kiana.

Megascopic Description: Fresh, fine-grained, greenish-gray rock. The groundmass is composed mainly of white feldspars with disseminated green pyroxenes or hornblendes. Pyrite and pyrrhotite crystals up to 5 mm. in diameter are scattered through the rock. Some fine and some very coarse purple fluorite was observed in the specimens.

Microscopic Description: In the section the rock appears as an unoriented mass of small anhedral crystals of plagioclase with some green and brown biotite, chlorite, and a little calcite. The feldspars are fresh and there are occasional examples of perthitic intergrowths. A few large pyrite and titanite crystals and possibly some ilmenite are present. The feldspars are mainly albite with other soda-calcic feldspars present. The order of crystallization is normal except in the case of fluorite.

Minerals in Order of Abundance:

- | | |
|----------------|--------------------------------------|
| 1. Plagioclase | 5. Hornblende |
| 2. Biotite | 6. Magnetite, ilmenite and leucoxene |
| 3. Chlorite | 7. Calcite |
| 4. Pyrite | 8. Titanite |

Texture: Hypidiomorphic

Rock Name: Probably hydrothermally altered dike rock or contact metamorphosed phase of an igneous intrusive body.

Kiwalik River

Specimen: A43-210A

Location: From placer cut of Henry M. Xavier, 11 miles above the mouth of Gold Run Creek, tributary to Kiwalik River.

Megascopeic Description: The hand specimen is made up mainly of large bladed, kyanite crystals; most are about 1/2 inch wide and several inches long. The kyanite crystals are streaked with blue dashes down the centers and parallel to the length. White feldspars and smoky quartz are common. Some muscovite is also present and very small particles of corundum (?) were also observed. Bordering the kyanite ore is a graphitic mica schist.

Microscopic Description: Clear, bladed, kyanite comprises most of the section. Some large particles of quartz and feldspars are also present. A few areas in the slide contain opaque alteration products of feldspars and probably of other minerals.

Rock Name: Kyanite ore in crystalline schist.

Snake River

Specimen: A43-218A

Location: Fresh bedrock from dump of old 32' shaft sunk on the U. S. S. R. & M. scheelite property, Rock Creek, tributary to Snake River.

Megascopeic Description: Gray, fine-grained, quartz-mica schist, highly silicified and mineralized with sulfides. Arsenopyrite, pyrite, galena and sphalerite are present. Some scheelite was observed with the ultra-violet lamp.

Microscopic Description: A fine-grained mass of calcite, sericite, and muscovite, feldspars (some much altered), quartz and euhedral sulfides make up the slide. Sericite appears to have replaced much of the calcite.

Minerals in Order of Abundance:

- | | |
|-------------------------|-------------|
| 1. Calcite | 4. Quartz |
| 2. Muscovite (sericite) | 5. Sulfides |
| 3. Feldspars | |

Rock Name: Mineralized calcareous schist.

Estel Anderson