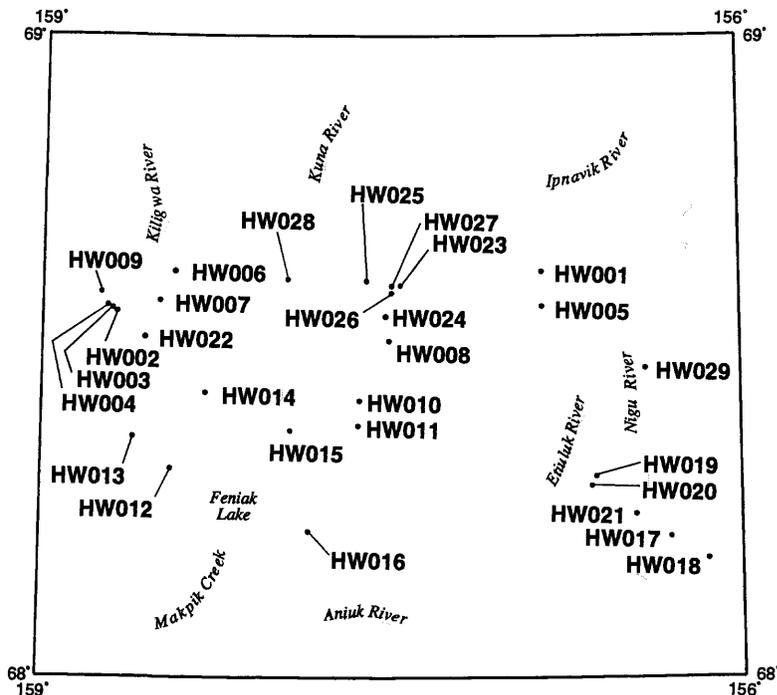


## Howard Pass quadrangle

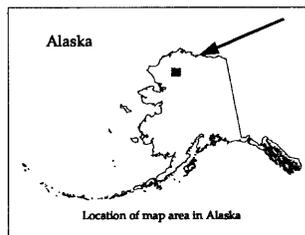
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences throughout Alaska.



*Distribution of mineral occurrences in the Howard Pass 1:250,000-scale quadrangle, north central Alaska*

This and related reports are accessible through the USGS World Wide Web site <http://www-mrs-ak.wr.usgs.gov/ardf>. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to the author(s) of this compilation:

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*This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.*



**Site: Unnamed****Type:** Occurrence**ARDF no.** HW001**Latitude:** 68.63**Quadrangle:** HW C-2**Longitude:** 156.85**Location description and accuracy:**

Location plotted is from p. 16A of Cobb and others (1981), in T9S,R21W; west of Hardway Creek and about 2.5 mi (4 km) due south of hill 1840, near Battery Lake; located to within 1 mi (1.6 km).

**Commodities:****Main:** Cu**Other:****Ore minerals:** Chalcopyrite**Gangue minerals:****Geologic description:**

Chalcopyrite blebs in Triassic limestone and chert adjacent to a small mafic sill or dike. (I.L. Tailleux, written communication, 1968).

**Alteration:****Workings/Exploration:****Age:****Deposit model:**

Lode; disseminated

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981

**Primary reference:** Cobb and others, 1981**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt**Reporter affiliation:** USGS**Last report date:** 11/2/92

**Site: Drenchwater--East****Type:** Prospect**ARDF no.** HW002**Latitude:** 68.57**Quadrangle:** HW C-5**Longitude:** 158.68**Location description and accuracy:**

Location plotted is site of samples NK13k and NK14b of Nokleberg and Winkler (1982, Pl. 2) and locality 65 of Jansons (1982, p. 17), in T10S, R29W; about 0.25 mi (0.4 km) west of False Wager Creek from a point about 2.25 mi (3.6 km) upstream from its confluence with Drenchwater Creek; located to within 2000 ft (610 m).

**Commodities:****Main:** Pb, Zn**Other:** Ag, Ba**Ore minerals:** Galena, sphalerite**Gangue minerals:** Fluorite, quartz, pyrite**Geologic description:**

Apparently stratiform deposit of disseminated fine-grained galena, sphalerite, and pyrite, minor barite, and rare fluorite in black chert, and siliceous shale of the Mississippian to Lower Pennsylvanian(?) Kuna Formation of the Lisburne group. Sporadic occurrences of sphalerite and galena occur in a zone that extends about 1.25 mi (2 km) west-northwest from this locality parallel to the strike of bedding. Main discovery rubblecrop is semi-massive sulfide with quartz gangue. Sulfides probably syngenetic. Interbedded felsic to intermediate(?) composition volcanic rocks lie north of mineralized zone; stratigraphic top not known so Pb-Zn mineralization may either underlie or overlie the volcanic section. Some sulfides also present as fracture fillings and in boxwork silica. Area imbricated by thrust faults of various displacements (Nokleberg and Winkler, 1982).

**Alteration:**

Silicification of minor carbonate layers in shale may be diagenetic.

**Workings/Exploration:**

Samples contain >10,000 ppm Zn, 1000 ppm Pb, 700 ppm Ba, and 20 ppm Ag (Nokleberg and Winkler, 1982, p. 16).

**Age:**

K-Ar ages of 319±10 and 330±17 Ma were obtained from biotite from a volcanic interbed within the mineralized belt; a Pb-isotope model age of 200 Ma was obtained from galena.

**Deposit model:**

Lode; sediment-hosted Pb-Zn

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31a

**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

**References:**

Nokleberg and Winkler, 1982; Jansons, 1982; Jansons and Baggs, 1980; Nokleberg and Winkler, 1978, OFR 78-70C; Nokleberg and Winkler, 1978, C772-B; Churkin and others, 1978; Mayfield and others, 1979

**Primary reference:** Nokleberg and Winkler, 1982

**Reporter:** M.T. Powers, D.F. Huber; J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

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**Site: Drenchwater--West****Type:** Prospect**ARDF no.** HW003**Latitude:** 68.575**Quadrangle:** HW C-5**Longitude:** 158.7**Location description and accuracy:**

Location plotted is area of samples NK4b,4d; NK13d-g; and MD116 of Nokleberg and Winkler (1982, Pl. 2); in T10S, R29W; about 0.5 mi (0.8 km) east of Drenchwater Creek and 3 mi (4.8 km) upstream from confluence of False Wager Creek; within 2000 ft (610 m).

**Commodities:****Main:** Pb, Zn**Other:****Ore minerals:** Galena, sphalerite**Gangue minerals:** Quartz**Geologic description:**

Sulfides occur as disseminated grains, fracture fillings, and in boxwork quartz in black chert and siliceous shale of Mississippian to Lower Pennsylvanian(?) Kuna Formation of the Lisburne Group; an interbed of felsic to intermediate(?) volcanic rocks occurs nearby. These sulfides are about midway in a west-northwest-trending zone of sporadic occurrences that extends about 1.25 mi (2 km) parallel to the strike of bedding. The sulfides are probably syngenetic.

**Alteration:****Workings/Exploration:**

Samples contain as much as >10,000 ppm Zn, 20,000 ppm Pb, 1500 ppm Ba, and 150 ppm Ag (Nokleberg and Winkler, 1982, p. 16).

**Age:**

K-Ar ages of 319±10 and 330±17 Ma were obtained from biotite from a volcanic interbed within the mineralized belt; a Pb-isotope model age of 200 Ma was obtained from galena.

**Deposit model:**

Lode; sediment-hosted Pb-Zn

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31a

**Production:** No**Status:** Not determined**Production notes:****Reserves:****Additional comments:****References:**

Nokleberg and Winkler, 1982; Jansons, 1982; Jansons and Baggs, 1980; Nokleberg and Winkler, 1978, OFR 78-70C; Nokleberg and Winkler, 1978, C772-B; Churkin and others, 1978; Mayfield and others, 1979

**Primary reference:** Nokleberg and Winkler, 1982

**Reporter:** J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

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**Site: Drenchwater Creek****Type:** Prospect**ARDF no.** HW004**Latitude:** 68.579**Quadrangle:** HW C-5**Longitude:** 158.721**Location description and accuracy:**

Location plotted is in center of area containing samples 30, 60-61 of Jansons (1982, p. 17) and Jansons and Baggs (1980, p. 33), and samples WK109, WK112, and WK116 of Nokleberg and Winkler (1982, Pl. 2); in T10S, R29W; along west bank of Drenchwater Creek about 3.5 mi (5.6 km) upstream from the confluence of False Wager Creek; within 2000 ft (610 m).

**Commodities:****Main:** Pb, Zn**Other:** Ag, Ba**Ore minerals:** Galena, sphalerite**Gangue minerals:** Pyrite, quartz**Geologic description:**

Sulfides occur as disseminated grains, fracture fillings, and in boxwork quartz in black chert and siliceous shale of Mississippian to Lower Pennsylvanian(?) Kuna Formation of Lisburne Group; felsic to intermediate(?) volcanic rocks are interbedded in the sedimentary section. The sulfides are at the west end of a west-northwest-trending zone of sporadic occurrences that extends about 1.25 mi (2 km) parallel to the strike of bedding and complex structural imbrication. Sulfides probably syngenetic.

**Alteration:****Workings/Exploration:**

Some samples contain up to 23% Zn, 5.1% ppm Pb, 1150 ppm Cu, 5000 ppm Ba, and 15 ppm Ag (Jansons, 1982, p. 22-28; Jansons and Baggs, 1980, p. 40-46).

**Age:**

K-Ar ages of 319±10 and 330±17 Ma were obtained from biotite from a volcanic interbed within the mineralized belt; a Pb-isotope model age of 200 Ma was obtained from galena.

**Deposit model:**

Lode; sediment-hosted Pb-Zn

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31a

**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

**References:**

Nokleberg and Winkler, 1982; Jansons, 1982; Jansons and Baggs, 1980; Nokleberg and Winkler, 1978, OFR 78-70C; Nokleberg and Winkler, 1978, C772-B; Churkin and others, 1978; Mayfield and others, 1979

**Primary reference:** Nokleberg and Winkler, 1982

**Reporter:** J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Lisburne Ridge****Type:** Occurrence**ARDF no.** HW005**Latitude:** 68.633**Quadrangle:** HW C-2**Longitude:** 156.733**Location description and accuracy:**

Location plotted is locality 42 (sample 50ATr61) from original 1950 field notes and maps of Tailleir and cited by Patton and Matzko (1959, p. 12), in T9S,R21W; at east end of westernmost Lisburne ridge, just west of Blankenship Creek; within 1000 ft (305 m).

**Commodities:****Main:** P**Other:** V**Ore minerals:** Phosphorite**Gangue minerals:****Geologic description:**

Sample from an 8 ft. zone of rubble of black chert, black paper shale, black shaly dolomite, and oolitic phosphate rocks in the Carboniferous Lisburne Group; there probably are 2 horizons (each about 6 in. thick) of phosphate rock (Patton and Matzko, 1959, p. 11-12). Stratigraphic position in Lisburne Group uncertain.

**Alteration:**

Large dolomite rhombs replace phosphatic pellets.

**Workings/Exploration:**

Sample contained 24.8% P<sub>2</sub>O<sub>5</sub> and 0.17% V<sub>2</sub>O<sub>5</sub> (Patton and Matzko, 1959, p. 11).

**Age:**

Carboniferous

**Deposit model:**

Lode; phosphorite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

34c

**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence # 0020200004 (USBM, 1995)

**References:**

Cobb and others, 1981; Patton and Matzko, 1959

**Primary reference:** Patton and Matzko, 1959**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Kiligwa River--Barite****Type:** Occurrence**ARDF no.** HW006**Latitude:** 68.63**Quadrangle:** HW C-5**Longitude:** 158.43**Location description and accuracy:**

Location plotted is from fig. 3 of Churkin and others (1978), in T9S, R28W; on north bank of major eastern tributary of Kiligwa River about 1 mi (1.6 km) upstream from their confluence and about 2 mi (3.2 km) west-northwest of the The Cockscomb; located to within 1 mi (1.6 km).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:****Geologic description:**

Lens of nearly pure barite 1 m thick and at least 10 m long parallel to bedding in shale of the Pennsylvanian-Permian Siksikpuk fm. (Cobb and others, 1981, p. A15).

**Alteration:****Workings/Exploration:****Age:**

Pennsylvanian-Permian

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981; Churkin and others, 1978

**Primary reference:** Cobb and others, 1981; Churkin and others, 1978**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt**Reporter affiliation:** USGS**Last report date:** 11/2/92

**Site: Kiligwa River--Sulfides****Type:** Occurrence**ARDF no.** HW007**Latitude:** 68.59**Quadrangle:** HW C-5**Longitude:** 158.5**Location description and accuracy:**

Location plotted is center of localities 36-42 of Jansons and Baggs (1980, p. 33), in T10S, R28W; about 0.5 mi (0.8 km) upstream on north side of minor tributary that joins Kiligwa River 2.5 mi (4 km) south of the confluence of Twistem Creek; located to within 1 mi (1.6 km).

**Commodities:****Main:** Base metals?**Other:****Ore minerals:****Gangue minerals:** Hematite, pyrite**Geologic description:**

Hematite (red)- and jarosite (yellow)-stained weathered pyritiferous cherts similar to those at Drenchwater Creek.

**Alteration:****Workings/Exploration:**

Rock chip samples taken by US Bureau of Mines (Jansons and Baggs, 1980, p.50-2) showed no anomalous values of Cu, Pb, or Zn.

**Age:****Deposit model:****Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Jansons and Baggs, 1980

**Primary reference:** Jansons and Baggs, 1980**Reporter:** J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Mt. Bupto****Type:** Occurrence**ARDF no.** HW008**Latitude:** 68.53**Quadrangle:** HW C-3**Longitude:** 157.51**Location description and accuracy:**

Location plotted is locality 110 (sample 50ATr160) from original 1950 field notes and maps of Tailleir and cited in Patton and Matzko (1959, p. 12), in T11S, R24W; on north flank of Mt. Bupto about 0.5 mi (0.8 km) north of summit; located to within 1 mi (1.6 km).

**Commodities:****Main:** P**Other:** U**Ore minerals:** Phosphorite, unknown Uranium-bearing mineral**Gangue minerals:****Geologic description:**

Phosphatic mudstone in dark-colored, dominantly calcareous rocks of the Carboniferous Lisburne Group, probably from a stratigraphic level correlative with the black chert and shale member of the Alapah Limestone. Nearby dolostone talus derived from Mt. Bupto has purple and green fluorite and coarsely crystalline calcite fracture coatings.

**Alteration:****Workings/Exploration:**

Mudstone sample contained 13.7% P<sub>2</sub>O<sub>5</sub> and .004% U (Patton and Matzko, 1959, p. 11).

**Age:**

Carboniferous

**Deposit model:**

Lode; phosphorite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

34c

**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence #0020200005 (USBM, 1995)

**References:**

Cobb and others, 1981; Patton and Matzko, 1959; Jansons and Baggs, 1980; Tailleir and others, 1976

**Primary reference:** Patton and Matzko, 1959**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Rolling Pin Creek****Type:** Occurrence**ARDF no.** HW009**Latitude:** 68.6**Quadrangle:** HW C-5**Longitude:** 158.75**Location description and accuracy:**

Location plotted is locality shown in Cobb and others (1981, p. A15) and Churkin and others (1978, Pl. 2), in T10S, R29W; on west side of upper Rolling Pin Creek about 2.2 mi (3.5 km) south-southwest of hill 2802; located to within 1 mi (1.6 km).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:****Geologic description:**

Lag deposits of small barite nodules and local thin barite seams in intensely folded chert of the Pennsylvanian-Permian Siksikpuuk Formation (Cobb and others, 1981, p. A15).

**Alteration:****Workings/Exploration:****Age:**

Pennsylvanian-Permian

**Deposit model:**

Lode; disseminated and nodular barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Cobb and others, 1981; Churkin and others, 1978; Jansons and Baggs, 1980

**Primary reference:** Cobb and others, 1981**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt**Reporter affiliation:** USGS**Last report date:** 11/2/92

**Site: Safari Creek North****Type:** Occurrence**ARDF no.** HW010**Latitude:** 68.43**Quadrangle:** HW B-3**Longitude:** 157.63**Location description and accuracy:**

Location plotted is locality shown in Cobb and others (1981, p. A15), in T12S, R25W; on a small tributary about 1 mi (1.6 km) upstream (east) of its confluence with Safari Creek and 2 mi (3.2 km) south-southeast of hill 2964; located to within 1 mi (1.6 km).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:****Geologic description:**

Barite occurs as sparse but rich concentrations of nodules weathered out of the Pennsylvanian-Permian Siksikpuk Formation in area of orange and red, iron-stained soil (Cobb and others, 1981, p. A15).

**Alteration:****Workings/Exploration:****Age:**

Pennsylvanian-Permian

**Deposit model:**

Lode; disseminated and nodular barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

Also, see MAS/MILS Sequence # 0020200021 for site with name 'Safari Creek', but which is located 10 mi (16 km) north of this locality (USBM, 1995)

**References:**

Cobb and others, 1981; Jansons and Baggs, 1980

**Primary reference:** Cobb and others, 1981**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt

**Reporter affiliation:** USGS

**Last report date:** 11/2/92

**Site: Safari Creek South****Type:** Occurrence**ARDF no.** HW011**Latitude:** 68.4**Quadrangle:** HW B-3**Longitude:** 157.64**Location description and accuracy:**

Location plotted is approximated from Churkin and others (1978, Fig. 3), in T12S, R25W; about 0.5 mi (0.8 km) east of the east fork of Safari Creek, near hill 2723; located to within 1 mi (1.6 km).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:****Geologic description:**

Barite associated with pyritiferous chert and black shale of Mississippian-Pennsylvanian Kuna Formation in area of complex, close-spaced imbricate thrusting.

**Alteration:****Workings/Exploration:**

Maximum values for samples 68-75 of Jansons and Baggs (1980, p. 63) are 45 ppm Cu, 130 ppm Pb, and 255 ppm Zn, which are not significantly anomalous for these elements.

**Age:**

Mississippian-Pennsylvanian

**Deposit model:**

Lode?

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Jansons and Baggs, 1980; Churkin and others, 1978; Cobb and others, 1981

**Primary reference:** Jansons and Baggs, 1980**Reporter:** J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Siniktanneyak Mtn.****Type:** Occurrence**ARDF no.** HW012**Latitude:** 68.33**Quadrangle:** HW B-5**Longitude:** 158.45**Location description and accuracy:**

Location plotted is center of chromite zone shown by Jansons and Baggs (1980, p. 26), in T34N, R2E; in saddle on ridge line about 1 mi (1.6 km) east of Siniktanneyak Mountain summit; located to within 1 mi (1.6 km).

**Commodities:****Main:** Cr**Other:** Ag**Ore minerals:** Chromite**Gangue minerals:****Geologic description:**

Peridotite in Jurassic? mafic-ultramafic complex contains widespread disseminated chromite and small chromite-bearing lenses, the largest being 8 in. thick and 12 ft. long (Jansons and Baggs, 1980, p. 65-9).

**Alteration:****Workings/Exploration:****Age:**

Jurassic?

**Deposit model:**

Lode; podiform chromite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

8a

**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence #0020200006 (USBM, 1995)

**References:**

Jansons and Baggs, 1980; Cobb and others, 1981

**Primary reference:** Jansons and Baggs, 1980**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt; J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Siniktanneyak--Northwest****Type:** Occurrence**ARDF no.** HW013**Latitude:** 68.38**Quadrangle:** HW B-5**Longitude:** 158.61**Location description and accuracy:**

Location plotted is 'NW' locality of Jansons and Baggs (1980, p. 26), in T12S, R29W; along main tributary valley near northwest margin of Siniktanneyak Mountain about 1 mi (1.6 km) upstream from its confluence with Uivaksak Creek; located to within 1 mi (1.6 km).

**Commodities:****Main:** Cu, Zn**Other:****Ore minerals:****Gangue minerals:** Pyrite**Geologic description:**

The occurrence is in a N60W-trending, 200 ft (61 m) wide zone of red-weathering pyritiferous felsic plutonic rock associated with a Jurassic? mafic/ultramafic complex (Jansons and Baggs, 1980, p. 66).

**Alteration:****Workings/Exploration:**

Samples contain up to 160 ppm Cu and 225 ppm Zn (Jansons and Baggs, 1980, p. 67).

**Age:**

Jurassic?

**Deposit model:**

Lode

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Jansons and Baggs, 1980

**Primary reference:** Jansons and Baggs, 1980**Reporter:** J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Siniktanneyak--East****Type:** Occurrence**ARDF no.** HW014**Latitude:** 68.34**Quadrangle:** HW B-4**Longitude:** 158.3**Location description and accuracy:**

Location plotted is locality 5 of Nelson and others (1979, p. B15), in T34N, R2E; on nose of prominent ridge between two major tributaries of Makpik Creek draining eastern part of Siniktanneyak massif; located to within 1 mi (1.6 km).

**Commodities:****Main:** Ag, Cu**Other:** Ba**Ore minerals:****Gangue minerals:****Geologic description:**

The occurrence is in a 6 ft (1.8 m) wide, orange-weathering, pyritiferous feldspathic dike? in pillow basalt that structurally underlies a Jurassic? mafic/ultramafic complex.

**Alteration:****Workings/Exploration:**

Mineralized sample contains 20 ppm Ag, 5000 ppm Ba, and 300 ppm Cu (Nelson and others, 1979, p. B14-16).

**Age:****Deposit model:**

Lode

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Nelson and others, 1979; Cobb and others, 1981

**Primary reference:** Nelson and others, 1979**Reporter:** J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Story Creek****Type:** Occurrence**ARDF no.** HW015**Latitude:** 68.387**Quadrangle:** HW B-4**Longitude:** 157.932**Location description and accuracy:**

Location plotted is approximate center of cluster of localities shown in Ellersieck and others (1982, p. 35) and localities 254, 256, 261, 278-9, 615 of Jansons and Parke (1981, p. 159); and is locality HP57 of Meyer and Kurtak (1992, fig. 2); in T12S, R26W; on topographic bench on south side of small tributary of Story Creek, about 2.5 mi (4 km) west-northwest of hill 4630 and 1.5 mi (2.4 km) north of Noatak Preserve boundary; located to within 2000 ft (610 m).

**Commodities:****Main:** Pb, Zn**Other:** Ag, Au, Cu**Ore minerals:** Galena, sphalerite**Gangue minerals:****Geologic description:**

The host rock is tightly folded siltstone and silty shale containing sandstone and minor dolomite and coal interbeds, and represents a stratigraphic interval at the top of the Stuver Member of the Upper Devonian Kanayut Conglomerate and the base of the Lower Mississippian Kayak Shale within a belt of complex regional thrusting. The mineralized zone is 30-50 ft wide and extends at least 1.8 mi. on a N65E trend that crosses folded strata and may be controlled by post-folding fracturing. Three types of mineralization occur: (1) banded massive sphalerite and galena; (2) brecciated sphalerite with galena matrix; and (3) shale-chip breccia with overgrowths of quartz on the chips and galena and sphalerite in the interstices (Ellersieck and others, 1982, p. 35).

**Alteration:****Workings/Exploration:**

Analyses indicate potential for Ag, Au, and Cu, as well as Pb and Zn (Bundtzen and others, 1995, p. 55). A grab sample of high-grade banded sulfide contains 0.43% Cu, 34% Pb, 28.8% Zn, 1.2% Au, and 940 ppm Ag; other composite or grab samples from the same mineralized zone contain up to 15.5% Pb, 50% Zn, and 500 ppm Ag (Ellersieck and others, 1982, p. 35). Geochemical rock and soil sampling was done on 4700 ft. of gridline by the U.S. Bureau of Mines in 1991, and a high-grade bulk sample contained 5.37% Zn, 2.11% Pb, and 0.014% Cu (Meyer and Kurtak, 1992, p. 54-8).

**Age:****Deposit model:**

Lode, sediment-hosted vein and breccia vein Pb-Zn-Ag.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:**

**Reserves:**

**Additional comments:**

**References:**

Ellersieck and others, 1982; Mayfield and others, 1979; Cobb and others, 1981;  
Jansons and Parke, 1981; Jansons, 1982; Meyer and Kurtak, 1992

**Primary reference:** Ellersieck and others, 1982

**Reporter:** M.T. Powers; D.F. Huber; J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

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**Site: Whoopee Creek****Type:** Occurrence**ARDF no.** HW016**Latitude:** 68.23**Quadrangle:** HW A-4**Longitude:** 157.852**Location description and accuracy:**

Location plotted is locality 652 of Jansons and Parke (1981, p. 189), in T33N, R3E; near the head of a small tributary of an unnamed fork of the Aniuk River, 10.5 mi (16.8 km) due east of the south end of Feniak Lake and 1.0 mi (1.6 km) north of hill 2873; located to within 2000 ft (610 m).

**Commodities:****Main:** Pb, Zn**Other:** Ag, Au, Cu**Ore minerals:** Galena, sphalerite**Gangue minerals:** Quartz**Geologic description:**

Sphalerite and galena in brecciated siltstone and shale of volcanic-bearing facies of Lower Mississippian Kayak Formation in structural window below thrust sheet of dominantly Upper Devonian Kanayut Conglomerate. The mineralized zone is about 20 ft wide and has a N65E trend of unknown extent.

**Alteration:****Workings/Exploration:**

Samples collected by the U.S. Bureau of Mines contain up to 0.24%Cu, 44% Pb, 46% Zn, 4.4 ppm Au, 460 ppm Ag, and 3700 ppm Cd (Jansons and Parke , 1981, p. 188).

**Age:****Deposit model:**

Lode; sediment-hosted vein and breccia vein Pb-Zn-Ag

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence #'s 0020200007 and 0020200029 (USBM, 1995)

**References:**

Jansons and Parke, 1981; Ellersieck and others, 1982; Jansons, 1982

**Primary reference:** Jansons and Parke, 1981**Reporter:** J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Koiyaktot Mountain--West****Type:** Occurrence**ARDF no.** HW017**Latitude:** 68.23**Quadrangle:** HW A-1**Longitude:** 156.3**Location description and accuracy:**

Location plotted is approximate center of localities HP83-HP86 of Meyer and Kurtak (1992, fig. 2), in T33N, R11E; on small southwest flowing tributary draining northwest part of Koiyaktot Mountain, 5.5 mi (8.8 km) northwest of peak 4280; located to within 1 mi (1.6 km).

**Commodities:****Main:** Pb, Zn**Other:** Ag**Ore minerals:** Galena, sphalerite**Gangue minerals:** Quartz**Geologic description:**

Float of quartz-cemented sandstone breccia locally contains massive sphalerite cut by quartz and galena veinlets in area of southwest-dipping Upper Devonian Kanayut Sandstone. Four separate small mineralized areas noted over a 0.5 mi (0.8 km) north-south trend; the largest is a 50 ft (15.2 m) x 300 ft (91.4 m) area of rubble and float of banded color-zoned sphalerite and minor galena veins cross-cutting fine-grained sandstone.

**Alteration:****Workings/Exploration:**

High-grade samples contain up to 43.9% Zn, 3.27% Pb and 7.15 oz per ton Ag (Meyer and Kurtak, 1992, p. 46-60).

**Age:****Deposit model:**

Lode; sediment-hosted vein and breccia-vein Pb-Zn-Ag

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence #0020200015 (USBM, 1995)

**References:**

Meyer and Kurtak, 1992; Jansons and Parke, 1981

**Primary reference:** Meyer and Kurtak, 1992**Reporter:** J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Koiyaktot Mountain--East****Type:** Occurrence**ARDF no.** HW018**Latitude:** 68.187**Quadrangle:** HW A-1**Longitude:** 156.147**Location description and accuracy:**

Location plotted is locality HP90 of Meyer and Kurtak (1992, fig. 2), in T32N, R12E; just north of divide in southeastern part of Koiyaktot Mountain on minor northeast draining tributary of Nigu River, about 1 mi (1.6 km) north-northwest of Peak 4280; located to within 2000 ft (610 m).

**Commodities:****Main:** Pb, Zn**Other:** Ag**Ore minerals:** Galena, sphalerite**Gangue minerals:** Quartz**Geologic description:**

This occurrence is a north-south zone of quartz veinlets and quartz-cemented sandstone breccia float and rubble containing locally massive galena and sphalerite; and is located in an incompletely mapped area of folded and thrust sandstone, siltstone, shale, and conglomerate of the Upper Devonian to Lower Mississippian Endicott Group.

**Alteration:****Workings/Exploration:**

A high grade sample contains up to 39.9% Pb, 23.94% Zn, 875 ppm Cu and 53.6 oz per ton Ag; stream sediment samples collected in this area by the U.S. Bureau of Mines are also anomalous in these elements (Meyer and Kurtak, 1992, p. 46-61).

**Age:****Deposit model:**

Lode; sediment-hosted vein and breccia vein Pb-Zn-Ag.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence #0020200014 (USBM, 1995)

**References:**

Meyer and Kurtak, 1992; Jansons and Parke, 1981

**Primary reference:** Meyer and Kurtak, 1992**Reporter:** J.M. Schmidt

**Reporter affiliation:** USGS

**Last report date:** 11/2/92

**Site: Kivliktort Mountain--West****Type:** Occurrence**ARDF no.** HW019**Latitude:** 68.32**Quadrangle:** HW B-2**Longitude:** 156.62**Location description and accuracy:**

Location plotted is locality HP73 of Meyer and Kurtak (1992, fig. 2), in T34N, R10E; in small drainage on east side of low hill about 1 mi (1.6 km) northwest of Kivliktort Mountain front and 3.7 mi (5.9 km) northwest of summit 4500 on Kivliktort Mountain; located to within 1 mi (1.6 km).

**Commodities:****Main:** Cu, Pb, Zn**Other:** Ag**Ore minerals:** Galena, sphalerite**Gangue minerals:** Quartz**Geologic description:**

Sphalerite and minor galena occur as disseminated grains in silicified matrix and as fragments in sandstone breccia, and massive sphalerite occurs as fracture fillings in sandstone of the Shanin Lake member? of the Upper Devonian Kanayut Conglomerate; the breccias may be localized at the base of a thrust sheet over shale and siltstone of the Stuver member of the Kanayut.

**Alteration:****Workings/Exploration:**

Mineralized breccias are scattered over an area 2500 ft (762 m) by 4200 ft (1280 m); a high-grade sample contained up to 31.4% Zn, 0.49% Pb, and 5.9 oz/t Ag (Meyer and Kurtak, 1992, p. 57-72).

**Age:****Deposit model:**

Lode; sediment-hosted vein and breccia vein Pb-Zn-Ag.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence #0020200003 (USBM, 1995)

**References:**

Meyer and Kurtak, 1992; Jansons and Parke, 1981

**Primary reference:** Meyer and Kurtak, 1992**Reporter:** J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: West Kivliktort****Type:** Occurrence**ARDF no.** HW020**Latitude:** 68.3**Quadrangle:** HW B-2**Longitude:** 156.64**Location description and accuracy:**

Location plotted is approximate center of area containing samples 539-44 and 546-7 of Jansons and Parke (1981, p. 139); T34N, R10E; on minor northwest-draining tributary of Etivluk River at northwest end of Kivliktort Mountain about 3.2 mi (5.1 km) northwest of summit 4500; located to within 1 mi (1.6 km).

**Commodities:****Main:** Pb, Zn**Other:** Ag, Au, Ba**Ore minerals:** Barite, galena, sphalerite**Gangue minerals:** Quartz**Geologic description:**

Mineralization occurs in float of quartz-cemented breccia and fracture-fillings in clastic rocks of the Upper Devonian to Lower Mississippian Endicott Group, and may be controlled by thrust contacts within the sequence.

**Alteration:****Workings/Exploration:**

High-grade samples collected by the U.S. Bureau of Mines contain up to 30.5% Zn, 0.5% Pb, and 23% Ba; stream sediment samples contain up to 1700 ppm Zn and 200 ppm Pb (Jansons and Parke, 1981, p. 138-143).

**Age:****Deposit model:**

Lode; sediment-hosted vein and breccia vein Pb-Zn-Ag.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:**

See MAS/MILS Sequence #0020200013 (USBM, 1995)

**References:**

Jansons and Parke, 1981; Jansons, 1982

**Primary reference:** Jansons and Parke, 1981**Reporter:** J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Kivliktort Mountain--East, East Kivliktort****Type:** Occurrence**ARDF no.** HW021**Latitude:** 68.257**Quadrangle:** HW B-1**Longitude:** 156.45**Location description and accuracy:**

Location plotted is locality HP79 of Meyer and Kurtak (1992, fig. 2), in T33N, R10E; near the head of a small, east-flowing tributary of Nigu River at southeast end of Kivliktort Mountain, 2.5 (4 km) southeast of summit 4500; located to within 2000 ft (610 m).

**Commodities:****Main:** Pb, Zn**Other:** Ag, Cu**Ore minerals:** Galena, malachite, sphalerite**Gangue minerals:** Pyrite, quartz**Geologic description:**

Sulfide minerals and malachite occur in quartz veinlets and breccia in sandstone of Upper Devonian Kanayut Conglomerate, possibly at the base of a thrust sheet overriding black, carbonaceous and locally pyritiferous siltstone and shale of the Lower Mississippian Kayak Shale.

**Alteration:****Workings/Exploration:**

Mineralization is confined to a 20 ft (6.1 m) by 50 ft (15.2 m) area; a high-grade sample contained 4.31% Pb, 0.12% Zn, and 2.4 oz/t Ag (Meyer and Kurtak, 1992, p. 46-60).

**Age:****Deposit model:**

Lode; sediment-hosted vein and breccia vein Pb-Zn-Ag.

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992; Jansons and Parke, 1981; Jansons, 1982

**Primary reference:** Meyer and Kurtak, 1992**Reporter:** J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Twistem Creek barite****Type:** Occurrence**ARDF no.** HW022**Latitude:** 68.53**Quadrangle:** HW C-5**Longitude:** 158.56**Location description and accuracy:**

Location plotted is locality HP41 of Meyer and Kurtak (1992, fig. 2), in T10S, R28W; on small tributary west of Twistem Creek about 0.25 mi (0.4 km) upstream from confluence and 1.0 mi (1.6 km) south-southeast of hill 2740; located to within 1 mi (1.6 km).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:****Geologic description:**

Barite probably is interbedded in sequence of intensely folded and imbricated fine-grained siliceous sediments and chert of the Pennsylvanian to Triassic Etivluk Group (unpublished mapping of J.H. Dover).

**Alteration:****Workings/Exploration:**

U.S. Bureau of Mines sample HP41 contains 53.98% Ba, 31 ppm Zn, 2 ppm Mo, 12 ppm As (Meyer and Kurtak, 1992, p. 48-62).

**Age:**

Pennsylvanian-Triassic

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

Meyer and Kurtak, 1992

**Primary reference:** Meyer and Kurtak, 1992**Reporter:** J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 10/30/96

**Site: Longview/Lakeview****Type:** Occurrence**ARDF no.** HW023**Latitude:** 68.612**Quadrangle:** HW C-3**Longitude:** 157.458**Location description and accuracy:**

Location plotted is midway between Longview and Lakeview localities of Kelley and others (1993, fig. 2), in T9S, R24W; on west side of head of Cula Creek about 3.0 mi (4.8 km) southwest of hill 2810; located to within 2000 ft (610 m).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:****Geologic description:**

Two rubble exposures (probably connected under cover) of barite interlayered with rhythmically bedded chert (of the Mississippian Lisburne Group?).

**Alteration:****Workings/Exploration:**

The two deposits may be connected under tundra cover to form one northeast-trending barite body about 5000 ft (1524 m) long.

**Age:**

Mississippian?

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:**

Inferred reserves are about 3,778,000 metric tons for the Lakeview deposit, and 29,494,000 metric tons for the Longview deposit

**Additional comments:**

See MAS/MILS Sequence #'s 0020200019 (which is named 'Abby' but has latitude/longitude coordinates that plot at this locality), 0020200028 ('Lakeview'), and 0020200030 ('Longview') (USBM, 1995)

**References:**

Kelley and others, 1993

**Primary reference:** Kelley and others, 1993**Reporter:** J.M. Schmidt; J.H. Dover

**Reporter affiliation:** USGS

**Last report date:** 9/30/96

**Site: Abby Creek****Type:** Occurrence**ARDF no.** HW024**Latitude:** 68.563**Quadrangle:** HW C-3**Longitude:** 157.522**Location description and accuracy:**

Occurrence is on a small knoll between two minor tributaries in the headwaters of Cutaway Creek, 1.0 mi (1.6 km) north-northeast of hill 3530, in T10S, R24W; located to within 2000 ft (610 m).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:** Calcite**Geologic description:**

Rubby outcrops of a tabular stratiform barite body about 100 ft (30.5 m) long in south-dipping bedded chert of the Mississippian Lisburne Group; in an area of imbricate thrusting.

**Alteration:****Workings/Exploration:****Age:**

Mississippian

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:**

Inferred reserves are about 406,000 metric tons.

**Additional comments:****References:**

Kelley and others, 1993

**Primary reference:** Kelley and others, 1993**Reporter:** J.M. Schmidt; J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Bion****Type:** Occurrence**ARDF no.** HW025**Latitude:** 68.62**Quadrangle:** HW C-3**Longitude:** 157.61**Location description and accuracy:**

Occurrence is between two main forks of Cutaway Creek about 2.7 mi (4.3 km) southeast of hill 2320, in T9S, R24W; located to within 1 mi (1.6 km).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:****Geologic description:**

Three rubbly outcrops of tabular barite bodies parallel bedding in enclosing limestone and chert of the Upper Mississippian or Lower Pennsylvanian Lisburne Group; it is uncertain whether these are separate barite lenses or a single body repeated by thrusting. There are no visible sulfides and no base metal chemical anomalies.

**Alteration:****Workings/Exploration:**

Gravity map in Kelley and others (1993) shows extent of anomaly.

**Age:**

Late Mississippian or Early Pennsylvanian

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:**

Inferred reserves are about 10,051,000 metric tons.

**Additional comments:**

See MAS/MILS Sequence #0020200020 (mislocated by 1 mi.) (USBM, 1995)

**References:**

Kelley and others, 1993

**Primary reference:** Kelley and others, 1993**Reporter:** J.M. Schmidt; J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96



**Site: Stack****Type:** Occurrence**ARDF no.** HW026**Latitude:** 68.6**Quadrangle:** HW C-3**Longitude:** 157.498**Location description and accuracy:**

Location is near limestone monolith (The Stack) on minor tributary of Cutaway Creek that drains small unnamed lake, and about 3.0 mi (4.8 km) northwest of Rim Butte, in T10S, R24W; within 1000 ft (305 m).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:** Calcite**Geologic description:**

Rubble mounds of barite with minor calcite gangue are associated with papery light-gray organic-rich(?) shale, bedded chert, and petroliferous limestone turbidites containing Meramecian (Late Mississippian) conodonts; contains no sulfide minerals.

**Alteration:****Workings/Exploration:****Age:**

Late Mississippian

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:**

Inferred reserves are about 2,851,000 metric tons.

**Additional comments:**

See MAS/MILS Sequence #0020200032 (USBM, 1995)

**References:**

Kelley and others, 1993

**Primary reference:** Kelley and others, 1993**Reporter:** J.M. Schmidt; J.H.Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Tuck****Type:** Occurrence**ARDF no.** HW027**Latitude:** 68.611**Quadrangle:** HW C-3**Longitude:** 157.497**Location description and accuracy:**

Occurrence is on small bench on southwest-facing slope about 0.5 mi (0.8 km) northeast of main fork of Cutaway Creek and 0.5 mi (0.8 km) north of small unnamed lake; in T10S, R24W; located to within 2000 ft (610 m).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite**Gangue minerals:** Calcite**Geologic description:**

Rhythmic bedding in barite parallels that of the north-dipping host chert of the Mississippian Lisburne Group

**Alteration:****Workings/Exploration:****Age:**

Mississippian

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:**

Inferred reserves are about 155,000 metric tons.

**Additional comments:**

See MAS/MILS Sequence #0020200031 (USBM, 1995)

**References:**

Kelley and others, 1993

**Primary reference:** Kelley and others, 1993**Reporter:** J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Ekakevik****Type:** Occurrence**ARDF no.** HW028**Latitude:** 68.621**Quadrangle:** HW C-4**Longitude:** 156.945**Location description and accuracy:**

Occurs in a series of low ridges about 2.5 mi (4 km) northeast of Ekakevik Creek and 3.0 mi (4.8 km) north-northwest of Ekakevik Mountain summit 3040, in T9S, R22W; located to within 1000 ft (305 m).

**Commodities:****Main:** Ba**Other:****Ore minerals:** Barite, witherite**Gangue minerals:****Geologic description:**

Massive barite and witherite consists of masses of radiating crystals in south-dipping petroliferous Mississippian? limestone of the Lisburne Group; overlain by dark-gray, partly buff-weathering bedded chert.

**Alteration:****Workings/Exploration:**

Width of area of barite outcrops is about 650 ft.

**Age:**

Mississippian?

**Deposit model:**

Lode; stratabound barite

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):**

31b

**Production:** No**Status:** Inactive**Production notes:****Reserves:**

Inferred reserves are about 2,275,000 metric tons.

**Additional comments:**

See MAS/MILS Sequence #0020200023 (USBM, 1995)

**References:**

Kelley and others, 1993

**Primary reference:** Kelley and others, 1993**Reporter:** J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

**Site: Nigu River****Type:** Occurrence**ARDF no.** HW029**Latitude:** 68.48**Quadrangle:** HW B-1**Longitude:** 156.41**Location description and accuracy:**

Location plotted is for locality in Nigu Bluff on east side of Nigu River, about 4 mi (6.4 km) upstream from its confluence with Etivluk River (U.S. Bureau of Mines (1995, Sequence #0020200018); in T11S, R19W; located to within 1 mi (1.6 km).

**Commodities:****Main:** P**Other:** Ba, V**Ore minerals:** Phosphate**Gangue minerals:****Geologic description:**

Phosphatic shale interbed within Pennsylvanian-Jurassic Etivluk or Mississippian-Pennsylvanian Lisburne Groups.

**Alteration:****Workings/Exploration:****Age:**

Mississippian-Jurassic

**Deposit model:**

Lode

**Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):****Production:** No**Status:** Inactive**Production notes:****Reserves:****Additional comments:****References:**

U.S. Bureau of Mines (1995)

**Primary reference:** U.S. Bureau of Mines (1995)**Reporter:** J.H. Dover**Reporter affiliation:** USGS**Last report date:** 9/30/96

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