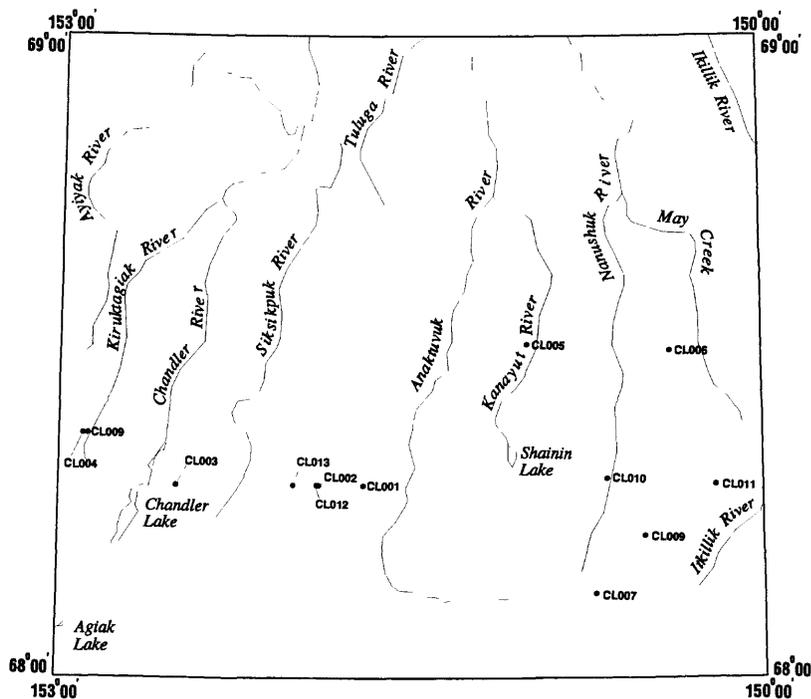


## Chandler Lake quadrangle

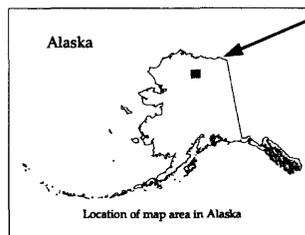
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences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



*Distribution of mineral occurrences in the Chandler Lake 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:

Karen Kelley  
 MS 973  
 U.S. Geological Survey  
 Denver Federal Center  
 Lakewood, CO 80225  
 Voice: (303) 236-2467  
 e-mail: [kdkelley@usgs.gov](mailto:kdkelley@usgs.gov)



*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: Natvakruak Lake****Type:** Occurrence**ARDF no.** CL001**Latitude:** 68.3**Quadrangle:** CL**Longitude:** 151.7**Location description and accuracy:**

Known to within 1 mile.

**Commodities:****Main:** P2O5**Other:****Ore minerals:** Fluorapatite**Gangue minerals:****Geologic description:**

Phosphate occurs in a sequence of black chert, lenticular dark siltstone, dark brittle shale, and oolitic phosphate rock that is probably part of the black chert and shale unit of the Alapha limestone. The deposit occurs on a thrust plate overlying the Siksikpuk formation.

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

27.9% P2O5; .020% EU.; Field station 50 AKe279

**Age:**

Mississippian

**Deposit model:**

Bedded phosphorite

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

34c

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

Patton and Matzko, 1959, USGS PP-302-A, p. 11, 13, 15; Cobb, 1975, USGS OFR 75-628, p. 52; Grybeck, 1977, USGS OFR 77-166C, p. 25, loc. 3.

**Primary reference:** Cobb, 1975, USGS OFR 75-628, p. 52**Reporter:** M.T. Powers (Huber, D.F.)**Reporter affiliation:** USGS**Last report date:** 6/30/92

**Site: Tiglukpuk Creek****Type:** Occurrence**ARDF no.** CL002**Latitude:** 68.3**Quadrangle:** CL**Longitude:** 151.89**Location description and accuracy:**

Deposits on a small tributary of Skimo Creek and on Tiglukpuk Creek. Within one mile.

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

Phosphate deposits restricted to black chert and shale unit of the Alapha Limestone of late Mississippian age. Phosphate rock and phosphorites occur within a section of interbedded oolitic to pisolitic limestone, chert, and shale. Marked variation in lithologic character of phosphate content. Fluorite was a constituent of all samples studied.

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

A 36 ft thick sequence average 8% P205; a 43 inch thick sequence averages 21% P205; and 6 beds, non more than 5.5 in. thick, contains 30% P205. Samples analyzed for vanadium contained 0.4% - 10% V205. Samples collected by USBM contained up to 23% phosphate with 1035 ppm V.

**Age:**

Mississippian

**Deposit model:**

Bedded phosphorite

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

34c

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

**References:** Patton and Matzko, 1959, USGS PP-302-A, p. 6, 9-11, 15; Cobb, 1975, USGS OFR 75-628, p. 53; Grybeck, 1977, USGS OFR 77-166C, p. 25, loc. 2; Patton and Tailleur, 1964, USGS PP-303-G, p. 497; Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95

**Primary reference:** Cobb, 1975, USGS OFR 75-628, p. 53

**Reporter:** M.T. Powers (D.F. Huber); K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

**Site: Chandler Lake****Type:** Occurrence**ARDF no.** CL003**Latitude:** 68.3**Quadrangle:** CL**Longitude:** 152.5**Location description and accuracy:**

Known to within 1 mile.

**Commodities:****Main:** P; V**Other:** V**Ore minerals:** Fluorapatite, vanadinite**Gangue minerals:** fluorite**Geologic description:**

Samples are of black, medium to coarsely oolitic phosphate rock from (probably) near the top of the Alapha Limestone. Phosphatic pellets, partly replaced by calcite, are in the calcite matrix. Purple fluorite occurs in and around the edges of phosphatic pellets and in veinlets in calcite.

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

Sample contained 25.6% P<sub>2</sub>O<sub>5</sub>, 0.02% V<sub>2</sub>O<sub>5</sub>, and 0.009% equiv. U; Field location 45 AGr21

**Age:**

Mississippian

**Deposit model:**

Bedded phosphorite

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

34c

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

Patton and Matzko, 1959, USGS PP-302-A, p. 11-12, 15; Cobb, 1975, USGS OFR 75-628, p. 50; Grybeck, 1977, USGS OFR 77-166C, p. 25, Loc. 1; Wedow and others, 1952, USGS OFR 51, p. 113.

**Primary reference:** Cobb, 1975, USGS OFR 75-628, p. 50**Reporter:** M.T. Powers (D.F. Huber)

**Reporter affiliation:** USGS

**Last report date:** 6/30/92

**Site: Kiruktagiak River****Type:** Occurrence**ARDF no.** CL004**Latitude:** 68.38**Quadrangle:** CL**Longitude:** 152.9**Location description and accuracy:**

Located on west side of upper Kiruktagiak River, 450-1200 m above mouth of Monitis Creek. Known to within one mile.

**Commodities:****Main:** P**Other:** V, U**Ore minerals:** Fluorapatite, vanadinite**Gangue minerals:** All samples contained calcite, dolomite, fluorite, and quartz.**Geologic description:**

Phosphate deposits are restricted to 40 ft. black shale and chert horizon of the Alapha Limestone of late Mississippian age. Rocks of phosphitic zone are chiefly a mixture of phosphatic material, Ca CO<sub>3</sub>, silt, and clay; in some places secondary purple fluorite is on bedding surfaces and in veinlets. Phosphatic material occurs as pellets (oolites) as much as 10 mm long and are composed of carbonate-fluorapatite. There are marked lateral variations in lithologic character and phosphate content. On the Kiraktagiak River and Monotis Creek, measured sections indicate that the phosphatic units are either lenticular or displaced by small folds and faults.

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

A 38 ft. thick zone of chert and shale unit in the Mississippian Alapha limestone contains an average of 12% P<sub>2</sub>O<sub>5</sub>; The upper 19 ft. averages 19% P<sub>2</sub>O<sub>5</sub>. A 27 inch thick sequence contains 27% P<sub>2</sub>O<sub>5</sub>. Samples analyzed for vanadium contained 0.07%-0.49% V<sub>2</sub>O<sub>5</sub>. Highest uranium content was 0.21% U. Samples collected by the USBM contained up to 20.6% phosphate.

**Age:**

Mississippian

**Deposit model:**

Bedded phosphorite

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

34c

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

**References:**

Patton and Matzko, 1959, USGS PP-302-A, p. 11, 13, 15; Cobb, 1975, USGS OFR 75-628, p. 51; Patton and Tailleux, 1964, USGS PP-303-G, p.497; Wedow and others, 1952, USGS OFR 51, p. 113; Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95

**Primary reference:**

**Reporter:** J.M. Schmidt; K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

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**Site: Anaktuvuk River****Type:** Occurrence**ARDF no.** CL005**Latitude:** 68.52**Quadrangle:** CL**Longitude:** 151**Location description and accuracy:**

Samples 50AB076 and 50AB078. Known to within eight miles.

**Commodities:****Main:** P**Other:** U**Ore minerals:** Fluorapatite**Gangue minerals:** Fluorite, calcite, quartz**Geologic description:**

Occurrence consists of phosphatic, uraniferous(?) pelletal rock from the Alapah Limestone of the Mississippian and Pennsylvanian Lisburne Group. Pelletal phosphate with quartz, purple fluorite and carbonaceous matter, occurs in a calcite matrix in the black shale and chert member of the Alapah.

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

Samples of phosphatic, uraniferous(?) pelletal rock contain 15% and 21.4% P<sub>2</sub>O<sub>5</sub>. Highest radioactivity was 0.014% eU. Field samples No. 50AB076 and No. 50AB078

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

Bedded phosphorite

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

34C

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

Cobb, 1975, USGS OFR 75-628, p. 49; Cobb and others, 1981, USGS OFR 81-767, p. A10; Wedow and others, 1952, USGS OFR 51, p. 113; Patton and Matzko, 1959, USGS PP-302-A, p. 11,13,15.

**Primary reference:****Reporter:** J.M. Schmidt

**Reporter affiliation:**

**Last report date:** 10/15/92

**Site: Cobblestone Creek****Type:** Occurrence**ARDF no.** CL006**Latitude:** 68.51**Quadrangle:** CL**Longitude:** 150.39**Location description and accuracy:**

Located on west side of Cobblestone Creek, 15.7 km south of Arc Mountain. Known to within one mile.

**Commodities:****Main:** Mn**Other:****Ore minerals:****Gangue minerals:****Geologic description:**

Shale and silty mudstone of the Torok Formation are exposed along Cobblestone Creek; greenish-brown mudstone and shale locally display intense manganese staining. Siderite is abundant, but there were no specific manganese minerals identified.

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

Samples with iron-manganese staining contain up to 11.7% Mn.

**Age:**

Cretaceous

**Deposit model:**

Sedimentary manganese

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

Barnwell and others, 1989, USGS OFR 89-540; Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Kurtak and others, 1995, USBM OFR 8-95**Reporter:** K.D. Kelley**Reporter affiliation:** USGS**Last report date:** 2/7/97

**Site: Cockedhat Mountain****Type:** Occurrence**ARDF no.** CL007**Latitude:** 68.13**Quadrangle:** CL**Longitude:** 150.71**Location description and accuracy:**

Located 2.1 km southwest of Cockedhat Mountain. Known to within one mile.

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

Outcrop of Kayak shale contains sulfide-bearing concretions.

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

Concretion-bearing zones contained up to 0.84% Zn and 27 ppm Pb.

**Age:**

Lower Mississippian

**Deposit model:**

Sediment-hosted Pb-Zn

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

Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Meyer, 1994, USBM OFR 34-94**Reporter:** K.D. Kelley**Reporter affiliation:** USGS**Last report date:** 2/7/97

**Site: Itkillik River West****Type:** Occurrence**ARDF no.** CL008**Latitude:** 68.22**Quadrangle:** CL**Longitude:** 150.5**Location description and accuracy:**

Located along west tributary of the Itkillik River, 18.8 km southwest of Thibodeaux Mountain. Known to within one mile.

**Commodities:****Main:** Ag, Ba, Pb, Zn**Other:** Cu**Ore minerals:** Barite, galena, chalcopyrite**Gangue minerals:** Quartz, calcite**Geologic description:**

Bedrock in the area consists of folded and faulted Hunt Fork Shale that is locally cut by quartz and sulfide-bearing quartz-carbonate veins and veinlets. Cobble-sized pieces of rounded massive white barite, containing streaks and blebs of galena were found as float. The source of the float is unknown. In another gully 800 m to the northeast, lense-like quartz-calcite-siderite veins are confined to a 50 cm-wide zone that trends northwest. The veins contain minor chalcopyrite and trace galena. No zinc minerals were observed.

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

Float of barite-galena cobbles contain up to 62% Ba, 0.67% Pb, and 25 g/tonne Ag. Veins from outcrop contain 735 ppm Cu and 3,900 ppm Zn.

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

Pb-Zn quartz veins

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

Meyer, 1994, OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Kurtak and others, 1995, USBM OFR 8-95.**Reporter:** K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

**Site: Monitis Creek****Type:** Occurrence**ARDF no.** CL009**Latitude:** 68.38**Quadrangle:** CL**Longitude:** 152.88**Location description and accuracy:**

Located along both sides of Monitis Creek, 600 m above junction with Kiruktagiak River. Known to within one mile

**Commodities:****Main:** P**Other:** U, V**Ore minerals:** Fluorapatite**Gangue minerals:** Fluorite**Geologic description:**

The phosphate occurrences are confined to the black chert and shale member of the Alapah Limestone. Interbedded phosphorite and phosphate rock occur in sections up to 11.3 m thick. The phosphate-bearing mineral consists of fluorapatite, which is concentrated in oolites, pellets, and matrix. Purple fluorite occurs locally. The phosphatic rocks can be traced for 1.5 km along strike.

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

Individual phosphorites up to 0.6 m thick contain up to 330% P<sub>2</sub>O<sub>5</sub>. One 6.7 m-thick section averaged 23% P<sub>2</sub>O<sub>5</sub>. Samples also contained up to 2,000 ppm V, and 119 ppm U.

**Age:**

Mississippian

**Deposit model:**

Bedded phosphorite

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

34c

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

Patton and Tailleur, 1964, PP-303-G; Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Kurtak and others, 1995, USBM OFR 8-95**Reporter:** K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

**Site: Nanushuk River****Type:** Occurrence**ARDF no.** CL010**Latitude:** 68.31**Quadrangle:** CL**Longitude:** 150.66**Location description and accuracy:**

Located along west tributary to Nanushuk River, 10 km south of Nanushuk Lake.  
Known to within one mile.

**Commodities:****Main:** Cu**Other:** Ba, Pb**Ore minerals:** Chalcopyrite, galena**Gangue minerals:** Quartz, calcite, barite**Geologic description:**

Quartz-carbonate veins are exposed in a 15 m-wide zone along the south canyon wall where they cut interbedded siltstone and shale of the Hunt Fork Shale. The veins are up to 30 cm wide and can be traced for at least 8 m along strike. Barite is mainly concentrated along the vein margins which locally contain breccia and slickensides. The vein margins also contain minor chalcopyrite and galena.

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

Samples contain up to 420 ppm Cu, 343 ppm Zn, 54 ppm Pb, and more than 2,000 ppm Ba.

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

Cu quartz veins

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

Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Kurtak and others, 1995, USBM OFR 8-95**Reporter:** K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

**Site: Siksikpuk River****Type:** Occurrence**ARDF no.** CL011**Latitude:** 68.3**Quadrangle:** CL**Longitude:** 150.2**Location description and accuracy:**

Located at headwaters of Siksikpuk River, 8.7 km northwest of Inualuruk Mountain.  
Known to within one mile.

**Commodities:****Main:** Pb, Zn**Other:** Ba**Ore minerals:** Sphalerite, galena, pyrite**Gangue minerals:****Geologic description:**

Red-brown concretions in Kayak Shale are confined to an approximately 6 m-thick section of black shale. They range from 4 cm rounded forms to 7.5 x 38 cm flattened, elongate forms. The concretions contain quartz, calcite, barite, siderite, and pyrite as septarian fracture fillings along with minor sphalerite and trace galena. At the base of the shale, a 10 cm-thick red-brown cherty ironstone bed contains minor sphalerite. The ironstone bed is exposed along strike for 6 m.

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

Sulfide-bearing concretions contain 1.3% Zn, more than 2,000 ppm Ba, and 52 ppm Pb. The ironstone bed contains 1,357 ppm Zn.

**Age:**

Mississippian

**Deposit model:**

Sediment-hosted Pb-Zn

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

Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Kurtak and others, 1995, USBM OFR 8-95**Reporter:** K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

**Site: Skimo Creek East****Type:** Occurrence**ARDF no.** CL012**Latitude:** 68.3**Quadrangle:** CL**Longitude:** 151.9**Location description and accuracy:**

Located along east side of Skimo Creek, 4.5 km above junction with Tiglukpuk Creek. Known to within one mile.

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

Phosphate rock and phosphorites occur within a 11 m-thick section of interbedded oolitic to pisolitic limestone and calcareous shale in the Alapah Limestone. Flattened pellets up to 3 cm in size were observed in the phosphorites.

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

A chip sample across a 0.3 m-thick phosphorite contained 22.5% P<sub>2</sub>O<sub>5</sub>. Samples collected across a 2.3 m-thick section averaged 16.4% P<sub>2</sub>O<sub>5</sub>, and the entire 11 m-thick phosphatic section averaged 5.7% P<sub>2</sub>O<sub>5</sub>. Samples also contained up to 733 ppm V.

**Age:**

Mississippian

**Deposit model:**

Bedded phosphorite

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

34c

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

Patton and Tailleux, 1964, PP-303-G; Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Kurtak and others, 1995, USBM OFR 8-95**Reporter:** K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

**Site: Skimo Creek West****Type:** Occurrence**ARDF no.** CL013**Latitude:** 68.3**Quadrangle:** CL**Longitude:** 152**Location description and accuracy:**

Located along east side of western tributary to Skimo Creek, 3 km above junction.  
Known to within one mile.

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

Phosphatic rocks are confined to the middle and upper parts of the black chert and shale member of the Alapah Limestone. Phosphate occurs in a section of interbedded oolitic shales and pisolitic phosphorites containing oblate pellets. The phosphatic rocks continue for a minimum of 4.2 km along strike..

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

One 2.2 m-thick zone averaged 20.6% P<sub>2</sub>O<sub>5</sub> and a 0.9 m-thick zone averaged 13.0% P<sub>2</sub>O<sub>5</sub>. Samples also contained up to 874 ppm V.

**Age:**

Mississippian

**Deposit model:**

Bedded phosphorite

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

34c

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

Patton and Tailleir, 1964, PP-303-G; Meyer, 1994, USBM OFR 34-94; Kurtak and others, 1995, USBM OFR 8-95.

**Primary reference:** Kurtak and others, 1995, USBM OFR 8-95**Reporter:** K.D. Kelley

**Reporter affiliation:** USGS

**Last report date:** 2/7/97

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