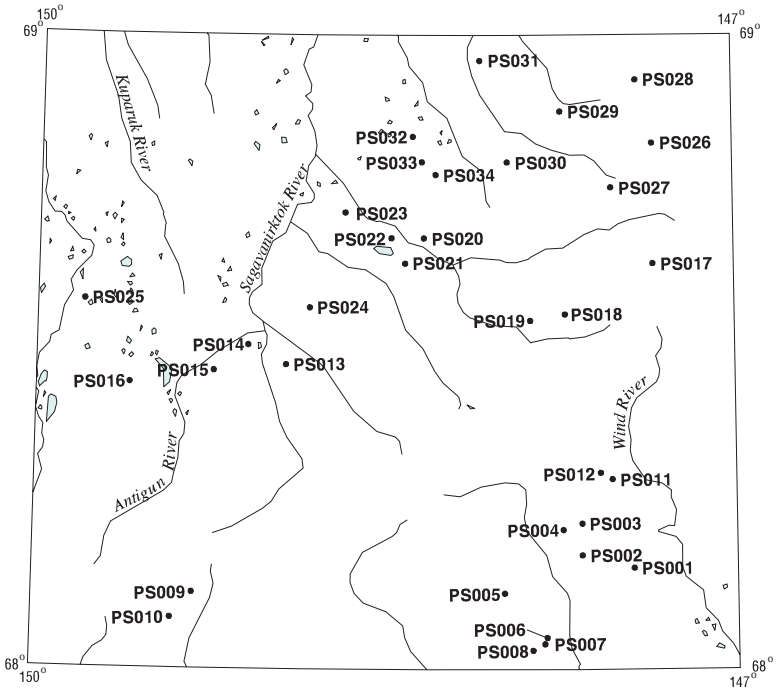
USGS
science for a changing world

Alaska Resource Data File

Philip Smith Mountains quadrangle

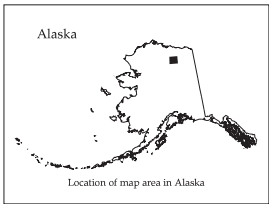
Descriptions of the mineral occurrences shown on the accompanying figure follow. See U.S. Geological Survey (1996) for a description of the information content of each field in the records. The data presented here are maintained as part of a statewide database on mines, prospects and mineral occurrences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



Distribution of mineral occurrences in the Philip Smith Mountains 1:250,000-scale quadrangle, Alaska

This and related reports are accessible through the USGS World Wide Web site http://ardf.wr.usgs.gov. Comments or information regarding corrections or missing data, or requests for digital retrievals should be directed to: Frederic Wilson, USGS, 4200 University Dr., Anchorage, AK 99508-4667, e-mail fwilson@usgs.gov, telephone (907) 786-7448. This compilation is authored by:

Joe Britton
Anchorage, AK



OPEN-FILE REPORT 00-291

Site name(s): Hungry Group

Site type: Occurrence

ARDF no.: PS001

Latitude: 68.16 **Quadrangle:** PS A-1

Longitude: 147.44

Location description and accuracy:
Site is at an elevation of about 3,900 ft. between the Middle Fork Chandalar and Wind rivers approximately 9 miles east of the mouth of Beaucoup Creek (north-center sec. 11, T. 15 S., R. 20 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: Cu

Other:

Ore minerals: Chalcopyrite, malachite, pyrite

Gangue minerals: Quartz

Geologic description:
Occurrence described only as a quartz vein in limestone containing chalcopyrite, pyrite and malachite in or near the contact zone between Devonian Skajit Limestone and Beaucoup Formation (Barker, 1978). The area is mapped as brown shale and limestone members of Beaucoup Formation. No other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:
Two claims located by Placid Oil in 1971 which were reportedly abandoned as of 1978

(Barker, 1978; Menzie and others, 1985).

Production notes:

Reserves:

Additional comments:

References:

Grybeck, 1977; Barker, 1978; Menzie and others, 1985; Maas, 1987.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (Middle Fork Chandalar River)

Site type: Occurrence

ARDF no.: PS002

Latitude: 68.18 **Quadrangle:** PS A-2

Longitude: 147.66

Location description and accuracy:
Site is at an elevation of about 4,700 ft. approximately 1 1/4 miles east of Beaucoup Creek (SE1/4 sec. 35, T. 14 S., R. 19 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: Cu

Other:

Ore minerals: Chalcopyrite

Gangue minerals: Quartz

Geologic description:
Occurrence described only as visible chalcopyrite and anomalous silver occurring in a quartz vein in Skajit Limestone beneath the contact with the Beaucoup Formation (Menzie and others, 1985). The area is mapped as the conglomerate member of Beaucoup formation (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

See Additional comments below.

Additional comments:

May be same location described by Proffett (1977) as a 'steep North-South striking, cross cutting quartz vein with coarse chalcopyrite. The ore-bearing part is 1 to 3 ft. wide and may average 5 to 10 percent copper. The vein is more than 1,000 ft. in strike length.' Proffett (1977) also estimated that the occurrence 'may have potential for 10,000 - 100,000 ton' deposit. Cathrall and other (1977) reported 1 ppm Ag in a rock sample (sample number 75 RR 121).

References:

Cathrall and others, 1977; Proffett, 1977; Brosgé and others, 1979; Menzie and others, 1985

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (Beaucoup Creek)

Site type: Occurrence

ARDF no.: PS003

Latitude: 68.23 **Quadrangle:** PS A-2

Longitude: 147.66

Location description and accuracy:

Site is at an elevation of about 3,600 ft. near the head of Beaucoup Creek about 7 to 8 miles above the mouth (NE1/4 sec. 14, T. 14 S., R. 19 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: Cu

Other:

Ore minerals: Azurite, malachite

Gangue minerals:

Geologic description:

Visible azurite and malachite were reported in Beaucoup Formation rocks (Menzie and others, 1985). The bedrock is mapped as the conglomerate member of Beaucoup Formation. No other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

References:

Cathrall and others, 1977; Brosgé and others, 1979; Menzie and others, 1985

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Beaucoup Group; Beaucoup Creek

Site type: Occurrence

ARDF no.: PS004

Latitude: 68.22 **Quadrangle:** PS A-2

Longitude: 147.74

Location description and accuracy:

Site is at an elevation of about 5,000 ft. on a ridge approximately 1 1/2 mile west of upper Beaucoup Creek and 6 miles north-northeast of the mouth of Beaucoup Creek (SE1/4 sec. 16, T. 14 S., R. 19 E., of the Umiat Meridian). Location accurate within 1-mile radius

Commodities:

Main: Cu

Other: Ag, Sn(?)

Ore minerals: Chalcopyrite, malachite

Gangue minerals: Calcite, quartz

Geologic description:

Visible chalcopyrite and malachite in the remnants of a leached quartz vein in limestone within the Beaucoup Formation (Barker, 1978). Geochemical analysis of a sample of a mineralized quartz-calcite vein crosscutting siltstone and shale of Beaucoup Formation shows anomalous Ag (7 ppm) and Sn (10 ppm) (Cathrall and others, 1977b, sample 75 RR 120). No other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Eight claims located in 1971 by Placid Oil, and exploration was said to be continuing in 1978 (Barker, 1978; Menzie and others, 1985).

Production notes:

Reserves:

Additional comments:

References:

Cathrall and others, 1977; Grybeck, 1977; Barker, 1978; Brosgé and others, 1979; Menzie and others, 1985; Maas, 1987

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Middle Fork Chandalar River)

Site type: Occurrence

ARDF no.: PS005

Latitude: 68.12 **Quadrangle:** PS A-2

Longitude: 147.99

Location description and accuracy:

Site is at an elevation of about 3,500 ft. approximately 7 miles west of the Middle Fork Chandalar River on a northeast- and east-flowing tributary (NE1/4 sec. 28, T. 15 S., R. 18 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: Cu

Other: Pb(?)

Ore minerals: Chalcopyrite, galena(?), pyrite

Gangue minerals: Quartz

Geologic description:

Occurrence is described only as black chert, at the contact between Devonian Skajit Limestone and overlying Beaucoup Formation, that contains a pyrite- and chalcopyrite-bearing quartz vein (Menzie and others, 1985). USBM information from a location thought to correspond to this prospect suggests galena is also present (Barker, 1978). No other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Described as being a stratabound vein in Menzie and others (1985); USGS field station 76ARR408.

References:

Barker, 1978; Menzie and others, 1985

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of the Middle Fork Chandalar River)

Site type: Occurrence

ARDF no.: PS006

Latitude: 68.05 **Quadrangle:** PS A-2

Longitude: 147.81

Location description and accuracy:

Site is at an elevation of about 3,800 ft. in the upper part of a small drainage approximately 2 miles west of the Middle Fork Chandalar River and about 6 miles south of the confluence of Beaucoup Creek and Middle Fork Chandalar River (SE1/4 sec. 18, T. 16 S., R. 19 E., of the Umiat Meridian). Location accurate within 1/4-mile radius.

Commodities:

Main: Pb, Zn

Other: Ag, Cu

Ore minerals: Chalcopyrite, galena, pyrite, sphalerite, tetrahedrite

Gangue minerals: Quartz

Geologic description:

One of two mineralized areas with small outcrops within which lead-zinc-silver-(copper?) mineralization is found (Detra, 1977). Sphalerite, galena and pyrite are found in crosscutting veins in a chert breccia with quartz veins. Samples from the veins are reported to contain galena, sphalerite and chalcopyrite as well as iron sulfides. An analysis of mineralized material returned a value of 34 percent Zn and 70 ppm Ag (Detra, 1977). Exposures of mineralization are less than 3 meters in length and not much wider than the streams (approximately 1 to 2 meters) in which they are exposed. The mineralization is described as occurring in a chert cap at an unconformable paleokarst surface at the top of the Devonian Skajit Limestone at the base of a 1,200-meter-thick Frasnian fine clastic marine sequence (Dutro, 1978). This marine sequence grades upward from basal black shales and dark laminated limestones through cycles of fine clastics and into reef limestones. The clastics contain volcaniclastics and mafic volcanic rocks. The overlying clastics are yellow-weathering phyllitic shales and sandstones, which in turn are overlain by black shales of the Hunt Fork Shale. This is purportedly the only carbonate-hosted prospect in Alaska genetically linked to a karst or paleokarst event (Schmidt, 1997). The surrounding area is mapped as Devonian shale, sandstone and conglomerate with scattered bodies of mafic rocks of uncertain age.

Alteration:

Age of mineralization:

Deposit model:
Mississippi Valley Zn-Pb (?) (Cox and Singer, 1986; model 32a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
32a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Two blocks of claims staked in 1977 (19 by Noranda, 6 by RAA). Semi-quantitative spectrographic data for sample 76ARR46 (Detra, 1977, Table 1): Ag (70 ppm), Cu (1,000 ppm), Pb (3,000 ppm), Sb (700 ppm), Zn (greater than 20,000 ppm); Zn by wet chemical analysis (340,000 ppm).

Production notes:

Reserves:

Additional comments:
See also locations PS007 and PS008. Area has potential for stratabound lead-zinc deposits.

References:
Cathrall and others, 1977; Detra, 1977; Barker, 1978; Dutro, 1978; Menzie and others, 1985; Maas, 1987; Schmidt, 1997

Primary reference: Detra, 1977

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of the Middle Fork Chandalar River)

Site type: Occurrence

ARDF no.: PS007

Latitude: 68.04 **Quadrangle:** PS A-2

Longitude: 147.82

Location description and accuracy:

Site is at an elevation of about 3,750 ft. in a small drainage approximately 2 miles west of the Middle Fork Chandalar River and about 7 miles south of the confluence of Beaucoup Creek and Middle Fork Chandalar River (south-center sec. 19, T. 16 S., R. 19 E., of the Umiat Meridian). It is described as Area B on fig. 1 in Detra (1977). Location accurate within 1/4-mile radius.

Commodities:

Main: Pb, Zn

Other: Ag, Cu(?)

Ore minerals: Chalcopyrite(?), galena, iron sulfides, sphalerite, tetrahedrite(?)

Gangue minerals: Quartz

Geologic description:

One of two mineralized areas with small outcrops within which lead-zinc-silver-(copper) mineralization is found (Detra, 1977). The mineralization is described as occurring in quartz veins in a chert breccia cap on limestone. Samples from the veins are reported to contain galena, sphalerite and chalcopyrite as well as iron sulfides. Exposures of mineralization are less than 3 meters in length and not much wider than the streams (approximately 1 to 2 meters) in which they are exposed. Two samples taken from the mineralized area returned analyses as high as 25% Zn, [more than] 2% Pb and 150 ppm Ag (Detra, 1977). The chert breccia cap which hosts the mineralization occurs locally at the top of the Skajit Limestone at an unconformity that has been interpreted as a paleokarst surface. The chert cap is overlain by yellow-weathering phyllitic siltstones, shales and sandstones, which in turn are overlain by black shales of the Hunt Fork Shale. The surrounding area is mapped as Devonian shale, sandstone and conglomerate with scattered bodies of mafic rocks of uncertain age (Detra, 1977).

Alteration:

Age of mineralization:

Deposit model:
Mississippi Valley Zn-Pb (?) (Cox and Singer, 1986; model 32a).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
32a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
57 claims in two claim blocks located by Noranda and RAA in 1977. Semi-quantitative spectrographic data (Detra, 1977) from rock samples from the area include: sample number 232RA - Ag (150 ppm), Ba (200 ppm), Cu (700 ppm), greater than 20,000 ppm Pb and Zn. Zn by wet chemical analysis - 250,000 ppm; sample number 232RB - Ag (30 ppm), Ba (300 ppm), Cu (150 ppm), Pb (15,000 ppm), greater than 20,000 ppm Zn. Zn by wet chemical analysis - 75,000 ppm (Detra, 1977, table 1).

Production notes:

Reserves:

Additional comments:
See also locations PS006 and PS008. Site is in an area thought to have potential for carbonate-hosted lead-zinc deposits (Menzie and others, 1985). The pH of the stream that cuts the mineralization is less than 4.5.

References:
Cathrall and others, 1977; Detra, 1977; Barker, 1978; Dutro, 1978; Menzie and others, 1985; Maas, 1987; Schmidt, 1997.

Primary reference: Detra, 1977

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of the Middle Fork Chandalar River)

Site type: Prospect

ARDF no.: PS008

Latitude: 68.03 **Quadrangle:** PS A-2

Longitude: 147.87

Location description and accuracy:
Site is at approximately 3,850 ft., about 4 1/2 miles west of the Middle Fork Chandalar River and about 8 miles south-southwest of the confluence of Beaucoup Creek and Middle Fork Chandalar River (west-center sec. 25, T. 16 S., R. 18 E., of the Umiat Meridian). The site corresponds to sample No. 76 ARR 47 shown in Detra (1977, fig. 1). Location accurate within 1/4-mile radius.

Commodities:

Main: Pb, Zn

Other: Ag(?), Cu(?)

Ore minerals: Chalcopyrite(?), galena, sphalerite, tetrahedrite(?)

Gangue minerals: Barite(?), quartz

Geologic description:
Visible sphalerite and galena occur in a Cu-stained and quartz-veined chert (Menzie and others, 1985). The occurrence is at the upper contact zone of Devonian - Silurian(?) Skajit Limestone with overlying shales, sandstones and conglomerates of the Devonian Hunt Fork Shale and Beaucoup Formation. The chert occurs locally along this contact. The upper contact of the Skajit in this location is an unconformity that has been interpreted as a paleokarst surface. Analysis of a sample of the mineralization from this occurrence returned values of 2 percent Pb, 0.5 to 1percent Zn, [more than] 0.5percent Ba and 30 ppm Ag (Detra, 1977).

Alteration:

Age of mineralization:

Deposit model:
Mississippi Valley Zn-Pb (?) (Cox and Singer, 1986; model 32a).

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

32a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:

One block of 15 lode claims staked by RAA in 1977. Semi-quantitative spectrographic data from a rock sample (sample number 76 ARR 47) from the site gave the following values: Ag (30 ppm), Ba (greater than 5,000 ppm), Cd (70 ppm), Cu (1,000 ppm), Pb (20,000 ppm), Sb (300 ppm), Zn (10,000 ppm). Zn by wet chemical analysis - 5,000 ppm (Detra, 1977, table 1).

Production notes:

Reserves:

Additional comments:

See also locations PS006 and PS007. Site is in an area of potential carbonate-hosted lead-zinc deposits (Menzie and others, 1985).

References:

Cathrall and others, 1977; Detra, 1977; Barker, 1978; Dutro, 1978; Brosgé and others, 1979; Menzie and others, 1985; Maas, 1987; Schmidt, 1997.

Primary reference: Detra, 1977

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (east of Atigun Pass)

Site type: Occurrence

ARDF no.: PS009

Latitude: 68.12 **Quadrangle:** PS A-4

Longitude: 149.32

Location description and accuracy:
Site is at an elevation of about 5,500 ft. approximately 4 miles east of Atigun Pass (south-center sec. 22, T. 15 S., R. 12 E., of the Umiat Meridian) Location accurate within 1-mile radius.

Commodities:

Main: Ag(?), Pb

Other:

Ore minerals:

Gangue minerals:

Geologic description:
Occurrence is described only as a bright red soil, weathering from Upper Devonian Kanayut Conglomerate, which contains anomalous concentrations of Pb (200 ppm) and Ag (2 ppm) (Menzie and others, 1985; USGS field station 75ABE133). No other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

References:

Menzie and others, 1985

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (southeast of Atigun Pass)

Site type: Occurrence

ARDF no.: PS010

Latitude: 68.08 **Quadrangle:** PS A-5

Longitude: 149.41

Location description and accuracy:
Site is at an elevation of about 5,700 ft. approximately 3 1/2 miles SE of Atigun Pass (NW1/4 sec. 5, T. 16 S., R. 12 E., of the Umiat Meridian); Location accurate within 1-mile radius.

Commodities:

Main: Cu

Other: Be(?), Mo(?), Pb(?), Zn(?)

Ore minerals: Pyrite

Gangue minerals: Quartz

Geologic description:
Occurrence is described as Upper Devonian Kanayut Conglomerate with abundant quartz veins, sericite, iron-oxide staining, and pyrite (Menzie and others, 1985). Geochemical analysis shows 50 ppm Cu, 10 ppm Mo, 50 ppm Pb, 1 ppm Be, and 40 ppm Zn (Menzie and others, 1985; USGS field station 75 ABE138).

Alteration:
Sericite and Fe staining.

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Occasional Group

Site type: Occurrence

ARDF no.: PS011

Latitude: 68.30 **Quadrangle:** PS B-1

Longitude: 147.53

Location description and accuracy:
Site is at an elevation of about 3,800 ft. on the north side of a large, southeast-flowing tributary to the upper Wind River approximately 12 miles northeast of the mouth of Beaucoup Creek (west-center sec. 21, T. 13 S., R. 20 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: Cu, Pb, Zn

Other:

Ore minerals: Chalcopyrite, galena, sphalerite

Gangue minerals: Quartz

Geologic description:
Galena, sphalerite and chalcopyrite occur in vein and boxwork of veinlets in limestone (Grybeck, 1977) near the unconformable upper contact of the Skajit Limestone with calcareous sandstone member of Hunt Fork Shale and/or Beaucoup Formation (Menzie and others, 1985). No other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Twenty-two claims were located by Placid Oil in 1971 and were active until at least 1978; they have since been abandoned.

Production notes:

Reserves:

Additional comments:

References:

Grybeck, 1977; Barker, 1978; Menzie and others, 1985; Maas, 1987.

Primary reference: Grybeck, 1977

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Wind River)

Site type: Occurrence

ARDF no.: PS012

Latitude: 68.31 **Quadrangle:** PS B-1

Longitude: 147.58

Location description and accuracy:

Site is at an elevation of about 4,800 ft. on the north side of a large, east-southeast-flowing tributary to the upper Wind River about 5 miles north-northeast of the head of Beaucoup Creek (SE1/4 sec. 18, T. 13 S., R. 20 E., of the Umiat Meridian) and approximately 2 miles northwest of the Occasional Group (PS011). Location accurate within 1-mile radius.

Commodities:

Main: Cu(?), Pb, Zn

Other:

Ore minerals: Galena, sphalerite

Gangue minerals: Calcite, quartz

Geologic description:

Visible sphalerite and galena occur in a stratabound quartz-calcite vein (Menzie and others, 1985). The vein cuts black, recrystallized chert and chert breccia which is found at the top of the Devonian Skajit Limestone. Barker (1978) reported sulfides as disseminated crystals and veinlets in limestone and dolomite in creek rubble. Anomalous values of silver, arsenic, antimony and cadmium were noted in rock samples from this location. The bedrock is mapped as Skajit Limestone in contact with calcareous sandstone member of Hunt Fork Shale and/or Beaucoup Formation. No other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

Polymetallic replacement deposit (?) (Cox and Singer, 1986; model 19a).

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

19a (?)

Production Status: None

Site Status: Inactive

Workings/exploration:

The maximum values from 7 rock samples from this area are: 300 ppm Cu, 500 ppm As, 100 ppm Sb, 7 ppm Ag, [more than] 500 ppm Cd (Cathrall and others, 1977; sample number 75 RR 113 A through E, S, and T).

Production notes:

Reserves:

Additional comments:

References:

Cathrall and others, 1977; Barker, 1978; Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (east of the Sagavanirktok River)

Site type: Occurrence

ARDF no.: PS013

Latitude: 68.48 **Quadrangle:** PS B-4

Longitude: 148.93

Location description and accuracy:
Site is at an elevation of about 3900 ft. east of the Sagavanirktok River approximately 6 miles south-southeast of the north end of Atigun Gorge (NE1/4 sec. 19, T. 11 S., R. 14 E., of the Umiat Meridian). This occurrence is shown as location No. 12 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (southeast of Atigun Gorge)

Site type: Occurrence

ARDF no.: PS014

Latitude: 68.49 **Quadrangle:** PS B-4

Longitude: 149.08

Location description and accuracy:

Site is at an elevation of about 3,900 ft. approximately 2 miles south of the lower end of Atigun Gorge and 8 miles east-northeast of Galbraith Lake (SE1/4 sec. 9, T. 11 S., R. 13 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:

Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group ' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (southwest of Atigun River Gorge)

Site type: Occurrence

ARDF no.: PS015

Latitude: 68.47 **Quadrangle:** PS B-4

Longitude: 149.24

Location description and accuracy:
Site is at an elevation of about 2,600 ft. on the south side of the Atigun River canyon about 4 1/2 miles east of Galbraith Lake (SE1/4 sec. 23, T. 11 S., R. 12 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: BaSO4

Other:

Ore minerals: Barite

Gangue minerals:

Geologic description:
Minor amounts of pervasive barite, typically in scattered concretionary clusters and solid silica-centered nodules, is reported in the Permian - Lower Triassic Sadlerochit Group (Menzie and others, 1985). In the Atigun Canyon, a 5-meter-thick zone contains an estimated 10-15% barite. Bundtzen and Henning (1978) describe the barite in the Atigun canyon as zones of nodules and layers within a black sideritic shale horizon in the Permian Siksikpuk Formation. The zones pinch and swell within the shale horizon. The barite is reportedly in the form of prismatic and tabular crystals as long as 3 inches, and black shale fragments are found throughout the barite. No base metals have been noted associated with this barite occurrence.

Minor amounts of barite also occur locally in the Philip Smith Mountains quadrangle in the Triassic Shublik Formation and possibly in the Jurassic Kingak Shale (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:
Bedded barite (?) (Cox and Singer, 1986; model 31b).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
31b (?)

Production Status: None

Site Status: Inactive

Workings/exploration:
Results from analysis of a sample from this location showed values of 2 ppm Ag and 1,500 ppm Ba (Cathrall and others, 1977; sample number 76BE403B).

Production notes:

Reserves:

Additional comments:
Barium in concentrations [more than] 5,000 ppm was found in heavy-mineral concentrate samples throughout the quadrangle (Menzie and others, 1985). The region also contains rock types which are considered permissive for the occurrence of stratabound barite deposits (Menzie and others, 1985).

References:
Cathrall and others, 1977; Paris, 1977; Bundtzen and Henning, 1978; Sellars, 1981; Menzie and others, 1985.

Primary reference: Bundtzen and Henning, 1978

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Galbraith Lake)

Site type: Occurrence

ARDF no.: PS016

Latitude: 68.45 **Quadrangle:** PS B-5

Longitude: 149.60

Location description and accuracy:

Site is at an elevation of about 4,800 ft. approximately 3 miles west of the Galbraith Lake Camp west of Galbraith Lake (NW1/4 sec. 32, T. 11 S., R. 11 E., of the Umiat Meridian) Location accurate within 1-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:

Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the Philip Smith mountains quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (head of Ribdon River)

Site type: Occurrence

ARDF no.: PS017

Latitude: 68.64 **Quadrangle:** PS C-1

Longitude: 147.35

Location description and accuracy:
The occurrence is located near the south fork headwaters of the Ribdon River at an elevation of about 4,600 ft. approximately 5 miles north-northeast of Windy Glacier (SW1/4 sec. 24, T. 9 S., R. 20 E., of the Umiat Meridian). This occurrence is shown as location number 15 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (south of Ribdon River)

Site type: Occurrence

ARDF no.: PS018

Latitude: 68.56 **Quadrangle:** PS C-2

Longitude: 147.73

Location description and accuracy:

The site is approximately 6 1/2 miles south of the Ribdon River and 8 1/2 miles west of Windy Glacier at an elevation of about 4,700 ft. (NW1/4 sec. 20, T. 10 S., R. 19 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:

Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the Philip Smith Mountains quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (south of Ribdon River))

Site type: Occurrence

ARDF no.: PS019

Latitude: 68.55 **Quadrangle:** PS C-2

Longitude: 147.88

Location description and accuracy:

The occurrence is about 6 miles south of the Ribdon River and 12 miles west of Windy Glacier at an elevation of about 3,600 ft. (north-center sec. 27, T. 10 S., R. 18 E., of the Umiat Meridian). This occurrence is shown as location number 14 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:

Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:

Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:

Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (east of Elusive Lake)

Site type: Occurrence

ARDF no.: PS020

Latitude: 68.68 **Quadrangle:** PS C-3

Longitude: 148.34

Location description and accuracy:
The site is about a mile north of the Ribdon River and 4 miles east-northeast of the east end of Elusive Lake at an elevation of about 2,950 ft. (SE1/4 sec. 10, T. 9 S., R. 16 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:
Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the Philip Smith Mountains quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (southeast of Elusive Lake)

Site type: Occurrence

ARDF no.: PS021

Latitude: 68.64 **Quadrangle:** PS C-3

Longitude: 148.42

Location description and accuracy:

The site is at an elevation of about 2,950 ft. approximately 1 1/2 miles southeast of the southeast corner of Elusive Lake (SE1/4 sec. 29, T. 9 S., R. 16 E., of the Umiat Meridian); Location accurate within 1-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:

Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the Philip Smith Mountains quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (north of Elusive Lake)

Site type: Occurrence

ARDF no.: PS022

Latitude: 68.68 **Quadrangle:** PS C-3

Longitude: 148.48

Location description and accuracy:

Site is approximately 2 miles north of Elusive Lake at an elevation of about 2,450 ft. (NW1/4 sec. 7, T. 9 S., R. 16 E., of the Umiat Meridian). Location accurate within 1-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:

Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the Philip Smith Moountains quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (northwest of Elusive Lake)

Site type: Occurrence

ARDF no.: PS023

Latitude: 68.72 **Quadrangle:** PS C-3

Longitude: 148.68

Location description and accuracy:
Site is approximately 6 miles northwest of Elusive Lake (SE1/4 sec. 25, T. 8 S., R. 14 E., of the Umiat Meridian) at an elevation of about 2,600 ft. This occurrence is shown as location number 23 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Jurassic to Early Cretaceous, based on the age of the host Early Cretaceous Fortress Mountain, Okpikruak, and Kongakut Formations and Jurassic Kingak Shale (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (south of Section Creek)

Site type: Occurrence

ARDF no.: PS024

Latitude: 68.57 **Quadrangle:** PS C-4

Longitude: 148.83

Location description and accuracy:
Site is approximately 5 miles northeast of the confluence of the Atigun and Sagavanirktok Rivers at an elevation of about 2,925 ft. (NW1/4 sec. 22, T. 10 S., R. 14 E., of the Umiat Meridian). This occurrence is shown as location No. 13 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Jurassic to Early Cretaceous, based on the age of the host Early Cretaceous Fortress Mountain, Okpikruak, and Kongakut Formations and Jurassic Kingak Shale (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:
The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:
Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (southwest of Toolik Lake)

Site type: Occurrence

ARDF no.: PS025

Latitude: 68.58 **Quadrangle:** PS C-5

Longitude: 149.80

Location description and accuracy:
Site is approximately 6.5 miles southwest of Toolik Lake (NW1/4 sec. 16, T. 10 S., R. 10 E., of the Umiat Meridian) at an elevation of about 2,550 ft. This occurrence is shown as location No. 11 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Jurassic to Early Cretaceous, based on the age of the host Early Cretaceous Fortress Mountain, Okpikruak, and Kongakut Formations and Jurassic Kingak Shale (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (east of the head of Saviukviayak River)

Site type: Occurrence

ARDF no.: PS026

Latitude: 68.83 **Quadrangle:** PS D-1

Longitude: 147.35

Location description and accuracy:

The occurrence is east of the north fork headwaters of the Saviukviayak River and about 16 miles north of Windy Glacier at an elevation of about 2,800 ft. (NW1/4 sec. 22, T. 7 S., R. 20 E., of the Umiat Meridian). This occurrence is shown as location number 17 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:

Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:

Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:

Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (head of Saviukviayak River)

Site type: Occurrence

ARDF no.: PS027

Latitude: 68.76 **Quadrangle:** PS D-1

Longitude: 147.53

Location description and accuracy:

The occurrence is near the south fork headwaters of the Saviukviayak River and about 14 miles north-northwest of Windy Glacier at an elevation of about 3,400 ft. (NE1/4 sec. 11, T. 8 S., R. 19 E., of the Umiat Meridian). This occurrence is shown as location number 16 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:

Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:

Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:

Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Ivishak River)

Site type: Occurrence

ARDF no.: PS028

Latitude: 68.93 **Quadrangle:** PS D-1

Longitude: 147.42

Location description and accuracy:
The occurrence is at an elevation of about 2,900 ft. approximately 19 miles north-northeast of VABM Lupine (north-center sec. 17, T. 6 S., R. 20 E., of the Umiat Meridian). This occurrence is shown as location number 18 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Flood Creek)

Site type: Occurrence

ARDF no.: PS029

Latitude: 68.88 **Quadrangle:** PS D-2

Longitude: 147.75

Location description and accuracy:
The occurrence is at an elevation of about 2,950 ft. near the head of Flood Creek approximately 10 miles east of VABM Lupine (NW1/4 sec. 36, T. 6 S., R. 18 E., of the Umiat Meridian). This occurrence is shown as location number 19 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (east of Lupine River)

Site type: Prospect

ARDF no.: PS030

Latitude: 68.80 **Quadrangle:** PS D-2

Longitude: 147.98

Location description and accuracy:
Site is at an elevation of about 3,250 ft. between the Saviukviayak and Lupine Rivers about 6 miles southeast of VABM Lupine (SW1/4 sec. 25, T. 7 S., R. 17 E., of the Umiat Meridian). Location is accurate within 1-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:
Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985). Fluorite mineralization at this locality reportedly grades up to 78 percent (Barker, 1978), but no other descriptive information is available.

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the Philip Smith Mountain quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Barker, 1978; Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (east of Saviukviayak River)

Site type: Occurrence

ARDF no.: PS031

Latitude: 68.96 **Quadrangle:** PS D-2

Longitude: 148.10

Location description and accuracy:
The occurrence is approximately 1 mile east of the Saviukviayak River and 6 1/2 miles north of VABM Lupine at an elevation of about 1,400 ft. (NW1/4 sec. 4, T. 6 S., R. 17 E., of the Umiat Meridian). This occurrence is shown as location number 20 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Lupine River)

Site type: Occurrence

ARDF no.: PS032

Latitude: 68.84 **Quadrangle:** PS D-3

Longitude: 148.39

Location description and accuracy:
The occurrence is at an elevation of about 2,000 ft. approximately 10 1/2 miles east-northeast of the confluence of the Ribdon and Sagavanirktok Rivers (junction of sections 7, 8, 17, and 18, T. 7 S., R. 16 E., of the Umiat Meridian). This occurrence is shown as location number 21 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Jurassic to Early Cretaceous, based on the age of the host Early Cretaceous Fortress Mountain, Okpikruak, and Kongakut Formations and Jurassic Kingak Shale (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

Deposit model number (After Cox and Singer, 1986 or Bliss, 1992):
34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:
The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:
Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Lupine River)

Site type: Occurrence

ARDF no.: PS033

Latitude: 68.80 **Quadrangle:** PS D-3

Longitude: 148.35

Location description and accuracy:
The occurrence is located about 11 miles east of the confluence of the Ribdon and Sagavanirktok Rivers at an elevation of about 2,250 ft. (NE1/4 sec. 32, T. 7 S., R. 16 E., of the Umiat Meridian). This occurrence is shown as location number 22 in Menzie and others (1985). Location accurate within 1-mile radius.

Commodities:

Main: P2O5

Other:

Ore minerals: Phosphate rock

Gangue minerals:

Geologic description:
Phosphate occurrences in the quadrangle have not been described individually but in general occur most commonly as thin, low-grade concentrations, which are estimated to probably average less than one percent of the host rock matrix (Menzie and others, 1985). The permissive rocks for the phosphate occurrences in the quadrangle are the black, calcareous phosphatic siltstones and shales of the Triassic Shublik Formation. Minor amounts of phosphate rock also occur within the Kongakut and Okpikruak Formations, Kingak Shale, and Sadlerochit Group (Menzie and others, 1985).

Alteration:

Age of mineralization:
Triassic, based on the age of the host Shublik Formation (as mapped by Menzie and others, 1985).

Deposit model:
Upwelling-type phosphate deposits (Cox and Singer, 1986; model 34c).

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

34c

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

The Philip Smith Mountains quadrangle contains rock types permissive for the occurrence of phosphate deposits. Phosphate rock is locally abundant in the Mississippian Lisburne Group to the west of the quadrangle but was not noted in that formation within this quadrangle. Samples of phosphate rock from the quadrangle were not analyzed for uranium; however, there are reports of uranium in samples of phosphate rock in adjacent quadrangles (Menzie and others, 1985).

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

Site name(s): Unnamed (west of Lupine River)

Site type: Occurrence

ARDF no.: PS034

Latitude: 68.78 **Quadrangle:** PS D-3

Longitude: 148.29

Location description and accuracy:
Located approximately 10 miles north-northeast of Elusive Lake and 14 miles east of the Dalton highway at an elevation of about 1,950 ft. (NW1/4 sec. 3, T. 8 S., R. 16 E., of the Umiat Meridian). Location accurate within 2-mile radius.

Commodities:

Main: F

Other:

Ore minerals: Fluorite

Gangue minerals:

Geologic description:
Fluorite occurrences in the Philip Smith Mountains quadrangle have not been described Individually. In general, fluorite found throughout the northern portion of the quadrangle has been described as 'microscopic interstitial and replacement crystals or as megascopic crystals and veins in the upper few hundred meters of the Lisburne Group and the basal beds of the Sadlerochit Group' (Menzie and others, 1985). The origin of the fluorite is uncertain. It may either be sedimentary (apparent stratabound distribution) or hydrothermal (local igneous associations) (Menzie and others, 1985).

Alteration:

Age of mineralization:

Deposit model:

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

Production Status: None

Site Status: Inactive

Workings/exploration:

Production notes:

Reserves:

Additional comments:

Fluorite is reported to occur at widespread localities across the entire northern part of the Philip Smith Mountains quadrangle. These occurrences extend to the east into the Arctic quadrangle, where thick veins and isolated crystals associated with Paleozoic volcanic rocks at the top of the Lisburne Group are reported.

References:

Menzie and others, 1985.

Primary reference: Menzie and others, 1985

Reporter(s): J.M. Britton (Anchorage)

Last report date: 11/17/99

References

Barker, J.C., 1978, Mineral investigations of certain lands in the eastern Brooks Range: A Summary Report: U.S. Bureau of Mines Open-File Report 63-78, 25 p., 5 sheets.

Barker, J.C., 1981, Mineral investigations of certain lands in the eastern Brooks Range, 1978: U.S. Bureau of Mines Open-File Report 37-81, 288 p., 8 sheets.

Bliss, J.D., ed., 1992, Developments in mineral deposit modeling: U.S. Geological Survey Bulletin 2004, 168 p.

Brosgé, W. P., Reiser, H. N., Dutro, J. T., Jr., and Detterman, R. L., 1979, Bedrock geologic map of the Philip Smith Mountains quadrangle, Alaska: U. S. Geological Survey Miscellaneous Field Studies Map MF-879-B, 2 sheets, scale 1:250,000.

Bundtzen, T.K., Eakins, G.R., Clough, J.G., Lueck, L.L., Green, C.B., Robinson, M.S., and Coleman, D.A., 1984, Alaska's mineral industry 1983: Alaska Division of Geological and Geophysical Surveys Special Report 33, 56 p.

Bundtzen, T.K., Eakins, G.R., Green, C.B., and Lueck, L.L., 1986, Alaska's mineral industry 1985: Alaska Division of Geological and Geophysical Surveys Special Report 39, 68 p.

Bundtzen, T.K., Green, C.B., Deagen, J.R., and Daniels, C.L., 1987, Alaska's mineral industry 1986: Alaska Division of Geological and Geophysical Surveys Special Report 40, 68 p.

Bundtzen, T.K., Green, C.B., Peterson, R.J., and Seward, A.F., 1988, Alaska's mineral industry 1987: Alaska Division of Geological and Geophysical Surveys Special Report 41, 69 p.

Bundtzen, T.K., and Henning, M.W., 1978, Barite in Alaska: Alaska Division of Geological and Geophysical Surveys Mines and Geology Bulletin, v. 27, no. 4, p. 1-4.

Bundtzen, T.K., Swainbank, R.C., Clough, A.H., Henning, M.W., and Charlie, K.M., 1996, Alaska's mineral industry 1995: Alaska Division of Geological and Geophysical Surveys Special Report 50, 72 p.

Bundtzen, T.K., Swainbank, R.C., Clough, A.H., Henning, M.W., and Hansen, E.W., 1994, Alaska's Mineral Industry 1993: Alaska Division of Geological and Geophysical Surveys Special Report 48, 84 p.

Bundtzen, T.K., Swainbank, R.C., Wood, J.E., and Clough, A.H., 1991, Alaska's mineral industry 1991: Alaska Division of Geological and Geophysical Surveys Special Report 46, 89 p.

Cathrall, J.B., Cooley, E.F., Detra, D.E., and O'Leary, R.M., 1977, A listing and statistical summary of spectrographic and chemical analysis of stream-sediment and rock samples from the Philip Smith Mountains quadrangle, Alaska: U.S. Geological Survey Open-File Report 77-244, 79 p.

Detra, D.E., 1977, Delineation of an anomalous lead-zinc area in the Philip Smith Mountains A-2 quadrangle, Alaska: U.S. Geological Survey Open-File Report 77-223, 11 p.

Dutro, J.T., Jr., 1978, Potential stratabound lead-zinc mineralization, Philip Smith Mountains quadrangle, Alaska, *in* Johnson, K. M., ed., The United States Geological Survey in Alaska - Accomplishments during 1977: U.S. Geological Survey Circular 772-B, p. B9-B11.

Eakins, G.R., Bundtzen, T.K., Robinson, M.S., Clough, J.G., Green, C.B., Clautice, K.H., and Albanese, M.A., 1983, Alaska's mineral industry 1982: Alaska Division of Geological and Geophysical Surveys Special Report 31, 68 p.

Grybeck, Donald, 1977, Known mineral deposits of the Brooks Range, Alaska: U.S. Geological Survey Open-

File Report 77-166C, 45 p., 1 sheet, scale 1:1,000,000.

Maas, K.M., 1987, Availability of land for Mineral exploration and development in northern Alaska, 1986: U.S. Bureau of Mines Special Publication, 34 p., 33 sheets.

Menzie, W.D., II, Reiser, H.N., Brosgé, W.P., and Detterman, R.L., 1985, Map showing distribution of mineral resources (excepting oil and gas) in the Philip Smith Mountains quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Investigations Map MF-879C, 2 sheets, scale 1:250,000.

Paris, C. 1977, Models of barite deposition with reference to the barite occurrence of Atigun Canyon, central Brooks Range, Alaska: University of Alaska Fairbanks special topics paper, 45 p.

Proffett, J., 1977, Progress Report - Atigun Project (Anaconda Co. files, memo to D.A. Heatwole, July 31, 1977): University of Wyoming American Heritage Center, Anaconda Geologic Documents Collection, 3 p.

Ransome, A.L., and Kern, W.H., 1954, Names and definitions of regions, districts, and subdistricts in Alaska: U. S. Bureau of Mines Information Circular 7679, 91 p.

Reiser, H.N., Brosgé, W.P., Hamilton, T.D., Singer, D.A., Menzie, W.D., II, Bird, K.J., Cady, J.W., Le Compte, J.R., and Cathrall, J.B., The Alaska Mineral Resource Assessment Program: Guide to information contained in folio of geologic and mineral resource maps of the Philip Smith Mountains quadrangle, Alaska: U.S. Geological Survey Circular 759, 22 p.

Schmidt, J.M., 1997, Strata-bound carbonate-hosted Zn-Pb and Cu deposits of Alaska, *in* Goldfarb, R. J. and Miller, L. D., eds., Mineral Deposits of Alaska: Economic Geology Monograph 9, 482 p.

Sellars, B.D., 1981, The barite occurrence and stratigraphy of the Siksikpuk Formation in Atigun River gorge, Brooks Range, Alaska: University of Alaska Fairbanks M. S. thesis, 108 p.

Swainbank, R.C., Bundtzen, T.K., Clough, A.H., Hansen, E.W., and Nelson, M.G., 1993, Alaska's Mineral Industry 1992: Alaska Division of Geological and Geophysical Surveys Special Report 47, 80 p.