

016930

NORTHEAST BRITISH COLUMBIA

Report on the Geology of
the Southwest Corner of Kwadacha Wilderness Park
and the Mt. Alcock Ba-Pb-Zn-Ag Showing
(94F/11)

by

D.G. MacIntyre

Table of Contents

	Page
Introduction	1
Geology	1
Cambrian-Ordovician	1
Ordovician-Silurian	2
Silurian	2
Devonian	3
Unit Dls	3
Unit Dss	3
Unit Dsh	4
Triassic	4
Mt. Alcock Ba-Pb-Zn-Ag Occurrence	5
Conclusions and Recommendations	6

List of Figures

Figure		
1	Location and tectonic setting	7
2	Geology	8

List of Plates

Plate	
1	View from Mt. Alcock looking NE.
2	View E toward Mt. Luke with barite kill zone in foreground.
3	Close-up of Pb-Zn showing.
4	Polished slab of massive bedded barite.

Introduction

Potentially economic barite-Pb-Zn-Ag occurrences have recently been discovered in northeastern British Columbia (94F,K,L). These occurrences are associated with siliceous argillite, chert and shale of the Middle to Upper Devonian Gunsteel "Formation". The geologic setting of the occurrences is very similar to those of the Selwyn basin in Yukon and the Meggen deposit in West Germany.

The Gunsteel Formation is exposed in a series of narrow discontinuous belts bounded by northwest trending imbricate thrust faults (Figure 1). The area of economic interest is over 180 km long and is centered approximately 72 km north of Williston Lake. During the 1979 field season a two-man helicopter-supported field crew mapped and examined mineral occurrences within this belt. A total of 5 days was spent mapping that part of the belt which passes through the west half of Kwadacha Wilderness Park (Figure 1). This report summarizes the results of this work.

Geology

The geology of the southwest corner of Kwadacha Wilderness Park is shown in Figure 2. Also shown is an interpretive SW-NE structural section that passes through Mt. Alcock, Mt. Luke and Mt. Holben.

Cambrian to Ordovician (unit €O)

The oldest rocks exposed in the area of Figure 2 are the calcareous phyllitic mudstones of the Cambrian to Ordovician Kechika Group (map unit €O). These rocks underlie

the extreme southwest and northeast corners of the map-area. No significant mineral occurrences have yet been discovered in Kechika Group rocks of the project area.

Ordovician to Silurian (unit OS)

The Kechika Group is unconformably overlain by cream to buff weathering laminated calcareous siltstone and black graptolitic shale. Within Kwadacha Park this unit is relatively thin and discontinuous. Much of the thrusting in the area has been directed along this unit which is very incompetent relative to overlying and underlying formations. These rocks have been tentatively correlated with the Ordovician Road River Formation which is host to the Howard Pass Pb-Zn deposit in Yukon. However, within the project area no significant mineral occurrences have been found within this unit.

Silurian (unit S)

Ordovician rocks are unconformably overlain by up to 400 m of distinctive orange to brown weathering dolomitic siltstone and minor limestone of apparent Silurian age (map unit S). These rocks are well exposed on ridges west and east of Mt. Alcock, along the west slope of Mt. Luke, and in the northeast corner of the map-area (Figure 2). Locally, the basal part of the Silurian section is comprised of a grey blocky weathering unit of interbedded limestone and chert (map unit Sls). No significant mineral occurrences have been found in Silurian age rocks of the project area.

Middle Devonian (unit Dls)

On Mt. Luke, and in the area southeast of the Kwadacha River, Silurian siltstone is unconformably to disconformably overlain by grey micritic limestone containing Middle Devonian fossil assemblages. This unit is correlated with platform carbonates of the Dunedin Formation which are host to significant Pb-Zn deposits in the Robb Lake area, approximately 125 km southeast of Kwadacha Park. A few isolated Zn showings of unknown economic potential also occur in Dunedin limestone at the Pie claims, located 24 km southeast of the park. The Dunedin limestone exposed within the park is relatively thin and discontinuous along strike and was probably deposited very close to the platform margin. No sulphide occurrences were noted within this unit.

Middle-Upper Devonian (unit Dss)

East and west of Mt. Luke, Silurian siltstone is disconformably overlain by laminated black silty shale and argillite with thin siltstone and sandstone interbeds (map unit Dss). This unit is interpreted to be the basal equivalent of the Dunedin limestone and is tentatively correlated with the Besa River Formation. Unit Dss apparently thins rapidly away from the limestone contact.

A few thin nodular barite and pyrite horizons have been located within this unit elsewhere in the project area but none were noted within Kwadacha Park.

Unit Dsh

Unit Dss is overlain by, and in places may grade laterally into, siliceous argillite, chert and carbonaceous black shale of the Middle to Upper Devonian Gunsteel "Formation" (map unit Dsh). This formation underlies the area between Mt. Alcock and Mt. Luke and the valley between Mt. Holben and ranges to the east (Figure 2). This is the unit of economic interest, containing all of the major shale-hosted barite-Pb-Zn occurrences known in the project area (Figure 1). One of these deposits, namely the Cirque, is located 22 km southeast of Mt. Alcock and has been extensively explored by drilling. To date drill indicated reserves - in-place of 18 million tonnes containing 2.3% Pb, 7.9% Zn, and 49 grams/MT Ag with an additional drill inferred geological reserve of approximately 15 million tonnes have been announced by the Cyprus Anvil/Hudson's Bay Oil and Gas joint venture. Within Kwadacha Park a Pb-Zn-Ag bearing massive barite horizon, very similar to that at the Cirque, is located on the east side of Mt. Alcock. In addition, several laminated pyrite horizons were noted in Gunsteel shale exposed in the valley east of Mt. Holben.

Triassic

Brown to orange weathering dolomitic siltstone with limestone turbidite interbeds underlies the area east of Mt. Luke. These rocks appear to be preserved within a synclinal keel and apparently disconformably overlie Gunsteel shale. Although lithologically similar to the Silurian siltstone unit, these rocks are easily distinguished by their Upper

Triassic fossil content. No significant sulphide mineralization was noted within this unit.

Mt. Alcock Ba-Pb-Zn-Ag Occurrence (94F/11)

A prominent white weathering kill zone, composed of angular blocks of dark grey bedded barite, occurs on the ridge northeast of Mt. Alcock (see Plates 1, 2). This showing is contained within a fault-bounded wedge of Gunsteel shale surrounded by Silurian siltstone. The barite horizon is apparently 25 to 30 m thick and dips from 45 to 75° to the southwest. Within the barite horizon is a 2-3 m thick zone containing fine diffuse bands of galena and sphalerite (see Plates 3, 4). Assays of selected grab samples collected from this zone are listed below.

<u>Sample No.</u>	Ag (ppm)	Ba%	Cu%	Pb%	Zn%
AL-1	24	50.5	.002	13.0	0.11
AL-2	17	49.3	.002	10.8	1.41
AL-3	15	50.3	.001	8.4	2.41
AL-4	20	50.8	.001	10.0	4.81
AL-5	15	51.8	.002	6.8	1.07

The Mt. Alcock mineralization is finer-grained and more banded than that at the Cirque, suggesting less recrystallization has taken place at Mt. Alcock. Metal ratios are also different, with the Mt. Alcock occurrence being predominantly Pb and the Cirque predominantly Zn. Combined Pb-Zn grades are very similar between the two deposits.

At the Cirque deposit barren massive barite grades into Pb-Zn-bearing barite over a short distance. This may also be the case at Mt. Alcock where there appears to be a significant increase in sulphide content going down dip and along strike towards the southwest. Unfortunately, in this

direction the barite horizon dips into the hillside and is not exposed beyond the barite kill zone. Diamond drilling is necessary to evaluate this area and to adequately define the tonnage and grade of the deposit as a whole.

Conclusions and Recommendations

Much of the southwest corner of Kwadacha Park is underlain by the Gunsteel Formation of Middle to Upper Devonian age. This formation is host to strataform, shale-hosted barite Pb-Zn occurrences and areas underlain by these rocks are considered to have relatively high mineral potential. One such occurrence, Mt. Alcock, is known within Kwadacha Park and others may be present.

Examination of the Mt. Alcock showing suggests it is contained within a fault-bounded wedge of Gunsteel shale. The only adequate way to evaluate the economic potential of this showing is by diamond drilling. Soil sampling and an EM survey would also be useful but not conclusive as to whether an economically viable deposit exists or not. A regional silt sampling program would help to evaluate areas of the park underlain by Gunsteel shale.

D. G. MacIntyre

D.G. MacIntyre
Project Geologist

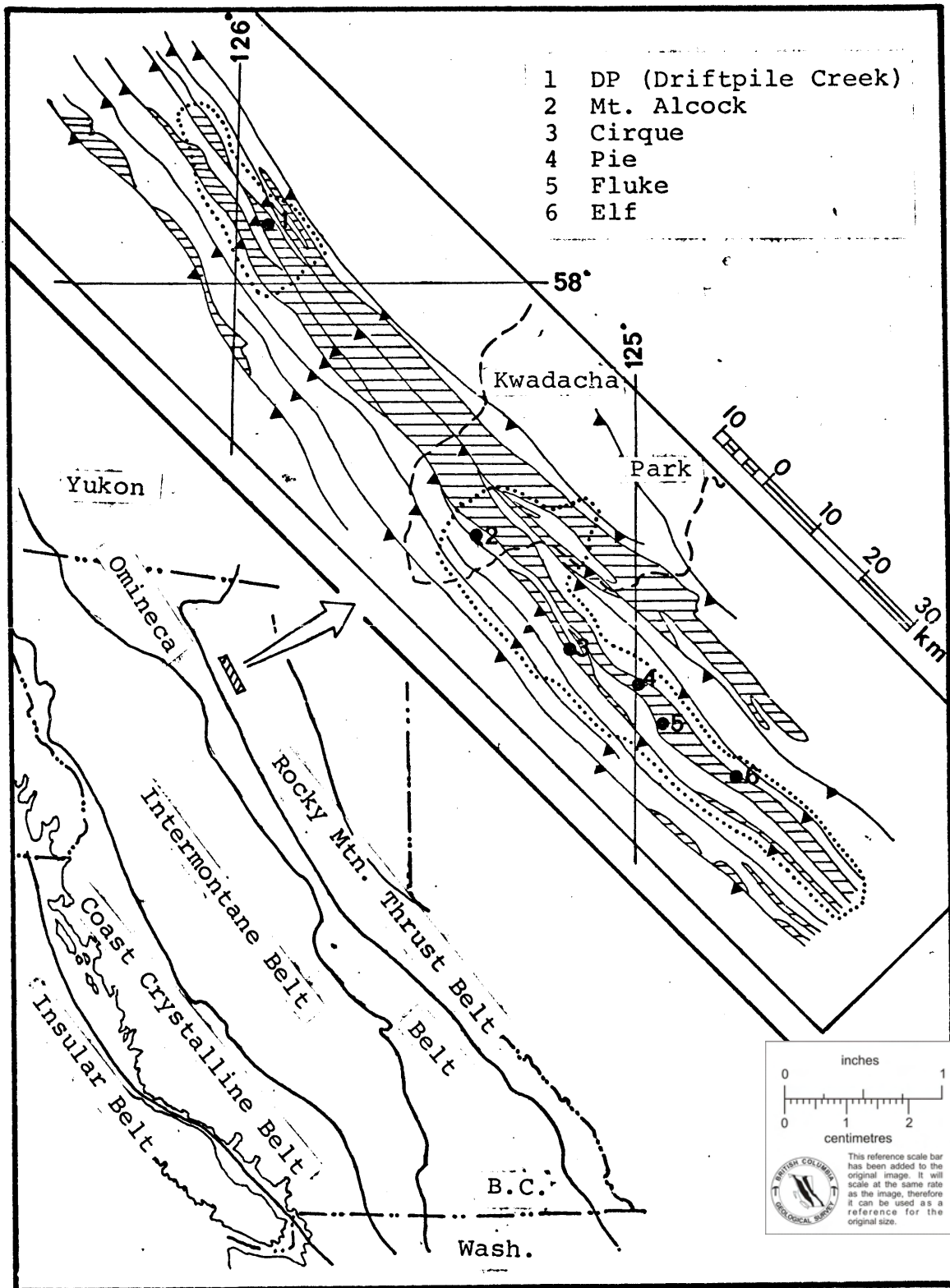
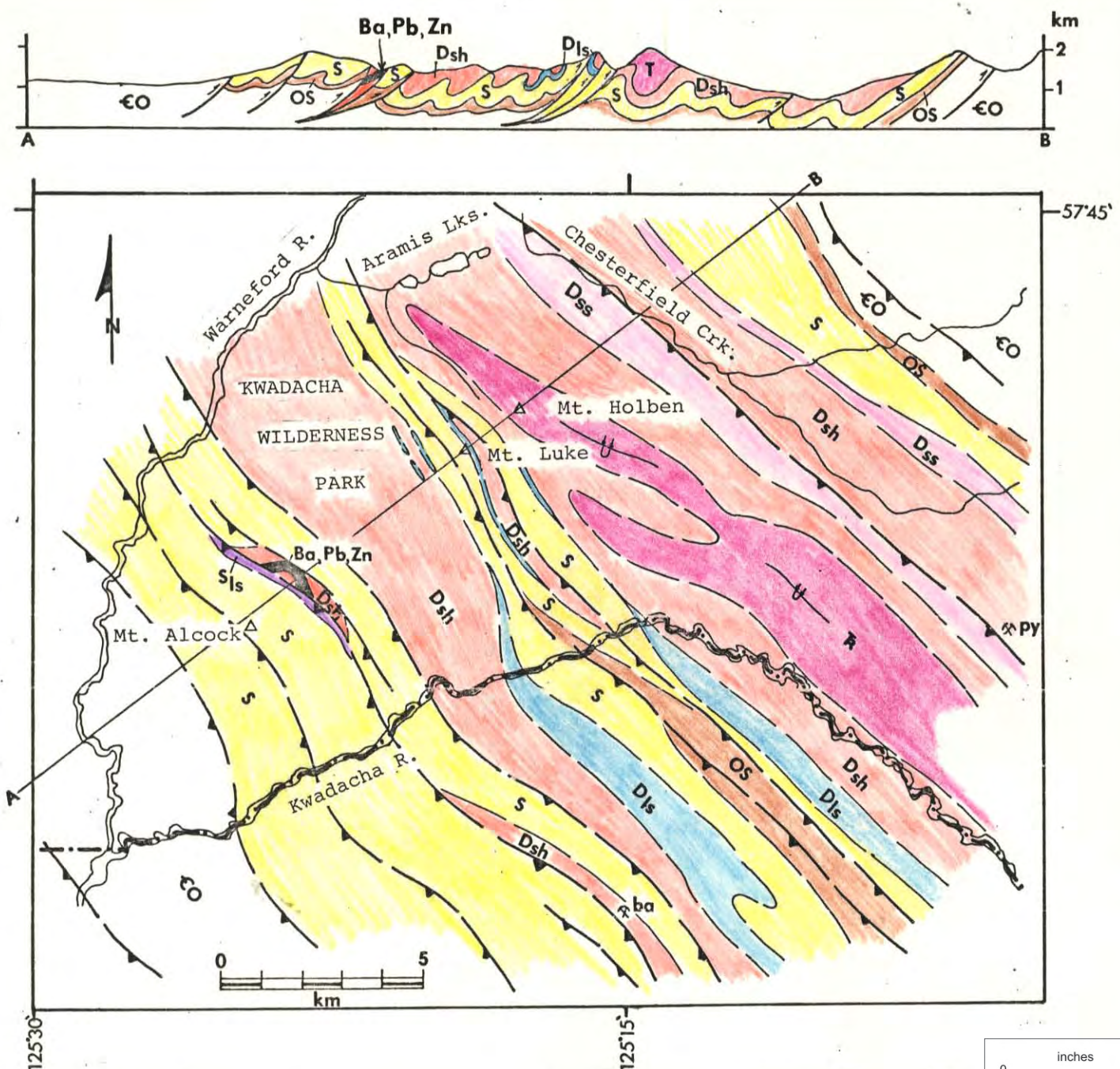


Fig.1 Location and tectonic setting of the 1979 Gataga project area. Inset shows limit of mapping (dotted line), major thrust faults, distribution of Devonian black clastics (lined) and location of major shale hosted Ba-Pb-Zn occurrences.



LEGEND

U. TRIASSIC

R fossil. siltstone, limestone

M.-U. DEVONIAN

Dsh sil. arg., chert, shale

Dss silty shale, siltstone

Dls fossil. limestone

SILURIAN

S siltstone

Sls limestone, chert

M. ORDOVICIAN-SILURIAN

OS shale, siltstone

U. CAMBRIAN-L. ORDOVICIAN

EO phyllitic mudstone

SYMBOLS

- thrust fault
- mineral occurrence
- park boundary
- overtaken syncline

0 1
inches

0 1 2
centimetres

This reference scale bar has been added to the original image. It will scale at the same rate as the image, therefore it can be used as a reference for the original size.

Figure 2, Geology of the southwest corner of Kwadacha Wilderness Park.



Plate 1 View from Mt. Alcock looking NE. White area is barite kill zone. See Figure 2 for legend.



Plate 2 View E toward Mt. Luke with barite kill zone in foreground. Note location of Pb-Zn zone within kill zone.



Plate 3 Close-up of Pb-Zn showing within barite talus slope. Location of photo marked by dot in Plates 1 and 2.

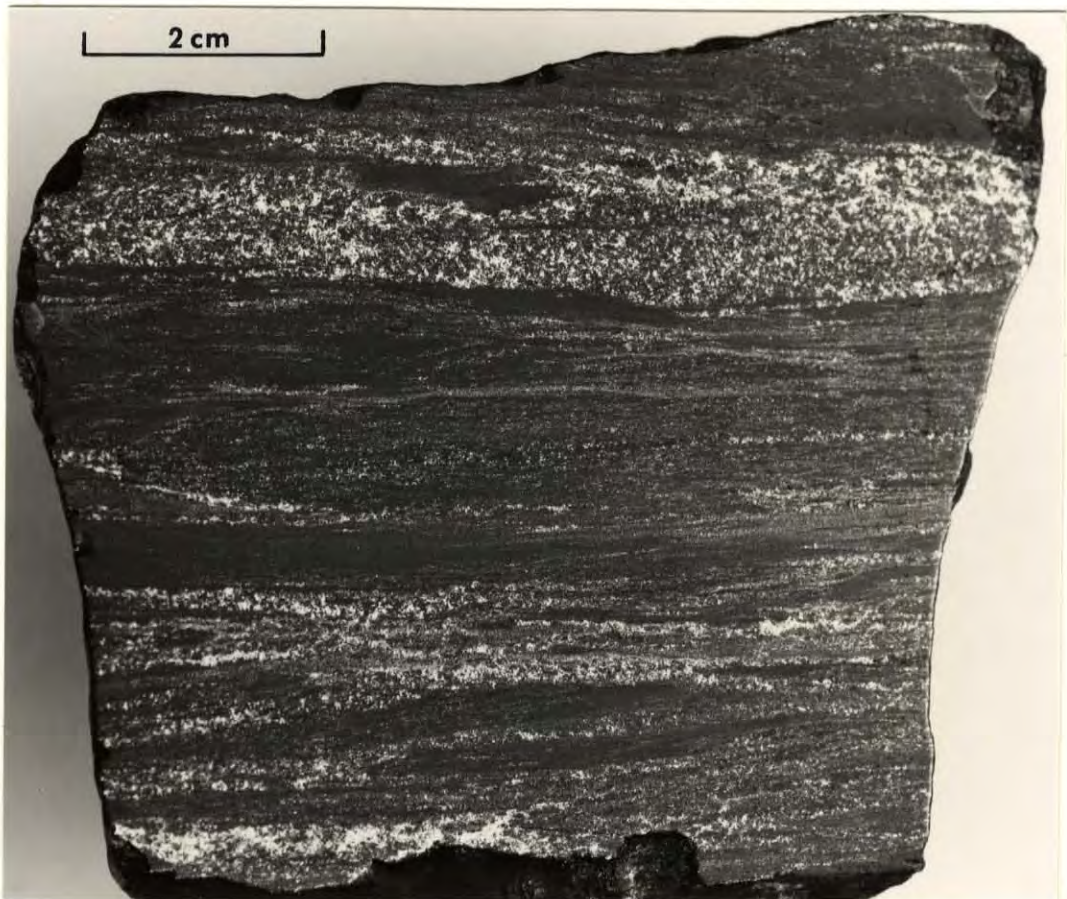


Plate 4 Polished slab of massive dark grey bedded barite with diffuse bands of galena (white specks). Sample assays 50.3% Ba, 8.4% Pb, 2.41% Zn and 15 ppm Ag.