



AKIE RIVER PROJECT  
 (94F)

By D.G. MacIntyre

The mapping project, which was initiated in the Driftpile Creek-Akie River Ba-Zn-Pb district in 1979, was continued during the 1981 field season. This year the project involved two helicopter-supported mapping crews operating from a base camp at Pretzel Lake. The following work was completed:

- (1) Detailed mapping and measurement of stratigraphic sections in the vicinity of the Kwadacha barite deposit (94F) (see separate report, this publication).
- (2) Continuation of regional 1:50 000-scale mapping south of the Akie River\* (94F/1W, 2E; Figure 1).
- (3) Sampling of strategic Devonian sections for a lithochemical study by J. Lowey at the University of Calgary.
- (4) Examination of Esso Resources Reb prospect (94C/16W).

LEGEND

MIDDLE TO UPPER DEVONIAN

mud Shale, silty shale, minor siltstone, sandstone, conglomerate, limestone; chert, siliceous argillite, pyritic and baritic shale

LOWER TO MIDDLE DEVONIAN

lmd Fossiliferous limestone; minor calcarenite, calcareous siltstone, and quartzite.

ORDOVICIAN TO SILURIAN

ROAD RIVER FORMATION

OS Dolomitic siltstone, graptolitic black shale, calcareous siltstone; minor limestone, quartz, chert

KECHIKA FORMATION

CO Nodular phyllitic mudstone, wavy banded, limestone, platy calcareous siltstone

Symbols

- High-angle fault; ball on downthrown side .....
  - Thrust fault .....
  - Antiform; synform .....
  - Mineral occurrence .....
  - Exhalite horizon .....
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\*To be released as a Preliminary Map, Spring 1982.

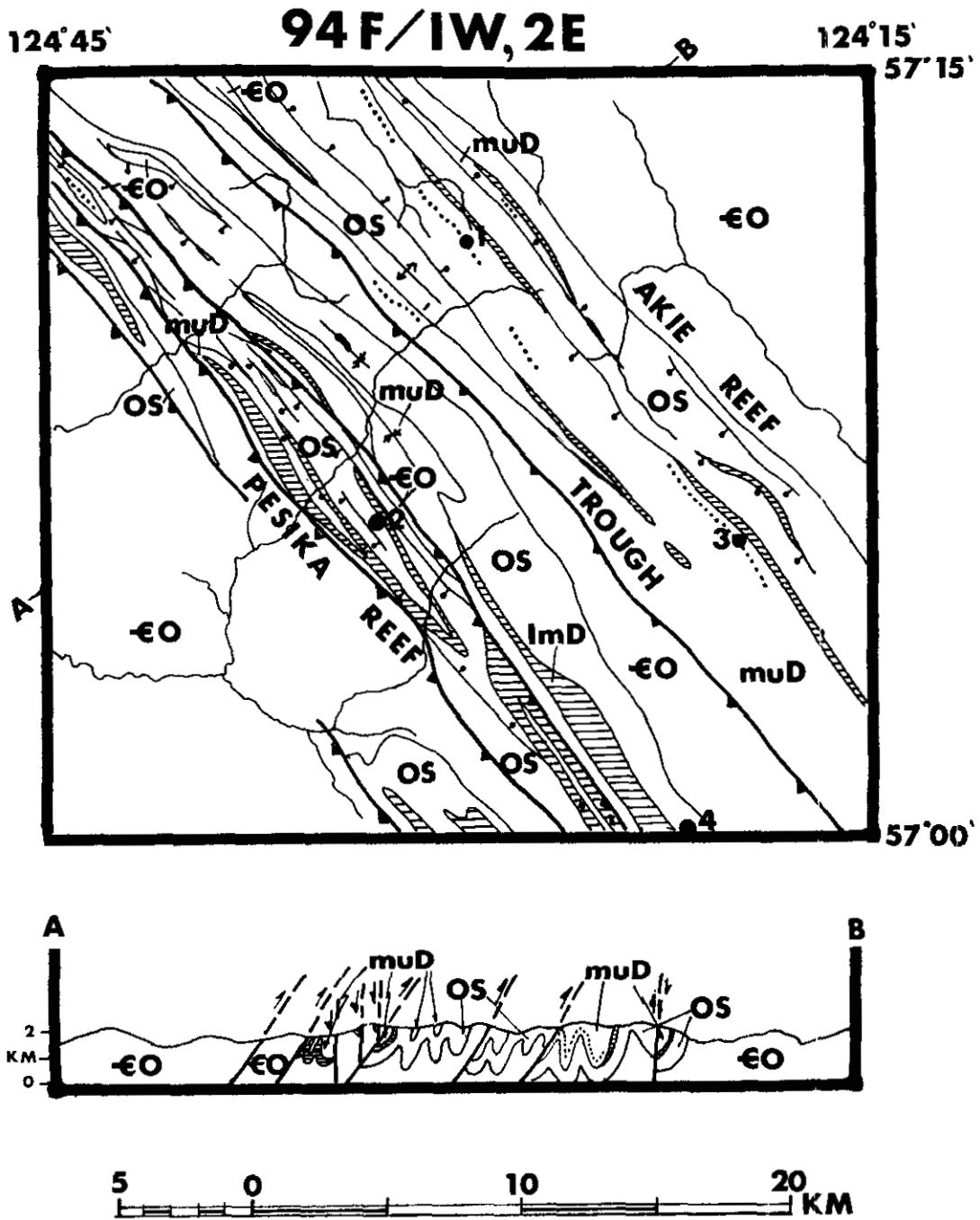


Figure 1. Generalized geology of 92F/1W, 2E.

In addition, L. Diakow spent 10 days mapping and sampling the Kwadacha barite deposit (see separate report, this publication). Tentative plans for the 1982 field season are to continue regional mapping in the area between Kwadacha Park and the Driftpile Creek occurrence. Geochemical, paleontological, and petrographic studies are currently in progress on samples collected to date and results will be published when all work is completed.

#### STRATIGRAPHIC AND STRUCTURAL SETTING

The Devonian stratigraphy and structure of the Akie River area have been discussed in two previous reports (MacIntyre, 1980, 1981). In general, the Devonian consists of a lower succession of quartzose and calcareous turbidites and shallow water carbonates that typically grade basinward into finer grained reduced silty shales and siltstones. These rocks, which on interbasin rises have been removed by a Middle Devonian erosional event, range in age from Early to Middle Devonian and are unconformably overlain by a distinctive unit of rhythmically bedded black chert, siliceous argillite, carbonaceous black shale, and minor limestone. These rocks in part correlate with Middle Devonian shelf carbonates of the MacDonald Platform and carbonates of the Akie and Pesika Reefs. These reefs, which apparently grew on the uplifted edges of westward tilted fault blocks, divided the Devonian basin into parallel troughs during Early and Middle Devonian time (MacIntyre, 1981), thus profoundly influencing Devonian sedimentation.

The Devonian stratigraphy in the current map-area (Figure 2) is a continuation of that observed to the north (MacIntyre, 1981). The lower part of the succession locally includes a unit of medium to thick-bedded quartz siltstone, sandstone, and conglomerate turbidites (unit 1) that unconformably overlies grey, pink, and red weathering platy siltstones and black cherts at the top of the Silurian section. The quartzose unit grades up section into interbedded calcarenites, limestone debris flows, and graptolitic (Pragian) black shale (unit 2). These turbidites presumably grade into the Lower Devonian limestone unit (unit 2a) found at the base of both the Akie and Pesika Reefs (Figure 3). Basinward the calcareous turbidites grade into black silty shales that have minor black chert and pelagic limestone intercalations (unit 3). The vertical succession of rocks suggests progressively deeper water conditions with time, perhaps due to an Early Devonian episode of crustal subsidence.

Where it has not been removed by erosion, the Lower Devonian transgressive cycle (units 1, 2 and 3) is overlain by a unit of medium to thick-bedded shallow water limestone that varies in thickness from over 200 metres in the core of the Pesika and Akie Reefs to less than a metre in adjacent troughs. Bioclastic beds rich in crinoid ossicles with double axial canals ('2 holers') typically occur near the top of the unit. The abundance of such ossicles indicates a probable early Middle Devonian age (Taylor and MacKenzie, 1970).

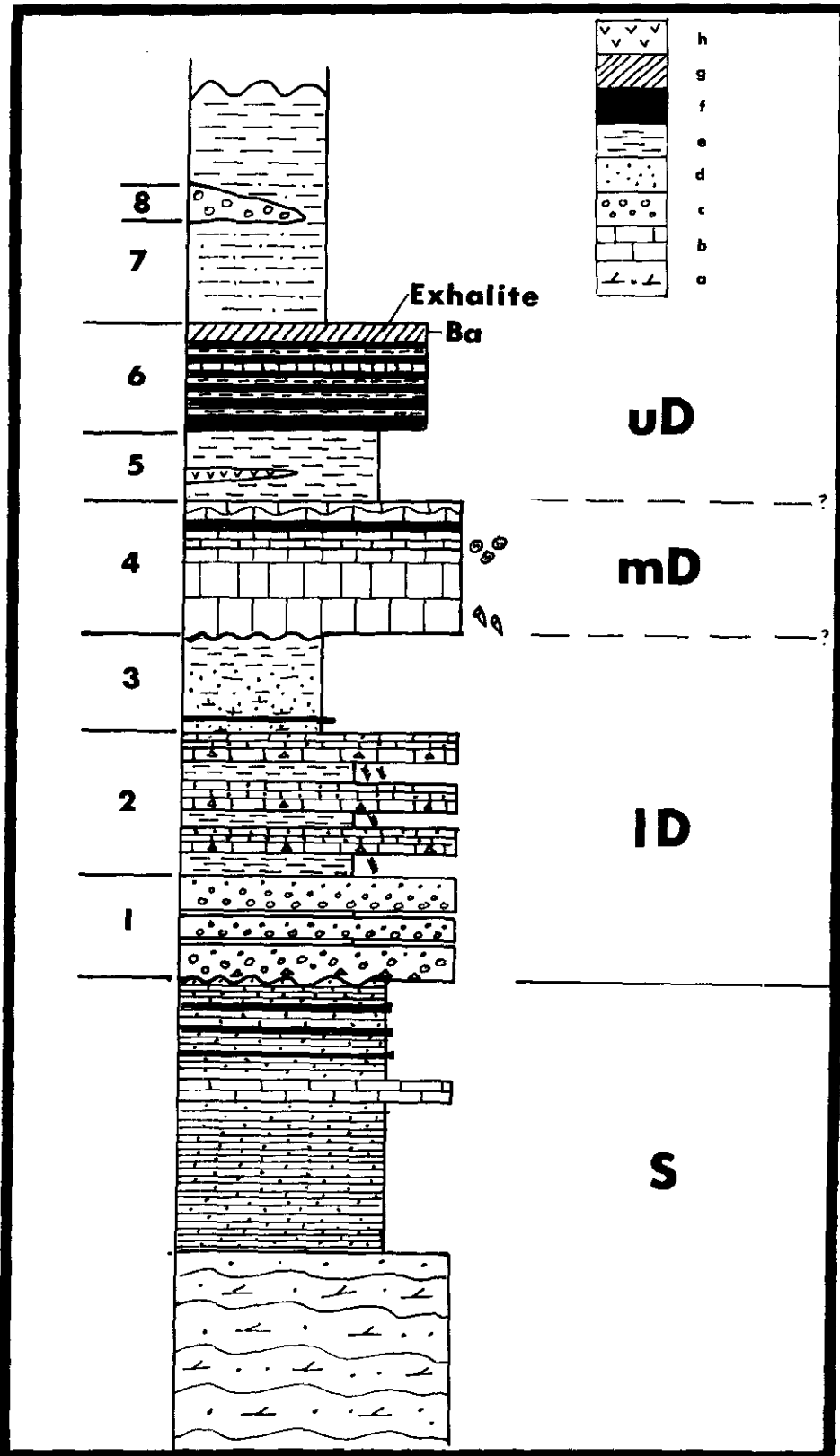


Figure 2. Idealized stratigraphic column for the Pesika Creek area showing apparent position of siliceous exhalites (black bands) and barite mineralization (cross hatched).

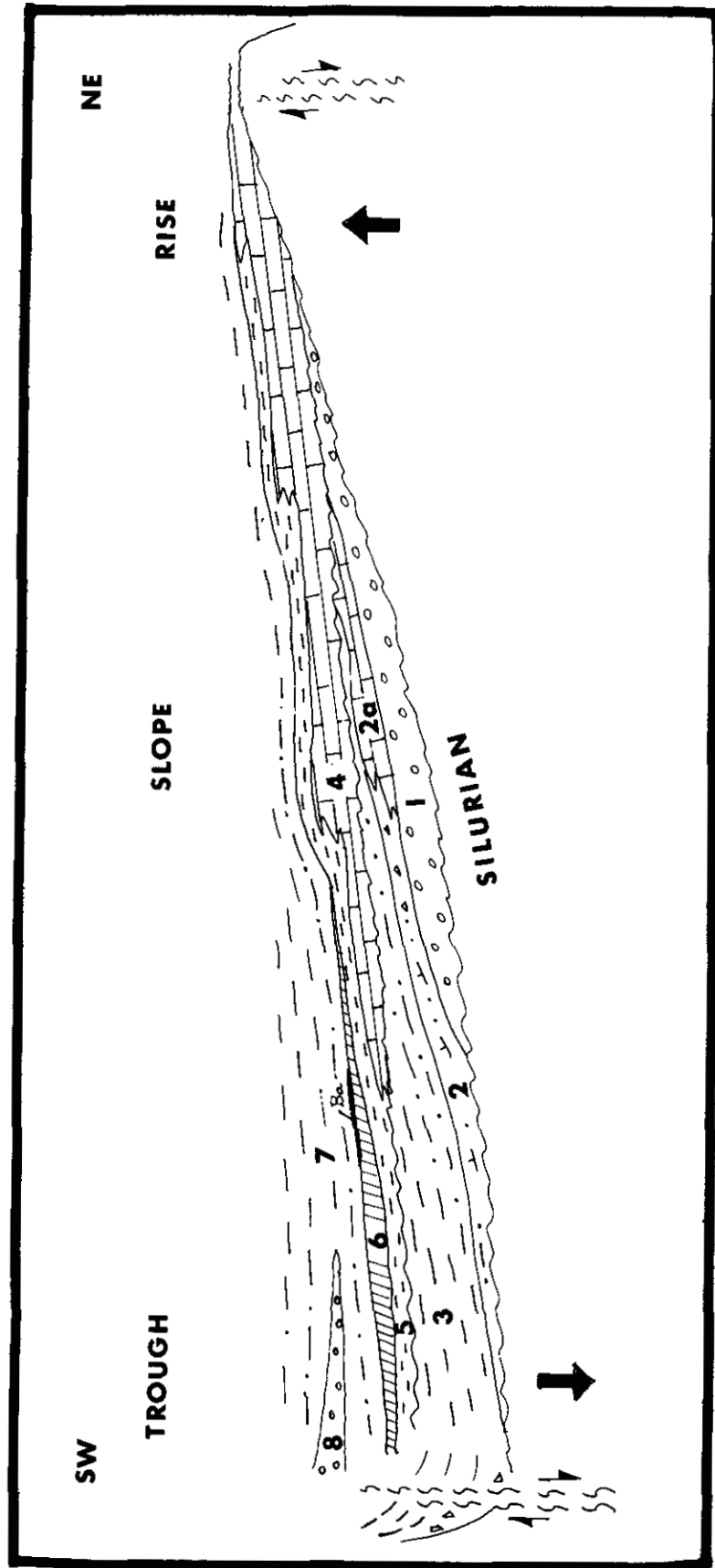


Figure 3. Idealized facies relationships between the Peslka Creek area and inferred depositional environments.

In contrast to the succession north of the Akie River, the Middle Devonian limestone in the current map-area is overlain by a relatively resistant unit of black rusty weathering shale that locally exceeds 100 metres in thickness (unit 5). The siliceous argillite, chert and shale unit (unit 6), which host the bedded barite and massive sulphide deposits of the Akie River district, lies stratigraphically above the rusty shale unit in the eastern part of the map-area but appears to be discontinuous in the westernmost shale belts. Where present, the siliceous unit is overlain by bluish grey to brownish grey-weathering banded silty shales of probable Late Devonian to Mississippian age (unit 7). In the westernmost exposures of the Devonian section thin units of sandstone and siltstone turbidites (unit 8) occur stratigraphically above the siliceous unit in the Late Devonian transgressive shale sequence. In the same area a 1-metre-thick greenish grey to orange-weathering pyritic tuff bed occurs within unit 5, a few metres above the Middle Devonian limestone. Units 4 and 5 may represent a short-lived transgressive cycle that preceded a period of tectonic and exhalative activity that heralded the beginning of a major episode of progressive, eastward advancing crustal subsidence in Middle to Late Devonian time. Concomitant crustal uplift and volcanism occurred to the west but shifted eastward during Mississippian time. This uplift may be related to the beginning of accretion of oceanic terranes further west at the leading edge of the continental plate.

#### MINERAL OCCURRENCES

The widespread Late Devonian baritic and/or pyritic siliceous exhalite unit, which is ubiquitous north of the Akie River, appears to be only locally present in the current map-area. This unit is exposed on Cyprus Anvil's Gin claims and Cominco's Pesika claims but surface mineralization is restricted to thin beds and laminae of nodular and massive barite. These occurrences (Nos. 1 and 3 on Figure 1) are on strike with a long belt of barite-sulphide occurrences that extends northward to the Driftpile creek district. The deposits appear to have formed in a linear structurally controlled trough bounded by the Akie and Pesika reefs.

Two other showings are also located within or near the 1981 map-area. Cominco's Ern showing (No. 2, Figure 1) comprises stratabound massive pyrite in a brecciated quartzite host. The quartzite is interbedded with dark grey calcareous siltstones, black chert, and limestone. Similar rocks have been observed elsewhere in the map-area; typically they occur near the top of the Silurian section, immediately below the Lower Devonian quartzite unit (unit 1, Figure 2). A similar stratigraphic position is suggested for the Ern showing.

Esso's Reb prospect (No. 4, Figure 1) is located slightly south of the area mapped in 1981. The showing is located in a small creek valley and consists of several finely laminated pyrite bands in a sequence of interbedded black shale, chert and siltstone. Graptolites collected from an outcrop of shale upstream from the showing indicate an Ordovician age for the mineralization. The Ordovician section on the Reb property appears to be anomalously thick

relative to those to the north, suggesting the presence of a local sedimentary basin or trough.

#### ACKNOWLEDGMENTS

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#### REFERENCES

- MacIntyre, D.G. (1980): Driftpile Creek-Akie River Project, B.C. Ministry of Energy, Mines & Pet. Res., Geological Fieldwork, 1979, Paper 1980-1, pp. 55-67.
- ..... (1981): Akie River Project, B.C. Ministry of Energy, Mines & Pet. Res., Geological Fieldwork, 1980, Paper 1981-1, pp. 33-47.
- ..... (1981): Geology of the Akie River Ba-Pb-Zn District, B.C. Ministry of Energy, Mines & Pet. Res., Prelim. Map 44.
- Taylor, G. and MacKenzie, W.S. (1970): Devonian Stratigraphy of Northeastern British Columbia, Geol. Surv., Canada, Bull. 186, 62 pp.