

Lower Triassic	Ivishak Formation	Fire Creek Siltstone Member
		Ledge Sandstone Member
Upper Permian	Echoka Formation	Kavik Member
		Ikiakpaurak Member
Lower Permian	Sadlerochit Formation	Joe Creek Siltstone and limestone unit

Sadlerochit Group

The base of each column marks the geographic location at which that section was measured. Arrows indicate position of inset sections.

- Conglomerate
- Siltstone
- Claystone
- Chert
- Volcanic rock
- Limestone
- Sandstone
- Silty sandstone
- Silty shale
- Clay shale
- Tuff
- Intervive rock
- Limestone and siliceous concretions
- Tronchite and phosphate concretions
- Covered

LITHOFACIES FENCE DIAGRAM OF SADLEROCHIT GROUP FOR PHILIP SMITH MOUNTAINS QUADRANGLE AND ADJACENT AREAS, NORTHEASTERN ALASKA

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**DISCUSSION**

The Sadlerochit Group was investigated in detail at 14 localities in the Philip Smith Mountains quadrangle in 1975. Eleven of the measured sections are used in the lithofacies fence diagram presented here, which is tied into some of the previously measured sections of the group (Deterrmann, 1974). The stratigraphic division of the group used here is modified slightly from the established nomenclature (Deterrmann and others, 1975) in that a persistent sequence of light-yellowish calcareous siltstone with thin limestone interbeds is informally designated the siltstone and limestone unit. This is a part of the Joe Creek Member of the Echoka Formation and is present at the type section for that member on Joe Creek. The siltstone and limestone unit is much thicker in sections measured in the Philip Smith Mountains quadrangle and may warrant formal designation as a separate stratigraphic unit. The age of the unit is Early Permian on the basis of the brachiopods *Atemnatis* sp., *Chonetes* sp., and the gastropod *Strophomena* (*Strophomena*) *alaskensis* (J. T. Dutro, Jr., oral comm., 1975). Also, a rusty weathering silty sandstone is present locally at the base of the Echoka Formation. This transgressive sandstone is a minor nearshore facies of the Joe Creek Member and contains an Early Permian fauna (Deterrmann, oral comm., 1975). The early Late Permian fauna typical of the Ikiakpaurak Member was found only in the northern exposures in the Philip Smith Mountains quadrangle, mainly on Flood Creek and the Siviukviyak River. The upper part of these same sections contained the only Early Triassic fossils found in the quadrangle.

The lower Permian rocks exposed in the Philip Smith Mountains quadrangle are considered as part of the Sadlerochit Group rather than the Siksikup

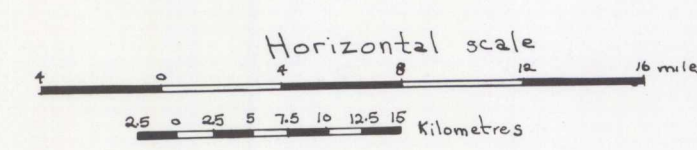
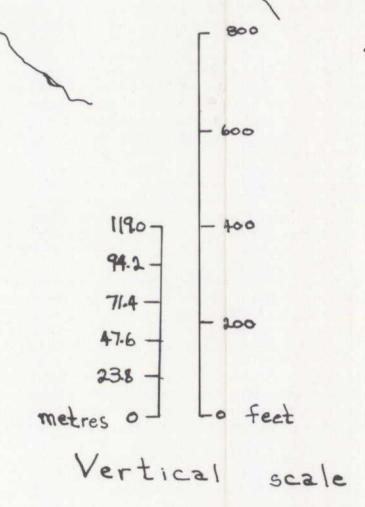
Formation. The Siksikup Formation as exposed in the central and western Brooks Range consists predominantly of variegated, mainly red and green, cherty siltstone and shale and chert. These lithologies are rarely present in the northeastern areas investigated. However, the lower part of the Sadlerochit in the Philip Smith Mountains quadrangle is undoubtedly correlative with the Siksikup Formation.

Two partial sections investigated in 1975 contain the first evidence for Permian volcanic rocks in northern Alaska. The section near Porcupine Lake, Arctic quadrangle, is mainly of flows with some pillow structures. The other on a mountain east of the Ivishak River, Sagsviniotok quadrangle, is mainly tuff and tuffaceous limestone. Both sections contain Permian brachiopods. The source of the volcanic material has not been definitely located, but a possible source for the northern area is present about 8-9.6 mi (5-6 mi) south of the locality where volcanic rocks are intrusive into the upper beds of the underlying Lisburne Group in a major anticlinal structure.

**References Cited**

Deterrmann, R. L., 1974, Fence diagram showing lithologic facies of the Sadlerochit Formation (Permian and Lower Triassic), northern Alaska: U.S. Geol. Survey Misc. Field Studies Map MF-584.

Deterrmann, R. L., Heiser, H. K., Broopé, W. P., and Dutro, J. T., Jr., 1975, Post-Carboniferous stratigraphy, northeastern Alaska: U.S. Geol. Survey Prof. Paper 886, 46 p.



Contact  
Gradational contact  
Unconformity, disconformity, or diastem  
Section missing through erosion

Sections 1-12 measured in 1975; others measured 1969 to 1972; 6A and 13A measured by W.R. Brooge and H.N. Reiser, 1975.

300.2 m  
985 ft  
Thickness of measured section

UNITED STATES ALASKA TERRITORY  
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