ECHOOKA FORMATION MEASURED SECTIONS
ARCTIC NATIONAL WILDLIFE REFUGE, NORTHEASTERN ALASKA

BY
GREGG A. HAKKILA
1986

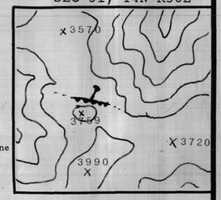
NORTH OF MT. WELLER
86GH18

STRATIGRAPHIC SECTION
69°39'14"N Latitude
144°52'03"W Longitude

EXPLANATION

Crossbeds, Zoophycos, Channelization, Limestone, Calcareous Conglomerate, Shale, Chert, Vertical Burrows, Fossils, Disconformable Contact, Breccia, Sandstone, Siltstone, Covered Interval, Randomly Oriented Burrows, Root Casts, Contact Obscured, Conglomerate, Calcareous Sandstone, Possible Siltstone

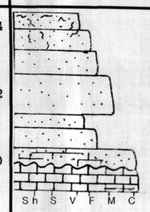
Mt. Michelson
(C-2) Quadrangle
SW¼, SW¼,
SEC 31, T4N R30E



1 : 25,000
= Measured Section

SERIES	STAGE	FORMATION	MEMBER	Thickness (m.)
Upper Permian	Guadalupe	Echooka	Ikiakpauruk	4
Middle Pennsylvanian	Atoka	Wahoo Limestone		2
				0

Graphic Column



Lithologic Description

Top contact obvious thrust fault with slickensides indicating a south to north direction of thrusting.

Quartz arenite: Medium to very fine graded unit. Medium to thin beds (upward thinning). Abundant disseminated organic material. Burrows increase upward to total destruction of beds near top. Glauconite common at top of unit; rare throughout the rest. Gray.

Quartz arenite: Fine to very fine. Thinly bedded. Upward thinning and fining. Highly organic. Black. Weathers gray.

Calcareous sandstone: Coarse Pore spaces contain hydrocarbons. Calcite cement.

The lower contact is an obvious thrust fault.
Lime mudstone with rare echinoderm fragments. It is medium bedded and has abundant stylolites.

This section of Echooka goes from an attitude of N85W, 45SW at the base to nearly flat lying near the top. Consequently the thicknesses of this section are a bit subjective. Every attempt was made to account for the amount of folding in these obviously deformed rocks in order to get data in the northern Sadlerochit mountains where the Echooka Formation is poorly exposed.

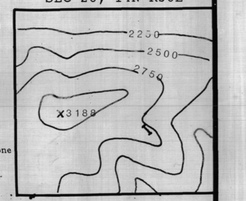
EAST OF MARSH CREEK
86GH19

STRATIGRAPHIC SECTION
69°40'35"N Latitude
144°47'36"W Longitude

EXPLANATION

Crossbeds, Zoophycos, Channelization, Limestone, Calcareous Conglomerate, Shale, Chert, Vertical Burrows, Fossils, Disconformable Contact, Breccia, Sandstone, Siltstone, Covered Interval, Randomly Oriented Burrows, Root Casts, Contact Obscured, Conglomerate, Calcareous Sandstone, Possible Siltstone

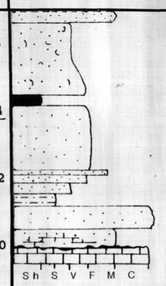
Mt. Michelson
(C-2) Quadrangle
NW¼, NW¼,
SEC 20, T4N R30E



1 : 25,000
= Measured Section

SERIES	STAGE	FORMATION	MEMBER	Thickness (m.)
Upper Permian	Guadalupe	Echooka	Ikiakpauruk	6
				4
				2
Middle Pennsylvanian	Atoka	Wahoo Limestone		0

Graphic Column



Lithologic Description

Top contact mantled by rubble from the Ledge Sandstone.

Quartz arenite: Medium grained. Approximately 100% quartz. Buff.

Quartz arenite: Fine to very fine graded unit. Thinly bedded. Contains possible bivalve fragments altered to or replaced by hematite. Scarce ironstone concretions. Lime green.

Shale: Extremely fissile unit with probable clay minerals and hematite. Red.

Quartz arenite: Fine grained, extremely glauconitic thinly bedded unit with common forams which have altered to hematite. Bright green, weathers red or green.

Quartz arenite: Silt to medium sand grains in inverse graded unit. Glauconite common; increases upsection. Hematite cement. Green, weathers red.

Quartz arenite: Very coarse to coarse sand. High porosity. Calcite cement. White. Weathers orange.

Calcareous sandstone: Medium quartz. Calcite cement. Gray, weathers white.

Contact seems gradational.
Below the lower contact Wahoo is lime mudstone.

N80°E 15°SE

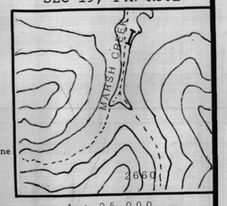
MARSH CREEK
86GH20

STRATIGRAPHIC SECTION
69°40'44"N Latitude
144°50'49"W Longitude

EXPLANATION

Crossbeds, Zoophycos, Channelization, Limestone, Calcareous Conglomerate, Shale, Chert, Vertical Burrows, Fossils, Disconformable Contact, Breccia, Sandstone, Siltstone, Covered Interval, Randomly Oriented Burrows, Root Casts, Contact Obscured, Conglomerate, Calcareous Sandstone, Possible Siltstone

Mt. Michelson
(C-2) Quadrangle
SE¼, SE¼,
SEC 19, T4N R30E



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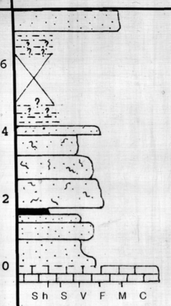

Lithologic Description

Top contact covered by tundra.

Quartz arenite: Medium grained. Laminated approximately every 1 cm. Extremely glauconitic. Green. Weathers red.

Covered interval: Possible green siltstone or shale seen as tailings from rodent burrows.

Quartz arenite: Fine grained. Organic material and glauconite. Green.

Quartz arenite: Fine to very fine and graded. Abundant disseminated organic material, glauconite, and pyrite. Rare ironstone concretions. Non-fossiliferous but apparently highly bioturbated. Green, weathers red or orange.

Shale: Glauconite and clay minerals in extremely fissile shale. Green.

Quartz arenite: Fine to very fine. Highly glauconitic. Contains abundant disseminated organic material and possibly plant fragments. Contains calcite filled vuggy porosity. Silica cement. Green, weathers red.

Contact appears conformable.
Lime mudstone.

N85°E 80°NW