IVISHAK FORMATION MEASURED SECTIONS
ARCTIC NATIONAL WILDLIFE REFUGE, NORTHEASTERN ALASKA

BY

NINA T. HARUN

IGNEK CREEK WESTERN SADLEROCHITS

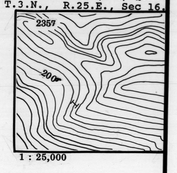
STRATIGRAPHIC SECTION 86NH02

LAT. 69° 36' 35" N. LONG. 146° 00' 00" W.

EXPLANATION

Rip up Clasts; U Shaped Burrows; H Hematite Stained; Pebble Layer; Parallel Laminations; Bioturbated Tops; Ripples; Trough Crossbeds; Hummocky Crossbeds; Low Angle Crossbeds; High Angle Crossbeds; F Fossils; Erosional Scour; Sandstone; Siltstone; Shale; Conglomerate

MT. MICHELSON (C-4) QUAD. T.3.N., R.25.E., Sec 16.



1 : 25,000

VERTICAL SCALE : 1 cm = 2 meters

SERIES	STAGE	FORMATION	MEMBER	Thickness (m.)	Graphic Column (slt vf f m c vc)	LITHOFACIES	Lithologic Description	Interpretation
LOWER TRIASSIC	SMITHIAN	IVISHAK	LEDGE SANDSTONE	44–40			Very fine grained light blue to white quartz arenite weathering orange-beige containing pyrite. Thickly bedded, thinning towards the top with highly fractured and lensing beds.	Reworked inner shelf to nearshore.
				40–36				
				36–32				
				32–28			covered interval	
				28–24				
				24–20			Very fine grained white clean quartz arenite weathering beige. Thick bedded, beds difficult to distinguish due to bed lensing and fracturing. Beds coarsen upward.	
				20–16				
				16–12	Rubblecrop			
? DIENERIAN ?				12–8			Very fine grained hematite stained quartz arenite with siltstone interval at top. Medium to thick bedded with occasional thinner interbeds 1-5 cm. Low angle crossbeds, thin planar laminations and wavy laminations, some oscillation ripples, bioturbated tops. Hematite nodules throughout interval. Thin friable siltstone beds less than 10 cm. Thicker sandstone beds punctuated by thinner sandstone and siltstone beds defining packages. Interval thickens upward.	Inner shelf
				8–4				
				4–0				

EAST OF WINDOW CREEK

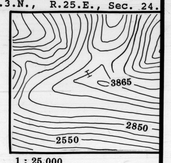
STRATIGRAPHIC SECTION 86NH15

LAT. 69° 35' 52" N. LONG. 145° 52' 30" W.

EXPLANATION

Rip up Clasts; U Shaped Burrows; H Hematite Stained; Pebble Layer; Parallel Laminations; Bioturbated Tops; Ripples; Trough Crossbeds; Hummocky Crossbeds; Low Angle Crossbeds; High Angle Crossbeds; F Fossils; Erosional Scour; Shrinkage cracks; Sandstone; Siltstone; Shale; Conglomerate

MT. MICHELSON (C-4) QUAD. T.3.N., R.25.E., Sec. 24.



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VERTICAL SCALE : 1 cm = 2 meters

SERIES	STAGE	FORMATION	MEMBER	Thickness (m.)	Graphic Column (slt vf f m c vc)	LITHOFACIES	Lithologic Description	Interpretation
LOWER TRIASSIC	SMITHIAN	IVISHAK	LEDGE SANDSTONE	36–32			Thick succession of very fine grained, white quartz arenite with shale fragments at base. Extremely thick bedded. Beds lense laterally from 10 cm to 3 m thick over 12 m. Abundant low angle crossbeds defined by pyrite and/or coarser grained clasts. Oscillation ripples. Generally thinning up section with distinct thickening-thinning up packages.	Reworked inner shelf to nearshore. (foreshore to middle shoreface)
				32–28				
				28–24				
				24–20			Hematite stained fossiliferous siltstone interval. Gray siltstone to very fine-grained quartz arenite, grain size generally increasing up section. Base of interval-primarily medium-bedded with 1-2 cm thick lag deposits of fine to very coarse sand and pebble sized grains elongate parallel to bedding surfaces, thin planar laminations, low angle crossbeds, concentrated zone of fossil (wood, pelecypods) fragments, organic rich planar laminations some vertical burrows in top 5 cm of bed, horizon burrows on bedding planes.	
				20–16				
				16–12	covered interval			
? DIENERIAN ?				12–8			Top of interval-Multiple crosscutting channels, thick-bedded thinning upwards, some beds contain scattered, abundant pebble and fossil fragments and shale and siltstone rip ups, organic rich planar laminations. Largest channel 4.5 m wide and 1.1 m thick with shrinkage cracks at base, no lag deposit.	Inner to middle shelf.
				8–4				
				4–0				

KATAKTURUK CANYON

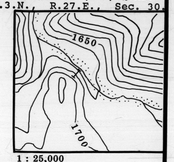
STRATIGRAPHIC SECTION 86NH01

LAT. 69° 35' 15" N. LONG. 145° 35' 40" W.

EXPLANATION

Rip up Clasts; U Shaped Burrows; H Hematite Stained; Pebble Layer; Parallel Laminations; Bioturbated Tops; Ripples; Trough Crossbeds; Hummocky Crossbeds; Low Angle Crossbeds; High Angle Crossbeds; F Fossils; Erosional Scour; Sandstone; Siltstone; Shale; Conglomerate

MT. MICHELSON (C-3) QUAD. T.3.N., R.27.E., Sec. 30.



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VERTICAL SCALE : 1 cm = 2 meters

SERIES	STAGE	FORMATION	MEMBER	Thickness (m.)	Graphic Column (slt vf f m c vc)	LITHOFACIES	Lithologic Description	Interpretation
LOWER TRIASSIC	SMITHIAN	FIRE CREEK SILTSTONE			cover		Orange-brown very fine grained sandstone to siltstone with hematite staining, thin to medium bedded with bioturbated tops.	Inner to middle shelf.
					cover			
					cover		Very fine grained gray quartz arenite weathering black and dark gray, medium bedded, forming small resistant ridge.	
				92	shaley cover; silty covered interval		Fine grained, light gray quartz arenite, weathering orange-brown. Medium to thin beds contain abundant vertical burrows and bioturbated tops.	
				88			Very fine grained , light gray quartz arenite, thick to medium bedded thinning up section.	
				84			covered interval	
				80			Highly weathered and fractured, very fine to fine white quartz arenite weathering gray with abundant pyrite. beds are highly fractured perpendicular to bedding planes. Medium beds predominates with thick beds at base. Bedding thins up section. Rare low angle crossbeds.	
				76				
				72				
				68				
				64			covered interval	
				60				
				56				
				52				
				48			Succession of very fine to fine grained, white quartz arenite weathering gray.	
				44			Base of sequence dominated by thick to very thick beds with occasional 5 mm thick interbeds of coarse sand to pebble sized chert. Medium beds increase in frequency up section.	Reworked inner shelf to nearshore.
				40			Oscillation ripples define most bedding planes. Fine to coarse sand size pyrite crystals weathering to hematite are occasionally concentrated within 5 mm thick interbeds. Fining and thinning upward sequence.	
				36				
				32			Widespread very low angle crossbeds are defined by weathered pyrite crystals. Some bioturbated surfaces.	
				28				
				24			Thickening and coarsening up sequence Very fine to fine grained white quartz arenite weathering gray. Occasional laterally discontinuous 5 mm thick interbeds of coarser grained sand and pebbles made up of white, gray and black chert. Interbeds are poorly sorted and abruptly fine up to very fine grained sandstone. Thick to very thick bedded, low angle crossbeds and trough crossbeds defined by coarser grained pyritic weathered to hematite. Ripple marks and bioturbated tops. Fine to medium grained orange, brown, red quartz arenite with hematite staining and medium grained pyrite. Thick bedding, low angle and trough crossbeds, bioturbated tops with possible horizontal burrows, oscillation ripples. Coarsening and thickening upwards.	(foreshore to middle shoreface)
				20				
				16				
				12				
				8	cover			Reworked inner shelf
? DIENERIAN ?				4			Very fine to fine grained gray-beige quartz arenite, hematite stained. Medium to thick bedded, two fining up cycles that thicken upward, rare low angle crossbedding, bioturbated tops, oscillation ripples.	
				0				

EAST OF WINDOW CREEK

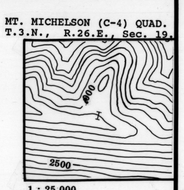
STRATIGRAPHIC SECTION 86NH14

LAT. 69° 35' 45" N. LONG. 145° 49' 45" W.

EXPLANATION

Rip up Clasts; U Shaped Burrows; H Hematite Stained; Pebble Layer; Parallel Laminations; Bioturbated Tops; Ripples; Trough Crossbeds; Hummocky Crossbeds; Low Angle Crossbeds; High Angle Crossbeds; F Fossils; Erosional Scour; Sandstone; Siltstone; Shale; Conglomerate

MT. MICHELSON (C-4) QUAD. T.3.N., R.26.E., Sec. 19.



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VERTICAL SCALE : 1 cm = .2 meters

SERIES	STAGE	FORMATION	MEMBER	Thickness (m.)	Graphic Column (slt vf f m c vc)	LITHOFACIES	Lithologic Description	Interpretation
LOWER TRIASSIC	SMITHIAN	IVISHAK	SMITHIAN	12–8			Very fine to fine-grained quartz arenite with minor fine-grained black chert and abundant pyrite. Extremely thick-bedded, thinning to top of section. Beds thin and thicken laterally, generally lensing laterally with curved hummocky upper surfaces and relatively flat basal surfaces over 10 to 30 m. Bedding planes defined by current and oscillation ripples. Some laterally discontinuous bioturbation of surfaces. High angle and trough crossbeds with some low angle crossbeds in top of section.	Reworked inner shelf to nearshore.
				8–4				
				4–0				

WEST OF KATAKTURUK CANYON

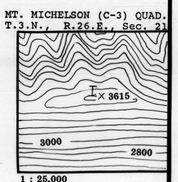
STRATIGRAPHIC SECTION 86NH16

LAT. 69° 35' 45" N. LONG. 145° 46' 00" W.

EXPLANATION

Rip up Clasts; U Shaped Burrows; H Hematite Stained; Pebble Layer; Parallel Laminations; Bioturbated Tops; Ripples; Trough Crossbeds; Hummocky Crossbeds; Low Angle Crossbeds; High Angle Crossbeds; F Fossils; Erosional Scour; Sandstone; Siltstone; Shale; Conglomerate

MT. MICHELSON (C-3) QUAD. T.3.N., R.26.E., Sec. 21.



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VERTICAL SCALE : 1 cm = 2 meters

SERIES	STAGE	FORMATION	MEMBER	Thickness (m.)	Graphic Column (slt vf f m c vc)	LITHOFACIES	Lithologic Description	Interpretation
LOWER TRIASSIC	SMITHIAN	IVISHAK	LEDGE SANDSTONE	28–24			Thick succession of very fine to fine-grained, light gray to dull white quartz arenite.	(foreshore to middle shoreface)
				24–20			Thick bedded, thickening and then thinning up section. Beds lense laterally, fracturing into lensing interbeds. Abundant low angle crossbeds in base of the interval defined by pyrite-rich zones, trough and herringbone crossbedding with some low angle crossbeds at top of the section. Some ripples and bioturbated bedding planes.	Reworked inner shelf to nearshore.
				20–16				
				16–12				
				12–8			Gray-brown siltstone to very fine-grained quartz arenite with thin organic-rich laminations, occasional shale and siltstone pebble clasts, thick-bedded, thickening and coarsening upwards, bioturbated surfaces, high angle sweeping laminations, spheroidal weathering.	
? DIENERIAN ?				8–4				
				4–0			Dark purple, gray siltstone to very fine-grained quartz arenite, hematite stained, thin-organic rich planar laminations, thick-bedded.	Inner to middle shelf.