

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

REPORT ON REFERRED FOSSILS

Stratigraphic Range Triassic, Jurassic, Cretaceous			Shipment Number A-91-1M	
General Locality (state, country, ocean, etc.) Alaska			Number of Samples 17	
Quadrangle or Area Philip Smith B-4 and C-4 Quadrangles			Region (county, province, sea, etc.) Northern Alaska	
Fossil Type(s) Mollusks, Annelids			Referred By Tom Moore	
Formation Otuk, Fortress Mountain, Opikruak, Torok			Report By William P. Elder	
Latitude deg. min. 68° 30'	Longitude deg. min. 149° 10'		Report Date June 11, 1991	

Field locality: 90AE-1; USGS Mesozoic locality: M8703
Float 0.2 mi up small ck bed on NW side of Atigun Gorge.
Lat. 68° 29.17' N, Long. 149° 13.60' W;
Ctr S1/2 of W section line, sec. 13, T11S, R12E
Philip Smith (B-4), 1:63,360 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Age

Bivalves

Buchia sublaevis Keyserling

E Val.

Remarks: Equals sample 90AMu58 of Mull. The age is consistent with the sampled unit belonging to the Opikruak Formation.

Field locality: 90AE-3; USGS Mesozoic locality: M8704
Float near basal Fortress Mountain Formation, NW side of lower Atigun Gorge.
Lat. 68° 31.06' N, Long. 149° 6.79' W;
NE/NE/SE quarter, Sec. 5, T11S, R13E
Philip Smith (C-4), 1:63,360 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Annelids

Hamulus sp.?

Bivalves

Arctica? sp.

Panopea? sp.

Pleuromya aff. *kelleri* Imlay

Remarks: *Pleuromya* aff. *kelleri* Imlay was described from Albian strata but may range through much of the Lower Cretaceous.

Field locality: 90AE-4; USGS Mesozoic locality: M8705

Float near basal Fortress Mountain Formation, NW side of lower Atigun Gorge.

Lat. 68° 31.05' N, Long. 149° 6.90' W;

Ctr NE/SE quarter, Sec. 5, T11S, R13E

Philip Smith (C-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Bivalves

Pecten undet.

Arctica? sp.

Astarte ignekensis Imlay

Panopea? sp.

Tancredia kurupana Imlay

Yoldia kissoumi McLearn

Remarks: These taxa were described from Albian strata but may range through much of the Lower Cretaceous.

Field locality: 90AE-5 U-5; USGS Mesozoic locality: M8706

Unit -5 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

See attached measured sections for localities M8706-M8717.

Taxa Present

Bivalves

Gryphaea? sp.

Monotis (Pacimonotis) cf. subcircularis Gabb

Remarks: This sample is probably of late Norian age.

Field locality: 90AE-5 U-4; USGS Mesozoic locality: M8707

Unit -4 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Bivalves

Monotis (Pacimonotis) cf. subcircularis Gabb

Remarks: This sample is probably of late Norian age.

Field locality: 90AE-5 U-2; USGS Mesozoic locality: M8708

Unit -2 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Bivalves

Gryphaea? sp.

Monotis (Pacimonotis) cf. subcircularis Gabb

Remarks: This sample is probably of late Norian age.

Field locality: 90AE-5 U0; USGS Mesozoic locality: M8709
Unit 0 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.
Lat. 68° 28.67' N, Long. 149° 14.03' W;
SW/NE/NE quarter, Sec. 23, T11S, R12E
Philip Smith (B-4) 1:63,360 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Bivalves

Gryphaea? sp.

Remarks: Sample is of uncertain age.

70cm Field locality: 90AE-5 U3; USGS Mesozoic locality: M8710
Unit 3 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.
Lat. 68° 28.67' N, Long. 149° 14.03' W;
SW/NE/NE quarter, Sec. 23, T11S, R12E
Philip Smith (B-4) 1:63,360 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Bivalves

Gryphaea? sp.

Remarks: Sample is of uncertain age.

80cm
0-10cm Field locality: 90AE-5 U4 0-10cm; USGS Mesozoic locality: M8711
Unit 4 0-10 cm, of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.
Lat. 68° 28.67' N, Long. 149° 14.03' W;
SW/NE/NE quarter, Sec. 23, T11S, R12E
Philip Smith (B-4) 1:63,360 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Age

Ammonites

Ammonites indet.

Bivalves

Inoceramid indeterminate

Ostreoid

Otapiria tailleuri Imlay*Oxytoma* sp.*Posidonia?* sp.

E - M Jur.

Remarks:- The ammonites present in this sample are crushed juveniles. However, one form is involute and inornate, resembling *Pseudolioceras*. A second form has strong broadly spaced ribs, resembling *Tmetoceras*. These ammonites are indicative of the basal Bajocian. In addition, several inoceramid specimens resembling the Bajocian species *Retroceramus lucifer* (Eichwald) also are present. Even if the latter species identification is incorrect, inoceramids are not known prior to the Toarcian. These data suggest that the sample is of early Bajocian age and that the Lower Jurassic and possibly part of the Late Triassic is missing or condensed into the Karen Creek sandstone member at this locality.

Field locality: 90AE-5 U4 10-15cm; USGS Mesozoic locality: M8712

Unit 4 10-15 cm, of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Bivalves

Posidonia? sp.

Field locality: 90AE-5 U4 45-50cm; USGS Mesozoic locality: M8713

Unit 45-50 cm, of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,60 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Age

Bivalves

Inoceramid indeterminate

Ostreaid

Otapiria tailleuri Imlay

Posidonia? sp.

E - M Jur.

Vertebrates

Fish scales

Remarks: This samples is probably of Toarcian to Bajocian age. See locality M8711 above.

Field locality: 90AE-5 U6; USGS Mesozoic locality: M8714

Unit 6 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

at. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Bivalves

Posidonotis? sp.

Remarks: This unusual looking bivalve resembles *Posidonotis*, which is known from the Aalenian of Europe. This taxa, therefore, also suggests a late Toarcian to early Bajocian age.

Field locality: 90AE-5 U8; USGS Mesozoic locality: M8715

Unit 8 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Age

Bivalves

Inoceramid indeterminate?

Ostreaid?

Otapiria tailleuri Imlay

E - M Jur.

Field locality: 90AE-5 U17; USGS Mesozoic locality: M8716

Unit 17 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Age

Belemnites

Cylindroteuthis sp.

Jur.

Bivalves

Retroceramus lucifer (Eichwald) ?

Baj.

Remarks: The inoceramids dominating this sample are probably the above species of Bajocian age.

Field locality: 90AE-5 U21; USGS Mesozoic locality: M8717

Unit 21 of measured section of Otuk Formation on bluff on NW side of Atigun Gorge.

Lat. 68° 28.67' N, Long. 149° 14.03' W;

SW/NE/NE quarter, Sec. 23, T11S, R12E

Philip Smith (B-4) 1:63,360 quadrangle.

Collector: W. P. Elder, 1990

Taxa Present

Age

Bivalves

Buchia sublaevis Keyserling

E Val.

Remarks: This sample is from the coquinoid limestone.

Field locality: 90AE-6; USGS Mesozoic locality: M8718
Concretion in place and float from near the Torok/Tuktu contact at the base of Slope Mountain.
Lat. 68° 43.57' N, Long. 149° 1.27' W;
Ctr NW/NW quarter, Sec. 27, T8S, R13E
Philip Smith (C-4) 1:63,360 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Ammonites

Pseudopulchellia flexicostata (Imlay)

Annelids

Serpulid

Bivalves

Heterodont bivalve indet.

Entolium utukokense Imlay

Yoldia kissoumi McLearn

Remarks: The ammonite constrains the age of the Torok/Tuktu contact to middle Albian age.

Field locality: 90AE-6A; USGS Mesozoic locality: M8719
Float near the end of road to base of Slope Mountain.
Lat. 68° 43.51' N, Long. 149° 1.25' W;
Ctr S line of NW/NW quarter, Sec. 27, T8S, R13E
Philip Smith (C-4) 1:63,360 quadrangle.
Collector: W. P. Elder, 1990

Taxa Present

Age

Annelids

Hamulus? sp.

Bivalves

"Inoceramus" anglicus Woods ?

M - L Alb.

Arctica? sp.

Entolium utukokense Imlay

Remarks: The concentric ornamentation of a fragmentary juvenile inoceramid resembles that of the above species.

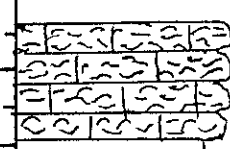

William P. Elder

Scale _____

LOCATION #: GOAE-S SECTION #: Otuk

Scale	Column	Units	Photo	Sam. #	Fos. Hor. #			Comments
20m		u20		LK				
1700 1740		?	← Discon. ^{Lk. Form.} _{conformity?}					
15		u18		R				
1240 1190		u17	Collection MB716	Thos. <i>Cylindropathis</i>				
10		u16						
1040 1030		u14						
900		u12						
570 517		u108 u107 u9	Collection MB715					
470		u8	Collection MB714					
448		u6						
3		Unit 4 MB717 MB713 MB712						
269		u4						
2		u2	Collection MB711	R				Otaria
1		u0	Collection MB710					
0		u-2	Collection MB709 MB708	R				
-1		u-4A u-4B						<i>H. subaerulonis</i>
-2			MB707 MB706					
-3		?						
-4								

Scale _____ LOCATION #: 90AE-5 SECTION #: Otak

Scale	Column	Units	Photo	Sam. #	Fos. Hor. #			Comments
40m								
35								
330		420 Collection MB717						B. Sublaevis Cylindrotentis?
30								
25								
20								
15								
10								
5								
0								

PHILIP SMITH MOUNTAINS (C-4) QUADRANGLE

ALASKA—NORTH SLOPE BOROUGH

1:63 360 SERIES (TOPOGRAPHIC)

(PHILIP SMITH MOUNTAINS C-3)

