Enclosure 5: Photographs, in Connelly, William, and Amoco Oil Co., Data compilation and preliminary summary of the 1977 Alaska Peninsula field project

Connelly, William, and Amoco Oil Co.

GMC DATA REPORT 461C

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State of Alaska
Department of Natural Resources
Division of Geological & Geophysical Surveys
GEOLOGIC MATERIALS CENTER

Enclosure 5
Photos

Amoco Production Company
Security Life Building
Denver, Colorado 80202

CF 79 0047



Denver Region
Frontier Division

Geological Report FR-02-79

Enclosure 5 Photos

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Photo 1-1

Tachilni Fm at Cape Tachilni. Very dirty sandstone with pyroxene, plagioclase, and less than 20% quartz; some ripple laminated siltstone; X-beds up to 5'. Occasional pebble conglomeritic layers with articulate pelecypods (Aug. 3).

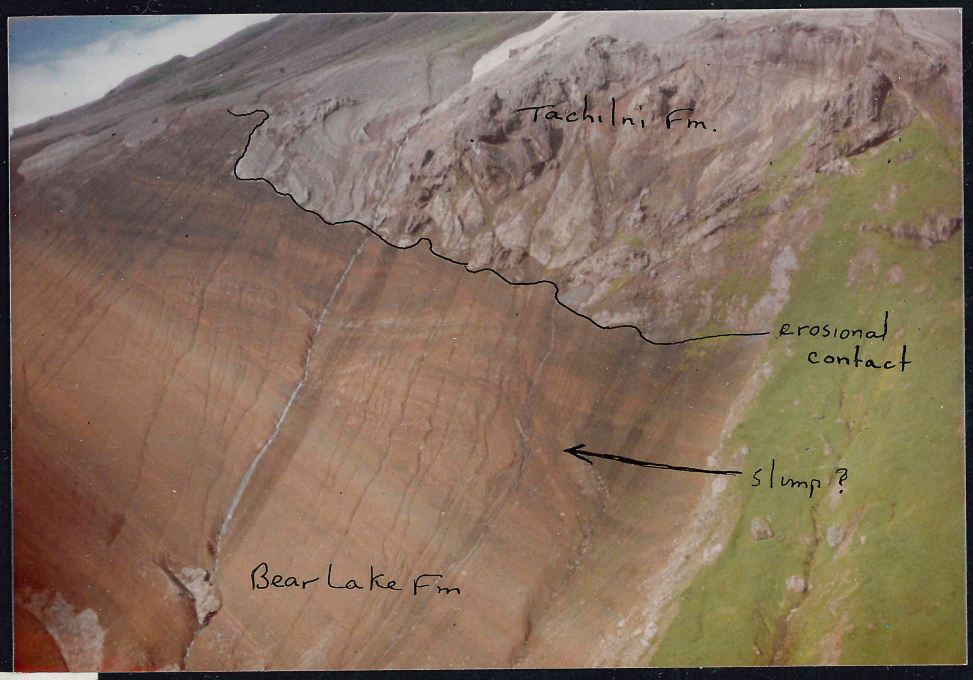


Photo 1-2

Contact between Tachilni and Bear Lake Fms at Milky Ridge/Milky River Section. Tachilni rests nearly conformably on Bear Lake; contact is complex but apparently has pronounced erosional relief (see photos 27-1,2). Tachilni here consists of volcanic agglomerate.

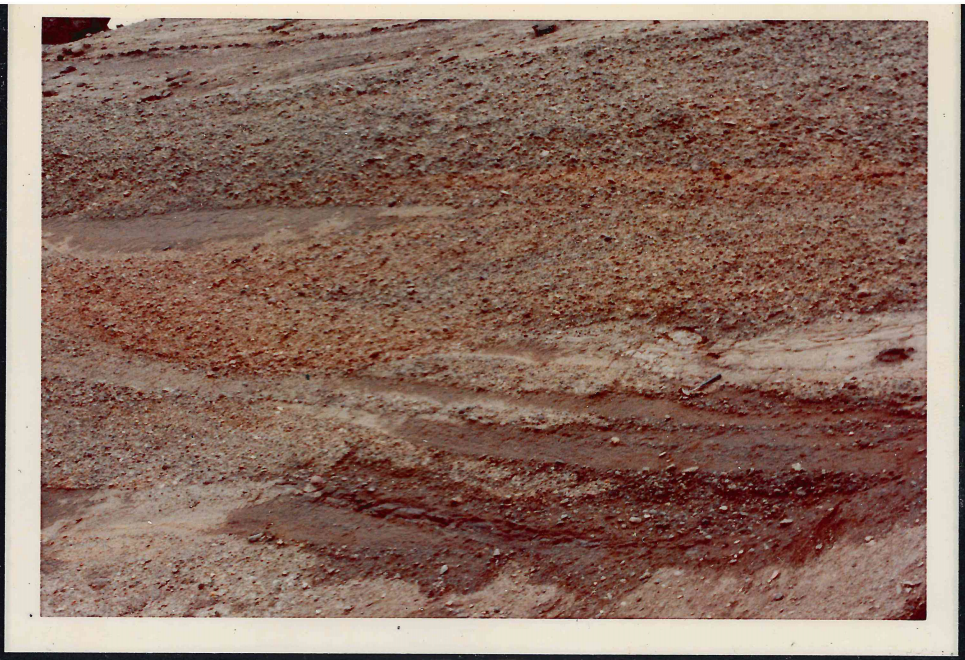


Photo 5-1

Tachilni Fm at NE Veniaminof Section; Unit 4 (630'). Congl. with many lenses of carbonaceous ss. SS is coarse-grained, poorly sorted, and polymictic. Fluvial deposits.



Photo 5-2

Tachilni Fm at NE Veniaminof Section; Unit 4 (670'). Siltstone with interbeds of coal and coaly shale.



Photo 6-2

Tachilni Fm at Sandy lake Section; Unit 1 (130'). Fossiliferous ss bed with pelecypods in living position. This ss bed is overlain by a fluvial conglomeratic ss, as in photo 7-1.



Photo 6-1

Tachilni Fm at Sandy Lake Section; Unit 1 (25'). Thinnly laminated fine grained ss. Beach deposits.
The sequence is repeated many times and may represent fluvial (storm?) outwashes on a shallow marine shelf.



Photo 7-1

Tachilni Fm at Sandy Lake Section; Unit 1 (about 130').
Fluvial conglomeratic ss with granule to pebble lens.



Photo 7-2

Tachilni Fm at Sandy Lake Section; Unit 1 (about 320').
Interbedded fossiliferous ss beds (as in Photo 6-2) and fluvial ss beds (as in Photo 7-1) indicate deposition near a strand line. Earl Armstrong for scale.



Photo 8-1

Tachilni Fm at Sandy Lake Section; Unit 2 outcrop photo.



Photo 8-2

Tachilni Fm at Sandy Lake Section; Unit 2 (450'). Complex trough x-bedded ss.



Photo 9-1

Tachilni Fm at Sandy Lake Section; unconformity between Units 3 and 4. Pronounced angular unconformity, but micropaleontology indicates rocks above and below unconformity are indistinguishable in age.



Photo 9-2

Tachilni Fm at Sandy Lake Section; unconformity between Units 3 and 4. This intraformational unconformity may be analogous to Holocene deformation observed in the Bristol Bay Lowlands (Photo 10-1). Greg Brown for scale.



Photo 10-1

Holocene deposits exposed along seacliff of Bristol Bay Lowlands. These unconsolidated sediments are recumbently folded.



Photo 10-2

Tachilni Fm at Sandy Lake Section; Unit 5. Flasier bedding in quartose ss. Tidal flat paleoenvironment?



Photo 11-1

Tachilni Fm east of Milky River. White tuff overlain by volcanic agglomerate.



Photo 11-2

Tachilni Fm near Milky Ridge Section. Flasier bedding and small-scale x-beds.



Photo 12-1

Ugashik Conglomerate at lower Ugashik Lake Section; Station 4. Massive granitic conglomerate with pebble to boulder sized clasts. Fluvial paleoenvironment.



Photo 12-2

Ugashik Conglomerate, as above.



Photo 13-1

Bear Lake or Tachilni Fm at Lower Ugashik Lake Section; Station 8. Poorly consolidated; volcanogenic; mainly siltstone and pebbly ss. Separated from Ugashik Conglomerate by a fault (Enclosure 1).



Photo 13-2

Bear Lake or Tachilni Fm, as above. Pebbly ss.



Photo 14-1

Unga Conglomerate at Zachary Bay Section, Unit 2. X-bedded medium to coarse-grained ss with abundant white pumice.

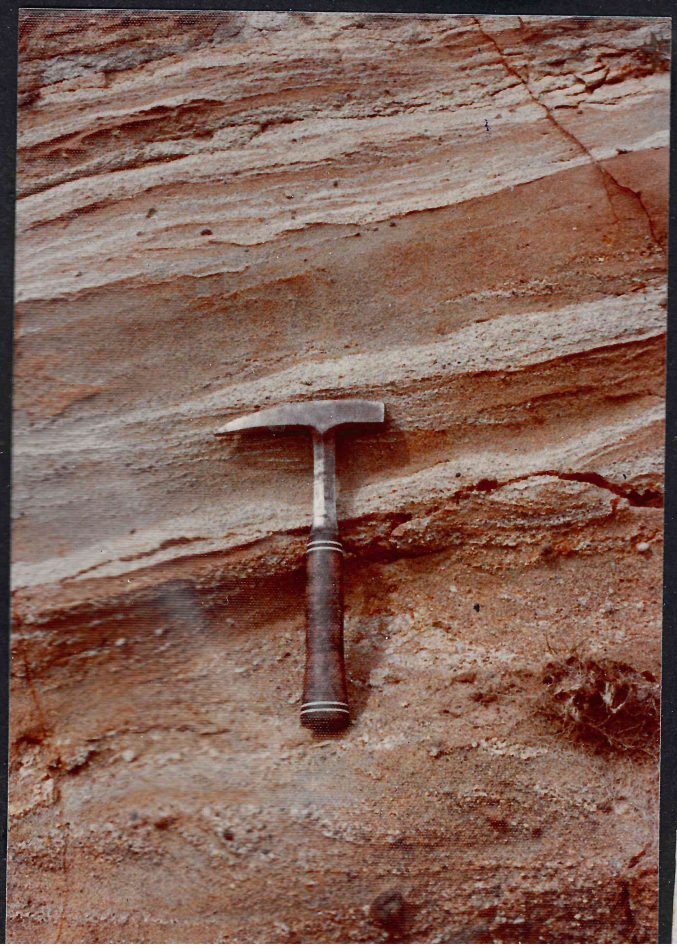


Photo 14-2

Unga Conglomerate, as above



Photo 15-1

Unga Conglomerate at Cape Aliaskan. Thick interbedded pebbly ss and conglomerate; poorly consolidated; good porosity; abundant grains of pyroxene and other volcanic rock fragments; fossiliferous. Shallow shelf environment.

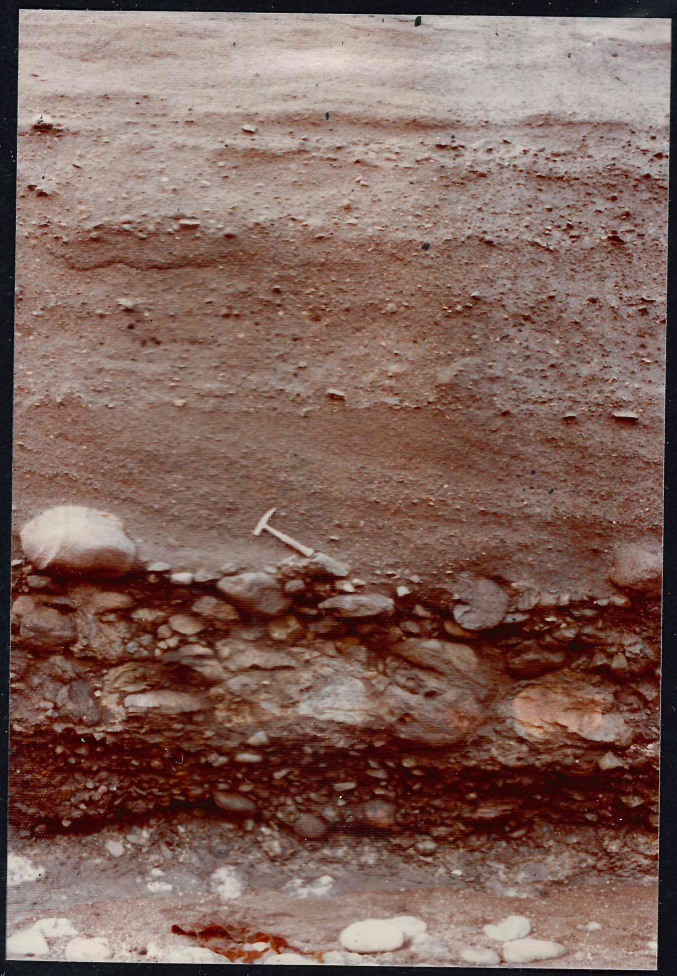


Photo 15-2

Unga Conglomerate as above.



Photo 17-1

Unga Conglomerate at N. Unga Island. Coarse andesitic agglomerate; these lahar deposits locally engulf Sequoia forests.



Photo 17-2

Unga Conglomerate, as above. Petrified Sequoia stumps engulfed by lahar deposits. The axes of asymmetry of the tree rings here indicate approximately 45° clockwise rotations since Upper Miocene time.

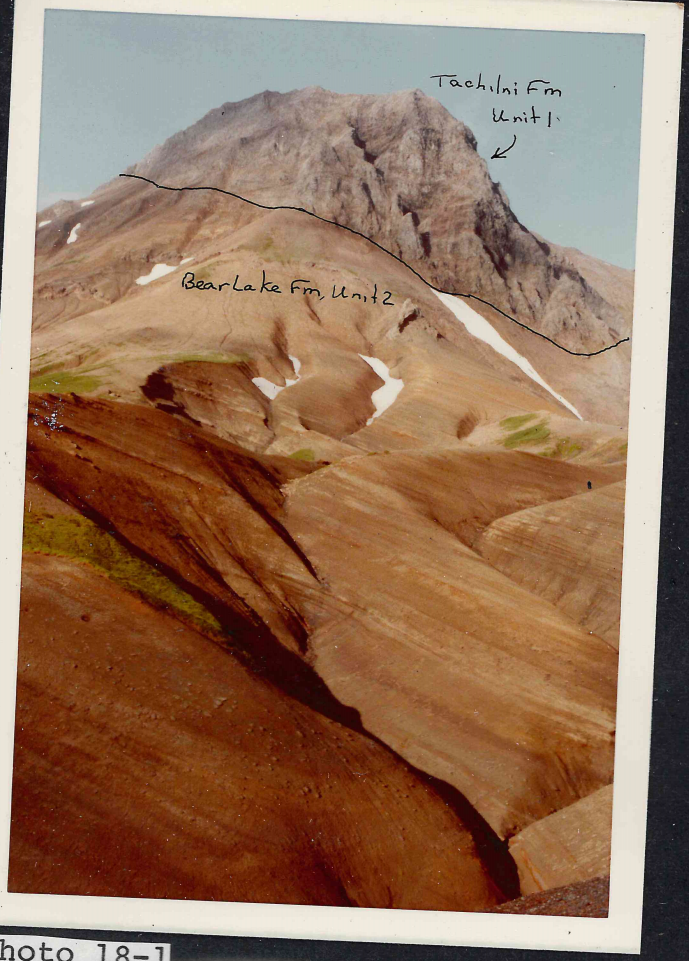


Photo 18-1

Bear Lake and Tachilni Fms at top of Windy Ridge Section. Photo shows erosional (?) unconformity between Tachilni Fm volcanics of Unit 1 and Bear Lake Fm ss, siltstone, and conglomerate of Unit 2.



Photo 18-2

Bear Lake Fm. at Windy Ridge Section. Outcrop photo of Leg B.



Photo 20-1

Bear Lake Fm at Windy Ridge Section, Unit 4 (550'). Interbedded pebbly ss, siltstone, and conglomerate. SS is medium-grained, conglomeratic, moderately sorted, arkosic, poorly cemented; fair to good porosity. Large-scale trough x-beds (from migrating shallow marine dunes?) are common. Greg Brown and Lee Smirnow for scale.

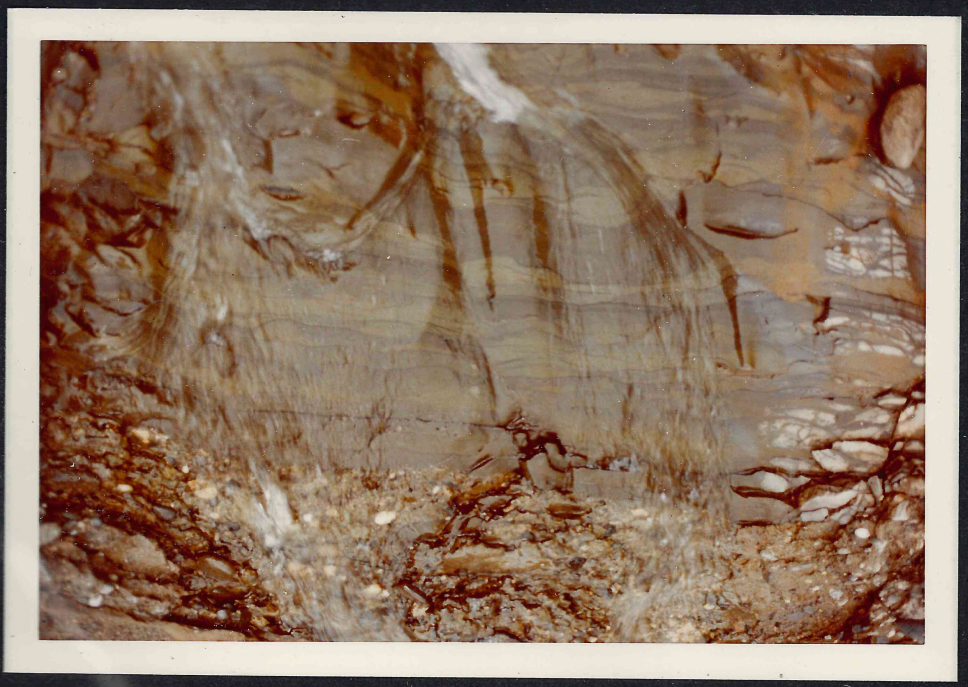


Photo 20-2

Bear Lake Fm at Windy Ridge Section, Unit 4 (700'). Ripple and flasier laminated siltstone overlain by pebble conglomerate.



Photo 21-1

Bear Lake Fm at Windy Ridge Section, Unit 5 (950'). Interbedded pebbly ss, conglomerate, and ripple-laminated siltstone.



Photo 21-2

Bear Lake Fm, as above. Close-up.



Photo 22-1

Bear Lake Fm at Windy Ridge Section, Unit 5 (800'). Mainly medium x-bedded ss with some flasier laminated siltstone interbeds.



Photo 22-2

Bear Lake Fm at Windy Ridge Section. Leg B is straight up canyon; leg C is in canyon to right. The lower portion of Leg B and all of Leg C were described from the helicopter because of high water in the rivers and steep canyon walls.



Photo 23-1

Eocene (?) at Windy Ridge Section; Leg D. Most of Leg D is exposed on cliff in foreground; beds are dipping away from the observer. The hillside in the right background is Bear Lake Fm which overlies these Eocene rocks.



Photo 23-2

Eocene(?) at Windy Ridge Section; top of Leg D. SS is pebbly, thin to massive bedded; interbedded with conglomerate; tight. Likely a fluvial paleoenvironment.



Photo 24-1

Eocene (?) at Windy Ridge Section; Leg E. Lava flow (?) make up all of this leg. Section is poorly exposed and structurally complex; may include some intrusive bodies.



Photo 24-2

Eocene (?) at Windy Ridge Section; Leg F, Unit 12. Small hogbacks here consist of thick-bedded conglomerate with thin lenses of ss. Conglomerate is clast-supported, well-rounded, well-cemented, and contains clasts of ss, volcanics, and minor granitics.



Photo 25-1

Eocene (?) at Windy Ridge Section; Leg G, Unit 17 (3300'). Interbedded marine ss and shale. SS is medium-grained, subangular, moderately sorted, and composed mainly of volcanic fragments. Sequence appears to be turbidites.



Photo 25-2

Eocene (?) at Windy Ridge Section; Leg G, Unit 18 (3480'). Bedded pebble conglomerate and coal.



Photo 26-1

Bear Lake Fm at Bear Lake Section; Unit 2. Interbedded ss and pebble conglomerate. SS is coarse-grained and poorly sorted; contains mainly volcanic clasts; coalified logs up to 3-4' long are common.

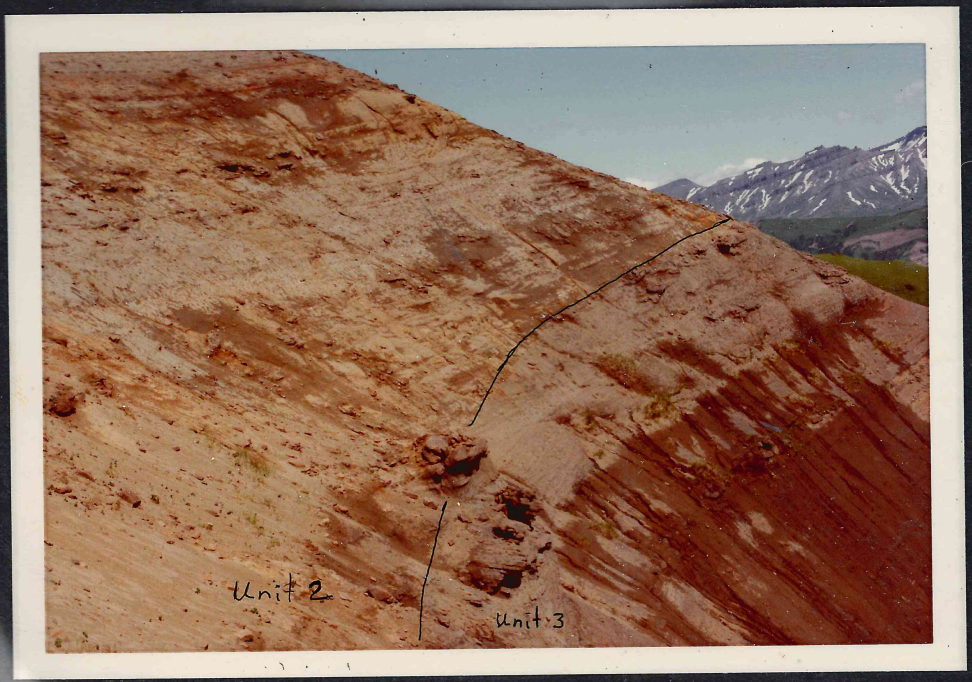


Photo 26-2

Bear Lake Fm at Bear Lake Section; Units 2 and 3. Unit 2 consists mainly of fossiliferous siltstone, and Unit 3 consists of ss. Unit 3 ss is fine to coarse-grained with occasional suspended pebbles and coalified wood fragments.

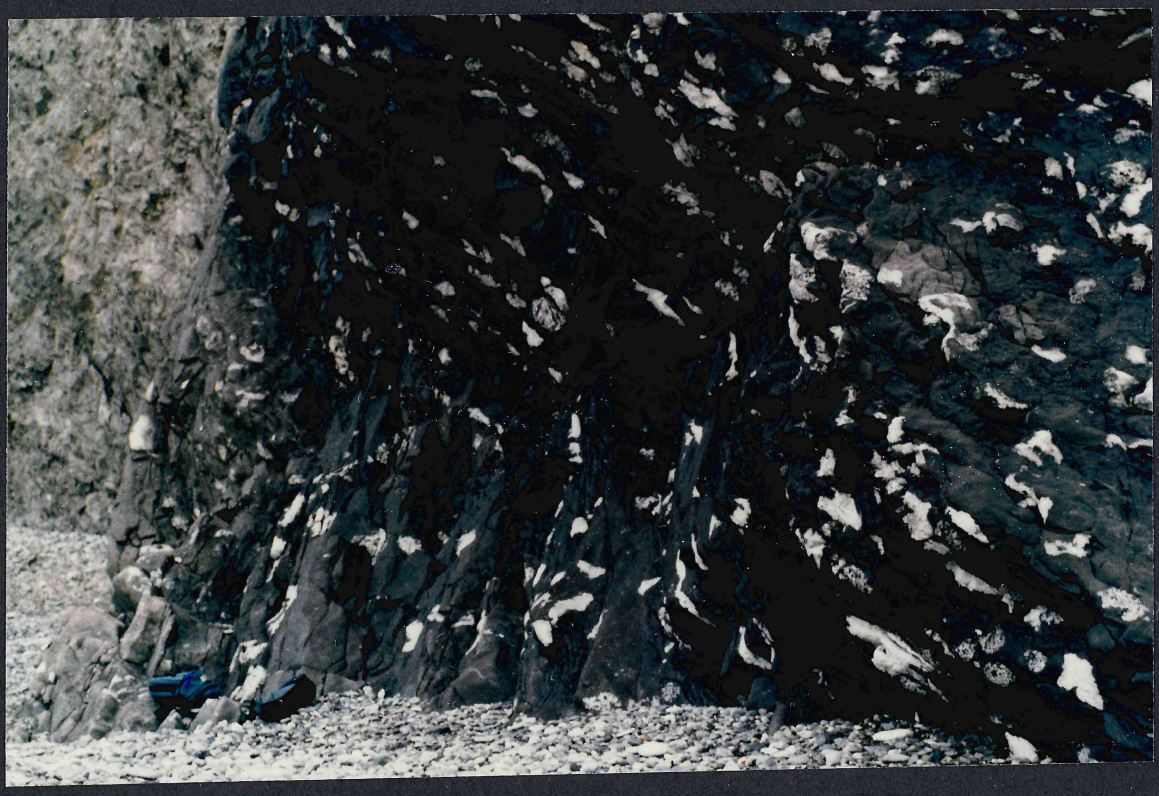




Photo 28-1

Bear Lake Fm at Milky River Section; upper Leg B. Outcrop photo of interbedded ss and siltstone.



Photo 28-2

Bear Lake Fm at Milky River Section; Unit 6. Large-scale x-bedded ss. SS is medium to coarse-grained, subrounded, and contains 40-50% quartz. Thin siltstone layers commonly occur along x-bed sets. X-beds likely caused by migrating marine dunes.



Photo 29-1

Bear Lake Fm at Milky River Section; Unit 6. Carbonaceous siltstone beds and pebble lags in ss (as above). Likely shallow shelf deposits.



Photo 29-2

Bear Lake Fm at Milky River Section; Unit 7. SS as in Photo 28-2 with burrows.



Photo 30-1

Bear Lake Fm at Milky River Section; Unit 9. Petrified worm-wood from base of petrified log.



Photo 30-2

Bear Lake Fm at Milky River Section; Unit 13. Prominent pebble to cobble conglomerate bed. Conglomerate contains abundant mytilus graticapi; note fossils below point on rock hammer (circled). Near beach paleoenvironment.



Photo 31-1

Bear Lake Fm at Milky River Section; Unit 15. X-bedded and ripple-laminated ss with abundant reed impressions. One-foot thick conglomerate beds containing abundant quartz pebbles are common. Lee Smirnov measuring x-beds.



Photo 31-2

Bear Lake Fm, as above. Interference ripples in ss concretion.



Photo 32-1

Greg Brown and Lee Smirnov at Milky River Section.



Photo 32-2

Bear Lake Fm at Milky River Section; Unit 18. Outcrop photo showing coal seams to 1' thick interbedded with siltstone and ss; bentonite locally occurs with coal. Lagoonal to lowland paleoenvironment (See Photos 34-1,2).

Photo 33-1

Bear Lake Fm at Milky River Section; Unit 18. Bentonitic siltstone with coal fragments; poorly consolidated.



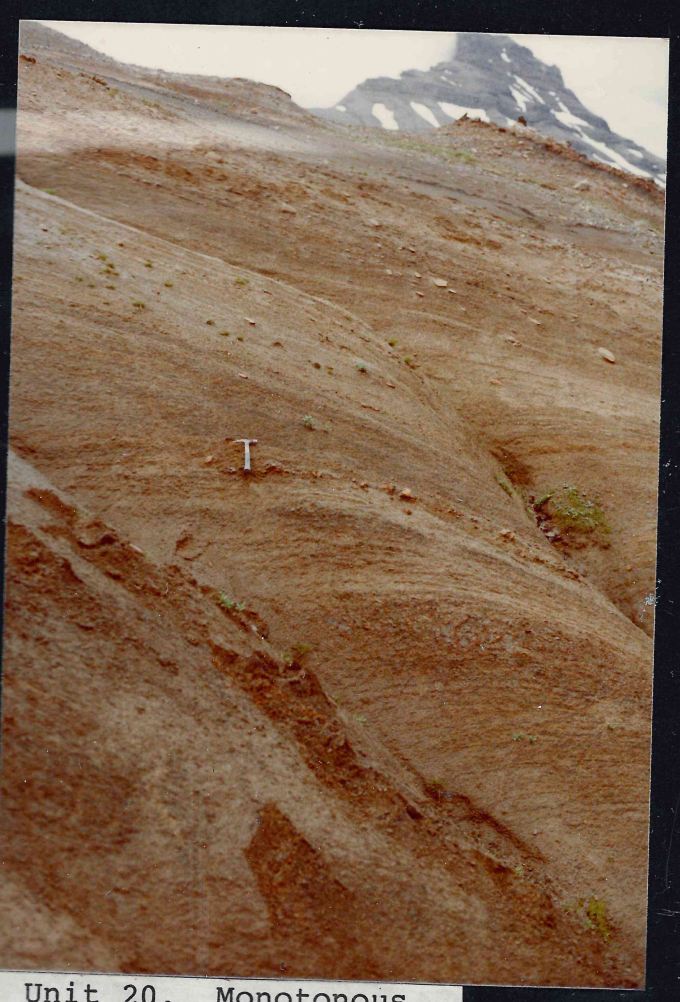


Photo 33-2

Bear Lake Fm at Milky River Section; Unit 20. Monotonous sequence of poorly consolidated siltstone and shale with local coal sections and bentonite beds. Lagoonal to lowland paleoenvironment.



Photo 34-1

Tidal flats at Moller Bay. Likely Recent antilog for upper portions of Bear Lake Fm at Milky River Section.



Photo 34-2

Bristol Bay Lowlands near Moller Bay; likely antilog for lower portions of Bear Lake Fm at Milky River Section.



Photo 35-1

Stepovak Fm (?) at Milky River Section; Units 30 to 32. Mainly thinnly laminated ss with some siltstone; locally bioturbated; highly indurated. Note coal of Unit 18 (Bear Lake Fm) in background.



Photo 35-2

Stepovak Fm (?) at Milky River Section; Unit 30. Herring-bone x-bedded ss. Shallow shelf paleoenvironment.



Photo 36-1

Stepovak Fm (?) at Milky River Section; Unit 30. Poorly developed flasier bedding in ss.



Photo 36-2

Stepovak Fm (?) at Milky River Section; Unit 32. Abundant burrows in ss. SS is poorly sorted and fine-grained; tight; contains abundant plant material. Marine Shelf paleoenvironment.

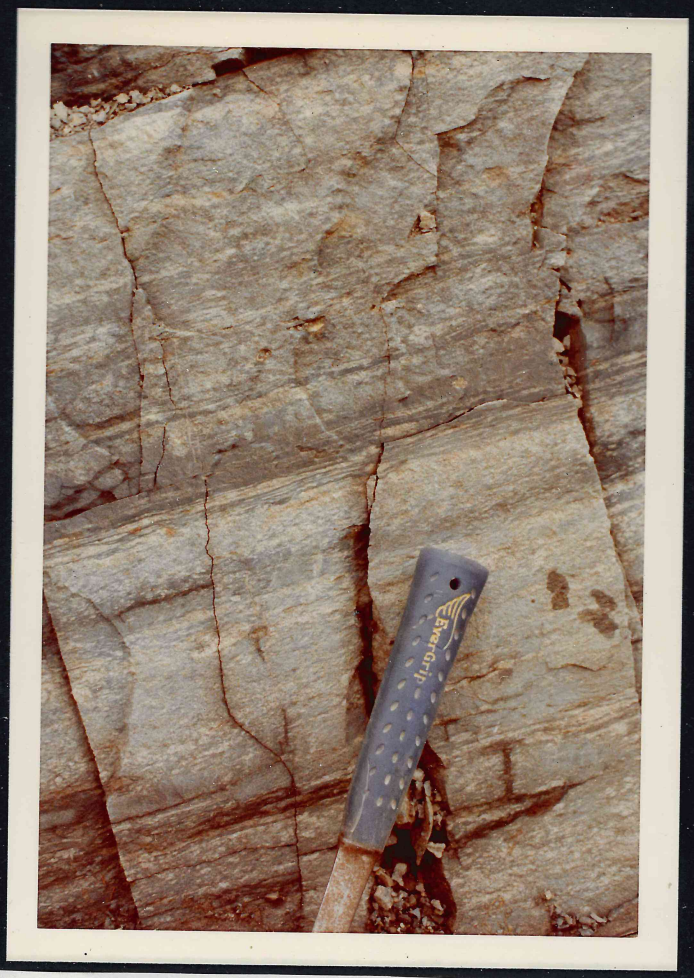


Photo 37-1

Stepovak Fm (?) at Milky River Section; Unit 38. Thinnly laminated siltstone and shale with minor ss. Bioturbation is common.



Photo 37-2

Blackie at Bear Lake Lodge playing with crab-pot float. Blackie was killed by wolves during the winter of 1977-78.



Photo 38-1

Greg Brown, Eric Panttila (piolet), and Earl Armstrong warming hands over Moller Bay Hotsprings gas seep; note orange flame.



Photo 38-2

Whale-bone mask collected by Japanese archeologists at Moller Bay Hotsprings.



Photo 39-1

Bear Lake Fm at SW Veniaminof; sample location AP-2117. Outcrop photo showing abundant dikes and sills intruding Bear Lake Fm. Mapped by Burk (1965) as Beaver Bay Gp.



Photo 39-2

Bear Lake Fm, as above.



Photo 40-1

Bear Lake Fm at SW Veniaminof; sample location AP-2117.
Conglomeratic ss; medium-sized x-beds. Fluvial paleoenvironment?



Photo 40-2

Bear Lake Fm, as above. Close-up.



Photo 41-1

Belkofski Fm at Balanced Rock section; top of section. Green tuffaceous microbreccia with interbedded ss.



Photo 41-2

Belkofski Fm, as above; bottom of section. Tan x-bedded ss; Carlos Pierce and Steve Williams for scale.



Photo 42-1

Belkofski Fm at Bold Cape area. Volcanics.



Photo 42-2

Belkofski Fm at Belkofski Bay area. Welded tuff.



Photo 43-1

Tolstoi Fm at Ivanof Bay Section; Unit 5. Interbedded ss and pebble conglomerate. SS is fine to medium-grained and poorly sorted; volcanic composition. Fluvial paleoenvironment. Lee Smirnov, Greg Brown, and Earl Armstrong for scale.



Photo 43-2

Tolstoi Fm at Ivanof Bay Section; Unit 9. Poorly exposed carbonaceous siltstone with abundant leaf impressions.



Photo 44-1

Tolstoi Fm at Ivanof Bay Section, Unit 10. SS is coarse-grained, poorly sorted, subangular; volcanogenic composition.



Photo 44-2

Tolstoi Fm. at Ivanof Bay section; Unit 14. Conglomeratic ss, coarse grained, subrounded; interbedded pebbly conglomerate. Uneven bedding with abundant lensing. Fluvial paleoenvironment.



Photo 45-1

Tolstoi Fm at Ivanof Bay Section; Unit 15. Interbedded feldspathic ss and carbonaceous siltstone.



Photo 45-2

Tolstoi Fm at Ivanof Bay section; Unit 19. Thinnly interbedded carbonaceous siltstone and shale. Probably shallow marine paleoenvironment.



Photo 46-1

Tolstoi Fm at Ivanof Bay section; Unit 24. Andesitic lava flow with burnt wood fragment. Subareal paleoenvironment.

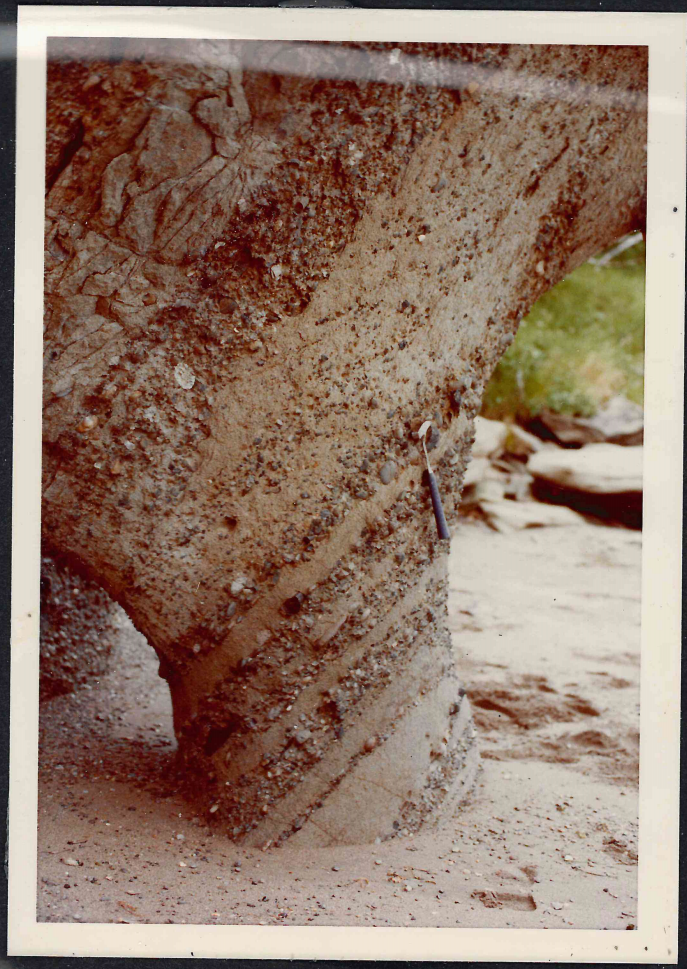


Photo 46-2

Tolstoi Fm at Ivanof Bay Section; Unit 28. Irregularly interbedded ss and pebble conglomerate. SS is pebbly medium to coarse-grained, poorly sorted, subangular; Many lenses of conglomerate. Fluvial paleoenvironment.



Photo 47-1

Tolstoi Fm at Ivanof Bay Section; Unit 30. Angular pebbles and shale rip-ups in medium-grained ss. Fluvial and/or shallowest marine paleoenvironment.



Photo 47-2

Tolstoi Fm, as above. Pebbly ss with crude medium-scale x-beds. Probably fluvial paleoenvironment.



Photo 48-1

Tolshoi Fm at Ivanof Bay Section; approximately Unit 61. Medium-bedded ss, fine to medium-grained, trough and planar x-beds; abundant leaf impressions. Prograding delta?



Photo 48-2

Tolstoi Fm, as above; Bill Connelly for scale.



Photo 49-1

Stepovak Fm at McGinty Point Section; Unit 7. Thin-bedded ss; medium to fine-grained, moderately sorted; lithic and volcanic clasts; occasional ripple marks. Lee Smirnov for scale.



Photo 49-2

Stepovak Fm at McGinty Point Section; Unit 6. Pebble to boulder conglomerate composed of volcanic and plutonic clasts;



Photo 50-1

Tolstoi Fm at Misty Ridge Section, Leg E. Outcrop photo; section measured along entire length of wash (vertical) near center of photo.



Photo 50-2

Tolstoi Fm at Misty Ridge section; Leg E (4670'). Black carbonaceous shale.



Photo 51-1

Tolstoi Fm at Misty Ridge Section; Leg E (4900'). Medium-bedded ss; ss is fine to medium grained, poorly sorted, tight. Lee Smirnov for scale.



Photo 51-2

Tolstoi Fm at Misty Ridge Section; Leg E. Sandstone (as above) and carbonaceous shale.



Photo 52-1

Tolstoi Fm at Misty Ridge Section; Leg E. Medium-bedded ss; fine-grained, tight.



Photo 52-2

Tolstoi Fm, as above (4970'). Gray siltstone with pelecypods and gastropods. Steve Williams for scale.



Photo 53-1

Tolstoi Fm at Misty Ridge Section; Leg F (5200'). Thinnly bedded ss; fine-grained, moderately sorted; 40% lithics, 40% feldspar, 20% quartz; tight. Plant fragments along bedding planes. Steve Williams for scale.



Photo 53-2

Tolstoi Fm, as above (5215'). Coarse-grained ss underlain by black carbonaceous shale.

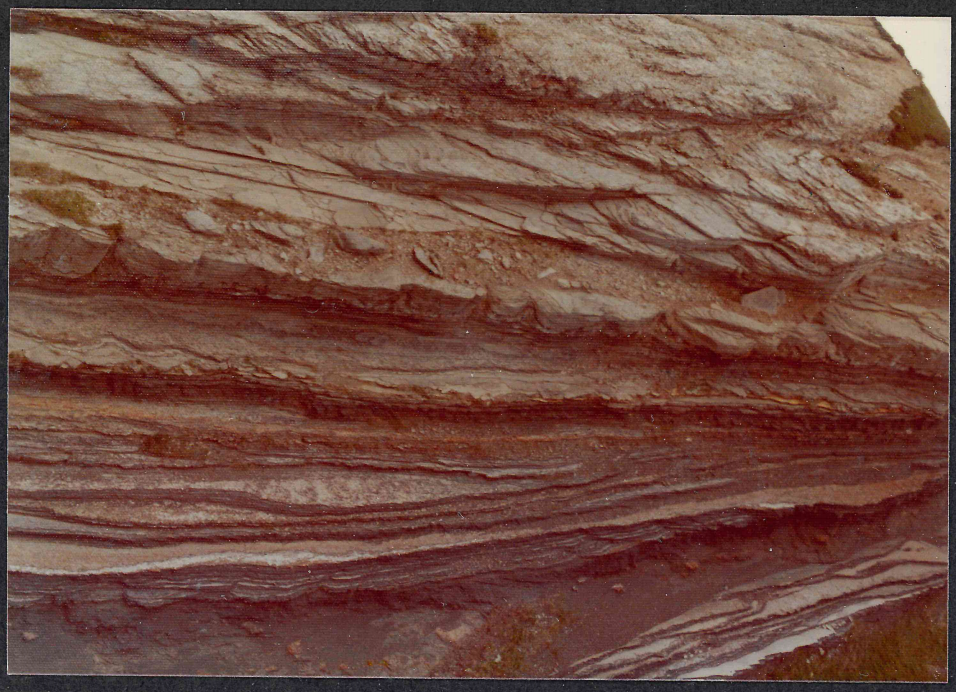


Photo 54-1

Stepovak Fm at Coal Bay Section. Thinnly interbedded ss and carbonaceous shale.

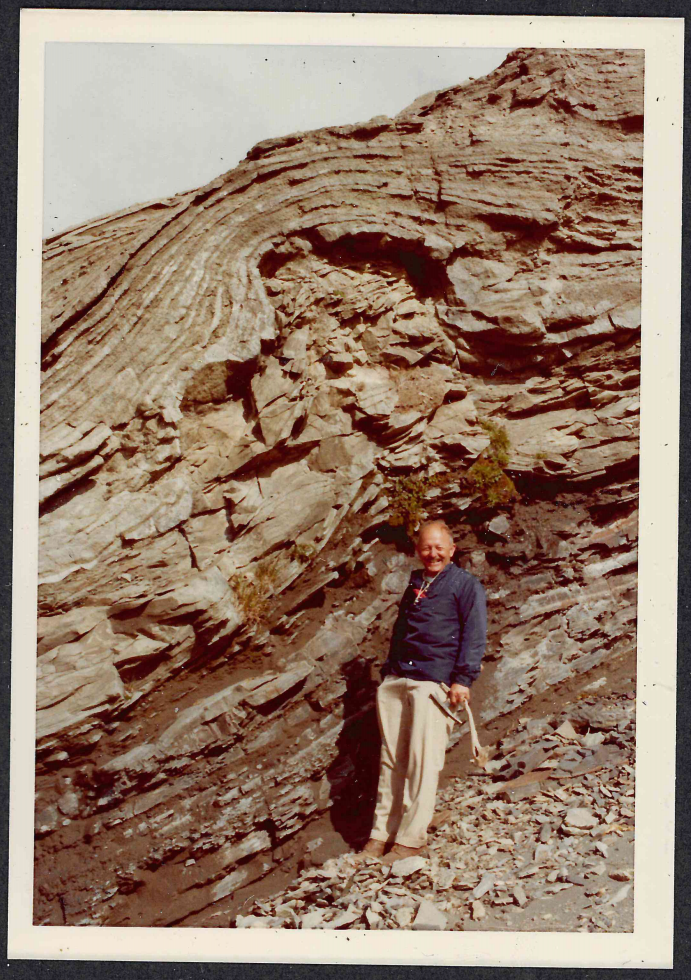


Photo 54-2

Stepovak Fm, as above. Soft sediment deformation in ss bed. Jake Wiloth for scale.



Photo 55-1

Eocene (?) strata near Old Creek (sample locality AP-2176; near Amoco Painter Creek Section). Coarse pebbly ss; interbedded with siltstone; abundant leaf imprints. Fluvial paleoenvironment. Rocks in this area were incorrectly called Cretaceous by Burk (1965).



Photo 55-2

Stepovak Fm on coast near Tolstoi Peak, SE Pavlof Bay. This coarse andesitic agglomerate must have been deposited very close to an Eocene/Olyocene volcano.



Photo 56-1

Tolstoi Fm at Korovin Is. White marine ss with Calianasa burrows; some x-bedding; common parallel beach laminations; poor porosity. Beach and shallowest shelf paleoenvironment. Bob Scott for scale.



Photo 56-2

Tolstoi Fm, as above. Gravel lags in medium-grained ss. Shallowest shelf deposits.



Photo 57-1

Porcupine on Bristol Bay Lowlands.



Photo 57-2

Caribou near Aniakchak volcano.



Photo 58-1

Meshik Fm near Pumice Creek (south of peak 2930').
Petrified wood, sandstone, and some siltstone beds are present.
Entire up-section interval is lava. Note: This section
has already been measured and is called the Amoco Cinder
River Section #230.



Photo 58-2

Meshik Fm at Kujulik Bay; Sample location AP-2224. Andesitic
agglomerate; probably lahar deposit.



Photo 59-1

Meshik Fm at Kujulik Bay; Sample location AP-2224. Andesitic agglomerate (Lahar deposit) engulfing petrified forest in growth position.



Photo 59-2

Meshik Fm, as above.



Photo 60-1

Coal Valley mbr at Coal Bluff Section; Unit 1. Massive cobble conglomerate with abundant lenses at ss. Interbeds of coal are common. Fluvial paleoenvironment. Lee Smirnov for scale.



Photo 60-2

Coal Valley mbr at Coal Bluff Section; Unit 2. Thick-bedded ss; coarse-grained pebbly; composed mainly of volcanic clasts with abundant pyroxene. Planar and trough x-beds. Probably subareal deposits.



Photo 61-1

Coal Valley mbr at Coal Bluff Section; Unit 3. Pebble conglomerate with abundant volcanic clasts and a tuffaceous matrix. Fluvial paleoenvironment.



Photo 61-2

Coal Valley mbr at Coal Bluff Section; Unit 4. White tuffaceous siltstone overlain by dark carbonaceous shale. Lagoonal paleoenvironment (?).

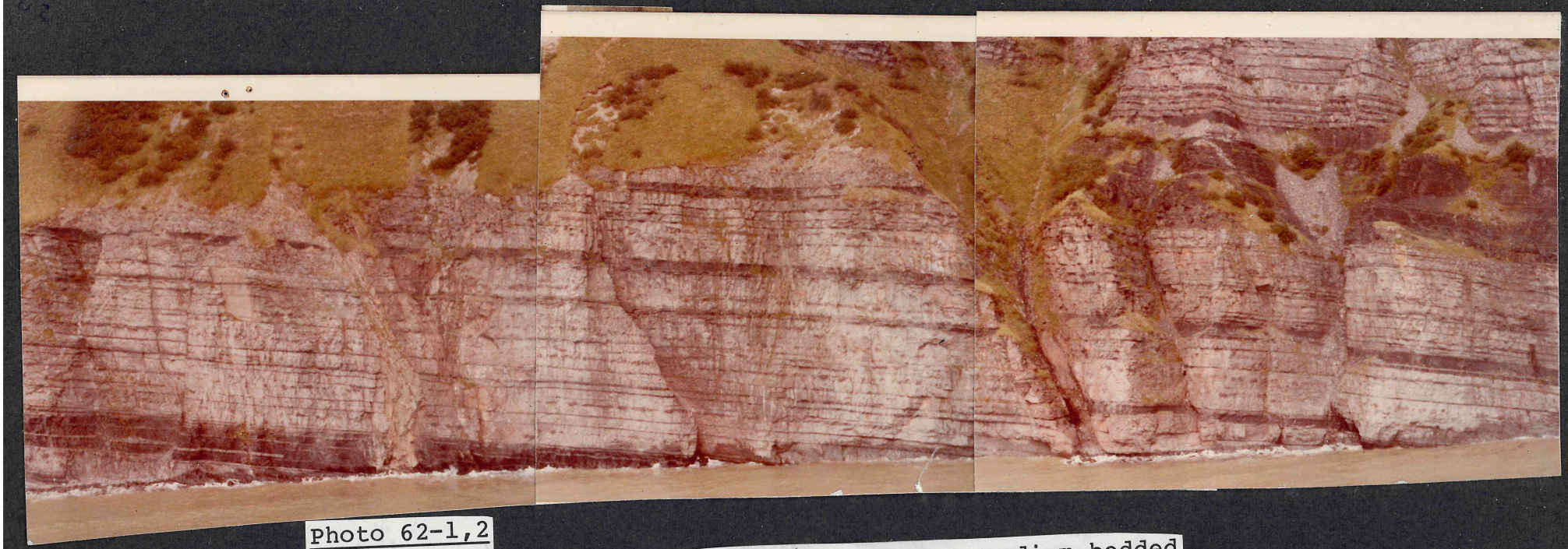


Photo 62-1,2

Kaguyak Fm at Kaguyak type-section. Thin to medium-bedded turbidites with graded bedding, CDE Bouma sequences, and sole marks. Deep marine paleoenvironment.

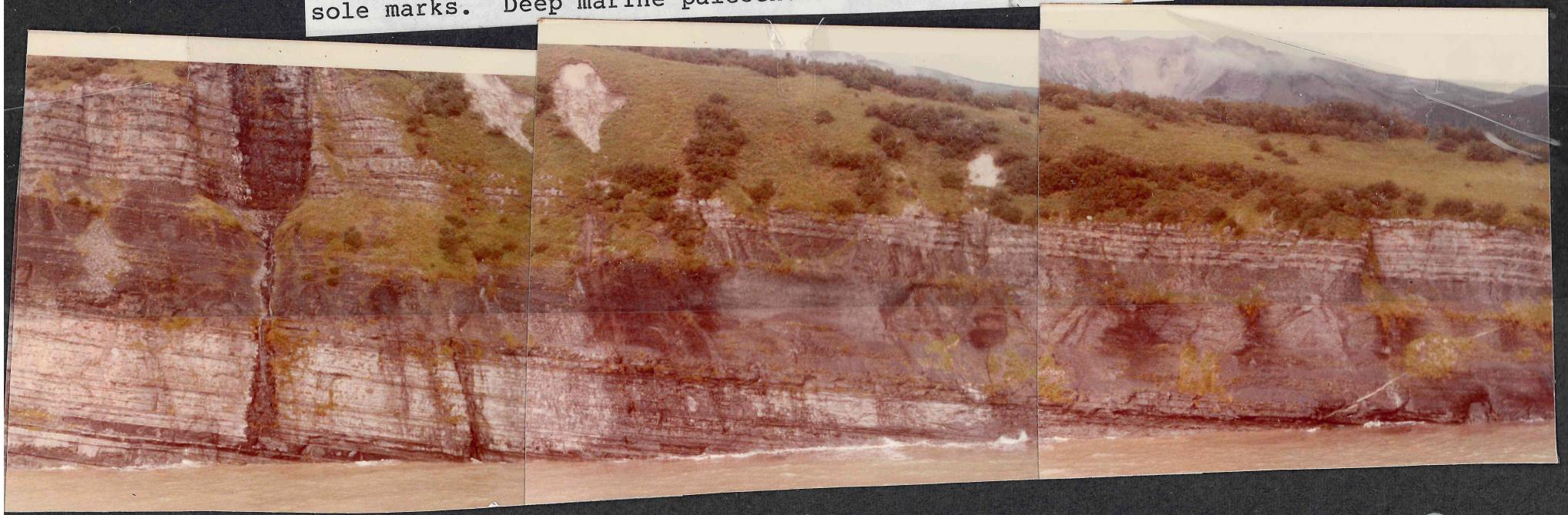




Photo 63-1

Kaguyak Fm at Kaguyak type-section; near base of section (Sample location AP-2289/90). Black structureless siltstone; highly fractured. Keller and Reiser (1959) report abundant fossils in this unit.



Photo 63-2

Kaguyak Fm, as above.

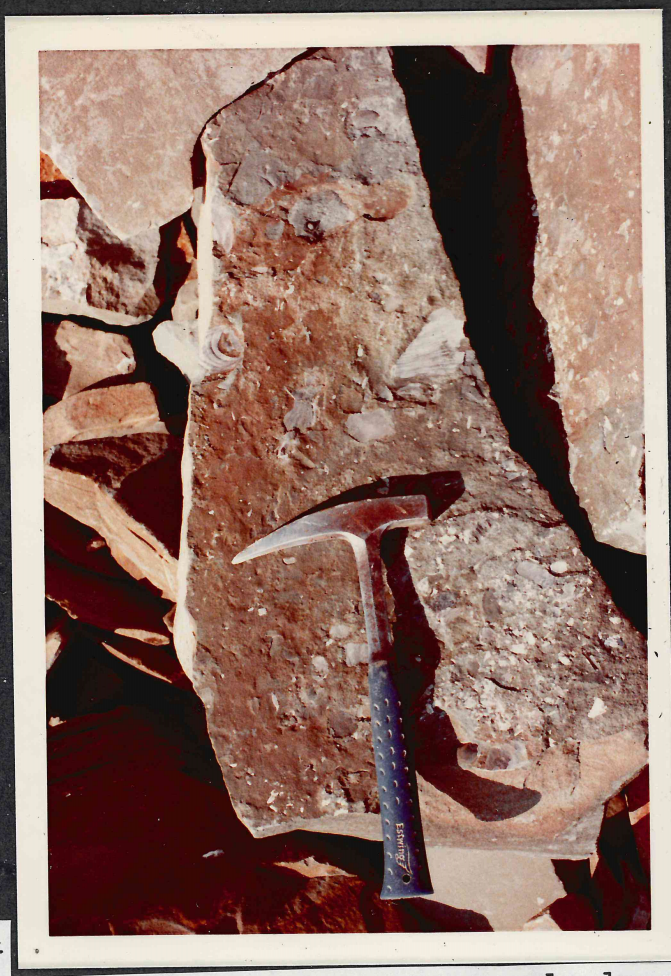


Photo 64-1

Herendeen Limestone near Kaguyak; Sample location AP-2252/54. Calcarenite with abundant broken Inoceramus. X-beds are common. Shallow shelf paleoenvironment.



Photo 64-2

Herendeen limestone, as above. Herendeen calcarenite underlain

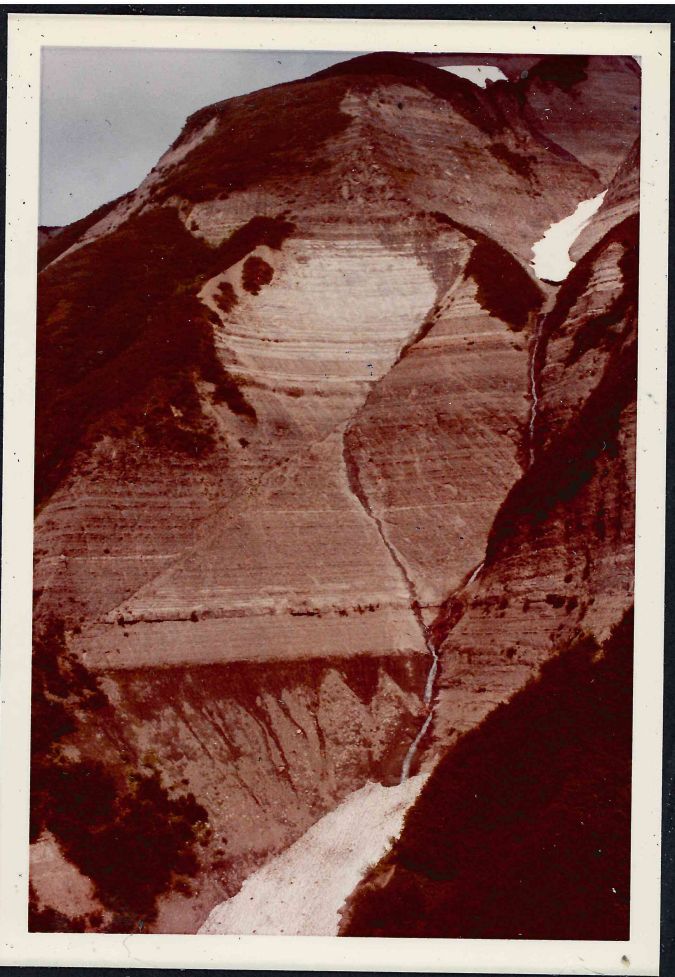


Photo 65-1

Naknek Fm at Kamishak Hills. Buff-white medium-bedded arkose; laumonite-bering. Deltaic paleoenvironment (?).



Photo 65-2

Naknek Fm, as above.



Photo 66-1

Maar volcano deposits at Cape Seniavin (Aug. 22, 1977).

Rocks are composed entirely of vesicular glassy dark brown angular volcanic clasts. X-beds occur locally. Much lapilli is present. Volcanic bombs commonly deform soft sediment.

The topography at Cape Seniavin forms a half circle of elevated ground. Maar deposits occur at both high areas at coast. These facts suggest this circular structure is a Recent Maar volcano with a central depression.



Photo 66-2

Recent Maar volcano at south end of Becharof Lake. Volcano erupted during winter of 1976-77; photo taken in August 1977



Photo 67-1

Subsiding shoreline at the village of Meshik, near Port Heiden. This cabin provides evidence for Recent subsidence in the Port Heiden area. Lee Smirnov for scale.



Photo 67-2

Salmon fishing near Cape Alaskan.



Photo 68

Pavlof and Pavlof's Sister viewed from the north.