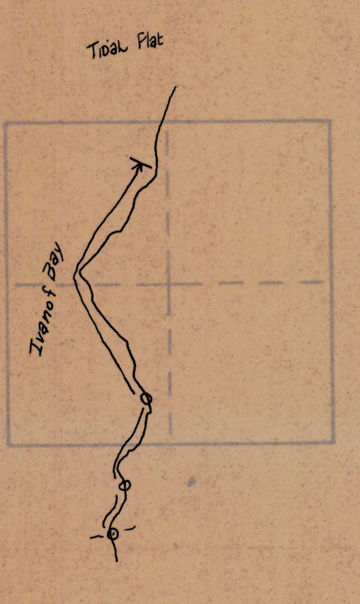
Amoco Production Company

Surface Log

Name: Ivanof Bay Section
Area or Quad: Stepovak Bay (D-5) 1:63,360 State: Alaska
Location: Kupreanof Peninsula Sec 3,10,15 Twn 50S Rng 66W
Measured by: Wm. Connelly, L. Smirnoff, G. Brown, R. Scott. Date: 21 July, 23 July, 7 Aug 77
Interval: Tolstoi Fm.
Remarks: measured up-section from point of Quaternary alluvium at head of Bay to monontonous igneous rocks at top of section. Measured on beach at east Ivanof Bay.



Location: 55° 52′ N 159° 57′ W

Plotted by: Wm. Connelly Date: 13 Aug 77

Periods	Epochs	Group or Fm.	Member	Ages / Stages	Fossils	Cores	Shows	Depth	Lithology	Porosity	Samples	Description

① Andesitic sill or pluton. Section ends here because no sedimentary rocks appear to be exposed further up the beach.

② Thin to medium bedded organic sh and ss. ss is lt. gray, m.gn., mod. sort, subangular, ~50% qtz, tight.

③ Sill, andesitic

④ Fluvial deposits; med. bedded ss with occasional congl. beds. ss is lt. gray-grn, vf to m gn., poor sort, mainly porous volc. clasts (pumaceous).

⑤ Similar to ④ but with more congl., uneven channeled bedding. ss is lt. gray-grn, c gn., conglomeritic with pebbles, finer grained up-section; abt. wood imprints

⑥ Sill (possibly flow); massive.
⑦ mainly thin bedded carbonaceous siltstn and coaly siltstn; leaf impressions common. minor fgn ss, volcanogenic.
⑧ Andesitic flow with wood fragments (burnt) and volc. breccia.

⑨ Same as ⑦

Covered

⑩ Unevenly bedded ss, lt. gray-grn, c to vc gn., poorly sort, subangular. X-beds up to 1′ thick, abt woody fragments; volcanogenic with much tuffaceous matrix and pumaceous volcanic clasts. Poorly exposed.

⑪ ss, lt. gray, m to f gn., mod. well rounded, good sort; ~60% qtz, many carbonaceous fragments and stringers.
⑫ Sill

Covered

⑬ Sm. exposure thin bedded gray siltstn and arg; subagueous
⑭ Fluvial deposits. Conglomeritic ss, c gn, subrounded; and pebble congl. with ss lenses. Many leaf and coalified wood fragments up to 1′ long. Uneven bedding.
⑮ Blk carbonaceous argillite lacking fissility; with lt. gray feldspathic ss, m.gn., subangular, poor sort, planar partings.

⑯ Pyroxene andesite porphyry sill.

⑰ Similar to ⑮. Thinly interbedded organic siltstn and sh with occasional 2′ beds of volcanic microbreccia (clasts average ~1/4″. ss is buff-gray, m gn, subrounded, poor sort.

⑱ Sill
⑲ Similar to ⑰ but without volc. microbreccia. Probably marine.

⑳ Sill or flow? No wood fragments.

㉑ Poorly exposed x-bedded ss.

㉒ Andesitic flow with burnt wood fragments

㉓ Almost massive siltstn/sh, blk-gray, many leafs. Also beds of m to c gn. ss, gray, with lg. wood fragments.

㉔ Flow?

㉕ ss, gray, vc gn, many wood fragments and wood.

㉖ Sill or flow? Brn, aphanitic, vesicular.

㉗ Thin bedded ss and sh, gray, vf gn, carbonaceous, some thin coal beds.

Covered.

㉘ Fluvial deposits. Irregular med. bedded, yellow-red conglomeritic ss and congl.; many channels and lenses. ss is med to c gn, poor sort, subangular; quartzose with many congl. lenses. Congl. contains mainly volc. clasts with some qtzite and metamorphics.

㉙ sh, poorly exposed

Covered

㉚ Similar to ㉘. Thick bedded ss with x-bed sets up to 3′; m-c gn., poor sort, conglomeritic; rich in qtz, wht-tan. Many pebble and granual lags, some channeling; abt. woody fragments. More gravels up section. Worm burrow at base, but looks more fluvial up-section.

㉛ Interbedded blk siltstone and sh with a few interbeds of ss; sh more abt up section. ss is gray, f to med gn., mod sorted, thin bedded; composed mainly of feldspar and qtz.

㉜ Massive ss with planar x-beds up to 5′ at base; granual lag on x-bed laminea.

㉝ Thin to med. bedded ss, gray-brn., f to c gn, mod well sorted; interbedded with thin bedded sequences of mudstn with wavey sand laminea. Ripple lam. common, esp. at top. Some trough x-beds.

㉞ sh with some siltstn, dark gray; possibly the uppermost fill of channel ㉟.
㉟ ss, thick bedded at base, progressively thinner bedded up section; f to c gn becoming finer up section, poor sort; ripple lam. common at top.
㊱ Thin bedded carbonaceous ss with minor sh; ss is f to vf gn., mod. well sort.

㊲ Series of fining up sequences about 30′ thick going from ss at base of each sequence to sh at top. Possibly represents infilling of a distributary channels in prograding delta.

㊳ Thinly interbedded carbonaceous siltstn and sh with some mudstn; some very large wood fragments.

㊴ Thick bedded wht ss, f to c gn., rare cobbles; trough x-beds and rippled dune x-beds; many coalified wood fragments.
㊵ ss, f gn, with interbedded carbonaceous sh; ripple lam. in sh and trough x-beds in ss.

Covered

㊶ Thin bedded carbonaceous sh and siltstn; poorly exposed.
㊷ Thin bedded ss, f to med. gn., with minor carbonaceous sh. Sm. trough x-beds in ss.

Covered

㊸ Same as ㊷.

㊹ Ripple lam. siltstn and sh; poorly exposed.
㊺ Thick bedded ss, wht., f to med. gn., poor sort, trough x-beds, abt. plant debris.
㊻ Thin bedded ss, f to med gn., ripple lam.
㊼ Carbonaceous sh with minor coal.
㊽ Thin bedded ss, gray-brn., f to c gn., poor sort, low angle x beds.
㊾ Dark gray carbonaceous sh with local coal seams and beds of med to c ss with trough x-beds. Plant material abt.

㊿ ss, gray to tan, f gn., well sorted; thin bedded and ripple lam; plant debris.

(51) Thin bedded dark gray siltstn and sh with minor interbeds of ss.

(52) ss, f to c gn, poor sort; some ripple lam. and trough x-beds. Much qtz, some musc.
(53) Similar to (51) with less ss.
(54) Similar to (52) with more ss.
(55) Similar to (51) but with less ss.

(56) Thick bedded ss, tan, f to c gn., mod. well sort; trough x-beds; rich in qtz with much musc.; local coal and plant fragments.

(57) Thin to med. bedded siltstn and med. gn. ss; ripple laminations.

Covered.

(58) med bedded ss, gray brn, f to med gn; low angle x-beds. Ripple lam. siltstn interbedded at top.
(59) Thin bedded sh with siltstn interlayers; plant fragments.

Covered

(60) Thin bedded dark gray sh, ripple lam., sparse plant fragments.

(61) Med. bedded lt. gray ss, f to med grained, planar and trough x-beds.

(62) Fissle dark sh, some ripple lam., some thin x-beds; common leafs and plant fragments.

(63) Med. bedded tan-gray ss, f to med. gn., abt. qtz; x-beds to 1′.
(64) Dark gray sh as in (62).

End section because no further exposure on beach.

Conclusions: This is an environmentally complex section. It begins (bottom to top) with fine grained sediments and sh with abt. leafs and local ss beds with large planar and trough x-beds. Then it goes through a series of fining up sequences ㊲ and then to fluvial deposits ㉚ and lava flows ㉒. This portion of the section may be interpreted as a prograding delta with infilling distributary channels and finally subareal fluvial deposits. The section apparently remained near the strand line between units ㉙ and ② as evidenced by coaly shaly deposits (possibly lagoonal), possibly marine ss beds, and fluvial deposits. This suggests sedimentation approximately kept pace with subsidence.

Paleocurrents:

1) Fluvial and/or coarse deltaic x-bed paleocurrent measurements of Units ㉘ & ㉚ have a very wide spectrum of transport direction and do not lend to a simple interpretation. Determining an approximate mean transport direction for each of the 4 rose diagrams and plotting them on a separate diagram suggests the mean paleoslope was inclined to the NW. The mean transport directions for Unit ⑤ are N & S; adding these to the above summary diagram supports a NW paleoslope. Perhaps further computer analyses of this and addition data from near by coeval sections would indicate the Eocene volcanic arc was SE of Ivanof Bay....

2) Paleocurrent directions from Units (32) to (62) are very complex, but two opposite paleocurrent trends prevailed.