

Figure DR-1

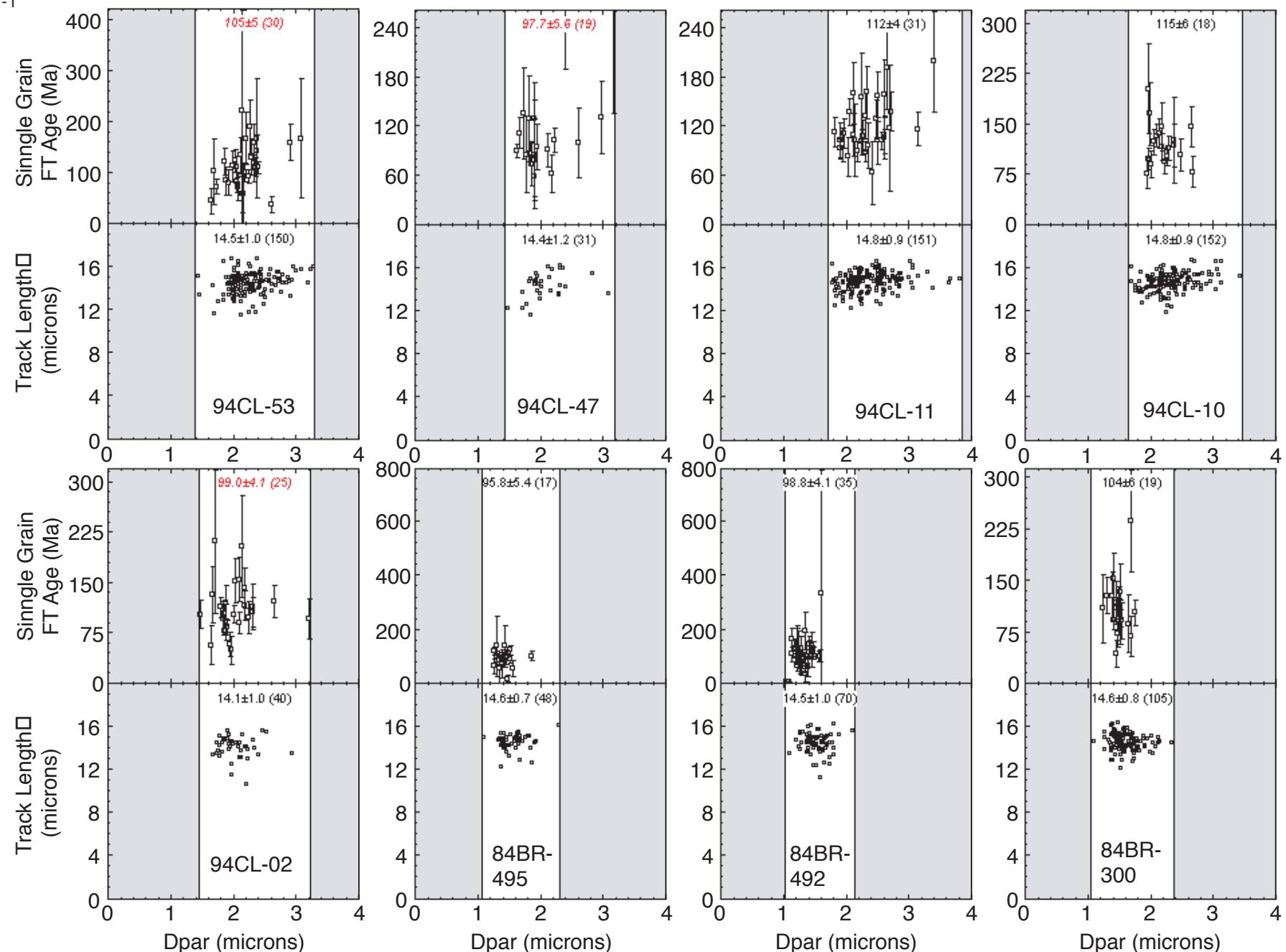


Figure DR-1. Plots of single grain fission track ages (upper) and individual track lengths (lower) versus Dpar kinetic parameter, output from program of Ketcham and others (2000; used by permission). Dpar (Donelick, U.S. Patent 5,267,272, 1993; Ketcham and others, 1999, 2000) correlates with annealing temperatures of individual apatite grains and is used as an input for the fission track modeling in Figure 17. Track lengths in lower plots are projected to c-axis using the methods of Donelick and others (1999) and Ketcham and others (2000). Pooled ages (with  $\pm 1\sigma$  uncertainties and numbers of grains dated) and mean track lengths (with one standard deviation of the distribution and numbers of tracks measured) are indicated on plots.

**Table DR-1.** Analysis of conodont collections from the lithic sandstone turbidite unit of the Iviagik Group and the Lisburne Group, northern Lisburne Peninsula, Alaska. See Figures 3 and 5 for locations of samples. Letters in field number refer to collector: AKA, K. E. Adams; TM, T. E. Moore; ARr, B. L. Reed; TR, I.L. Tailleur. Abbreviations: CAI, conodont color alteration index; indets., indeterminate bar, blade, and platform fragments.

### IVIAGIK GROUP

Field no. (USGS colln. no.)	QUADRANGLE, LATITUDE/ LONGITUDE	LITHOLOGY	CONODONT FAUNA	AGE	CAI	CONODONT BIOFACIES & DEPOSITIONAL ENVIRONMENT	REMARKS
82Tr83B (10628- SD)	Point Hope C-3 68°33'55"/ 166°13'40"	Calcareous nodule from mudrock interval in lithic sandstone turbidite unit, Iviagik Group.	2 incomplete Pa <i>Distomodus</i> <i>staurognathoides</i> (Walliser) 1 Pa fragment <i>Distomodus</i> sp. indet. or <i>Icriodella</i> sp. indet. 2 distomodid M elements 2 <i>Panderodus</i> sp. indet. fragments 1 unassigned Sc element 4 indets.	Early Silurian (middle Llandoverian to early Wenlockian)	5	Indeterminate (too few conodonts); conodonts present indicate postmortem transport within or from a normal- marine depositional setting.	2.9 kg of rock processed; 1.4 kg +20 mesh insoluble residue.

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**Table DR-1** (continued)

### LISBURNE GROUP

Field no. (USGS colln. no.)	QUADRANGLE, LATITUDE/ LONGITUDE (Township and Range)	STRATIGRAPHIC UNIT, LITHOLOGY, & LOCALITY DESCRIPTION	CONODONT FAUNA	AGE	CAI	CONODONT BIOFACIES & DEPOSITIONAL ENVIRONMENT	REMARKS
94AKA6-8 (33406- PC)	Point Hope D-2 68°49'21"/ 166°12'08" (sec. 21, T. 7 S., R. 60 W.)	Top of Nasorak Formation, Lisburne Group; dark-gray, crinoidal, dolomitic wackestone. Beach outcrop, about 1 km north of mouth of Niak Creek.	3 Pa (juveniles) <i>Cavusgnathus</i> sp. indet. 1 Sa <i>Hindeodus</i> sp. indet. <i>Kladognathus</i> sp. indet. 2 M and 1 Sb-Sc (all fragments) elements <i>Synclydognathus geminus</i> (Hinde) 11 Pa, 2 Pb, 1 M, 3 Sa, 6 Sb, and 1 Sc elements 43 indets.	late Meramecian- early Chesterian (middle Late Mississippian).	2.5	Synclydognathid biofacies: warm, shallow-water, near restricted depositional setting.	9.7 kg of rock processed; 1.52 kg +20 mesh and 129 g 20-200 mesh insoluble residue. Heavy-mineral concentrate: chiefly pyrite euhedra and euhehedral clusters, lesser rhombohedral dolomite, minor phosphatic brachiopod fragments, and rare ichthyoliths and chalcopyrite.
94AKA6-9 (33407- PC)	Point Hope D-2 68°48'45"/ 166°12'00" (sec. 28, T. 7 S., R. 60 W.)	Base of Nasorak Formation, Lisburne Group; dark-gray, coralline, crinoidal wackestone with bryozoans. Beach outcrop, about 0.2 km south of mouth of Niak Creek.	4 Pa <i>Bispathodus utahensis</i> Sandberg and Gutschick <i>Cavusgnathus</i> sp. indet. 5 Pa (all fragments) and 1 Pb elements <i>Kladognathus</i> sp. indet. 20 M, 2 Sa, and 18 Sb-Sc elements 55 indets.	late Meramecian- early Chesterian (middle Late Mississippian), likely late Meramecian as <i>Bi. utahensis</i> has not been found in definitively Chesterian strata.	3	Postmortem transport within or from the kladognathid biofacies; a shallow- water depositional setting, possibly near shoal water.	9.3 kg of rock processed; 120 g +20 mesh and 281g 20-200 mesh insoluble residue. Heavy-mineral concentrate: chiefly ferruginous and nonferruginous phosphatized and phosphatic bioclasts (including, in order of decreasing abundance, pelmatozoans, endothyrids, bryozoans, ichthyoliths, and gastropods).

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Field no. (USGS colln. no.)	QUADRANGLE, LATITUDE/ LONGITUDE (Township and Range)	STRATIGRAPHIC UNIT, LITHOLOGY, & LOCALITY DESCRIPTION	CONODONT FAUNA	AGE	CAI	CONODONT BIOFACIES & DEPOSITIONAL ENVIRONMENT	REMARKS
94AKA9-5 (33408- PC)	Point Hope D-2 68°51'29"/ 166°06'55" (sec. 2, T. 7 S., R. 60 W.)	Nasorak Formation, Lisburne Group, about 10 m above base of formation; dark-gray wackestone containing crinoids, corals, and bryozoans(?). Along road to radar towers, about 1.3 km northwest of right-angle bend in Selin Creek.	<i>Kladognathus</i> sp. indet. 1 Pa-Pb (fragment), 2 M, and 1 Sb-Sc elements 1 Sc? <i>Synclydognathus</i> sp. indet. 1 indet.	Osagean- Chesterian, probably no older than late Osagean	3	Indeterminate (too few conodonts).	11.6 kg of rock processed; 0.7 kg +20 mesh and 540 g 20-200 mesh insoluble residue. Heavy-mineral concentrate: chiefly phosphatized composite grains with and without pyrite, composite ferruginous flakes and grains, and minor anhedral and euhedral pyrite, ichthyoliths, and phosphatic brachiopod fragments.
94TM78A (33409- PC)	Point Hope D-2 68°51'24"/ 166°05'20" (sec. 11, T. 7 S., R. 60 W.)	Top of Nasorak Formation, Lisburne Group; dark-gray, crinoidal, coralline, bryozoan mudstone- wackestone. Along west side of road that parallels Seba Creek, about 1.2 km south of small lake at Cape Lisburne long-range radar station.	1 Pa fragment <i>Cavusgnathus</i> sp. indet. <i>Kladognathus</i> sp. indet. 1 M, 1 Sa, and 2 Sb-Sc elements <i>Synclydognathus geminus</i> (Hinde) 3 Pa, 1 Sa, 1 Sb, and 4 Sc elements 13 indets.	Late Meramecian- early Chesterian (middle Late Mississippian)	2.5	Indeterminate (too few conodonts); conodonts present indicate shallow- water depositional setting.	10 kg of rock processed; 120 g +20 mesh and 731 g 20-200 mesh insoluble residue. Heavy-mineral concentrate: chiefly composite ferruginous grains, common phosphatized chert, and minor euhedral pyrite.

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94TM78B (33410- PC)	Point Hope D-2 68°51'24"/ 166°05'20" (sec. 11, T. 7 S., R. 60 W.)	Base of Kogruk Formation, Lisburne Group; recrystallized, fine-grained, yellowish- light-gray-weathering, medium-gray limestone containing black chert nodules and lenses. Along west side of road that parallels Selin Creek, about 1.2 km south of small lake at Cape Lisburne long- range radar station.	2 Pa fragments <i>Bispathodus utahensis</i> Sandberg and Gutschick 2 Pa fragments <i>Cavusgnathus</i> sp. indet. <i>Hindeodus cristulus</i> (Youngquist and Miller)? 2 Pa (fragments) and 1 Sa elements <i>Kladognathus</i> sp. indet. 2 M, 1 Sa, and 3 Sb-Sc elements <i>Synclydognathus geminus</i> (Hinde) 3 Pa, 1 Sa, 3 Sb, and 1 Sc elements <u>UNASSIGNED ELEMENTS:</u> 1 Sa and 1 Sb 114 indets.	Late Meramecian- early Chesterian (middle Late Mississippian), possibly no younger than late Meramecian as <i>Bi. utahensis</i> has not been found in definitively Chesterian strata.	2.5	Mixed biofacies; postmortem transport of predominantly shelf or platform species.	9.3 kg of rock processed; 3.0 kg +20 mesh and 175 g 20-200 mesh insoluble residue. Heavy-mineral concentrate: chiefly anhedral dolomite and composite ferruginous flakes and grains, minor phosphatic brachiopod fragments, and rare ichthyoliths.
94TM80A (33411- PC)	Point Hope D-2 68°51'40"/ 166°05'15" (sec. 1, T. 7 S., R. 60 W.)	Silicified carbonatite unit, Lisburne Group (within upper half); fine- grained, recrystallized.	2 small bar fragments <i>Kladognathus?</i> sp. indet. 1 unassigned M element 21 indets.	Mississippian but not early Kinderhookian. Should be no older than late Meramecian as Tupik generally overlies the Kogruk.	2- 2.5	Indeterminate (too few generically identifiable conodonts).	10.5 kg of rock processed; 5.0 kg +20 mesh and 431 g 20-200 mesh insoluble residue. Heavy-mineral concentrate: chiefly anhedral dolomite, minor composite ferruginous flakes and ferroan dolomite, and rare phosphatized gastropod steinkerns.

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94TM83A (33412- PC)	Point Hope D-2 68°52'00"/ 166°12'27" (sec. 5, T. 7 S., R. 60 W.)	Silicified carbonatite unit, Lisburne Group (within middle part); light-gray, light-gray- and yellowish-brown- weathering, fine- grained limestone containing brachiopods. 0.7 km northeast of Chukchi Sea and 1 km southeast of Alokut Point on north side of unnamed creek.	4 Pa fragments <i>Cavusgnathus</i> sp. indet. 3 Pa <i>Gnathodus texanus</i> Roundy 6 Pa <i>Gnathodus girtyi girtyi</i> Hass <i>Idiopriioniodus</i> sp. indet. 1 P and 1 M element fragments <i>Kladognathus tenuis</i> (Branson and Mehl) 3 M and 4 Sa element fragments 116 indets.	Late Meramecian- early Chesterian (middle Late Mississippian)	2- 2.5	Postmortem transport from or within a kladognathid- gnathodid biofacies; normal-marine relatively shallow- water depositional setting.	8.4 kg of rock processed; 240 g +20 mesh and 434 g 20-200 mesh insoluble residue. Heavy-mineral concentrate: chiefly rhombohedral and minor anhedral dolomite, minor composite ferruginous flakes and phosphatic brachiopods fragments and ichthyoliths.
82Tr110 (28777- PC)	Point Hope D-2 68°50'05"/ 166°11'50"	Base of Nasorak Formation, Lisburne Group; impure, fossiliferous limestone. 1.5 miles north of Niak Creek.	1 mid Pa element fragment <i>Bispathodus utahensis</i> Sandberg and Gutschick? 1 incomplete Pa element <i>Cavusgnathus</i> sp. indet. <i>Kladognathus</i> sp. indet. 2 M, 1 Sa, and 6 Sb-Sc (all fragments) <i>Synclydognathus</i> sp. indet. 1 Pb and 1 Sc elements 84 indet. bar, blade, and platform fragments	late Meramecian- early Chesterian (middle Late Mississippian), likely late Meramecian as <i>Bi. utahensis</i> has not been found in definitively Chesterian strata.	2.5	Indeterminate (too few generically identifiable conodonts); conodonts present indicate a warm, shallow-water, depositional setting.	2.6 kg of rock was processed; 0.56 kg +20 mesh insoluble residue.

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82Tr109 (28778- PC)	Point Hope D-2 68°49'40"/ 166°12'00"	Base of Nasorak Formation Lisburne Group; impure, fossiliferous limestone. 1.0 mile north of Niak Creek.	1 juvenile and 1 adult Pa (fragments) <i>Bispathodus?</i> sp. indet. 1 incomplete Pa <i>Cavusgnathus</i> sp. indet. <i>Kladognathus</i> sp. indet. 7 M and 4 Sb-Sc elements 1 S fragment <i>Synclydognathus</i> sp. indet. 44 indets.	late Meramecian- early Chesterian (middle Late Mississippian), likely late Meramecian as <i>Bi. utahensis</i> is not known to extend into the Chesterian.	2- 2.5	Indeterminate (too few generically identifiable conodonts); conodonts present indicate a warm, shallow-water, depositional setting.	3.1 kg of rock processed; 214 g +20 mesh insoluble residue. Rare ichthyoliths.
82Tr108A (28779- PC)	Point Hope D-2 68°48'50"/ 166°12'00"	Base of Nasorak Formation Nasorak Formation, Lisburne Group; impure, fossiliferous limestone. South of Niak Creek.	1 Pa fragment <i>Bispathodus</i> <i>utahensis</i> Sandberg and Gutschick? 2 incomplete Pa <i>Cavusgnathus</i> sp. indet. 2 <i>Kladognathus</i> sp. indet. fragments	late Meramecian- early Chesterian (middle Late Mississippian), likely late Meramecian as <i>Bi. utahensis</i> is not known to extend into the Chesterian.	~2.5	Indeterminate (too few generically identifiable conodonts); conodonts present indicate a warm, shallow-water, depositional setting.	2.7 kg of rock processed; 220 g +20 mesh insoluble residue. Ichthyoliths and phosphatized gastropod and endothyrid steinkerns.
82Tr98A (28780- PC)	Point Hope D-2 68°45'05"/ 166°11'50"	Base of Nasorak Formation, Lisburne Group; impure, fossiliferous limestone. South of Noyalik Creek.	1 Pa <i>Cavusgnathus</i> <i>unicornis</i> Youngquist and Miller <i>Kladognathus</i> sp. indet. 1 M and 1 Sb-Sc elements 2 Pb <i>Synclydognathus</i> sp. indet. 1 unassigned Sb element 12 indets.	late Meramecian- early Chesterian (middle Late Mississippian)	2	Indeterminate (too few generically identifiable conodonts); conodonts present indicate post- mortem transport within or from a relatively shallow- water depositional setting.	2.5 kg of rock processed; 154 g +20 mesh insoluble residue.

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82Tr95 (28781- PC)	Point Hope C-2 68°41'35"/ 166°11'40"	Base of Nasorak Formation, Lisburne Group; impure, fossiliferous limestone. From Collier's fig. 4 section, south of Cape Lewis.	3 Pa (incomplete) <i>Bispaphodus utahensis</i> Sandberg and Gutschick 3 Pa <i>Cavusgnathus</i> <i>unicornis</i> Youngquist and Miller 1 Sa <i>Hindeodus</i> sp. indet. <i>Kladognathus</i> sp. indet. 2 M, 1 Sa, and 2 Sb-Sc elements 46 indets.	late Meramecian- early Chesterian (middle Late Mississippian), likely late Meramecian as <i>Bi. utahensis</i> is not known to extend into the Chesterian.	2	Indeterminate (too few generically identifiable conodonts); conodonts present indicate normal- marine, relatively shallow-water depositional setting.	2.9 kg of rock processed; 816 g +20 mesh insoluble residue. 1 phosphatized gastropod steinkern.
82Tr99 (28774- PC)	Point Hope D-2 68°47'05"/ 166°11'20"	Uppermost Kogruk Formation, Lisburne Group. From mouth of Alkalugen Creek.	1 Pa <i>Cavusgnathus altus</i> Harris and Hollingsworth 2 Pa <i>Cavusgnathus</i> <i>unicornis</i> Youngquist and Miller 12 Pa fragments <i>Cavusgnathus</i> sp. indet. 3 Pa <i>Gnathodus texanus</i> Roundy 2 <i>Idiopriioniodus</i> sp. indet. fragments 3 Sb-Sc fragments <i>Kladognathus</i> sp. indet. 104 indets. (chiefly small kladognathid fragments)	late Meramecian- early Chesterian (middle Late Mississippian)	2	Cavusgnathid biofacies; relatively high-energy, shallow-water (near shoal) depositional setting.	2.9 kg of rock processed; 1 g +20 mesh insoluble residue.
82Tr98B (28772- PC)	Point Hope D-2 68°45'20"/ 166°11'55"	Uppermost Kogruk Formation, Lisburne Group. From south edge of Noyalik Peak.	1 Pa <i>Hindeodus cristulus</i> (Youngquist and Miller) <i>Kladognathus</i> sp. indet. 1 M and 2 Sb-Sc elements 1 Pa <i>Synclydognathus</i> <i>geminus</i> Hinde 1 indet.	late Meramecian- early Chesterian	2	Indeterminate (too few conodonts); conodonts present suggest shallow water, or nearby shallow-water partly restricted depositional setting.	2.7 kg of rock processed; 140 g +20 mesh insoluble residue. 3 ichthyoliths.

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82ARr30 (28773- PC)	Point Hope D-2 68°45'42"/ 166°11'48"	Uppermost Kogruk Formation, Lisburne Group. From north of Noyalik Peak.	53 Pa <i>Gnathodus girtyi girtyi</i> Hass and <i>G. g. simplex</i> Dunn 1 M <i>Gnathodus</i> sp. indet. 1 Pa <i>Hindeodus minutus</i> (Ellison) 9 <i>Idiopriioniodus</i> sp. indet. fragments 14 Pa <i>Rhachistognathus</i> <i>muricatus</i> Dunn 2 juvenile Pa <i>Rhachistognathus prolixus</i> Baesemann and Lane? 1M and 1 Pb unassigned elements +100 indets.	Chesterian (late Late Mississippian)	1.5- 2	Gnathodid biofacies; normal- marine middle to shallow-shelf (because of associated rhachistognathids) depositional setting. These two collections represent the most	3.4 kg of rock processed; 174 g +20 mesh insoluble residue. 3 ichthyoliths.
82Tr96 (28771- PC)	Point Hope C-2 68°43'30"/ 166°11'54"	Uppermost Kogruk Formation, Lisburne Group. From north end of sea cliffs, Cape Lewis, south of Ukinak Creek.	27 Pa <i>Gnathodus girtyi girtyi</i> Hass and <i>G. g. simplex</i> Dunn 1 M fragment <i>Idiopriioniodus</i> sp. indet. 1 Pa <i>Lochriea commutata</i> (Branson and Mehl) 1 Pa <i>Rhachistognathus</i> <i>muricatus</i> Dunn 1 unassigned Sa fragment 34 indets.	very late Meramecian- Chesterian, possibly no older than Chesterian.	1.5	open-marine depositional setting of all the collections analyzed in this table.	3.0 kg of rock processed; 87.5 g +20 mesh insoluble residue. Common ichthyoliths.

**Table DR-2.** Graptolite faunas from Lisburne Peninsula, Alaska. See Figure 5 for location of samples. Samples collected by I. L. Tailleur (Tr), A. Grantz, (AGz), and B. Matsutsuyu (BM). All faunas identified by Claire Carter, U.S. Geological Survey, 1982.

Sample number	Collector location number	Latitude/Longitude/ 1:63,360-scale quadrangle	Location detail	Stratigraphic unit	Graptolite fauna	Abundance/Preservation	Age
82Tr80A <sup>1</sup>	82Tr80A	68° 37' 27"/ 166° 13' 20"/ Point Hope C-3 quadrangle	Near seacoast, 150 m south of Angolik Creek	Argillite and shale unit, Iviagik Group	<i>Nemagraptus gracilis surcularis</i> (Hall) <i>Reteograptus geinitzianus</i> Hall <i>Cryptograptus schaferi</i> Lapworth <i>Glossograptus ciliatus</i> Emmons <i>Corynoides</i> sp. <i>Dicellograptus</i> cf. <i>D. gurleyi gurleyi</i> Lapworth <i>D. cf. D. sextans exilis</i> Elles & Wood <i>Glyptograptus</i> cf. <i>G. teretiusculus</i> (Hisinger) <i>G. sp.</i> <i>Climacograptus</i> sp. <i>Orthograptus calcaratus</i> subsp. indeterminate	Rare Rare Frequent Frequent Rare Rare Rare Frequent Frequent Common Rare	Zone of <i>Nemagraptus gracilis</i> ; Middle Ordovician
82Tr80B <sup>1</sup>	82Tr80B	68° 37' 27"/ 166° 13' 20"/ Point Hope C-3 quadrangle	Near seacoast, 150 m south of Angolik Creek, northern part of same exposure as 82Tr80A	Argillite and shale unit, Iviagik Group	<i>Nemagraptus</i> sp. <i>Cryptograptus schaferi</i> Lapworth <i>C. tricornis</i> (Carruthers) <i>Glossograptus</i> sp. <i>Didymograptus?</i> sp. <i>Dicellograptus</i> cf. <i>D. gurleyi gurleyi</i> Lapworth <i>D. sextans exilis</i> Elles & Wood <i>D. aff. D. caduceus</i> Lapworth <i>Glyptograptus</i> sp. <i>Amplexograptus?</i> <i>Climacograptus</i> sp.	Frequent Common Frequent Rare Rare Frequent Frequent Frequent Frequent Rare Frequent	Zone of <i>N. gracilis</i> ; Middle Ordovician
82Tr81A	82Tr81A	68° 37' 43"/ 166° 13' 15"/ Point Hope C-3 quadrangle	Near seacoast, 300 m north of Angolik Creek	Argillite and shale unit, Iviagik Group	<i>Cryptograptus tricornis</i> (Carruthers) <i>Glossograptus?</i> sp. <i>Dicranograptus ramosus spinifer</i> Elles & Wood <i>Dicellograptus</i> sp. <i>Climacograptus bicornis bicornis</i> (Hall) <i>C. bicornis tridentatus</i> Lapworth <i>Pseudoclimacograptus?</i> sp. <i>Amplexograptus</i> sp. <i>Glyptograptus</i> or <i>Orthograptus</i> sp. A dendroid(?) form like <i>Mastigograptus</i>	Rare Rare Rare Rare Common Rare Rare Frequent Rare Frequent	Zone of <i>Climacograptus bicornis</i> ; Middle Ordovician

**Table 2** (con't).

Sample number	Collector location number	Latitude/Longitude/ 1:63,360-scale quadrangle	Location detail	Stratigraphic unit	Graptolite fauna	Abundance/Preservation	Age
82Tr81B <sup>1</sup>	82Tr81B	68° 37' 45"/ 166° 13' 13"/ Point Hope C-3 quadrangle	Near seacoast 300 m north of Angolik Creek, same location as 82Tr81B	Argillite and shale unit, Iviagik Group	<i>Dicranograptus</i> cf. <i>D. hians</i> <i>hians</i> T. S. Hall <i>Climacograptus</i> cf. <i>C. caudatus</i> Lapworth <i>C. sp.</i> <i>Glyptograptus?</i> sp. <i>Orthograptus</i> cf. <i>O. pageanus</i> Elles & Wood	Rare Rare Common Rare Rare	Approximately the zones of <i>Climacograptus</i> <i>wilsoni</i> and <i>Dicranograptus</i> <i>clingani</i> ; Middle Ordovician
82Tr83B <sup>2</sup>	82Tr83B	68° 33' 55"/ 166° 13' 40"/ Point Hope C-3 quadrangle	Seacliffs, 350 m south of Okrukut Creek	Lithic sandstone turbidite unit	<i>Monograptus spiralis</i> (Geinitz) <i>Monograptus</i> sp. aff. <i>M. communis</i> Unidentified fragments	ND	Zones of <i>Rastrites</i> <i>maximus</i> through <i>Monoclimacis</i> <i>crenulata</i> ; Early Silurian
82AGz3 <sup>1</sup>	82AGz3	68° 39' 20"/ 166° 13' 25"/ Point Hope C-3 quadrangle	Near seacoast, 1 km NNE of Cape Dyer	Argillite and shale unit, Iviagik Group	<i>Didymograptus?</i> sp.	ND Poorly preserved	Approximately Early Ordovician
82AGz9 <sup>1</sup>	82AGz9	68° 39' 20"/ 166° 13' 25"/ Point Hope C-3 quadrangle	Near seacoast, 1 km NNE of Cape Dyer, ~same location as 82AGz3	Argillite and shale unit, Iviagik Group	<i>Glyptograptus</i> sp. <i>Climacograptus?</i> sp.	Rare Rare Poorly preserved	Approximately Middle or Late Ordovician
83WR430 <sup>3</sup>	BM10	68° 37' 15"/ 166° 13' 20"/ Point Hope C-3 quadrangle	From 10- 15- ft.- thick interval, north end of cliffs south of Angolik Creek	Argillite and shale unit, Iviagik Group	<i>Nemagraptus exilis linearis</i> Ruedemann <i>Dicellograptus</i> sp. <i>Reteograptus</i> sp. <i>Glossograptus</i> sp. <i>Orthograptus</i> sp. <i>Glyptograptus</i> sp. <i>Pseudoclimacograptus?</i> sp.	ND	Zone of <i>Nemagraptus</i> <i>gracilis</i> ; early Middle Ordovician (Caradocian)
83WB430 <sup>3</sup>	BM10b	68° 37' 15"/ 166° 13' 20"/ Point Hope C-3 quadrangle	Float collection over 100 m from BM10	Argillite and shale unit, Iviagik Group	<i>Glossograptus</i> sp. <i>Dicellograptus</i> sp. <i>Orthograptus</i> cf. <i>O. calcaratus acutus</i> Elles & Wood	ND	Approximately early Middle Ordovician

**Table 2** (con't).

Sample number	Collector location number	Latitude/Longitude/ 1:63,360-scale quadrangle	Location detail	Stratigraphic unit	Graptolite fauna	Abundance/Preservation	Age
83WB488 <sup>3</sup>	BM21	68° 37' 00"/ 166° 12' 55"/ Point Hope C-3 quadrangle	Iviagik Mountain, east flank	Argillite and shale unit, Iviagik Group	<i>Pterograptus</i> sp. <i>Didymograptus</i> sp. <i>Phyllograptus?</i> sp. <i>Glossograptus ciliatus</i> Emmons <i>Cryptograptus schaferi</i> Lapworth <i>Climacograptus riddellensis</i> Harris <i>Pseudoclimacograptus?</i> sp. <i>Glyptograptus</i> sp.	ND tectonically distorted	Lower <i>Diplograptus?</i> <i>decoratus</i> zone; early Middle Ordovician (Llanvirnian)
83WB488 <sup>3</sup>	BM21	68° 37' 00"/ 166° 12' 55"/ Point Hope C-3 quadrangle	Iviagik Mountain, east flank	Argillite and shale unit, Iviagik Group	<i>Pterograptus</i> sp. <i>Didymograptus</i> sp. <i>Phyllograptus?</i> sp. <i>Glossograptus ciliatus</i> Emmons <i>Cryptograptus schaferi</i> Lapworth <i>Climacograptus riddellensis</i> Harris <i>Pseudoclimacograptus?</i> sp. <i>Glyptograptus</i> sp.	ND tectonically distorted	Lower <i>Diplograptus?</i> <i>decoratus</i> zone; early Middle Ordovician (Llanvirnian)
83WB542 <sup>3</sup>	BM40	68° 37' 15"/ 166° 13' 35"/ Point Hope C-3 quadrangle	Seacliff on northwestern flank of Iviagik Mountain	Argillite and shale unit, Iviagik Group	<i>Cryptograptus tricornis</i> (Carruthers) <i>Orthograptus calcaratus acutus</i> Elles & Wood <i>Amplexograptus</i> sp.	ND/very scrappy	Approximately <i>N.</i> <i>gracilis</i> and <i>Climacograptus</i> <i>bicornis</i> zones; Middle Ordovician
83WB561 <sup>3</sup>	BM22	68° 37' 35"/ 166° 13' 10"/ Point Hope C-3 quadrangle	Between Cape Dyer and Iviagik Mountain, near Angolik Creek	Argillite and shale unit, Iviagik Group	<i>Climacograptus bicornis</i> (Hall) <i>Glyptograptus?</i> sp. <i>Cryptograptus tricornis</i> (Carruthers) <i>Dicellograptus</i> sp.	ND	Zone of <i>C.</i> <i>bicornis</i> ; Middle Ordovician
83WB562 <sup>3</sup>	BM49	68° 37' 40"/ 166° 13' 15"/ Point Hope C-3 quadrangle	Between Cape Dyer and Iviagik Mountain; north of Angolik Creek	Argillite and shale unit, Iviagik Group	<i>Climacograptus</i> sp.	ND /Sparse and scrappy	Middle Ordovician through Early Silurian
83WB578 <sup>3</sup>	BM54	68° 31' 15"/ 166° 39' 55"/ Point Hope C-2 quadrangle	Akalolik Creek, 5.5 km south-southeast of Iviagik Mtn.	Argillite and shale unit, Iviagik Group	<i>Didymograptus?</i> sp. Biserial rhabdosome	ND /very scrappy	Late Early to Middle Ordovician

**Table 2** (con't).

Sample number	Collector location number	Latitude/Longitude/ 1:63,360-scale quadrangle	Location detail	Stratigraphic unit	Graptolite fauna	Abundance/Preservation	Age
83WB580 <sup>3</sup>	BM49	68° 37' 40"/ 166° 13' 15"/ Point Hope C-3 quadrangle	Between Cape Dyer and Iviagik Mountain; north of Angolik Creek	Argillite and shale unit, Iviagik Group	? <i>Climacograptus caudatus</i> Lapworth <i>Dicellograptus</i> or <i>Dicranograptus</i> sp.	ND /very poorly preserved	Probably Middle Ordovician
83WB724 <sup>3</sup>	BM70	68° 31' 15"/ 166° 39' 55"/ Point Hope C-2 quadrangle	Tributary to Akalilik Creek, 5 km south of Iviangik Mtn.	Argillite and shale unit, Iviagik Group	<i>Glyptograptus</i> sp. <i>Dicellograptus?</i> sp.	ND /very poorly preserved	Approximately Middle Ordovician

<sup>1</sup>, C. Carter (written commun. to I. Tailleur, Sept. 1982); <sup>2</sup>, C. Carter (written commun. to I. Tailleur, Oct. 1982); <sup>3</sup>, C. Carter (written commun. to B. Matsutsuyu, June 1984)  
 Abbreviations: ND, not determined.