

UNIVERSITY OF PENNSYLVANIA RADIOCARBON DATES IV

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With one exception, the radiocarbon dates in this list were reported previously by Rainey and Ralph (1959). For discussions of the reliability of the dates, of the materials dated, and of the correspondence of the dates with estimated arctic chronologies, the reader is urged to refer to the original publication. The radiocarbon determinations were made over a period of several years. Those processed before 1956 were dated by the solid-carbon method and are so labeled; others, by the carbon-dioxide method. The age calculations are based on the average of several samples dated archaeologically and by tree-rings, corrected to zero age (Rainey and Ralph, 1959, p. 365). By this means the errors due to atmospheric depletion (Suess effect) and to past changes in radiocarbon concentration (de Vries, 1958; Willis, Tauber, and Münnich, 1960) have been minimized. The B.P. dates are calculated from A.D. 1957 (solid-carbon) and A.D. 1958 (carbon dioxide).

The one exception, not included in the previous publication, is sample P-325 from St. Lawrence Island, Alaska (Okvik Period), a recount of C-505 (Chicago II) after conversion to carbon dioxide.

Ekseavik Site series, Tree-Ring-Dated Samples

Ekseavik site is along the Squirrel River, 8 mi N of the village of Kiana (67° 0' 0" N Lat, 160° 41' 18" W Long), which is on the Kobuk River, Alaska. Coll. 1947 and subm. by J. L. Giddings, Brown University, Providence, Rhode Island. From the distribution of the dendrochronological dates, Giddings (1952, p. 107) states that house 11 was constructed between 578 and 568 B.P., occupied and rebuilt during the following two decades and abandoned after 548 B.P. As the bark dates are the crucial ones for the archaeologist rather than the average age of the wood used for dating, these C¹⁴ dates do *not* date the time of occupation of the site. These tree-ring-dated samples serve only as a check on the C¹⁴ dating.

P-16. Ekseavik, no. 42 **780 ± 150**

Spruce wood from house 11, no. 42. Dated by tree-ring analysis, 874 to 571 B.P. *Comment:* dated by solid-carbon method, two counting runs.

P-29. Ekseavik, no. 33 **720 ± 200**

Spruce wood from house 11, no. 33. Dated by tree-ring analysis, 738 to 593 B.P. Portion used for this measurement had an average of 691. *Comment:* dated by solid-carbon method.

P-31. Ekseavik, no. 1 **820 ± 200**

Wood from house 11, no. 1. Dated by tree-ring analysis, 747 to 592 B.P.

Portion used for this measurement had an average age of 688. *Comment*: dated by solid-carbon method.

Kugusugaruk Site series

Kugusugaruk site consists of a group of middens located 10 mi S of the village of Utkiavik (Barrow village) (71° 12' N Lat, 156° 30' W Long), Point Barrow, Alaska. Coll. 1917-1919 by W. B. Van Valin (deceased); subm. by F. Rainey, University Museum, University of Pennsylvania, Philadelphia. This site was incorrectly labeled "Utkiavik" by Rainey and Ralph (1959) as it was believed that Van Valin had worked at Utkiavik. Ford (1959, p. 19) revealed that Van Valin's site is actually Kugusugaruk. According to Ford's (p. 21, fig. 34) classification, the Kugusugaruk site burials fall in the early part of the Birnirk Period. Artifacts from this site are similar to those of the Birnirk site (Ford, 1959; Mason, 1930; Van Valin, 1941).

P-73. Kugusugaruk (Birnirk Period), house 4 1430 ± 190

Wood from a light-weight coarse-grained oval-shaped cylindrical piece, from house 4 (University Mus. no. 29-90-608). Broken end gives the impression of having been hafted in something. *Comment*: dated by solid-carbon method; individual dates of two portions are 1620 ± 300 and 1320 ± 220.

P-97. Kugusugaruk (Birnirk Period) house 3 1146 ± 95

Wooden meat tray (University Mus. no. 29-90-293) from house 3, found near skeleton no. 12.

P-55. Anderson Point Site 1130 ± 200

Spruce wood from the Anderson Point site on the Arctic Sea coast between Barter and Flaxman Islands (70° 02' N Lat, 144° 27' W Long), Alaska. Coll. 1952 by J. L. Giddings and A. Ricciardelli; subm. by J. L. Giddings, Brown University, Providence, Rhode Island., who noted that the material seemed roughly equivalent to Birnirk culture. *Comment*: dated by solid-carbon method; individual dates of two portions are 1160 ± 240 and 1090 ± 310.

Kurigitavik Site series

Kurigitavik site is located just back of the present village of Wales (65° 36' N Lat, 168° 4' W Long), Cape Prince of Wales, Alaska. Birnirk-type pottery occurs in the midden from about the middle to bottom levels. Thule-Punuk harpoon heads occur from the surface of the midden to about the middle. Below the middle level the harpoon heads exhibit features suggestive of Birnirk. The one associated with sample P-65 was the only typical Birnirk head found at the site (Collins, 1937a; 1940, p. 561-562). Coll. 1936 and subm. by H. B. Collins, Smithsonian Institution, Washington, D. C.

P-68. Kurigitavik (Thule-Punuk Period), 20 in. 1350 ± 360

Wooden dish (piece of base) and shafts (17 small pieces) from cut 2, section 4, depth 20 in. *Comment*: dated by the solid-carbon method.

P-67. Kurigitavik (Thule-Punuk Period), 29 in. 1230 ± 240

Wooden dish (2 pieces) from cut 6, section 4, depth 29 in. Typical Thule-

Punuk harpoon heads and other artifacts occur at this level. *Comment*: dated by solid-carbon method.

P-65. Kurigitavik (Birnik Period), 88 and 90 in. 1320 ± 230

Wooden shafts (4 small pieces) from cut 3, sections 20 and 21, depth 88 and 90 in. (base). A Birnik harpoon head was found in this cut at a depth of 86 in. *Comment*: dated by solid-carbon method.

P-63. Beach Midden, Cape Prince of Wales 1480 ± 240

Wooden dish bottom from a large steeply sloping midden on a high beach located just south of the village of Wales (65° 36' N Lat, 186° 4' W Long), Cape Prince of Wales, Alaska. Sample is from cut A, section 26, depth 101 in., from near the base (upper part of slope). A Birnik harpoon head was found in a nearby cut at about this level. The surface of the midden contains recent material (Collins, 1937a; 1940, p. 561-562). *Comment*: dated by solid-carbon method. This site was inadvertently placed under Kurigitavik site by Rainey and Ralph (1959).

St. Lawrence Island series

Ievoghiyoq, Miyowagh, and Hillside sites are located E of Gambell, near Cape Chibukak (63° 46' 30" N Lat, 171° 43' 20" W Long), St. Lawrence Island, Alaska. Ievoghiyoq and Miyowagh are situated on a gravel spit, and Hillside at the foot of Cape Chibukak.

Ievoghiyoq Site

Ievoghiyoq site is representative of the Punuk period (Collins, 1937b, p. 181-182). Coll. 1930 and subm. by H. B. Collins, Smithsonian Institution, Washington, D. C.

P-69. Ievoghiyoq (Punuk Period), no. 354968 1070 ± 210

Wooden dish bottom (U. S. Nat. Mus. no. 354968) from cut 2, section 8, depth 52 in. (base). *Comment*: dated by solid-carbon method.

P-92. Ievoghiyoq (Punuk Period), no. 354971 910 ± 145

Wooden object (U. S. Nat. Mus. no. 354971) from cut 2, section 8, depth 52 in. (base).

Miyowagh Site

Miyowagh is a two-level site containing cultural material from the Old Bering Sea Period and the early phase of the Punuk Period. In some instances (Collins' house 3), Punuk house floors have been dug into areas of the midden that yield predominantly Old Bering Sea artifacts, Samples P-83, P-85, P-88, P-84 and P-80 coll. and subm. by H. Michael, University Museum, University of Pennsylvania, Philadelphia.

P-83. Miyowagh (Early Punuk Period), shaft 1013 ± 111

Wooden shaft from test pit 18 m SW by S of Collins' house 5 at depth 1.35 m below surface (2.5 m below house rim). Coll. 1952.

P-85. Miyowagh (Late Old Bering Sea Period) 1002 ± 108

Wood from test pit 25 m N of NE corner of Collins' cut 26 from the 0.8 to 1.0 m level, in association with ivory harpoon point. Coll. 1952.

P-88. Miyowagh (Early Punuk Period), log 1231 ± 108

Outer piece of large log found lying on flagstone floor of structure, Collins' house 3 entrance from 2.5-m level. Coll. 1952.

P-84. Miyowagh (Old Bering Sea Period), beam 1296 ± 108

Roof beam of passageway to house 4, 1.4 to 1.6 m level, in association with (OBS) whaling harpoon head. Coll. 1952.

P-80. Miyowagh (Old Bering Sea Period), wood 1398 ± 116

Piece of wood associated with OBS harpoon heads 0.8 m level, above P-88. Coll. 1952.

P-71. Miyowagh (Old Bering Sea Period), wood 1630 ± 230

Wooden objects, fire drills (U. S. Nat. Mus. nos. 353754 and 353769), from cut 7, levels 8 and 9, depths 46 and 51 in. Coll. 1930 and subm. by H. B. Collins, Smithsonian Institution, Washington, D. C.

P-93. Miyowagh (Old Bering Sea Period), wood 1700 ± 150

Wooden objects (U. S. Nat. Mus. no. 353744) from cut 7, section 7, depth 37 in. Coll. 1930 and subm. by H. B. Collins, Smithsonian Institution, Washington, D. C.

Hillside Site series

Collins (1937b) originally designated the more simplified art style at the Hillside site "Old Bering Sea Style I." It was not until Rainey (1941) and Rudenko (1947) established Okvik as a distinct period that the "Old Bering Sea Style I" of Collins was recognized as a form of Okvik design. Collins, Giddings and Larsen (Giddings, 1960, p. 123, 132, and 137) have considered Okvik to contain two to three separate art styles which may allow Okvik to be broken up into stages as has been done by Collins for Old Bering Sea. It has been assumed that Okvik preceded the Old Bering Sea Period. The following dates seemingly contradict this sequence. In light of continuing analyses of the Okvik and old Bering Sea culture, it has been noted by Levin (in Giddings, 1960) that the Okvik and Old Bering Sea periods overlap. An early phase of Old Bering Sea culture could thus be older than a late phase of Okvik culture, giving rise to an apparent contradiction in the sequence based upon single dates at some point in the culture's history rather than upon the total time span of the culture. Coll. 1930 and subm. by H. B. Collins (except P-325), Smithsonian Institution, Washington, D. C.

P-95. Hillside (Old Bering Sea Period) 1641 ± 106

Wooden objects (U. S. Nat. Mus. no. 352646) from house 1. *Comment:* 2 counting runs.

P-70. Hillside (Okvik Period), no. 352547 1420 ± 230

Wooden object (U. S. Nat. Mus. no. 352547) from house 2, below floor stones. *Comment:* dated by solid-carbon method.

P-94. Hillside (Okvik Period), no. 352558 1429 ± 121

Wooden object (U. S. Nat. Mus. no. 352558) from house 2, below floor stones. *Comment:* two counting runs.

P-325. Hillside (Okvik Period), Okvik house 1461 ± 65

Carbon (Chicago solid-carbon sample C-505) derived from spruce log taken from Giddings' Okvik house (Rainey, 1941, p. 468-472). Coll. 1939 by J. L. Giddings, Brown University, Providence, Rhode Island; subm. to Chicago Laboratory 1951 by F. Rainey, Univ. Mus., Univ. of Pa. Carbon subm. in 1960 to Univ. of Pennsylvania laboratory by W. F. Libby, Institute of Geophysics, University of California, Los Angeles, and R. Ackerman, University of Pennsylvania, Philadelphia. *Comment:* Chicago solid-carbon date for this sample is 2258 ± 230 (Chicago II). The date for P-325 is in agreement with the other two Okvik samples listed here.

P-98. Ipiutak Site, Point Hope 1619 ± 210

Caribou antler from Ipiutak site, on the N shore of Point Hope Spit, approximately 1 mi from the village of Tigara (68° 19' N Lat, 166° 42' W Long). Point Hope, Alaska. The site extends 5 mi or more to the east. Sample consisted of 14 caribou antler arrowheads, Type I, one of the most typical artifacts found at Ipiutak. Coll. 1948 and subm. by F. Rainey, Univ. Mus., U. of Pa. This is the type site for the Ipiutak stage that H. Larsen and F. Rainey (1948) have described as the Paleo-Eskimo horizon in the arctic. *Comment:* other dates for Ipiutak culture are C-266, 912 ± 170, and C-260, 973 ± 170 (Chicago I).

P-225. Cape Krusenstern Site 1651 ± 130

Charcoal from Cape Krusenstern site (67° 8' 33" N Lat, 163° 40' 0" W Long), located on a series of beach ridges between the villages or camp sites of Talikoot and Tikizat, Cape Krusenstern, Kotzebue Sound, Alaska. Coll. 1958 and subm. by J. L. Giddings, Brown University, Providence, Rhode Island. This is an extensive site of many cultural horizons that are located on a succession of beach ridges. Cultures earlier than Cape Denbigh Flint complex to the present are represented. This sample is representative of the Ipiutak period. *Comment:* sample was infested with rootlets which were removed as much as possible before processing.

Native Point Sites series

Native Point sites lie 40 mi S of Coral Harbor (64° 10' N Lat, 83° 15' W Long) on the SE coast of Southampton Island, Hudson's Bay, Canada. Site T 1, 1 mi E of the Sadlermiut site of Tunermiut, extends over 20 acres, covering most of a plateau 70 ft high. T 3 site is 30 ft lower than T 1, on an old beach ridge, 40 ft high, at the base of the T 1 plateau. Coll. 1954 and 1955

and subm. by H. B. Collins, Smithsonian Institution, Washington, D. C. These are early Dorset period sites (Collins, 1956a, 1956b).

P-62. Native Point T 1 (Dorset Period), 14 in. 2060 ± 200

Charred bones from Test Pit 6 on the NE end of T 1 plateau, on a gravel ridge ca. 50 yd from the Dorset midden. From a hearth 14 in. below the surface; hearth contained large quantities of burned mammal bones, blackened earth and gravel, and many bird bones. *Comment*: dated by solid-carbon method.

P-74. Native Point T 1 (Dorset Period), 12 in. 2183 ± 122

Burned bones, soil, and a few small pieces of charcoal from hearth area in T 1 site, Test Pit 8, from depth 12 in. (base).

P-75. Native Point T 1 (Dorset Period), 6 in. 2508 ± 130

Burned bones from T 1 site, trench A, square 1, level 2, depth 6 in. Trench A is 275 yards from Test Pit 8.

P-76. Native Point T 1 (Dorset Period), 6-10 in. 2632 ± 128

Burned bones from T 1 site, trench A, square 5, levels 2 and 3, depth 6 to 10 in. *Comment*: on the basis of culture and stratigraphy, this sample is expected to be contemporaneous with P-75.

P-77. Native Point T 3 (Dorset Period), 8 in. 2191 ± 120

Burned bones from T 3 site, squares 1 and 9, level 2, depth 8 in. *Comment*: 2 counting runs.

Yukon Island Site series

Yukon Island is in Kachemak Bay, E of the city of Seldovia (59° 27' N Lat, 151° 44' W Long) on the Kenai Peninsula of Alaska. Coll. 1932 and subm. by F. de Laguna, Bryn Mawr College, Bryn Mawr, Pennsylvania. De Laguna (1934) defined 5 periods at this site which are described as Kachemak Bay I, II, III, Sub-III, and IV.

P-138. Kachemak Bay III Period, layers 6-9 1369 ± 102

Caribou antler (5 pieces) from layers 6-9.

P-139. Kachemak Bay I Period, layer 1 2706 ± 118

Caribou antler (8 pieces) from level I, the earliest.

Palugvik Site series

Palugvik site is on the western spit of Hawkins Island (60° 30' N Lat, 146° 30' W Long), Prince William Sound, Alaska. The site is a large midden consisting of 4 layers; the bottom (no. 1) began in the Kachemak Bay III or sub-III period whereas the top layer (no. 4) indicates that the site was abandoned before European contact (de Laguna, 1956). Coll. 1938 and subm. by de Laguna, Bryn Mawr College, Bryn Mawr, Pennsylvania. These samples represent the Kachemak Bay III Period. *Comment*: samples had been coated with paraffin. The suspicion that paraffin might have penetrated the wood was

prompted by the date of a contaminated sample, a wooden shovel blade from the same site (P-173, 2265 ± 112), which should have been contemporaneous with P-174. The core of the house post (P-192) was therefore counted. The fact that the dates of P-192 and P-174 are in agreement indicates either that this post did not have serious paraffin contamination or that the paraffin was removed by the cleaning process.

P-174. Palugvik (Katchemak Bay III Period) 1753 \pm 105

Wood from the outer part of house post (University Mus. no. 33-37-476).

P-192. Palugvik (Katchemak Bay III Period) 1727 \pm 105

Wood from core of house post (University Mus. no. 33-37-476). The C^{14} date has been corrected for age of 83 yr as determined by tree-ring count.

Choris Site series

Choris site is near the end of Choris Peninsula ($66^{\circ} 16' 24''$ N Lat, $161^{\circ} 52' 18''$ W Long), Kotzebue Sound, Alaska. Coll. and subm. by J. L. Giddings, Brown University, Providence, Rhode Island. The site is considered by Giddings (1957) to contain artifacts typologically closer to Norton forms than to those of the Denbigh Flint complex. *Comment*: samples were broken into small pieces and visible rootlets removed before processing.

P-96. Choris Period, wood 2635 \pm 125

Wood, a partially disintegrated base log heavily infused with rootlets, from Oval House 1. Coll. 1956.

P-175. Choris Period, antler 2244 \pm 133

Worked fragments of antler (with a few rootlets) from floor deposit of Oval House 1. Coll. 1956.

P-203. Choris Period, charcoal 2646 \pm 177

Charcoal from below roof level at N end of house 2 pit. Coll. 1958.

P-228. Engigstciak Site (Early Mountain Phase) 3208 \pm 156

Antler from Engigstciak site, located at foot of British Mountains, 16 mi from the Arctic Ocean, on the E side of Firth River, about 0.5 mi N of where the narrow steep canyon of the Firth River gives way to a relatively wide valley that becomes the Firth River Delta ($69^{\circ} 34' 18''$ N Lat, $139^{\circ} 22' 30''$ W Long), Yukon Territory, Canada. Sample from pit 32 (N. VK-1, S135W25), level 3-4, 1.7 ft beneath ceramics of Cordmarked and Dentate pottery. MacNeish, in a letter dated Oct. 6, 1958, stated that the culture typologically seems to be an early variant of Cape Denbigh. The site is described by MacNeish (1956). Coll. 1958 and subm. by R. S. MacNeish, National Museum, Ottawa, Ontario, Canada.

Igloolik Area series

The 3 sites of Alarnerk, Kapuivik, and Kaleruserk are located in the area of Igloolik ($69^{\circ} 10'$ N Lat, $83^{\circ} 59'$ W Long), Northwest Territory, Canada. Samples taken from house ruins found on raised gravel beaches. House ruins

were found on various sites on terraces up to 54 m above present sealevel, revealing 3 distinct Eskimo cultures: Thule (5- to 8-m terraces), Dorset (8- to 22-m terraces), and Sarqaaq (23- to 54-m terraces) (Meldgaard, 1960). Coll. 1954 and 1957 and subm. by Jørgen Meldgaard, Danish National Museum, Copenhagen, Denmark. *Comment*: the dates for antler samples are consistently younger than those for ivory. Ivory is believed to be a more reliable material.

P-212. Alarnerk (Dorset Period, Stage I), antler **2404 ± 137**

Antler from 22 m above sealevel. *Comment*: compare with P-213.

P-213. Alarnerk (Dorset Period, Stage I), ivory **2910 ± 129**

Ivory from 22 m above sealevel.

P-211. Kapuivik (Late Sarqaaq Period), antler **2354 ± 135**

Antler from 24 m above sealevel.

P-210. Kapuivik (Early Sarqaaq Period), antler **2898 ± 136**

Antler from 44 m above sealevel.

P-208. Kaleruserk (Early Sarqaaq Period), antler **3560 ± 123**

Antler from 51 m above sealevel. *Comment*: this sample is identical to K-505, 3700 ± 300 (Copenhagen IV); compare also with P-209.

P-209. Kaleruserk (Early Sarqaaq Period), ivory, 51 m **3906 ± 133**

Ivory from 51 m above sealevel.

P-207. Kaleruserk (Early Sarqaaq Period), ivory, 52 m **3958 ± 168**

Ivory from 52 m above sealevel.

Iyatayet Site series

Iyatayet site is on the W side of Cape Denbigh (64° 25' 42" N Lat, 161° 31' 30" W Long), on steep slopes flanking a fresh-water stream, Norton Sound, Alaska. Coll. 1948-1950 and subm. by J. L. Giddings, Brown Univ., Providence, R. I. There are three cultural levels at Iyatayet, an upper Neo-Eskimo (Nuklet), a middle Paleo-Eskimo (Norton culture), and a separated lower level defined as the Denbigh Flint complex (Giddings, 1949). Charcoal samples from the very thin layer of Denbigh Flint material were contaminated with roots of later date which were probably not removed successfully before processing. David Hopkins of the U. S. Geol. Survey, who made a study of this site, believed that geologic, paleobotanical, and radiocarbon evidence all point to an age of more than 5000 and less than 10,000 yr (Giddings, 1955).

P-13. Norton Culture (Paleo-Eskimo) **2213 ± 110**

Charcoal from baseline timbers of W wall. *Comment*: this was a new portion of the same material as that used for C-563 (Chicago II), dated 2016 ± 250 in 1951. Another portion of P-13 was dated by solid-carbon method,

average of 3 counting runs is 2360 ± 170 . Compare also with C-506 (Chicago I), 1460 ± 200 .

P-104. Above Denbigh Complex, sec. IYZ-5B 3000 ± 170

Peat and earth from second peat above Denbigh Flint complex, section IYZ-5B. *Comment:* dated by solid-carbon method; 3 counting runs, C-793 (Chicago IV), 3509 ± 230 , was taken from the same section.

P-108. Above Denbigh Complex, sec. IYZ-5A 3080 ± 210

Dry peat and earth from peaty layer next above Denbigh Flint complex, section IYZ-5A. *Comment:* dated by solid-carbon method; 2 counting runs.

P-105. Denbigh Complex, sec. IYZ-5B 4040 ± 280

Charcoal mixed with earth from soil above Denbigh Flint complex, but below peaty layer where peaty layer was covered with sterile sandy layer, section IYZ-5B. *Comment:* dated by solid-carbon method. Sample contaminated with roots.

P-103. Denbigh Complex, sec. IYZ-5D 3480 ± 200

Charcoal and charred twigs from 2 fireplaces, section IYZ-5D. *Comment:* dated by solid-carbon method, 2 counting runs. Sample contaminated with roots.

P-102. Denbigh Complex, sec. IYR 3310 ± 200

Charcoal, earth, and a few roots from fireplace from section IYR. *Comment:* dated by solid-carbon method; 2 counting runs. Compare this sample and P-105 and P-103 with C-793 (Chicago IV), 4658 ± 220 and with W-298 (USGS III), 3970 ± 600 . Sample contaminated with roots.

GENERAL COMMENT

Dates obtained by the CO₂ method are considered more reliable than those obtained by the solid-carbon method, and thus we have placed our major emphasis on those dates. One date worthy of comment, and not previously listed in the paper by Rainey and Ralph (1959), is P-325 from the Hillside site at Gambell, St. Lawrence Island, Alaska. Dated by the solid-carbon method (C-505, 2258 ± 30 , Chicago II), this sample was used by Giddings (1960, p. 123) as a basal date for the cultural sequence on St. Lawrence Island. The new date for this sample (1461 ± 65) by the CO₂ dating process places the Okvik house excavated by Giddings at Gambell within the time period of the Old Bering Sea culture. New samples are yet necessary for a firm dating of the Okvik culture in the Bering Sea region and until they are obtained, the claim of precedence for the Okvik culture will necessarily have to rest upon archaeological interpretation.

A tentative cultural chronology for the Arctic was attempted previously (Rainey and Ralph, 1959, p. 373) and found to be useful. This chronologic sequence reproduced below is, however, to be used with caution as it is for the most part based on too few samples.

Neo-Eskimo Horizon

| | |
|-------------------------|-----------|
| Punuk Period | A.D. 1000 |
| Birnik | A.D. 800 |
| Kachemak Bay III Period | A.D. 600 |
| Okvik Period | A.D. 500 |
| Old Bering Sea Period | A.D. 300 |

Paleo-Eskimo Horizon

| | |
|-----------------------|-----------------|
| Ipiutak Period | A.D. 300 |
| Norton Period | 300 B.C. |
| Dorset Period | 200 to 700 B.C. |
| Kachemak Bay I Period | 700 B.C. |
| Choris Period | 700 B.C. |

Ancient Arctic Horizon

| | |
|------------------------|------------------------|
| Firth River | |
| (Early Mountain Phase) | 1300 B.C. |
| Sarqaq | 400 to 2000 B.C. |
| Denbigh Flint Complex | Earlier than 2000 B.C. |

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