

**Survey of the JfEj-3 site,
Kangiqsualuk (Hall Bay), Nunavik**

**Presented to:
Ministère de la Culture et des Communications du Québec**

**By:
Avataq Cultural Institute**

February, 1999

Table of Contents

	Page
Figures	ii
Tables	iii
Appendices.....	iv
Acknowledgements.....	v
1.0 Introduction.....	1
2.0 Description of the JfEj-3 site	5
2.1 Site Context.....	5
2.2 Quarry Component.....	6
2.3 Settlement Component	8
3.0 Quartzite Samples.....	12
4.0 Discussion.....	15
5.0 References Cited.....	18
6.0 Photographs	

Figures

Page

Figure 1. Location of the JfEj-3 site

4

Tables

	Page
Table 1. Summary of the Extration Zone	7
Table 2. Summary of the Habitation Structures	9
Table 3. Summary of the Exterior Features	11
Table 4. Summary of the Quartzite Samples	14

Appendices

Appendix 1. List of Photographs

Appendix 2. Catalogue of Lithic Specimens

Appendix 3. JfEj-3 Site Map

Acknowledgements

We wish to express our gratitude to David Okpik, who discovered the JfEj-3 site and participated as guide in the survey project undertaken at the site. Our thanks as well to Charles Martijn, formally from the ministère de la Culture et des Communications du Québec, who volunteered his services as field assistant for the survey. Funds for the project were apportioned from that ministry's allocations to Avataq for Archaeology.

The Avataq Cultural Institute gratefully acknowledges the contributions of the above individuals and the ministry to the JfEj-3 survey project.

1.0 Introduction

The present report concerns the 1986 archaeological survey of the JfEj-3 site. This important prehistoric quarry and habitation site is located near the base of the Quaqtak Peninsula, northwestern Ungava Bay, at (figure 1). It is situated about 600 m east of Hall Bay or KANGIQSUALUK, the southeastern extension of Diana Bay, approximately 18 km south of the village of Quaqtak.

The importance of JfEj-3 lies essentially in its quarry component, which consists of "Diana" quartzite. Research conducted in the 1970s by the Laboratoire d'Archéologie of the Université du Québec à Montréal revealed extensive use of this quartzite by Dorset groups that inhabited the Diana Bay area. Microscopic analysis of quartzite samples collected from outcrops and Dorset sites in the area and on the adjacent Ungava Bay coast as far south as the Payne River proved the Diana type to be petrographically distinct from other quartzites in the region (de Boutray, 1981). As such, the type has been noted by Plumet (1981, 1985) as being of particular significance to the study of Late Palaeoeskimo lithic raw material procurement systems in northwestern Ungava Bay. Moreover, decreased frequency of the quartzite in archaeological collections relative to increased distance from Diana Bay strongly suggested a local source for the material in the immediate environs of the bay (Plumet, 1986).

The Dorset sites investigated by the Laboratoire d'Archéologie date, in general, to 200 B.C. – A.D. 1500 and pertain to the Middle and Late phases of the culture. Diana quartzite was also found to occur in the DIA-1

site, a Pre-Dorset site on Diana Island radiocarbon-dated to 1520 B.C. (Desrosiers, 1986). Subsequent research carried out by the Avataq Cultural Institute (1988a, 1988b) indicated heavy use of the quartzite by the inhabitants of the JgEj-3 site, at Quaqtq. This site relates to the Groswater phase, a Pre-Dorset - Dorset transitional phase, and is presumed to have been occupied around 650 B.C. An appreciable number of Diana quartzite artifacts were also recovered from the 1991 excavations in the IhEj-44 site, a Pre-Dorset site at Aupaluk dated to 920 B.C. (Avataq Cultural Institute, in preparation). These specimens extend the known range of the material into southeastern Ungava Bay.

The JfEl-3 site was discovered in spring of 1985 by David Okpik of Quaqtq, while gathering eider down. Later that summer David returned to the site with Charles Martijn who was then assisting in the Avataq archaeological field school at Quaqtq. The site was assessed at that time as being of marked importance and, consequently, a preliminary survey of JfEj-3 was carried out the following year, between 15 and 19 august. The field crew consisted of Ian Badgley, Resident Archaeologist of Avataq, Charles Martijn, Gérard Gagné and David Okpik, who was engaged as guide. It also included Henry Stewart of Mejiro Gakuen Women's College, Tokyo, Japan. Henry had been invited to participate in the Institute's 1986 field program, in order to familiarize himself with Inuit archaeology in Nunavik and to discuss Japanese collaboration in long-term archaeological research planned elsewhere in the region.

The fieldwork undertaken at JfEj-3 was centered on the mapping of the site using a Sokkisha theodolite and 60 meter surveyor's chains. This

work stressed the definition of the quarry component, the identification of habitation structures and exterior cultural features and the recovery of representative quartzite samples. The site in general, the quartzite veins and extraction zones the habitations and the features were photographed in color prints. The mechanical failure of 2 other cameras prevented photography of the site in black and white prints and slides.

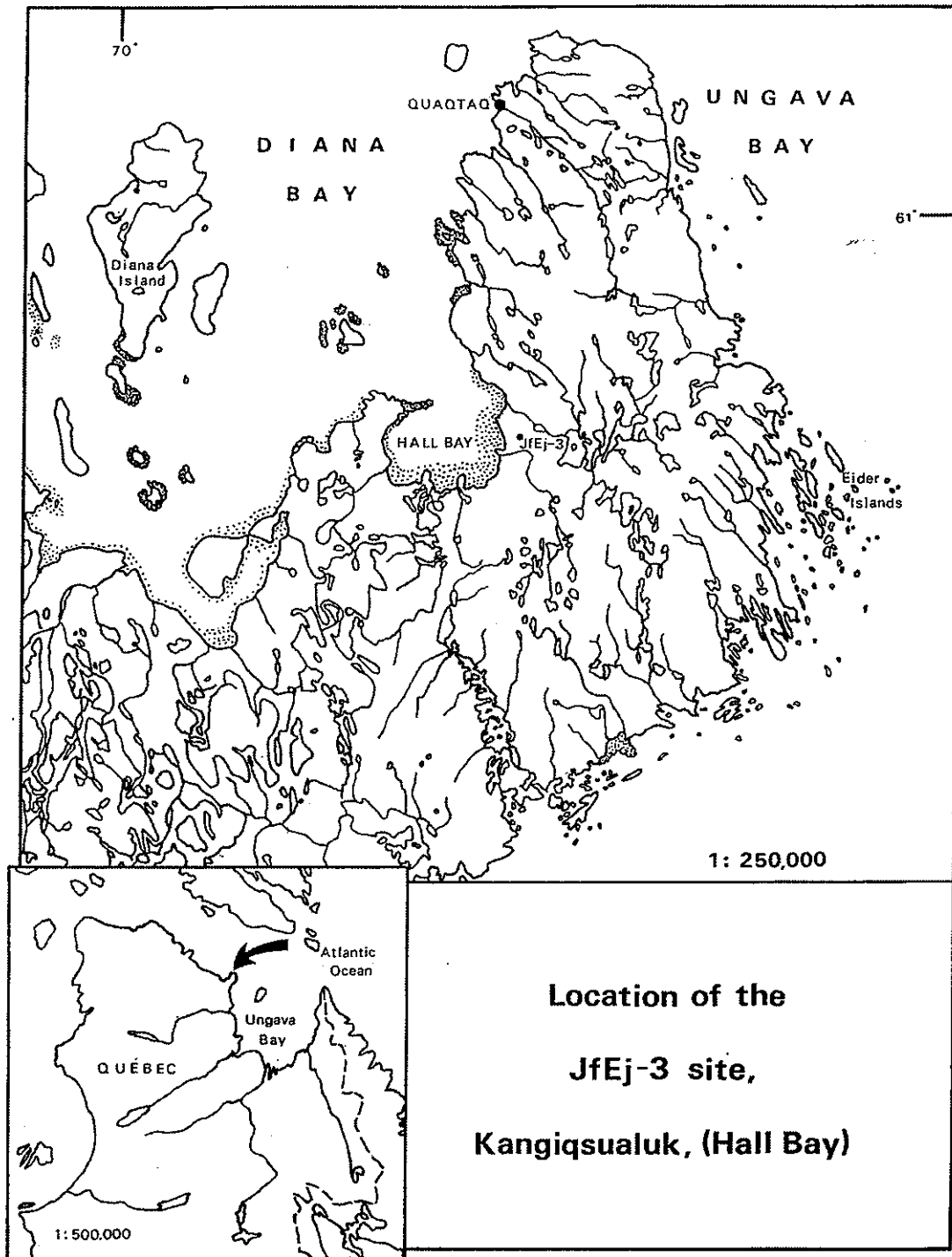


Figure 1. Location of the JfEj-3 site.

2.0 Description of the JfEj-3 site

2.1 Site Context

The JfEj-3 site is located in the Churchill Province of the Canadian Shield and the Larch Plateau Division of the James Physiographic Region (c.f. Stockwell et al., 1979; Bostok, 1979). As illustrated in Appendix 3, the site is dominated by a linear, west facing bedrock ridge and 2 prominent knolls, aligned in north-south orientation. The ridge and knolls are formed by strongly folded rock strata, probably Aphedian in age. Adjacent marine sedimentary deposits are controlled to the east by a bedrock hill and, to the west and southwest, by low, flat outcrops. The site is delimited to the south by a boulder field and its northern limit is defined by a small cluster of cultural features situated on raised gravel beaches.

Although spread over a distance of approximately 700 m, the cultural features identified in the site are concentrated mainly in an area measuring 200 x 270 m in maximum dimensions and covering about 40,000 m². The bedrock knolls divide this part of the site into eastern and western sections. The eastern section comprises a natural corridor which, bounded by the knolls and hills, is 350 m in length and 110 m in maximum width. The corridor is occupied by boulder fields, bordering the knoll, and gravel beach ridges, bordering the hill. An elongated pond measuring 15 x 100 m is situated in its central portion. The western section of the site is composed of gravel beaches interrupted by outcrops and covers roughly 8,500 m².

Altitude above sea level increases from 22 m in the northern extremity of the site to 31 m in the western section and 37 m in the eastern

section. The north and south knolls attain elevations in excess of 37 and 39 m.a.s.l. respectively. The gravel deposits in the site are generally well drained and are carpeted in greater proportion by a thin mat of mosses and lichens mixed with short grasses. Small colonies of sphagnum occur in wetter zones.

2.2 Quarry Component

The quarry component encompasses the 2 knolls, measuring 400 m in overall length and 20 to 50 m in width. These outcrops consist of subvertical layers of granitic gneiss interbedded with numerous veins of quartzite trending in a north-northwesterly direction. The surface of the formation is differentially eroded, providing a stepped western face composed of narrow ledges rising some 7 to 9 m. The eastern slope is less steeply inclined and drops an average of 4 to 5 m from ridge crests to adjoining boulder fields. The southern portion of the south knoll is low lying and dips gradually beneath surrounding marine sediments.

Three major veins of quartzite occur in each knoll and another in a lower, flat outcrop on the western periphery of the south knoll. The thickness of the veins varies from 0.15 to 6.00 m, with an average of about 1.50 – 2.00 m. The south knoll veins are generally thicker than those in the north knoll and diverge into a number of branches. Color ranges from opaque white through translucent grey and grey-green to green. The latter 2 varieties are frequently fine grained and banded. A distinctly blue tinted variety of quartzite was also observed at several locations along the east vein of the north knoll. Color

intergrading is both abrupt and gradual and small pieces of quartzite may contain 2 or more varieties of the raw material.

Both knolls are heavily littered with quartzite debris, most of which appears to result from frost action. Much of the debris is of medium or high quality and would have been exploited in some measure by Palaeoeskimo groups inhabiting the area. However, mining of the raw material is clearly indicated by 9 extraction zones identified along the major veins faces, relatively fresh in appearance and bearing impact marks and percussion cones, and by shattered vein segments protruding above the

Zone	Dimensions (m)	Location	Remarks
1	3.50 x 3.50	Southern extremity of west vein, north knoll	
2	5.00 x 8.00	Central portion of central vein, north knoll	Occupies a depression formed by bedrock and quartzite ledge, with dense concentration of debitage occurring in a fissure measuring 1 x 8 m.
3	5.00 x 8.00	Southern portion of central vein, north knoll	Overlaps central and east veins Several short, irregular alignments and small clusters of rocks suggest possible features
4	3.00 x 6.00	Northern extremity of central vein, south knoll	
5	1.00 x 15.00	West branch of central vein, south knoll	
6	4.00 x 8.00	Northern portion of east vein, south knoll	
7	4.00 x 10.00	Northwest branch of southwest vein, south knoll	
8	4.00 x 6.00	Central portion of southwest vein, south knoll	
9	8.00 x 9.00	Central portion of central vein, south knoll	

Table 1. Summary of the Extration Zone

ground surface. Each is associated with massive quantities of quartzite debitage, consisting of angular blocks, large fragments and dense concentrations of flakes and shatter of varying size. The debitage deposits cover surface areas of from 12 to 72 m² and attain a thickness, in Extraction Zone 2, of at least 30 cm.

Quarrying techniques involved the extraction of blocks through the battering and levering of vein edges, with fine-grained translucent grey and grey-green varieties apparently representing preferred raw material. Primary reduction of selected blocks and fragments included the preparation of cores and core-bifaces, which occur with some frequency in the debitage deposits. The presence of bifacial trim and thinning flakes indicates that blanks and finished tools were also manufactured in the extraction zones. In particular, large, comparatively discrete flake concentrations in Extraction Zones 3 and 4 are interpreted as workshops related to secondary lithic reduction. The concentration in the first of these zones is associated with several short alignments and clusters of rocks, suggesting possible features. Three additional workshops were noted in locations removed from the extraction zones.

2.3 Settlement Component

Habitation Structures

Forty tent rings were registered in the site (Table 2). Twenty-one of the structures are oval, 12 are circular, 4 are irregular and 3 are rectangular in form. One of the rectangular examples is a heavy tent rings, consisting of several courses of rocks. All are single family habitations, with the smallest

Structure	Form	Dimensions (m)	Orientation	Remarks
1	rectangular	1.90 x 2.40	NE/SW	--
2	oval	2.80 x 3.30	E/W	--
3	oval	2.30 x 2.90	N/S	--
4	oval	1.90 x 2.30	NW/SE	possible interior cache
5	circular	1.90 dia.	--	--
6	circular	2.00 dia.	--	--
7	oval	2.00 x 2.70	E/W	--
8	circular	2.00 dia.	--	--
9	oval	2.00 x 2.40	N/S	--
10	oval	2.00 x 2.50	E/W	--
11	circular	2.80 dia.	--	--
12	irregular	2.30 x 2.30	--	--
13	rectangular	1.30 x 1.50	E/W	heavy tent ring built against bedrock ledge
14	circular	2.00 dia.	--	--
15	irregular	2.30 x 2.30	--	composed of flagstone pavement
16	oval	1.70 x 2.30	N/S	--
17	oval	2.20 x 3.00	E/W	--
18	oval	2.40 x 2.60	NE/SE	--
19	rectangular	2.50 x 3.50	NW/SE	--
20	circular	2.30 dia.	--	--
21	oval	1.50 x 2.00	NW/SE	--
22	oval	1.70 x 2.20	N/S	--
23	oval	2.30 x 3.50	E/W	--
24	circular	2.00 dia.	--	--
25	circular	2.40 dia.	--	--
26	circular	2.10 dia.	--	--
27	circular	2.10 dia.	--	contains hearth supports
28	oval	2.10 x 2.30	NNE/SSW	--
29	oval	2.10 x 2.30	NNE/SSW	--
30	circular	2.20 dia.	--	--
31	irregular	2.20 x 2.20	--	--
32	oval	2.10 x 2.40	NW/SE	--
33	irregular	2.00 x 2.00	--	possible interior cobble hearth
34	irregular	2.00 x 2.40	--	possible interior cobble hearth
35	oval	2.50 x 4.00	E/W	--
36	oval	2.00 x 2.20	N/S	interior hearth, 30 cm dia.
37	oval	2.00 x 2.40	NW/SE	--
38	oval	1.90 x 2.70	NE/SW	--
39	circular	2.00 dia.	--	--
40	oval	2.90 x 3.40	N/S	--

Table 2. Summary of the Habitation Structures

measuring 1.30 x 1.50 m and the largest 2.50 x 4.00 m. Most however, vary from 1.70 x 2.20 to 2.30 x 2.90 m in dimensions. Discernible interior features

include a flagstone pavement, defining Structure 15, hearth supports in Structure 27 and a cobble hearth in Structure 36. Cobble hearths are suggested in Structures 33 and 34 and a cache in Structure 5.

The majority of the tent rings occupy gravel deposits west of the north knoll (N=11) and the boulder fields in the eastern section of the site (N=17). Six others are located on gravel in that section, 4 are grouped on bedrock, on the western edge and east-central flank of the south knoll. Although the habitations are of scattered distribution, cluster of 2 and 3 structures are common, suggesting that small groups composed of one to several families occupied the site. As well, the different contexts of the structures may indicate seasonal variability of occupation, with boulder fields perhaps having been favoured during wetter periods in spring and fall and the gravel formations during drier summer months.

Time limitations prevented testing of the tent rings and it is not known whether the structures are only Palaeoeskimo in cultural affiliation. On the other hand, the observation of quantities of Diana quartzite in a large number of structures suggest that most, if not all, are related to the Dorset or Pre-Dorset cultures. However, the possibility of Thule occupation of the site for reasons other than lithic raw material procurement cannot be dismissed at the present.

Exterior Features

The 44 exterior features recorded in the JfEj-3 site comprise 31 hunting blinds, 6 caches, 5 hearths, a fox trap and a cache pit (Table 3). The hunting blinds consist of straight to slightly curved rows of tightly-spaced rocks and vary, in the majority of cases, from 1.40 to 3.00 m in length. Six are

Feature	Type	Dimensions (m)	Orientation	Remarks
I	hearth	0.90 dia.	--	--
II	fox trap	1.00 x 1.20	E/W	--
III	cache	1.00 dia.	--	--
IV	hunting blind	4.00	NE/SW	--
V	hunting blind	3.00	NE/SW	--
VI	hunting blind	2.00	NW/SE	--
VII	cache	1.70 dia.	--	--
VIII	cache	1.70 x 2.30	--	possible habitation structure
IX	cache pit	1.90 dia.	--	--
X	cache	1.60 x 1.80	--	--
XI	cache	0.80 x 1.00	--	contiguous with Structure 22
XII	cache	1.00 x 1.60	--	--
XIII	hearth	0.90 dia.	--	--
XIV	hunting blind	2.90	E/W	--
XV	hunting blind	2.00	E/W	--
XVI	hunting blind	2.50	E/W	--
XVII	hunting blind	2.40	E/W	--
XVIII	hunting blind	2.10	E/W	--
XIX	hunting blind	2.00	E/W	associated with shallow depression ca. 2.00 m in dia.
XX	hunting blind	2.10	E/W	associated with a shallow depression
XXI	hunting blind	1.60	NE/SW	--
XXII	hunting blind	7.00	NE/SW	--
XXIII	hunting blind	2.45	NW/SE	--
XXIV	hunting blind	2.50	NE/SW	--
XXV	hunting blind	2.00	NNE/SSW	--
XXVI	hunting blind	7.00	NE/SW	--
XXVII	hunting blind	2.85	E/W	--
XXVIII	hunting blind	2.60	E/W	--
XXIX	hunting blind	2.20	NE/SW	--
XXX	hunting blind	8.00	NE/SW	--
XXXI	hunting blind	1.80	E/W	--
XXXII	hearth	0.70 dia.	--	--
XXXIII	hunting blind	2.60	NNE/SSW	--
XXXIV	hunting blind	2.00	NW/SE	--
XXXV	hunting blind	1.70	E/W	--
XXXVI	hearth	0.90 dia.	--	--
XXXVII	hunting blind	1.90	NNW/SSE	--
XXXVIII	hunting blind	7.00	E/W	--
XXXIX	hunting blind	1.40	E/W	--
XL	hunting blind	1.60	NE/SW	--
XLI	hunting blind	6.50	NNE/SSW	--
XLII	hunting blind	5.00	NNE/SSW	--
XLIII	hunting blind or fence	19.00	N/S	--
XLIV	box hearth	0.50 x 0.60	NW/SE	composed of 3 blocks

Table 3. Summary of the Exterior Features

4.00 to 7.00 m in length, 1 is 8.00 m in length and another is 19.00 m long. Twenty-seven blinds are situated in the eastern section of the site, which forms a natural corridor channeling caribou movement in a north-south direction. Most are concentrated in the central portion of the section, on gravel deposits between the pond and the hill (N=16) and in the boulder field west of the pond (N=6). Two hunting blinds are located near the northernmost group of habitation structures and 1 on the southeastern limit of the site.

Five caches are located in the northern part of the eastern section and the other in the western section of the site. One is of sizable dimensions and may represent a badly disturbed heavy tent ring or dismantled storage feature built in a tent ring. One cache is contiguous with Structure 22 and another as well as 3 hearths and the cache pit occur in close proximity to tent rings; these features are probably associated with the occupation of the structures. The association of the other features, including the hunting blinds, with habitation of the site is more dubious.

As in the case of the habitation structures, none of the exterior features are distinctive of any prehistoric Inuit culture in Nunavik and none were tested. Hence, the cultural affiliation of the features remains to be determined.

3.0 Quartzite Samples

A total of 171 quartzite specimens were surface collected at the site in 1985 and 1986 (Appendix 2). While the provenience of the 1985 specimens is unknown, those collected the following year were obtained from each of the extraction zones and a number of locations on the major veins lacking

traces of quarrying. No effort was directed toward the collection of specimens related to any particular stage of lithic reduction or in terms of size classification. Instead, attention was focused on the recovery of samples illustrating the different varieties of the raw material.

The samples include 20 tools, comprising 14 retouched flakes, 2 flake cores, a microblade core, an end scraper on a flake, a bifacial preform and a used flake. Although only the microblade core is technologically distinctive and can be attributed with certainty to either the Pre-Dorset or Dorset culture, all of the tools are considered to be Palaeoeskimo in origin. This interpretation is based on the absence of Diana quartzite in the Thule lithic assemblages recovered to date in Nunavik.

The microblade core is a fine-grained translucent grey quartzite, is wedge-shape in form and is characterized by 4 blade facets, 11 to 18 mm in length (c.f. Avataq Cultural Institute, n.d.). The edge core length of the core is 18 mm. The end scraper is in similar raw material. It measures 31 x 21 x 10 mm and is defined by fine retouch along one slightly convex margin, providing a working-edge angle of 60°. Both fine and large retouch occurs discontinuously on the bifacial preform. Edge angles on the preform and the retouched flakes vary from 40° to 90°, suggesting cutting and scraping functions for these implements. One of the retouched flakes is a modified core fragment and may have served as a chopping or planing tool while another appears to have been used as an awl.

Fifteen waste flakes and fragments encompassing the full range of variation macroscopically observed in the samples were transferred to the département des Sciences de la Terre, Université du Québec à Montréal, for

petrographic analysis. Microscopic analysis of thin sections of these specimens confirmed the Diana quartzite identification of the raw material (c.f. de Boutray and Plumet, n.d.). In particular, 2 textural characteristics are noted as being sufficiently constant to distinguish the Diana type from other quartzites: 1. schistosity, or orientation of the crystals consisting of elongated and aligned quartz grains; 2. the presence in the grains of irregular veinlets, indicating either secondary infiltration or secondary recrystallization.

The analysis has also shown that grain size and content in secondary minerals such as amphibole and muscovite are random elements and cannot be applied to the definition of the type. These results demonstrate that several separate varieties of quartzite previously identified in Dorset lithic collections from the area are, in fact, Diana quartzite.

Sample No.	Location	Number of specimen
1	Extraction Zone 3	10
2	Extraction Zone 3	7
3	East vein, north knoll	10
4	East vein, north knoll	4
5	Extraction Zone 2	11
6	Extraction Zone 1	20
7	East vein, north knoll	8
8	East vein, north knoll	8
9	Extraction Zone 6	11
10	Extraction Zone 4	11
11	Extraction Zone 5	10
12	Extraction Zone 7	18
13	Extraction Zone 8	10
14	Extraction Zone 9	12
15	Central vein, south knoll	9
1985 sample	--	12

Table 4. Summary of the Quartzite Samples

4.0 Discussion

Radiocarbon determinations and typologically dated sites point to continuous Paleoeskimo occupation of the northwestern Ungava Bay area from the late 16th century B.C. to around A.D. 1500. Although gaps exist in the chronological sequence, present evidence indicates the use of Diana quartzite throughout this 3,000 years continuum and suggests, in theory, the exploitation of the JfE1-3 quarry over the period. However, this suggestion is tempered by the locality of tools stylistically diagnostic of the Pre-Dorset and Dorset cultures. It also does not account for the possibility of other Diana quartzite outcrops and quarries in or near the area. Alternative sources of the raw material may be indicated by the occurrence in the various archaeological collections of quartzites that are now identified as belonging to the Diana type.

The considerations mentioned above do not, however, detract from the importance of the JfEj-3 site. As the only known source of the Diana quartzite its implications to the study of Palaeoeskimo lithic raw material procurement systems and regional contact situations are clear. In addition, the debitage deposits associated with the site's quarry component are of significance to a better appreciation of Paleoeskimo lithic tool manufacturing techniques. As stated by Crabtree (1972:3, cited in Ritchie and Gould, 1985:35-36):

The finish artifacts usually reveals only the final series of flakes, so the modern typologist generally relies primarily on theory and morphology is certainly a part of the method and technique, but the industry must be defined to verify the types that emerge from industries. Artifacts may be identical morphologically, but made by entirely different techniques.

As a corollary to this principle, Ritchie and Gould (1985:36) argue that the study of lithic reduction processes is more important than the analysis of final products to the accurate reconstruction and evaluation of prehistoric cultural relationships. The potential of the JfEj-3 site to shed new light on Palaeoeskimo lithic technology is enhanced by the settlement component. All stages of lithic tool production were carried out at the site and it is assumed that the habitation structures and associated activity areas contain a variety of finished implements in Diana quartzite. The eventual recovery of such implements along with debitage by-products will form a unique basis for the combined technical and typological study of the Diana quartzite reduction sequence.

The distribution and dimensions of the tent rings are also important to the assessment of the social composition and organization of the groups that frequented the locality. As well, the hunting blinds in the eastern section of the site provide an excellent example of caribou hunting strategy incorporating landscape formations. The spatial arrangement of certain of the blinds together with the longer alignments may signify occasional communal hunting by several families or assembled local bands. Naturally, the determination of the cultural affiliation and temporal relationships of the habitation structures and the hunting blinds is critical to interpretation of the occupations of the site.

In view of the preceding discussion it is recommended that an archaeological research project be organized and implemented at the JfEj-3 site. Extensive research involving the study of the geology and geomorphology of the site, the systematic sampling of the quartzite veins and

debitage deposits and the excavation and sampling of habitation structures, activity areas and hunting blinds is proposed. It is also suggested that Inuit Elders knowledgeable in traditional hunting practices be consulted regarding the arrangement and inter-relationships of the hunting blinds. Information possessed by the Elders will provide insight into the organization of the caribou hunting strategy employed at the site and allow speculations on discrete sets of blinds and the number of hunters present on separate occasions.

It is further recommended that the project include archaeological survey work. The conduct of this work is forwarded in the interest of clarifying: 1. the archaeological resources in the general vicinity of the JfEj-3 site; 2. the integration through time of the site in past cultural adaptation systems; 3. the possibility of other Diana quartzite outcrops and quarries in the northwestern Ungava Bay region. While local site inventories may be restricted to the eastern Hall Bay - southeastern Diana Bay area, it is suggested that surveys oriented toward the research of alternative sources of Diana quartzite extend as far south as the Payne River.

5.0 References Cited

Avataq Cultural Institute

- 1988a École de fouille pour Inuit sur le site JgEj-3, Quaqlaq. 1985, Presented to the ministère des Affaires culturelles du Québec, 16 p.
- 1988b Report of 1986 and 1987 Inuit Archaeological Field Schools. Presented to Illivvik Inc., 21 p.
- n.d. The Avataq 1991 Archaeological Field School, the IhEj-44 site, Aupaluk, Nunavik. Manuscript in preparation.
- n.d. JfEj-3 Lithic Analysis Forms. Manuscript on file. Avataq Cultural Institute.

Bostock, H. S.

- 1979 *Physiographic Subdivision of Canada*. In R.J.W. Douglas (ed.) *Geology and Economic Minerals of Canada*, Geological Survey of Canada. Department of Energy, Mines and Resources, Ottawa, Economic Geology Report No. 1: 9 – 30.

de Boutray, B.

- 1980 *Étude pétrographique comparative des quartzites enfumés utilisés par les Paléoesquimaux de l'Arctique québécois*, Géographie physique et Quaternaire (Montréal), Vol. 35, No. 1: 29 – 40

de Boutray, B. and P. Plumet

- n.d. L'origine du quartzite de Diana. Manuscript on file. Avataq Cultural Institute

Desrosiers, P.

- 1986 *Pre-Dorset Surface Structures from Diana - 1, Ungava Bay (Nouveau-Québec)*. In *Palaeo-Eskimo Cultures in Newfoundland, Labrador and Ungava*, Memorial University of Newfoundland, St. Johns, Reports in Archaeology, No. 1: 3 - 25

Plumet, P.

- 1981 *Matières premières allochtones et réseau spatial paléoesquimau en Ungava occidentale, Arctique québécois, Géographie physique et Quaternaire* (Montréal), Vol. 35, No. 1: 5 - 17
- 1985 *Archéologie de l'Ungava: le site de la Pointe aux Bélugas (Qilalugarsiuvik) et les maisons longues dorsétiennes, Collection Paléo-Québec*, No. 18, Les Presses de l'Université du Québec, Montréal.
- 1986 *Question et réflexions concernant la préhistoire de l'Ungava*. In *Palaeo-Eskimo Cultures in Newfoundland, Labrador and Ungava*, Memorial University of Newfoundland, St. Johns, Reports in Archaeology, No. 1: 151 - 160

Ritchie, D. and R. A. Gould

- 1985 *Back to the Source: A Preliminary Account of the Massachusetts Hill Quarry Complex*. In M. G. Plew (ed.), Stone Tool Analysis, University of New Mexico Press, Albuquerque, pp. 35 - 53

6.0 Photographs



Photo 1. General view of the north knoll, toward the northeast. The white band on the knoll slope represents the west vein.



Photo 2. General view of the south knoll, toward the southeast.



Photo 3. General view of the west vein, north knoll, toward the east-northeast.

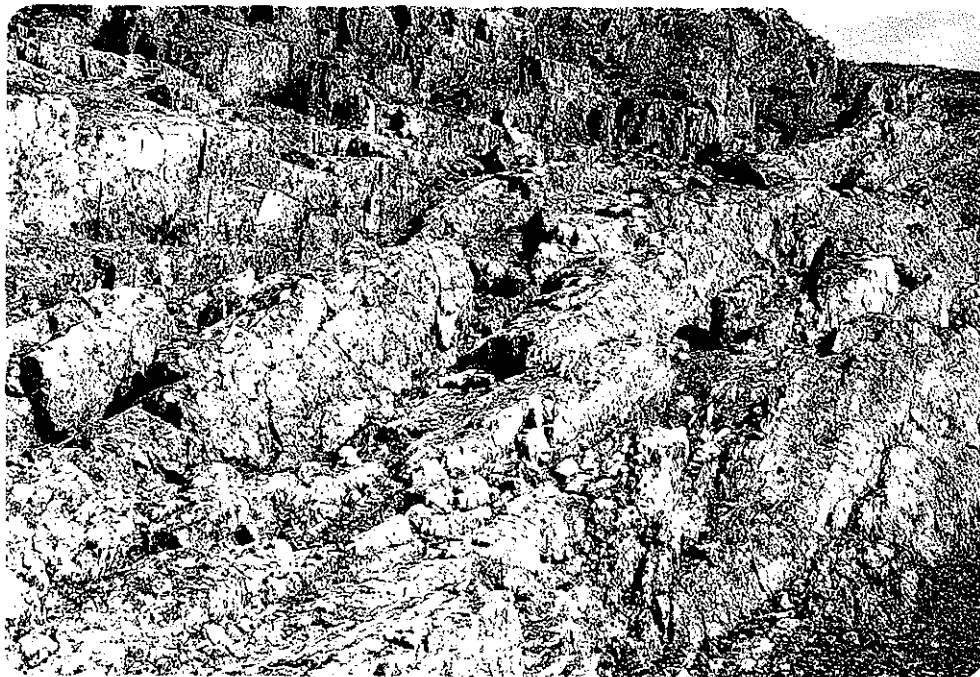


Photo 4. Central portion of the west vein, north knoll, toward the southeast



Photo 5. General view of the central vein, crest of north knoll, toward the south. Note the south knoll in the background.

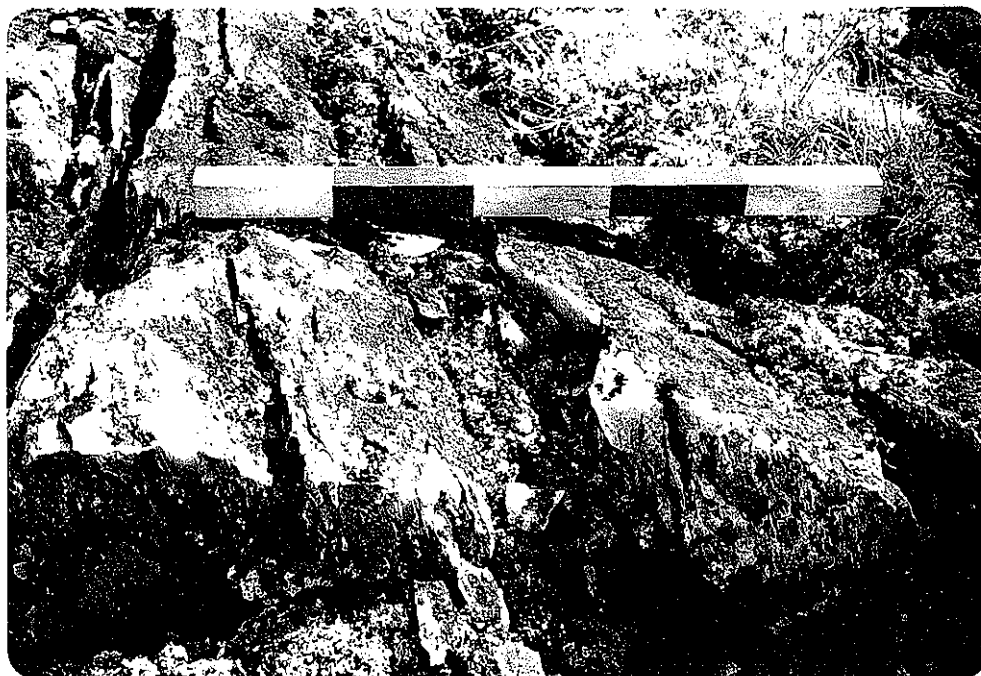


Photo 6. Detail of the east vein, north knoll.

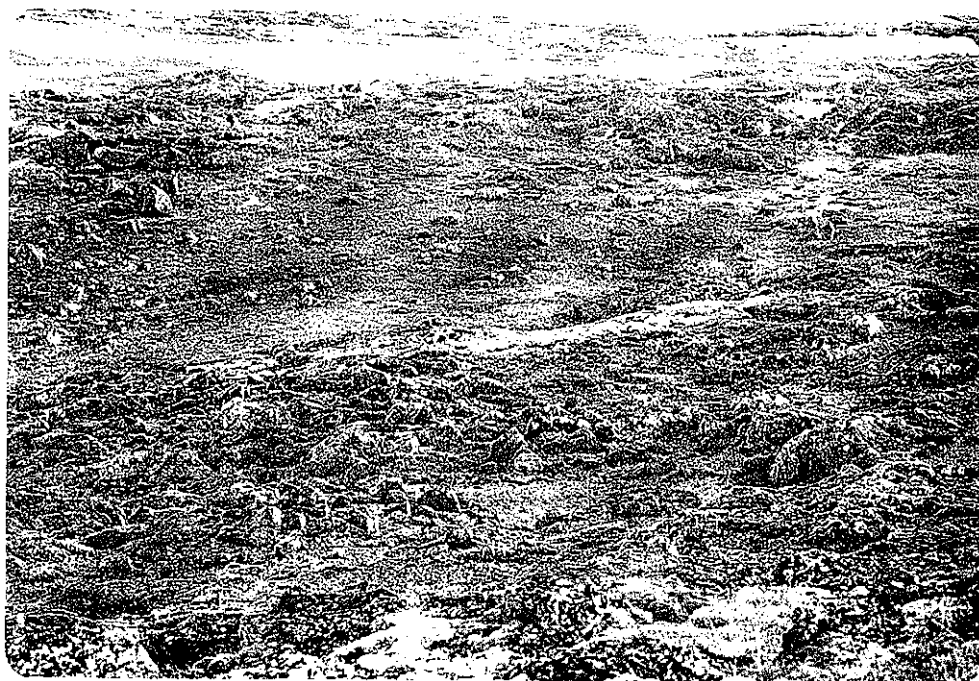


Photo 7. View of the west vein from the crest of the south knoll, toward the northwest.

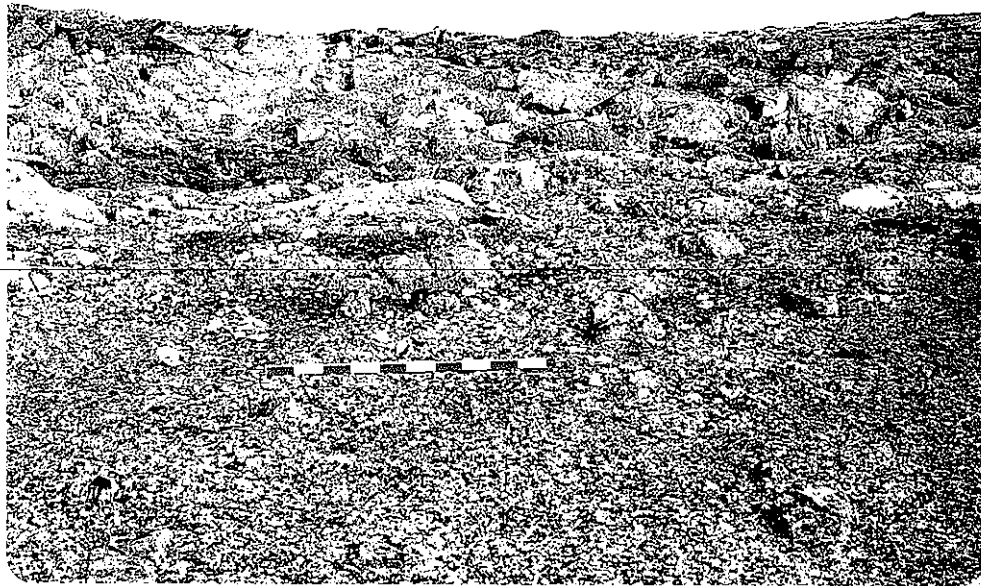


Photo 8. General view of Extraction Zone 1, toward the east.



Photo 9. Debitage and nodules in Extraction Zone 1.

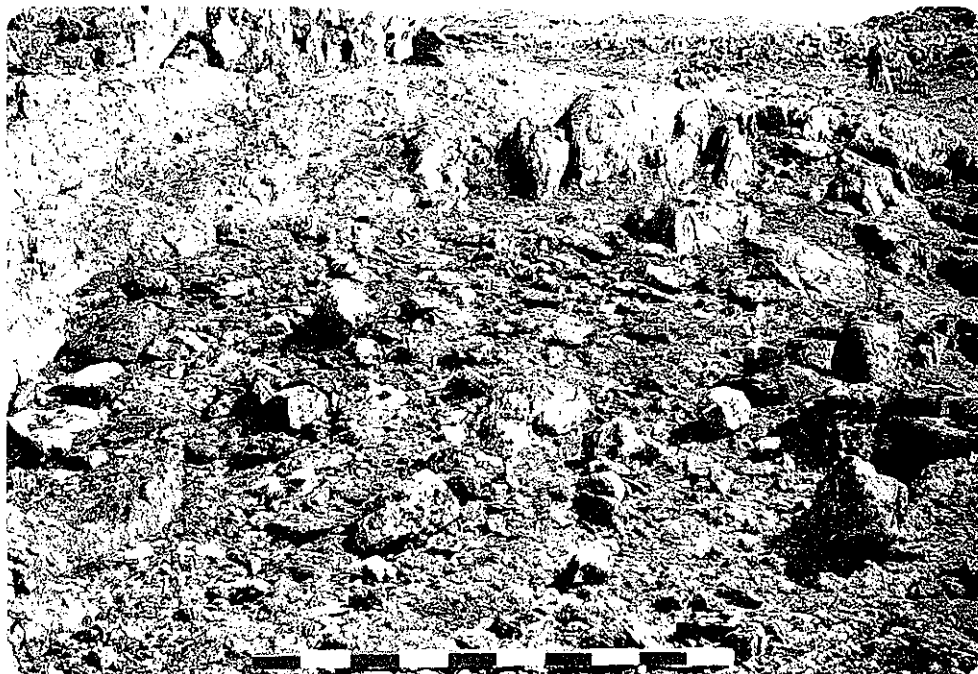


Photo 10. General view of Extraction Zone 2, toward the south-southeast



Photo 11. Detail of debitage in Extraction Zone 2.

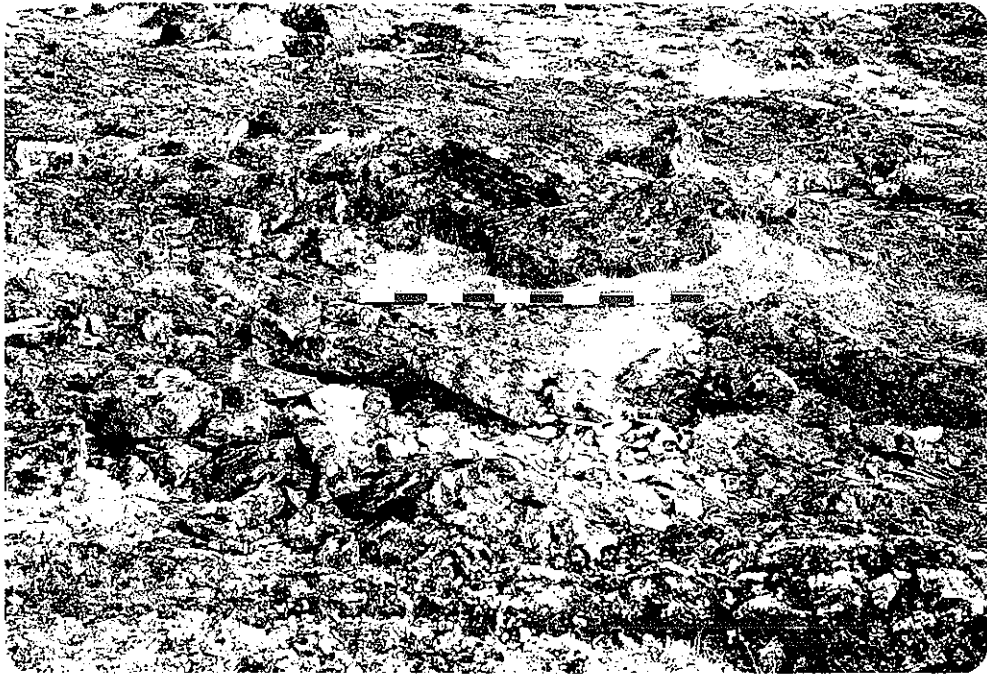


Photo 12. Rock alignment and lithic workshop, Extraction Zone 3, toward the east.



Photo 13. Debitage associated with the lithic workshop in Extraction Zone 3.

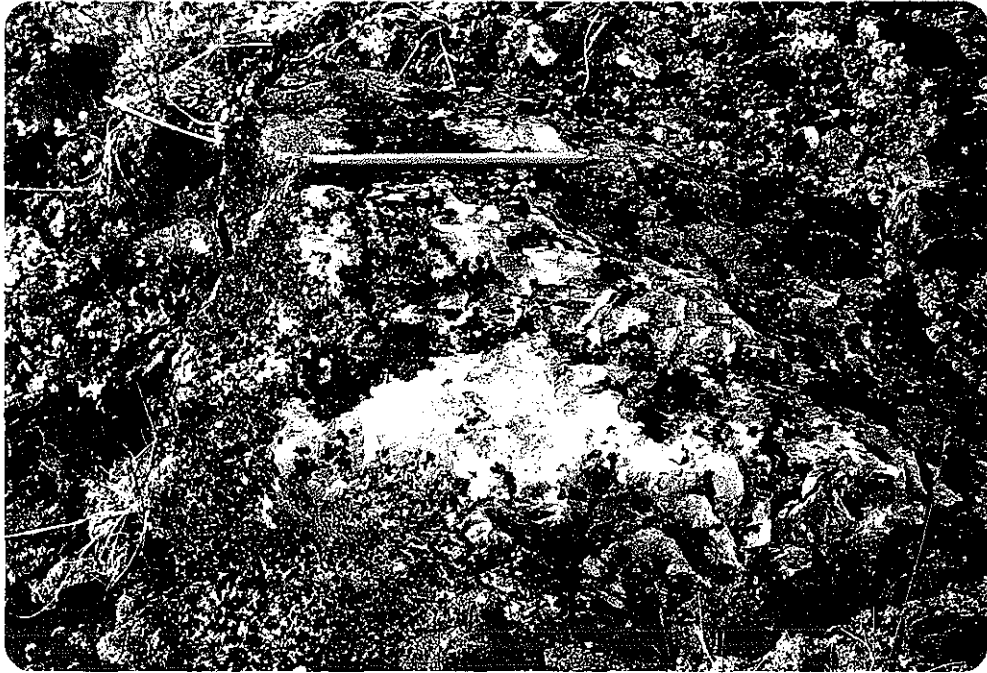


Photo 14. Quarried quartzite vein face, Extraction Zone 3, toward the west.

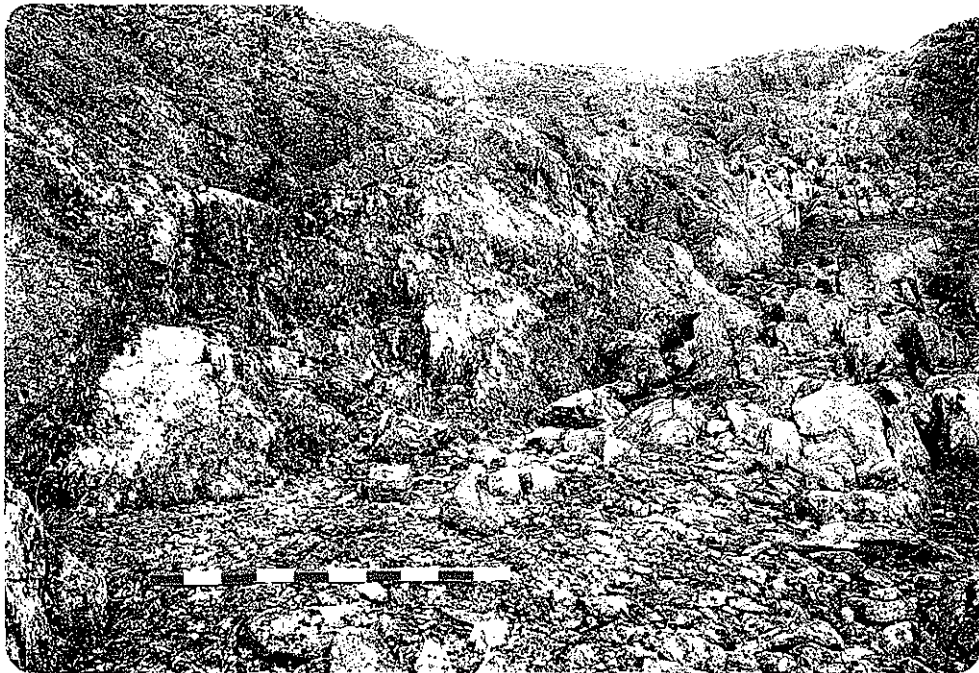


Photo 15. General view of Extraction Zone 4, toward the southeast.



Photo 16. General view of Extraction Zone 5, toward the northeast.



Photo 17. Quarried quartzite vein face, Extraction Zone 6, toward the southeast.

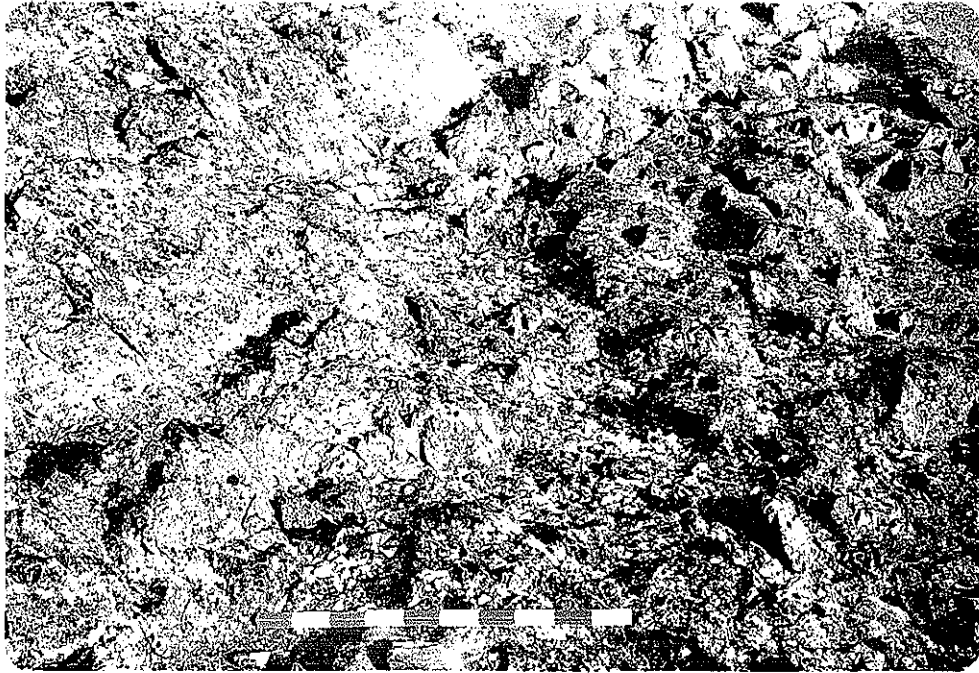


Photo 18. General view of Extraction Zone 7, toward the southeast.

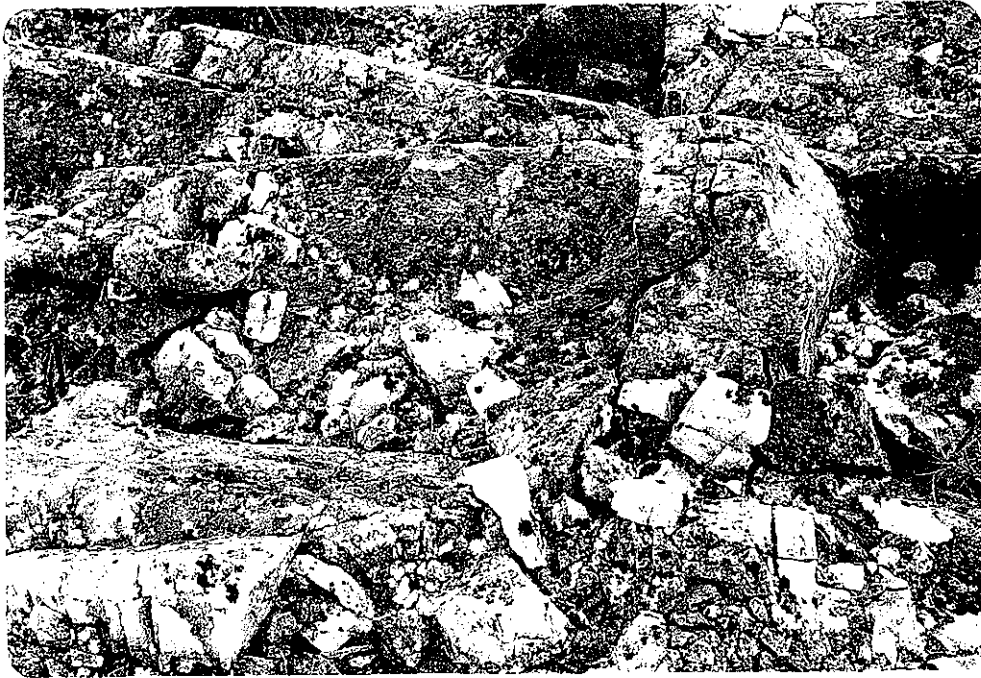


Photo 19. Northern portion of Extraction Zone 8, toward the east.

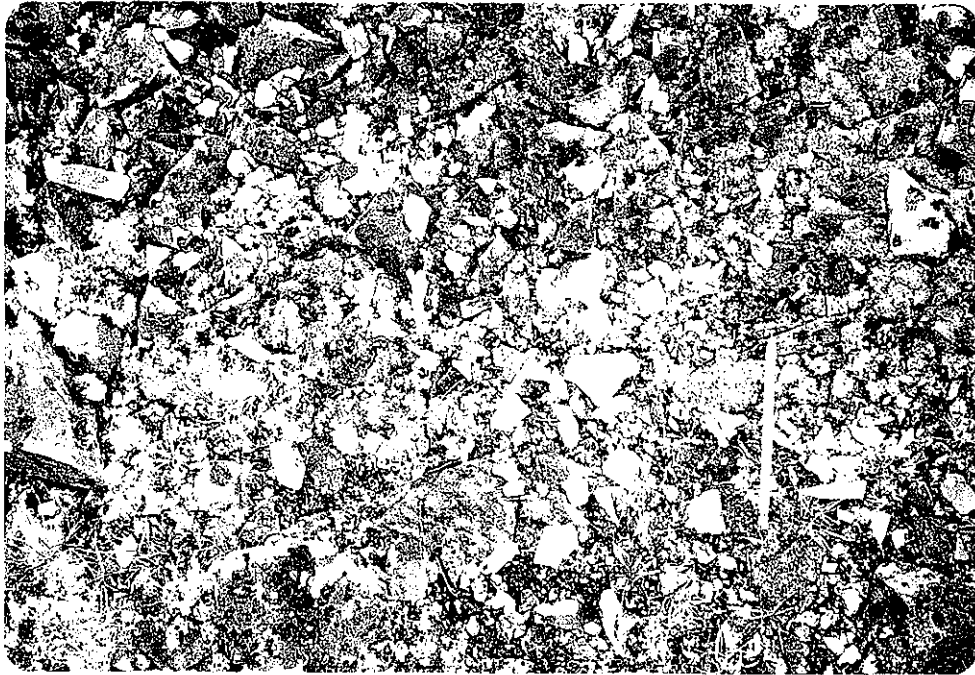


Photo 20. Debitage concentration in Extraction Zone 9.

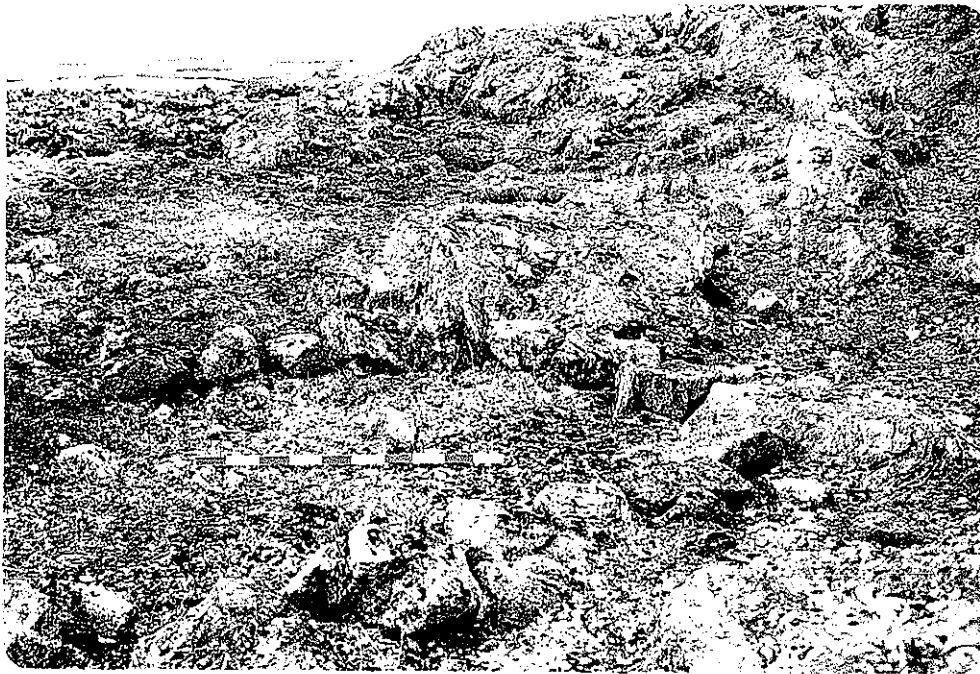


Photo 21. Structure 1, toward the northwest.

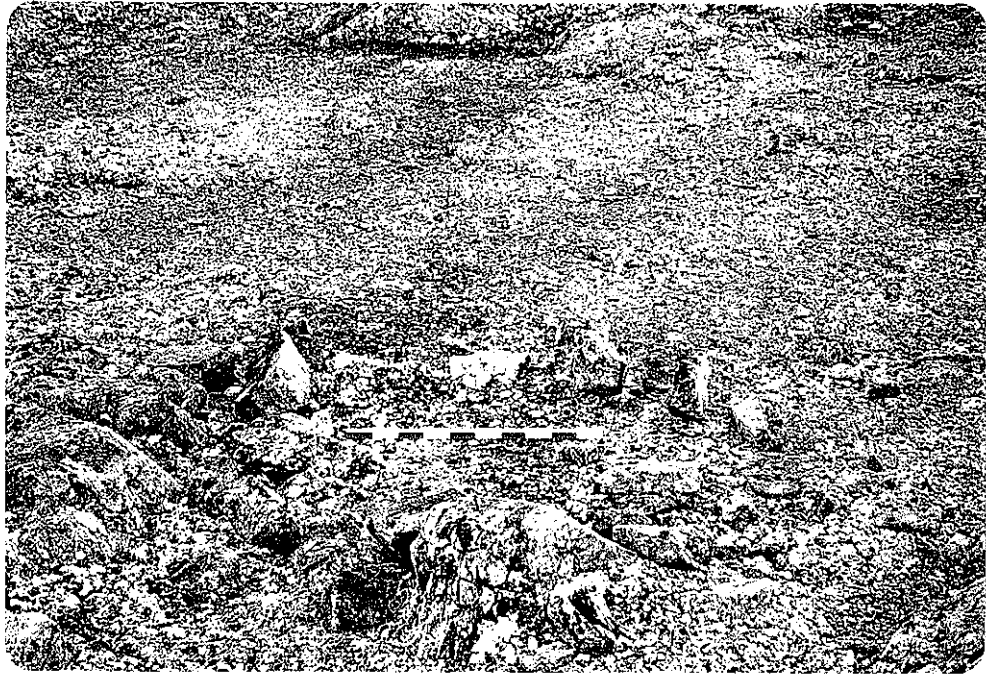


Photo 22. Structure 13, toward the west.

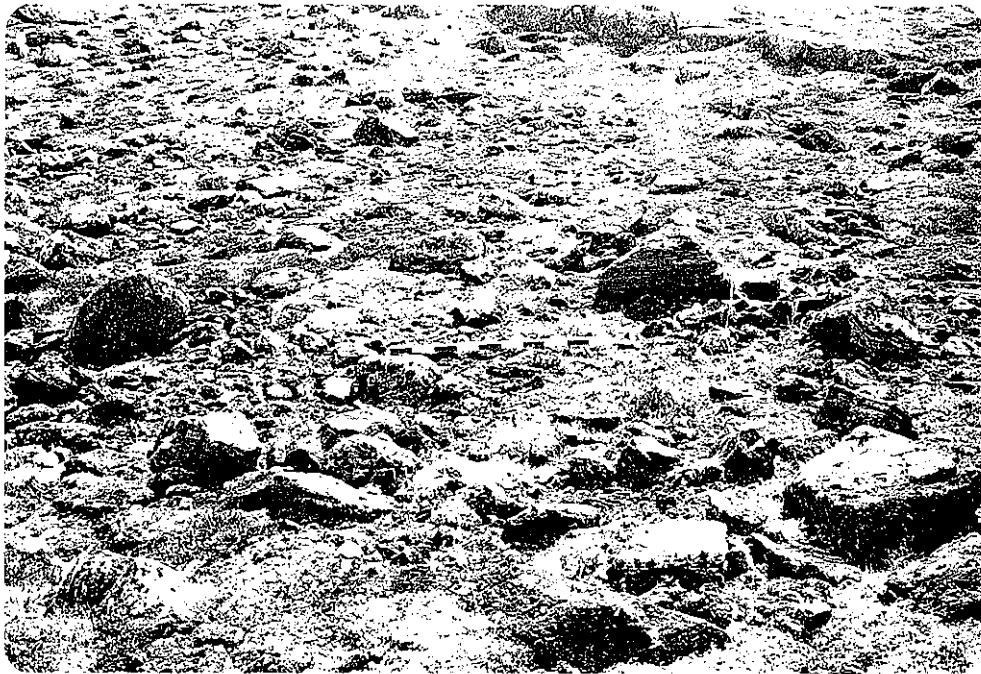


Photo 23. Structure 23, toward the south.



Photo 24. Feature V, hunting blind, toward the southwest.

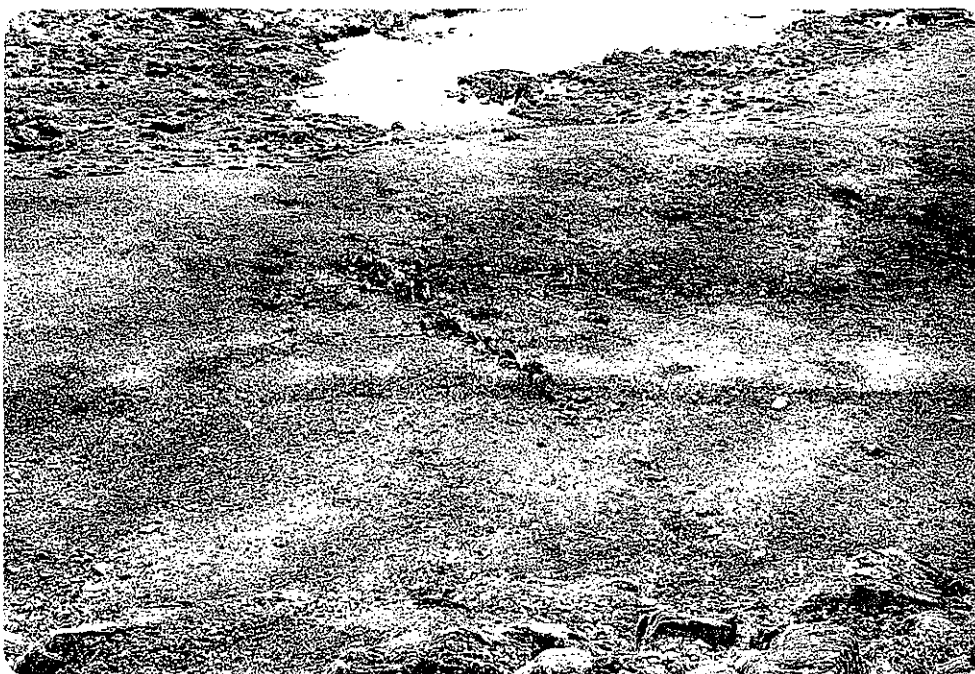


Photo 25. Feature XXII, hunting blind, toward the northwest.

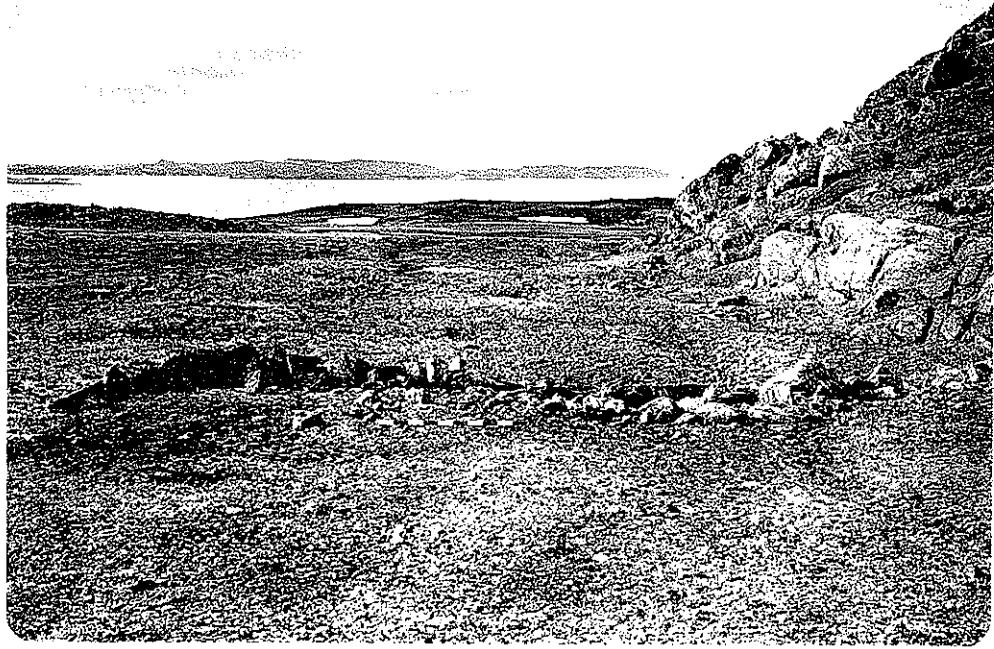


Photo 26. Feature XXVI, hunting blind, toward the north.

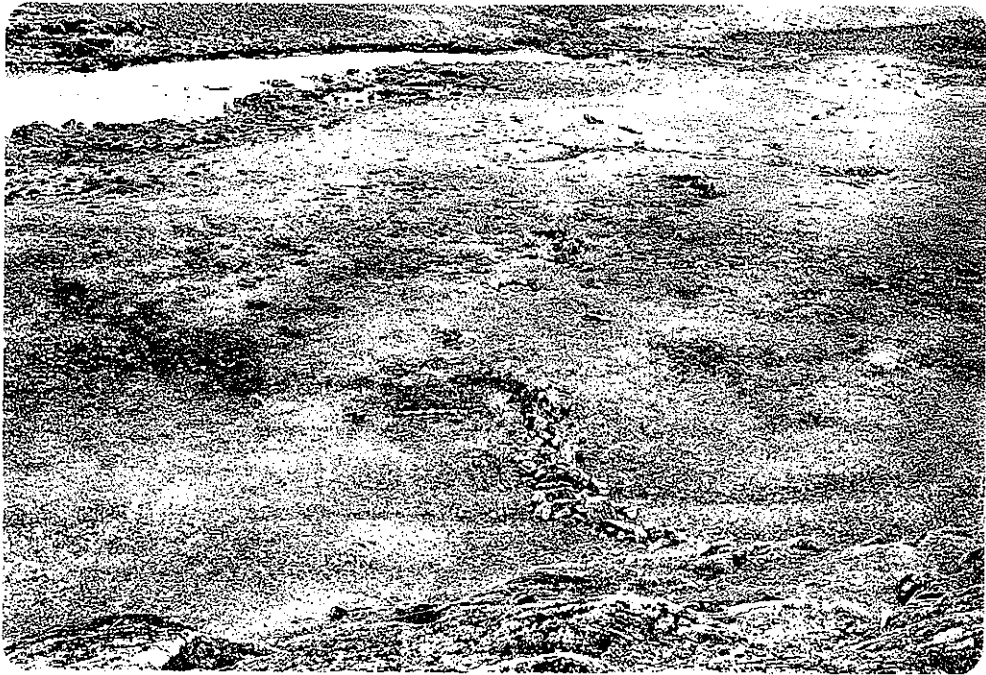


Photo 27. Features XXVI (foreground), XXVII and XXVIII (right centre), hunting blinds, toward the west.

Appendix 1.

List of Photographs

Appendix 1

List of Photographs

Roll	Negative	Subject	Orientation	Date
C8608(1)	1A	Extraction Zone 1, general view	E	16/8/86
	2A	Extraction Zone 1, debitage	E	16/8/86
	3A	Extraction Zone 1, debitage	SE	16/8/86
	4A	Extraction Zone 1, debitage	E	16/8/86
	5A	Extraction Zone 1, debitage	S	16/8/86
	6A	Extraction Zone 1, nodules	E	16/8/86
	7A	Extraction Zone 1, nodule	E	16/8/86
	8A	Extraction Zone 1, quartzite vein and nodules	S	16/8/86
	9A	Extraction Zone 1, debitage	-	16/8/86
	10A	Extraction Zone 1, debitage	-	16/8/86
	11A	Extraction Zone 1, debitage	-	16/8/86
	12A	Extraction Zone 1, western portion	SE	16/8/86
	13A	Extraction Zone 1, western portion	SE	16/8/86
	14A	Extraction Zone 2	SSE	16/8/86
	15A	Extraction Zone 2	SSE	16/8/86
	16A	Extraction Zone 2, debitage	S	16/8/86
	17A	Extraction Zone 2, debitage	S	16/8/86
	18A	Extraction Zone 2, debitage	S	16/8/86
	19A	Extraction Zone 2, debitage	S	16/8/86
	20A	Extraction Zone 2, debitage	-	16/8/86
	21A	Extraction Zone 2, debitage	-	16/8/86
	22A	Extraction Zone 2, debitage	-	16/8/86
	23A	Extraction Zone 2, quartzite vein and debitage	-	16/8/86
	24A	Extraction Zone 2, debitage	-	16/8/86
	25A	Extraction Zone 2, debitage	-	16/8/86
	26A	Extraction Zone 2, debitage	-	16/8/86
	27A	Extraction Zone 2, nodules	E	16/8/86
	28A	Extraction Zone 2, nodules	E	16/8/86
	29A	Extraction Zone 2, nodules	SE	16/8/86
	30A	Extraction Zone 2, nodules	-	16/8/86
	31A	Extraction Zone 2, nodules	-	16/8/86
	32A	Extraction Zone 2, nodules	-	16/8/86
	33A	Extraction Zone 2, quartzite ledge	SE	16/8/86
	34A	Extraction Zone 2, quartzite ledge	E	16/8/86
	35A	General view, west vein, north knoll (Extraction Zone 2 in background)	SE	16/8/86
	36A	General view, west vein, north knoll	S	16/8/86

Roll	Negative	Subject	Orientation	Date
C8608(2)	1	Structure 1	NE	16/8/86
	2	Structure 1	NW	16/8/86
	3	Structure 1	W	16/8/86
	4	Structure 2	N	16/8/86
	5	Feature I, hearth	N	16/8/86
	6	Feature II, fox trap	N	16/8/86
	7	Feature II, fox trap	N	16/8/86
	8	Structure 5	NE	16/8/86
	9	Structure 7	E	16/8/86
	10	Feature III, cache	NNW	16/8/86
	11	Structure 9	N	16/8/86
	12	Structure 12	N	16/8/86
	13	Structure 12	N	16/8/86
	14	Structure 13	E	16/8/86
	15	Structure 13	W	16/8/86
	16	Feature IV, hunting bling	NNW	16/8/86
	17	Feature IV, hunting blind	NE	16/8/86
	18	South-central section of central vein, north knoll	W	17/8/86
	19	Extraction Zone 3, debitage and central vein, north knoll	W	17/8/86
	20	Extraction Zone 3, debitage and central vein, north knoll	W	17/8/86
	21	General view of central vein, north knoll	N	17/8/86
	22	General view of central vein, north knoll	N	17/8/86
	23	Extraction Zone 3, rock alignment and lithic workshop	E	17/8/86
	24	Extraction Zone 3, rock alignment and lithic workshop	N	17/8/86
	25	Extraction Zone 3, lithic workshop, detail	-	17/8/86
	26	Extraction Zone 3, lithic workshop, detail	W	17/8/86
	27	Extraction Zone 3, quartzite vein and debitage	W	17/8/86
	28	Extraction Zone,3, detail of quarried quartzite vein	W	17/8/86
	29	Extraction Zone 3, detail of quarried quartzite vein	W	17/8/86
	30	Extraction Zone 3, debitage and rock alignment	E	17/8/86
	31	Extraction Zone 3, debitage	-	17/8/86
	32	General view of south knoll from Extraction Zone 3	SSE	17/8/86
	33	General view of south knoll from Extraction Zone 3	SSE	17/8/86
	34	General view of Hall Bay	NW	17/8/86

Roll	Negative	Subject	Orientation	Date
	35	General view of Hall Bay	W	17/8/86
	36	General view of valley south of Hall Bay	SW	17/8/86
	36A	General view of valley south of Hall Bay	S	17/8/86
C8608(3)	0A	Boulder field on southeast periphery of north knoll	E	17/8/86
	1A	General view of northern portion of north knoll	NNE	17/8/86
	2A	Central vein, crest of north knoll (bag marks Extraction Zone 3)	SSE	17/8/86
	3A	Feature V, hunting blind	SW	17/8/86
	4A	Feature V, hunting blind	NE	17/8/86
	5A	Feature VI, cache	SW	17/8/86
	6A	Feature VII, cache	SW	17/8/86
	7A	Structure 16	S	17/8/86
	8A	Structure 16	SE	17/8/86
	9A	Structure 19	S	17/8/86
	10A	Structure 21	SW	17/8/86
	11A	Structure 23	S	17/8/86
	12A	Northern portion of Extraction Zone 3, east vein, north knoll	-	17/8/86
	13A	General view of east vein, north knoll	S	17/8/86
	14A	General view of east vein, north knoll	S	17/8/86
	15A	Quarried portion of east vein, north knoll, containing green quartzite	W	17/8/86
	16A	Quarried portion of east vein, north knoll, containing green quartzite	W	17/8/86
	17A	Section of east vein, north knoll, containing grey-white quartzite	-	17/8/86
	18A	Close-up, grey-white quartzite, east vein, north knoll	-	17/8/86
	19A	Possible extraction zone, east vein, north knoll	W	17/8/86
	20A	Possible extraction zone, east vein, north knoll	W	17/8/86
	21A	Possible extraction zone, east vein, north knoll	W	17/8/86
	22A	White quartzite, east vein, north knoll	NW	17/8/86
	23A	White quartzite, east vein, north knoll	NW	17/8/86
	24A	Inter-grading of green and grey-white quartzite, east vein, north knoll	S	17/8/86

Roll	Negative	Subject	Orientation	Date
	25A	East vein, north knoll	S	17/8/86
	26A	Blue-grey quartzite, east vein, north knoll	-	17/8/86
	27A	Blue-grey quartzite, east vein, north knoll	-	17/8/86
	28A	East vein, north knoll (blue-grey quartzite)	-	17/8/86
	29A	East vein, north knoll	SSE	17/8/86
	30A	East vein, north knoll	-	17/8/86
	31A	East vein, north knoll	N	17/8/86
	32A	General view of west vein, north knoll	ESE	17/8/86
	33A	General view of west vein, north knoll	E	17/8/86
	34A	General view of west vein, north knoll	NE	17/8/86
	35A	General view of west vein, north knoll	NNE	17/8/86
	36A	General view of eastern flank of north knoll	NW	17/8/86
C8608(4)	0A	General view of north knoll (west vein in foreground)	N	17/8/86
	1A	General view of south knoll	SE	17/8/86
	2A	General view of south knoll	SE	17/8/86
	3A	General view of west vein, south knoll	SE	17/8/86
	4A	Sample 7 locus, east vein, north knoll	NE	17/8/86
	5A	Sample 7 locus	-	17/8/86
	6A	Sample 8 locus, east vein, north knoll	N	17/8/86
	7A	West-central vein, south knoll	N	17/8/86
	8A	Central vein, south knoll	-	17/8/86
	9A	Central vein, south knoll	-	17/8/86
	10A	General view of north knoll and ridge	NNE	17/8/86
	11A	General view of north knoll and ridge	SE	17/8/86
	12A	General view of north knoll and ridge	E	17/8/86
	13A	General view of north knoll and ridge	NE	17/8/86
	14A	General view of north knoll and ridge	E	17/8/86
	15A	Feature XXII, hunting blind	NW	19/8/86
	16A	Features XXVI (foreground), XXVII and XXVIII (background), hunting blinds	E	19/8/86
	17A	Feature XXII, hunting blind	SE	19/8/86
	18A	Feature XXVI, hunting blind	N	19/8/86

Roll	Negative	Subject	Orientation	Date
	19A	Feature XXVII, hunting blind	SE	19/8/86
	20A	Feature XX, hunting blind	E	19/8/86
	21A	Feature XX, hunting blind	E	19/8/86
	22A	Feature XX, hunting blind	N	19/8/86
	23A	Feature XXXIX, hunting blind	S	19/8/86
	24A	Structure 27	SW	19/8/86
	25A	Structure 27	N	19/8/86
	26A	Extraction Zone 4, general view	SE	19/8/86
	27A	Extraction Zone 4, debitage	SSE	19/8/86
	28A	Extraction Zone 4, debitage	SSE	19/8/86
	29A	Extraction Zone 4, quartzite vein face	E	19/8/86
	30A	Extraction Zone 4, quartzite vein face	E	19/8/86
	31A	Extraction Zone 4, vein face and lithic workshop	E	19/8/86
	32A	West vein, foot of south knoll	NW	19/8/86
	33A	Extraction Zone 5, debitage	NE	19/8/86
	34A	Extraction Zone 5, general view	N	19/8/86
	35A	Extraction Zone 5, debitage	SE	19/8/86
	36A	Extraction Zone 5, nodule	E	19/8/86
C8608(5)	0A	Central vein, north slope of south knoll	SE	19/8/86
	1A	Central vein, north slope of south knoll	SE	19/8/86
	2A	Extraction Zone 6, nodules	SE	19/8/86
	3A	Extraction Zone 6, nodules	SE	19/8/86
	4A	Extraction Zone 6, quarried vein face	SE	19/8/86
	5A	Extraction Zone 6, debitage	-	19/8/86
	6A	Extraction Zone 6, nodules	-	19/8/86
	7A	Extraction Zone 6, flake core	SE	19/8/86
	8A	General view of north knoll from crest of south knoll	NNW	19/8/86
	9A	Quartzite flakes, south slope of south knoll	N	19/8/86
	10A	Quartzite vein, west slope of south knoll	N	19/8/86
	11A	Extraction Zone 7, general view	SE	19/8/86
	12A	Extraction Zone 7	SE	19/8/86
	13A	Extraction Zone 7	SE	19/8/86
	14A	Extraction Zone 7, debitage	-	19/8/86
	15A	Extraction Zone 7, quartzite vein and debitage	NE	19/8/86
	16A	Extraction Zone 7, debitage	-	19/8/86
	17A	Extraction Zone 7, debitage	-	19/8/86
	18A	Extraction Zone 7, debitage	-	19/8/86

Roll	Negative	Subject	Orientation	Date
	19A	Extraction Zone 8, general view	S	19/8/86
	20A	Extraction Zone 8, vertical view	-	19/8/86
	21A	Extraction Zone 8, vertical view	-	19/8/86
	22A	Extraction Zone 8, general view	N	19/8/86
	23A	Extraction Zone 8, nodules and debitage	N	19/8/86
	24A	Marker stone	NE	19/8/86
	25A	Extraction Zone 9, general view	SSE	19/8/86
	26A	Extraction Zone 9, debitage	-	19/8/86
	27A	Extraction Zone 9, debitage	-	19/8/86
	28A	Extraction Zone 9, debitage	-	19/8/86
	29A	Extraction Zone 9, debitage	-	19/8/86
	30A	General view of hill and hunting blinds east of south knoll	E	19/8/86
	31A	South slope of south knoll	S	19/8/86
	32A	General view of west vein from crest of south knoll	SW	19/8/86
	33A	Extraction Zone 4, general view	NE	19/8/86
	34A	General view of south knoll	SE	19/8/86
	35A	Overview of habitation structure, unregistered site, Hall Bay	SW	19/8/86
	36A	Northern portion of habitation structure, unregistered site, Hall Bay	W	19/8/86

Appendix 2

Catalogue of Lithic Specimens

Appendix 2

Catalogue of Lithic Specimens

1. Tools

Catalogue No.	Class	Sample No.	Location
5	used flake	1985 Coll.	-
6	retouched flake	1985 Coll.	-
7	retouched flake	1985 Coll.	-
8	retouched flake	1985 Coll.	-
14	retouched flake	10	Ext. Zone 4
15	retouched flake	10	Ext. Zone 4
17	retouched flake	11	Ext. Zone 5
18	retouched flake	11	Ext. Zone 5
20	retouched flake	9	Ext. Zone 6
22	preform	12	Ext. Zone 7
25	retouched flake	14	Ext. Zone 9
26	end scraper	14	Ext. Zone 9
27	microblade core	14	Ext. Zone 9
30	retouched flake	4	East vein, north knoll
34	retouched flake	4	East vein, north knoll
35	retouched flake	15	Central vein, south knoll
37	retouched flake	10	Ext. Zone 4
38	retouched flake	9	Ext. Zone 6
39	flake core	10	Ext. Zone 4
40	flake core fragment	10	Ext. Zone 4

2. Debitage and Debris

<u>Catalogue No.</u>	<u>Sample No.</u>	<u>Location</u>	<u>Numbers of Specimens</u>
1	1985 Coll.	-	1
2	1985 Coll.	-	1
3	1985 Coll.	-	1
4	1985 Coll.	-	1
9	1985 Coll.	-	4
10	6	Ext. Zone 1	20
11	5	Ext. Zone 2	11
12	1	Ext. Zone 3	10
13	2	Ext. Zone 3	7
16	10	Ext. Zone 4	6
19	11	Ext. Zone 5	8
21	9	Ext. Zone 6	9
23	12	Ext. Zone 7	17
24	13	Ext. Zone 8	10
28	14	Ext. Zone 9	9
29	3	East vein, north knoll	10
31	4	East vein, north knoll	2
32	7	East vein, north knoll	8
33	8	East vein, north knoll	8
36	15	Central vein, north knoll	8

3. Specimens Transferred to UQAM for Petrographic Analysis

<u>Catalogue No.</u>	<u>Sample No.</u>	<u>Number of Specimens</u>
9	1985 Coll.	1
11	2	2
12	3	2
16	4	2
19	5	1
21	6	2
23	7	3
24	8	1
28	9	1