APPENDIX 8:

PIN-D ROSS POINT INTERMEDIATE
DISTANT EARLY WARNING (DEW)
LINE SITE REMEDIATION PROJECT

ARCHAEOLOGICAL IMPACT ASSESSMENT

FINAL REPORT

ARCHAEOLOGICAL IMPACT ASSESSMENT (AIA) OF THE PIN-D INTERMEDIATE DEW LINE SITE, ROSS POINT, NUNAVUT

Submitted to:

The Department of Culture, Language, Elders and Youth (CLEY), Nunavut
Nunavut Permit No. 2009-021A

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February 2010 **09-1333-0019**

102, 2535 - 3rd Avenue S.E., Calgary, Alberta, Canada T2A 7W5
Tel: +1 (403) 299 5600 Fax: +1 (403) 299 5606 www.golder.com
Golder Associates: Operations in Africa, Asia, Australasia, Europe, North America and South America

CREDITS

Project Director	Grant Clarke, M.A.
Project Manager	Brent Murphy, M.A.
Permit Holder	Brad Novecosky, M.A.
Report Authors	Brad Novecosky, M.A. Katie Zdunich, B.A
Field Investigators	Brad Novecosky, M.A. Richard Angivrana (Cambridge Bay)
Site File Searches	Brent Murphy
Senior Review	David Blower, Ph.D.
Client Contacts	Matthew McElwaine, P.Eng. Environmental Engineer PWGSC – Northern Contaminated Sites 5th Floor, 10025 Jasper Avenue Edmonton, AB. T5J 1S6 Ph. (780) 497-3690 Fax (780) 497-3842 matthew.mcelwaine@pwgsc.gc.ca

EXECUTIVE SUMMARY

During August of 2009, Golder Associates Ltd. conducted an Archaeological Impact Assessment (AIA) of the PIN-D Intermediate DEW Line site at Ross Point. This project was completed in conjunction with the Phase III Environmental Site Assessment, Hazardous and Non-Hazardous Materials Audit, Geotechnical Evaluation, and Remedial Action Plan on behalf of Public Works and Government Services Canada (PWGSC). All required fieldwork was completed under an Archaeological Permit (2009-021A) issued by the Department of Culture, Language, Elders and Youth (CLEY) , Nunavut to Brad Novecosky of Golder.

Five previously unrecorded heritage resource sites, NdNv-1, NdNv-2, NdNv-3, NdNv-4 and NdNv-5, were identified as a result of the investigations. NdNv-1 consisted of 8 caches and 6 round tent outlines, as well as a lithic/bone scatter that produced 4 micro blades, 1 endscraper and 2 bone tools. NdNv-2 consisted of one round tent outline, NdNv-3 included 6 caches, NdNv-4 consisted of 3 caches and a marker, and NdNv-5 was represented by a single cache feature. All sites occur outside potential impact areas, and will be avoided during reclamation activities. As a result, no further study is recommended.

It is recommended that PWCSC have met their obligations to assess the potential for impact to heritage resources during the proposed remediation/reclamation of the PIN-D Intermediate DEW Line site at Ross Point.

The AIA included the participation of Richard Angivrana from the local community of Cambridge Bay, who acted as wildlife monitor and participated in the identification and recordation of the heritage resource sites.

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During August of 2009, Golder Associates Ltd. (Golder) conducted an Archaeological Impact Assessment (AIA) of the PIN-D Intermediate DEW Line site at Ross Point on behalf of Public Works and Government Services Canada (PWGCS). All required fieldwork was completed under an Archaeological Permit (2009-021A) issued by the Department of Culture, Language, Elders and Youth (CLEY), Nunavut to Brad Novecosky of Golder.

A pedestrian reconnaissance of the moderate to high potential areas within the developed area as well as all proposed borrow pit locations was carried out. The AIA was intended to identify any artifacts or heritage resource areas that might be impacted by a remediation program and, as such, only those areas of previous and potential disturbance were assessed. Artifacts collected under Archaeological Permit (2009-021A) will be submitted to the collections repository at the Prince of Wales Northern Heritage Centre located in Yellowknife, Northwest Territories.

Previous disturbance to the DEW Line site as well as a lack of vegetation provided increased visibility and aided in locating and assessing cultural remains. As requested, areas that will not be impacted during remediation were not fully examined. Five previously unrecorded heritage resource sites were identified by the archaeologist during the program, which were documented as per the *Nunavut Archaeological and Palaeontological Sites Regulations*.

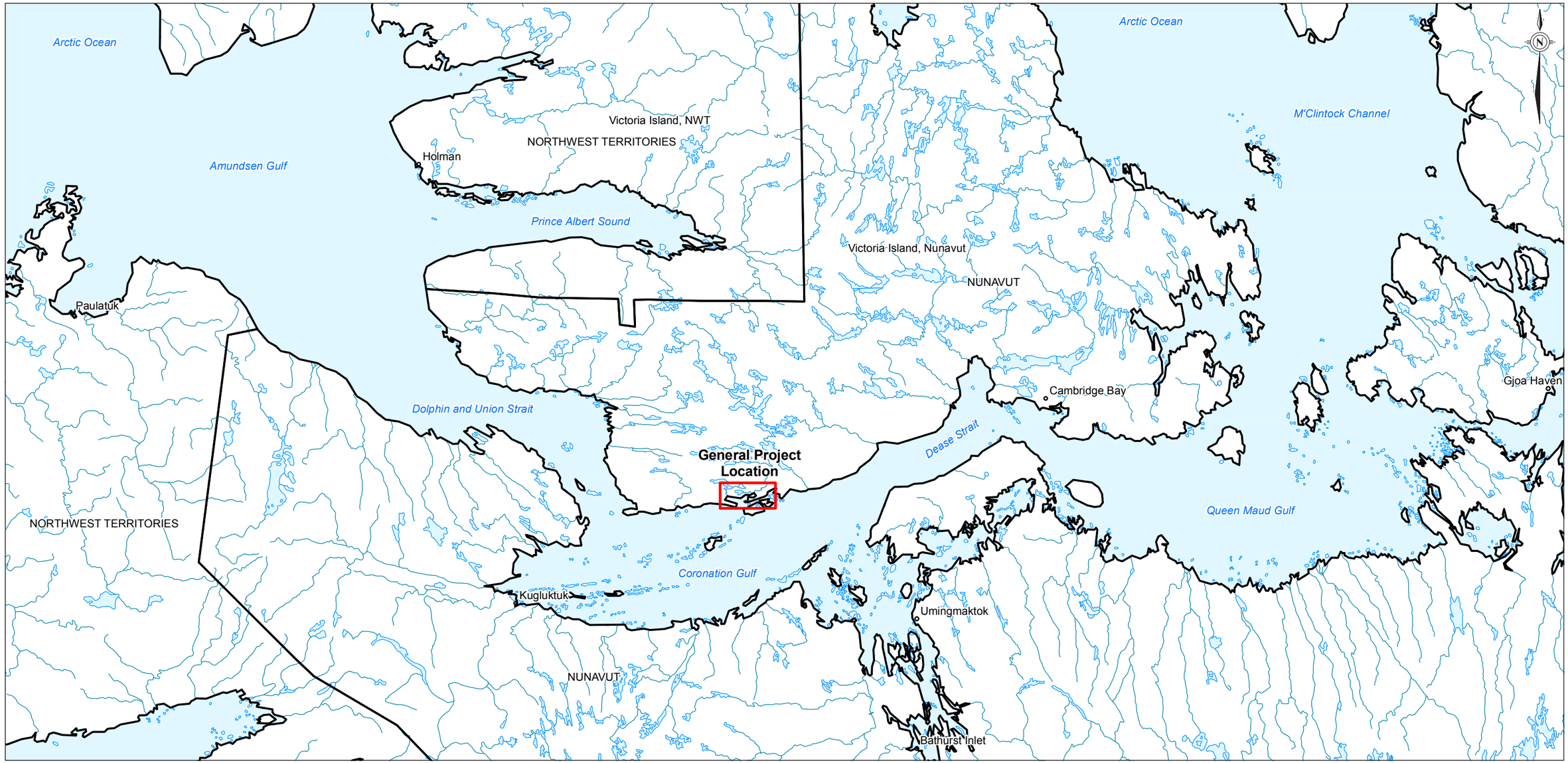
2. LOCATION, POTENTIAL IMPACTS, AND OBJECTIVES

2.1 Location

The PIN-D Intermediate DEW Line site is located on Victoria Island, 250 km west of Cambridge Bay, Nunavut (Figure 1). PIN-D is located at the south end of the Island at Ross Point in Johansen Bay (Plate 1 and 2). PIN-D was operated as an Intermediate DEW Line site between 1957 and 1963.

2.2 Potential Impacts

The potential impacts to heritage resources around the PIN-D Intermediate DEW Line Site are dependent upon the proximity of those resources to the remediation activities that will be conducted to remove the remnants of the former station. Heritage resource sites are non-renewable resources that may be located on or near ground surface. Prehistoric or precontact archaeological sites are those sites which contain features, artifacts or ecofacts reflecting the use of a given land base by people prior to European influences and technologies. Features are non-portable articles that indicate a human modification of the local environment such as hearths, pits, tent rings, stone cairns and Inuksuit. Artifacts are portable items that have been modified by people at some time in the past. These include such items as projectile points, stone flaking debris, and cut and modified bone. Ecofacts are naturally occurring items such as preserved plant remains or pollen that can aid in the interpretation of archaeological sites. Historic archaeological sites include the features, artifacts and ecofacts relating to the past few hundred years of human occupation. These sites are typically identified by the presence of buildings or structural remains, but may include any site that has evidence of historic use of the landscape.



75 0 75

SCALE 1:3,000,000 KILOMETRES

Legend

- Community
- Project Location

Reference:
Atlas of Canada
NAD 83 UTM Zone 12

PROJECT
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

TITLE
PWGSC PIN-D
GENERAL PROJECT LOCATION

Golder Associates
Saskatoon, Saskatchewan

PROJECT		09-1333-0019	FILE No.	
DESIGN	BN	10/01/10	SCALE AS SHOWN	REV. 0
GIS	MGD	03/02/10		
CHECK	BM	16/01/10		
REVIEW	DB	16/01/10		

FIGURE: 1

G:\2009\1333\09-1333-0019 PWGSC - PIN DIGISIMaps\09-1333-0019 - General Location of PIN-D.mxd

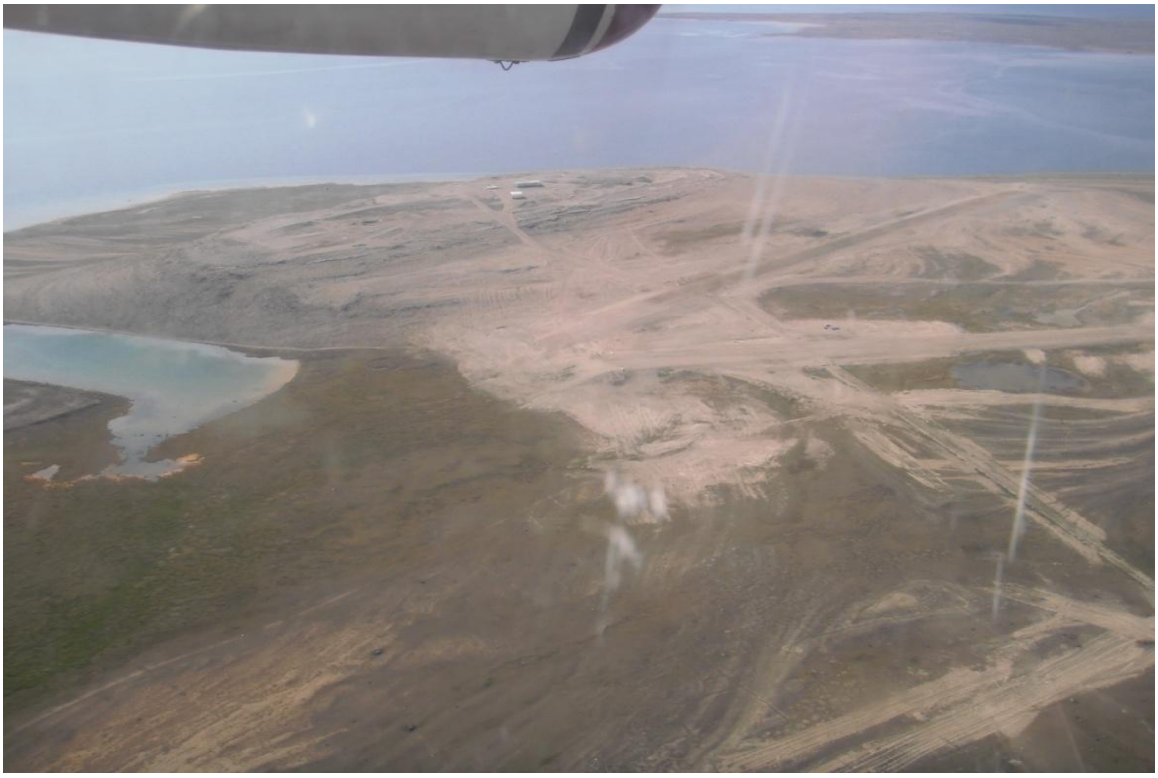


Plate 1 View of PIN-D Intermediate DEW Line site from the air.

Plate 2 View of infrastructure at PIN-D Intermediate DEW Line site

Alteration of the landscape can result in the damage or complete destruction of all or portions of historic resource sites. These alterations often involve the displacement of artifacts resulting in the loss of valuable contextual information or may involve the destruction of the artifacts and features themselves resulting in complete information loss. These losses are permanent and irreversible. Primary, secondary and tertiary impacts are possible with any new development. Remediation can be considered a new development in this context if it impacts previously undisturbed areas during operation.

Primary impacts include those disturbances resulting immediately from a project. The primary impact zone is the area within the remediation footprint including access roads, temporary work zones, borrow pits and dumps. Individual sites are likely to be affected to varying degrees if they are located within the development area. Artifact context is fundamental to interpretation of archaeological sites. By disturbing the context in which artifacts and features are recovered, interpretations of heritage resources sites and, ultimately, past life ways are affected negatively.

Secondary impacts can occur when the support services or additional access required by development adversely affects heritage resources outside the primary target areas. The remediation project should have no secondary effect on heritage resources.

Tertiary impacts are the results of project induced changes in demography and land use patterns. Increased rates of intentional and unintentional impacts can be expected as a result of increased visitation to an area if the project were large enough to affect regional population bases. Tertiary impacts are anticipated to be very low for this project, especially because changes to the site through remediation will not affect the visitation rates.

The study detailed in this report is intended to identify areas of possible impact and to determine whether the current proposed project will disturb those heritage resources located in proximity to the development.

2.3 Project Objectives

The objective of the 2009 study at the PIN-D Intermediate DEW Line Site located at Ross Point is to ensure that heritage resources are not inadvertently impacted by the proposed clean-up and remediation project. The purpose of this AIA is to:

- conduct a pre-impact assessment of the proposed remediation areas;
- identify any archaeological sites within those areas (if present);
- make recommendations to CLEY and PWGSC to mitigate or avoid those sites;
- make recommendations on surveillance and monitoring;
- provide a cost estimate on implementing the recommendations during the construction phase (if necessary); and
- prepare a draft Final Report to be reviewed by PWGSC, followed by a Final Report for distribution as required and submission to CLEY.

3. PHYSICAL AND CULTURAL SETTING

3.1 Environmental Context

An understanding of past environmental conditions and the environmental factors that shape human approaches to subsistence and settlement patterns enable archaeologists to not only locate sites, but also to provide more accurate interpretations of individual sites. The physical aspects of the environs (topography, drainage, climate and soils) as well as resource availability (flora, fauna, lithic materials and water) are prime criteria for the identification of site location and function. Assessments of the universal cultural activities of the site location, travel within and through the area, and resource exploitation are key components of any archaeological site analysis.

The anthropological theory of environmental determinism suggests that, to a great extent, environmental factors condition human behavioural and cultural adaptations, or patterns of behaviour. The environment has likely influenced many of the activities that contribute to the character of the regional prehistoric record. All available environmental variables must be considered as indicators of prehistoric use of the landscape.

The regional environment influences where specific activities and occupation are located in a pattern of seasonal movements according to the availability of resources: a seasonal round. The variables of archaeological site distribution can be identified and combined into useful criteria for suggesting the potential of an environment to hold heritage resources that includes a wide variety of landforms frequently associated with coastlines and lake shores, river banks, eskers and kames, and bedrock knolls in Arctic environs. Distribution patterns partially reflect environmental opportunities presented to human groups as well as cultural preferences demonstrated by site location. Topography influences much human activity including travel, communication, resource catchments, dwelling locations and eventually constrains human activity areas to defined localities. Based on existing heritage resources, the environment is a key factor in human settlement patterns.

3.2 Regional Environment

Prior to contact with Europeans, the environment in which the people of North America lived strongly influenced their culture and economy. The people who inhabited the north took advantage of the seasons and all the resources available. The topography of Victoria Island consists mainly of moraine covered low-lands and drumlin fields, with many raised beaches (Collignon 2005). The vegetation is typical of the tundra environment and consists of arctic willows, marshy lowlands and lichen on rocky outcrops. Inland, small herds of musk-oxen and caribou, as well as white foxes, wolves, ptarmigans and Arctic owls are found on the island; while seals and polar bears inhabit the coastal areas.

The PIN-D site is located on a prominent bedrock outcrop that slopes dramatically southward toward the sandy shores of Johansen Bay (Plate 3). Very little vegetation and no wildlife were observed at this location.

Plate 3 View from rocky outcrop at PIN-D.

3.3 Heritage Resources

Archaeology is the study of human history through the material remains of culture, now known as heritage resources. The ultimate goal in archaeology is to describe the cultures and events responsible for the creation and deposition of the remains at a given archaeological site. As such, archaeologists use material remains to determine the nature and age of cultural occupations at a site. Artifacts, ecofacts and features deposited into the natural environment, along with their inter-relationships, are the integral parts that make up an archaeological site. The *Nunavut Archaeological and Palaeontological Sites Regulations* (2003) define heritage resources as: "but not limited to, archaeological and historical sites, burial grounds, palaeontological sites, historical buildings and cairns."

Predating the arrival of Europeans, precontact archaeological sites are comprised of artifacts, features and residues of native origin typically characterized by modified bone and stone, and stone structures. Historic sites are those structures, features, and objects of European influence that date back to contact with the Europeans but can also represent more recent activity of more than 50 years. Depending on the context, sites less than 50 years old may be considered to represent traditional land use and are identified to document continued use and occupation of an area to the present time. A key component of the historic period record are the sites, artifacts and affiliated resources relating to post-contact Aboriginal people's use of the landscape. These include both archaeological sites and objects such as standing and collapsed cabins, campsites, graves, and traditional sites and resources, such as special places, hunting and plant collecting areas, traplines and their associated remains, oral traditions and various documents. These latter resources are usually identified through consultation procedures such as Traditional Use Studies (TUS) or community consultations.

Additionally, heritage resources include, as well as the sites where events took place in the past, all of the objects that they contain and any of the contextual information that may be associated with them and will aid in their interpretation, including natural specimens and documents or verbal accounts.

Heritage resources are non-renewable and are susceptible to alteration, damage, and destruction by construction and development activities. The value of heritage resources cannot be measured in terms of individual artifacts or biological specimens, rather the value of these resources lies in the integrated information which is derived from the relationship of the individual artifacts and fossil specimens, associated features, spatial relationships (distribution), and contextual situations. Interpretation of heritage resource materials, and the ability to interpret the significance of particular sites in a landscape, is based on an understanding of the nature of the relationship between individual archaeological and palaeontological materials as well as the sediments and strata within which they are contained. As such, removal or mixing of cultural or fossil bearing sediments results in the permanent loss of information basic to the understanding of these resources. As a result, heritage resources are increasingly susceptible to destruction and depletion through disturbance.

Similarly, tundra areas north of the tree line are characterized by extremely slow rates of soil development and sediment accumulation. Accordingly, at repeatedly occupied sites, there is little chance of distinguishing occupations relating to different periods within the 10,000-year record of human occupation in the region without recovering a diagnostic indicator. Some areas of high sediment deposition rates are present within the study area, but these are not the typical scenario.

The lack of temporally diagnostic artifacts, the absence of materials suitable for radiocarbon dating, and the natural mixing of shallow archaeological deposits serve to limit the definition of the recognized prehistory for the region. In contrast, extant documents, records, and oral testimony provide a firmer basis for understanding the historic period of the region.

3.3.1 Cultural Chronology

3.3.1.1 Arctic Small Tool tradition (4200 B.P. to 2800 B.P.)

Archaeologists generally agree that the earliest known occupation of the eastern arctic began with the Arctic Small Tool tradition (ASTt) (Dumond 1987; Friesen 2002; Maxwell 1980, 1984). The ASTt represents a widespread cultural manifestation that covers all of the Canadian Arctic as well as parts of Alaska and Greenland. This rapid expansion of people throughout the arctic is believed to have occurred approximately 4,000 years after the retreat of the Pleistocene ice opened the Hudson Bay and Hudson Strait to the Atlantic Ocean (Maxwell 1984). Climatic conditions were milder at this time and it is believed that the migration was the result of people expanding eastward from Siberia.

The ASTt is typically thought to date between approximately 4,200 and 2,800 B.P. (McGhee 1990). It includes the Denbigh Flint complex in northern Alaska, the Independence I culture of the Canadian High Arctic, the Inuvik Phase and the Pre-Dorset culture in Arctic Canada, and the Sarqaq culture in Greenland. As the name implies, the toolkit of the ASTt is comprised of lithic artifacts that are finely made and smaller than tools of similar function and age from elsewhere in North America. These include microblades and microcores, burins, gravers, small side and end scrapers, side and end blades, and bipointed (arrow) and triangular (harpoon) projectile points (Wright 1995). In Alaska it appears to have developed into the cultures of the Norton tradition while in Canada it developed into the Dorset culture.

3.3.1.2 Dorset Culture (2,500 B.P. to 1,000 B.P.)

The Dorset culture occupied the Canadian Arctic from 2,500 BP until at least 1,000 BP. (McGhee 1990). Best known for miniature carvings, Dorset appears to have been a more successful adaptation to the conditions of the north than the preceding ASTt cultures from which it developed. This is demonstrated by the huge area occupied by Dorset groups and by evidence that they had perfected winter hunting on the sea ice. Cooler

conditions in the northern hemisphere around 3,000 years ago resulted in expansion of the sea ice and a shift away from terrestrial hunting of caribou and hunting of sea mammals from boats in open water to a procurement of sea mammals from coastal edges and sea ice. This is evidenced in the archaeological record with a shift away from bow hunting to harpoon and spear hunting (McGhee 1990). Artifacts recovered from sites representing this period are more diverse and "reflect a richer and more secure way of life than that of earlier Palaeo-Eskimos." including the establishment of permanent winter villages (McGhee 1990).

However, when the people of the Thule culture arrived in the Canadian Arctic approximately 1,000 years ago, the Dorset culture had largely or entirely disappeared for reasons that are not well understood (McGhee 2001; Wright 1999).

3.3.1.3 Thule (1,000 B.P. to 400 B.P.)

The Thule tradition dates from approximately 1,000 to 400 B.P. and is derived from the Norton tradition in northern Alaska. More specifically, Thule grows out of the Old Bering Sea and Punuk traditions, which have numerous similarities to Thule cultural assemblages. These assemblages suggest subsistence based on maritime resources such as seals and whales that were hunted from kayaks or umiaks as identified by harpoon floats. Thule represented a new kind of adaptation to the Arctic environment, based on the hunting of large sea mammals in open water through the use of drag floats attached to the harpoon line. Large skin boats and the use of dogs to pull large sleds were other Thule innovations. Winters were spent in sometimes large communities of semi-subterranean houses, subsisting on a stored surplus obtained most typically by hunting bowhead whales. The introduction of Thule into the Canadian Arctic is noted by a distinct change in a number of cultural markers from the Dorset culture. The earliest Thule occupations currently recognized are on islands in the Bering Strait and exhibit an almost complete reliance on maritime resources; however, later sites demonstrate that both maritime and terrestrial resources were utilized (McGhee 1990). Climatic changes following the

thirteenth century likely caused the Thule to modify their way of life into that of the various historic Inuit groups.

3.3.2 Historic Inhabitants

Historic use of the project area is identified with the 'Copper Inuit'. The traditional territory of the Copper Inuit extends from the Coppermine River east to the Perry River and the south coast of Banks Island south to Great Bear Lake (Damas 1984). The subsistence, economy and settlement pattern of the Copper Inuit was greatly influenced by seasonal fluctuations. In the spring they would leave their more sedentary villages along the coast to hunt and fish inland. Subsistence from late May until November was reliant on caribou, fish, fowl and small game common on the interior tundra. In the fall during the caribou migration hunting caribou was often the most dominant form of subsistence. The Copper Inuit would return to the coast in the fall to build villages for the winter; breathing-hole sealing was the most prevalent activity during the winter months. This method involved specialty trained dogs to locate the seals' breathing holes; each hunter would station themselves at a hole and quietly wait for a seal to come up to breathe (Damas 1984). Other resources that were occasionally used include polar bears in the winter and musk-oxen in the summer.

The largest grouping of Copper Inuit was during the winter months when they would gather in villages along the coast (more people was beneficial for breathing-hole sealing). Over the summer they split up into smaller groups and even individual nuclear families when subsistence was based on fishing, hunting small animals and foraging. In the late autumn many of these groups would reunite for the sewing period, when sewing their winter garments was the most important task (Damas 1984).

Although many of the characteristics described are similar with other Inuit groups there are some distinguishing characteristics that the Copper Inuit have. According to Damas (1984) aside form the territory that they inhabited, the Copper Inuit were also known for their wide use of copper; their distinctively tailored clothing; and their social and familial organization.

3.3.3 Heritage Studies

Prior to the current study of the PIN-D Intermediate DEW Line Site at Ross Point, no heritage resources were recorded in the Nunavut or Canadian Museum of Civilization database for this location. However, exploration of the region has been taking place throughout the past century and even prior to this with early explorers trying to find the Northwest Passage.

In the early 1900s, research expeditions detailing the geography and inhabitants of the Canadian Arctic were carried out by researchers such as Diamond Jenness and Vilhjalmur Stefansson. Their work created the basis for future archaeological studies in the region. The first organized archaeological survey was conducted in the early 1960s. In 1963 the National Museum of Canada sent William E. Taylor out to identify any heritage resources in the vicinity of the DEW Line sites between Cape Parry and Cambridge Bay, N.W.T. (Taylor 1972).

Iqaluktuuq is one of the most studied regions on Victoria Island. This area is located along a short stretch of the Ekalluk River between Ferguson Lake and Wellington Bay, 50 km northwest of Cambridge Bay (Kitikmeot Heritage Society). Iqaluktuuq is a traditional hunting and fishing ground that is well known for its annual run of arctic char as well as the migrating caribou that pass through this area (Friesen 2002). Both sides of the river contain dense archaeological remains that reflect the continuous occupation of this region beginning with the Pre-Dorset tradition (1,800 to 500 B.C. B.P.). William E. Taylor conducted three seasons of extensive fieldwork in this area and recorded 28 heritage resources (Taylor 1964, 1967, 1972, 1988). Jack Brink (1991) subsequently carried out a study on lithic reduction strategies at one of these sites (NiNg-17) recorded by Brink (1992). More recently Max Friesen (2002) has led a multi-year archaeological project of the Iqaluktuuq region.

Lady Franklin Point is another area well known for its concentration of archaeological sites. The Point is located at the south western end of Victoria Island 85 km west of the

PIN-D location. William E. Taylor was the first to lead an organized survey of the area in 1963 during his assessment of the DEW Line sites. In total there are 43 heritage resources that have been recorded and assessed at Lady Franklin Point (Blower 2007). These sites include caches, traps, tent rings, graves and a Thule village. It is important to note that traditional use of this land continues today as local people have been observed in recent years using the area for hunting and camping activities (Blower 2007).

4. METHODOLOGY

4.1 Field Inventory and Assessment

All field work was conducted under a valid Class II Archaeological Permit issued by CLEY. The field program focused on assessment of all areas of high and moderate archaeological potential within the disturbed DEW Line site, and the proposed borrow source locations. The purpose of the field investigation was to identify archaeological materials, document location and content and provide data to be used in the development of recommendations for future remediation programs. Inventory and assessment techniques followed established practices and consisted of the following:

- visual examination of the identified areas to determine the presence of surficial features such as stone tent outlines, inuksuit, and caches, and exposed precontact cultural materials such as stone tool making debris and tools;
- visual examination of the identified areas to determine the presence of items of historical military interest;
- visual examination of bedrock exposures (if any) or gravels for precontact quarrying activity;
- documentation of the location (GPS coordinates), nature, size, and complexity of each identified site; and
- documentation of individual site features to record content, context, potential identity, and to provide information required to develop a mitigation program.

These results, along with updates and recommendations will be included in written submissions to CLEY as required by the Permit to conduct the AIA, and discussed with the Territorial Archaeologist of Nunavut.

4.2 Heritage Feature / Structure Evaluation

Evaluations of heritage features and standing structures were to be completed for features/structures that are observed during the investigations. These evaluations would consider perceived heritage resource value and community cultural value as well as the predicted impact from the proposed program. In general, disturbed sites with limited cultural remains would be assigned lower archaeological resource values than undisturbed sites, large sites with large amounts of cultural material, complex sites, and multicomponent sites. Undisturbed multicomponent sites would generally be assigned the highest heritage resource value.

Community input will play a role in the evaluation of site value, and the inclusion of a member of the local community on the field crew aided in the in-field discussions regarding site significance.

4.3 Detailed Archaeological Site Investigations / Mitigation

If required, mitigation of significant heritage resources sites may include a number of different options. Prior to evaluation of these mitigative options, the perceived value of the identified archaeological sites will be discussed with the PWGSC project team to determine the feasibility of avoiding important sites. Only if site avoidance is not possible, will other mitigative measures such as collection and documentation, and controlled mapping/excavation be considered. In areas of no sediment deposition surface collection and mapping of artifacts and features may satisfy regulatory requirements for mitigation. Recommendations for excavation may include a controlled excavation mitigative plan and will specify the number of square metres and suggest locations for excavation units/blocks.

Overall mitigative options may be summarized by:

- collection and documentation undertaken at the time of the field assessment at all sites with low archaeological resource value;
- avoidance if feasible at all sites assigned high archaeological resource value;
- mitigative excavations which will be recommended at those sites assigned high archaeological resource value that could not be avoided by borrow source relocation; and
- a management plan for required mitigation relative to the proposed construction schedule will be discussed with the site project team.

4.4 Reporting

Analysis of collected artifacts includes cleaning, cataloguing, identification, inventory, and description of each individual piece for inclusion in the final report. GPS site information is provided for mapping relative to the former site structures at the site and to CLEY, but not included in the final versions of this report. Archaeological site maps, photographs, and artifact scans are prepared as digital files.

Upon completion of the field component and the artifact curation, a draft report was prepared. This final permit report on the archaeological studies will be forwarded to PWGSC for their review, and then on CLEY for their review. This report includes a project description, the environmental setting, the historical and archaeological context for the project area, field methodology, and the results of the field reconnaissance. The report includes both descriptive, as well as mapped data on the sites, artifacts, and features identified, as well as detailed information on the nature, content, and significance of the artifacts and features identified. Cultural material recovered has been inventoried, described, and discussed within the report text to aid in evaluation of scientific and interpretive value. All identified sites have been documented on appropriate site inventory forms.

If required, a summary of the findings will be prepared for inclusion in a screening document.

In general, the following workplan is followed:

- Avoidance has been recommended if feasible at all sites assigned high archaeological resource value (this to include all constructed features: burials, tent rings, caches, hunting blinds, hearths).
- Collection and documentation has been undertaken as a mitigative option of sites with low archaeological resource value as a method of protecting the heritage resource from future undocumented impacts due to increased personnel activity in the vicinity.
- Acceptable methods of mitigation are discussed with CLEY and the Territorial Archaeologist, and may lead to a recommendation for detailed mapping, collection and/or test excavations at those sites assigned high archaeological resource value that cannot be avoided by reclamation project.

A management plan for required mitigation, monitoring or surveillance relative to the proposed remediation will be developed as part of the contracted services deliverable to PWGSC. This includes site mitigation, additional survey of any project re-locates required due to site avoidance, and verification of those heritage sites located outside the proposed development activity area that should remain outside re-located areas.

4.5 Community Consultation

Consultation regarding the PIN-D Intermediate DEW Line site is ongoing. A community meeting was held in January of 2010. The presentation included the results of this study, sites identified, and recommendations. Information from these meetings and interviews are included in the final report.

5. RESULTS

A search of the Canadian Museum of Civilization database yielded no information on previously recorded heritage resources sites at this location prior to conducting the AIA. As such, no revisits or information updates to existing sites was required.

The AIA assessment included areas of moderate to high archaeological potential that have been disturbed by the PIN-D DEW Line site, including the facility area and roads, as well as areas of heritage potential identified for future borrow sources, dumps and beach landing areas. During the assessment five heritage sites were identified and recorded. They are discussed further below.

5.1 Newly Identified Heritage Resource Sites

5.1.1 NdNv-1

NdNv-1 is located 800 m southeast of the PIN-D facility on a bench overlooking a sandy beach along Johansen Bay (Plate 4). The site consists of 8 caches and 6 round tent outlines in a 160 m by 100 m area (Table 1). Many of the features exhibit patterning of lichen growth between the stones suggestive of having been in place for a substantial period of time. However, evidence of more recent occupation is present in the form of modern refuse including tin lids, tobacco cans, shotgun shells and fragments of paper.

Precontact occupation is evident in the form of three artifact scatters also observed at this site. The first consists of lithic and faunal remains observed 15 m northeast of cache C5. Over 100 secondary and tertiary fine white chert flakes occur in an area that measures 5 m by 7 m. This represents the detritus from lithic reduction or tool manufacture. Within this scatter, one bone awl/needle and another piece of worked bone were collected (Table 2 and 3). The second piece of bone could not be identified as to function; however a narrow groove was cut into it (Plate 5).

Plate 4 View cache feature (C 7) at NdNv-1.

Table 1 NdNv-1 Features

Feature No.	Feature Type	Measurements (m)	Notes
C1	Cache	2 x 1.8	Constructed with large flat rock. Inside 12 ga shotgun shell and paper.
C2	Cache	1.6 x 2	Exhibits lichen growth suggestive of being in place for a long period of time..
C3	Cache	1.1 x 1.8	Collapsed. Sand has filled interior.
C4	Cache	2 x 1.6	Large boulder used in construction. Good lichen growth.
C5	Cache	2.4 x 1.2	Elongated cache
C6	Cache	2 x 2.5	-
C7	Cache	1.2 x 1.3	3 m east of C6. Rusty tin can lid beside cache.
R1	Tent Outline	4 x 4	Round tent outline. 21 cobbles. Likely recent given presence of modern refuse.
C8	Cache	1.3 x 1.7	Large boulder used.
R2	Tent Outline	4 x 3	Square tent outline. 27 cobbles. Some lichen growth. Old rusty tobacco can present.
R3	Tent Outline	2.4 x 2.4	Small ring of rocks. 16 cobbles. Well buried. Some lichen growth.
R4	Tent Outline	7 x 7	Large round outline. 14 rocks around outside. 16 rocks inside.
R5	Tent Outline	2.5 x 2.5	Round outline. 26 cobbles. Well buried.
R6	Tent Outline	4 x 4	Round outline. 42 cobbles. Some lichen. Deeply buried.

Plate 5 Bone tools collected from NdNv-1.

Table 2 Metric attributes of bone awl

Length (mm)	Width (mm)	Thickness (mm)	Notch Width (mm)	Notch Depth (mm)	Weight (g)
102.21	14.62	8.63	12.67	2.98	5.4

Table 3 Metric attributes of worked bone

Length (mm)	Width (mm)	Thickness (mm)	Notch Width (mm)	Notch Depth (mm)	Weight (g)
78.85	25.42	21.02	7.66	3.73	21.1

An endscraper and 5 micro blades were observed in another scatter 10 m northwest of tent outline R5 (Plate 6). Microblades were utilized in the past by both the ASTt and the Dorset culture. This tool is typically less than a centimetre wide and up to 3 or 4 centimetres long. Microblades were likely used for a variety of cutting activities such as butchering animals, cutting and shaping wood and bone, and cutting skins for making clothing (Stenton and Park 1998). A third lithic scatter was observed 2 m from tent outline R6. This scatter consists of 18 small chert flakes. No tools were identified in this scatter.

5.1.2 NdNv-2

NdNv-2 is located on a rocky/sandy point of land on the shore of Johansen Bay, approximately 5.5 km southwest of the PIN-D facility (Plate 7). The site consists of a round tent outline comprised of 22 cobbles and a diameter of 4 m. The cobbles were well buried with heavy lichen growth. No artifacts were observed at this location. A surveyor's pin was also observed 135 m northwest of the outline.

5.1.3 NdNv-3

NdNv-3 is located 900 m east of the PIN-D facility on a hilltop overlooking Johansen Bay, which lies 700 m to the south. The site consists of six caches in a 300 m by 100 m area (Table 4). Three of the caches exhibit heavy lichen growth, while one is opened and three have collapsed (Plate 8). No artifacts were observed at this site. A collapsed marker was also identified north of the caches on the hill slope.

Plate 6 Microblades and endscraper observed at NdNv-1.

Plate 7 View of tent outline at NdNv-2.

Table 4 NdNv-2 Features

Feature No.	Feature Type	Measurements (m)	Notes
C9	Cache	0.2 x 0.6	Small opened cache. Heavy lichen. Built with limestone rocks.
C10	Cache	1.5 x 2	Collapsed cache. Heavy lichen growth.
C11	Cache	1.5 x 1	Collapsed cache. Large flat rock used for one side. Heavy lichen growth.
C12	Cache	1.5 x 1.5	Collapsed cache.
C13a	Cache	0.35 x 0.7	Small rectangular box shaped.
C13b	Cache	2.5 x 2.5	Large collapsed cache.

Plate 8 View of boxed shape cache (C13a) at NdNv-3.

5.1.4 NdNv-4

NdNv-4 is located on a rock outcrop immediately south of a small unnamed pond, approximately 460 m east of the PIN-D facility. This site consists of three caches and a

collapsed marker (Table 5, Plate 9). Two of the caches and the marker were found in close proximity to each other adjacent to the pond, while the third cache is located approximately 200 m to the south. No other artifacts were observed on this landform.

Table 5 NdNv-4 Features

Feature No.	Feature Type	Measurements (m)	Notes
C14	Cache	1 x 1	Good lichen and organic growth.
C15	Cache	2.5 x 2	Little lichen growth.
C16	Cache	n/r	Scattered and collapsed. Some lichen growth.

n/r = not recorded

Plate 9 View of collapsed cache (C14) at site.

5.1.5 NdNv-5

NdNv-5 is located on a rocky outcrop approximately 300 m west of the PIN-D facility and 560 m north of Johansen Bay. One large collapsed cache feature was identified (Plate 10). The feature has a 2.5 m diameter and heavy lichen growth. No other features or artifacts were identified.

Plate 10 View of collapsed cache feature at NdNv-5.

6. SUMMARY AND RECOMMENDATIONS

The AIA of the PIN-D Intermediate DEW Line site conducted under Nunavut Permit 2009-021A produced the results as discussed in Section 5 and summarized in Table 6. The assessment was limited to disturbed areas of moderate to high archaeological potential including facility remains and roads, as well as proposed borrow pit sources and beach landing areas.

Table 6 Heritage Site Recommendations

Site	Features/Artifacts	Significance	Recommendations
NdNv-1	Tent outlines (6), caches (8), lithic scatter, worked stone and bone tools	High	Site will be avoided. No further work is recommended
NdNv-2	Tent outline (1)	Low	Site will be avoided. No further work is recommended
NdNv-3	Caches (6)	Low	Site will be avoided. No further work is recommended
NdNv-4	Cache (3), marker (1)	Low	Site will be avoided. No further work is recommended
NdNv-5	Tent outline (1)	Low	Site will be avoided. No further work is recommended

Upon arrival at the project location it was obvious that much of the area was previously disturbed or had little vegetation or sedimentation. This resulted in excellent surface visibility that greatly enhanced the identification and assessment of heritage resources. During the study, five heritage resource sites, NdNv-1, NdNv-2, NdNv-3, NdNv-4 and NdNv-5 were identified and are documented as per the *Guidelines for Applicants and Holders of Nunavut Territory Archaeology and Palaeontology Permits* (Government of Nunavut 2003).

NdNv-1 is considered to be of high heritage significance given the multiple features, lithic scatter and presence of formed lithic and bone tools. The remaining four sites containing features only, with no associated artifacts, are considered to be of limited

significance. The location and coordinates of sites recorded during the assessment were discussed with the client, and all occur outside potential impact areas. As a result, all sites will be avoided and no further study is recommended as it relates to this project.

PWGSC has fulfilled the requirements to identify the potential for impact to heritage resources during the proposed remediation/reclamation of the PIN-D Intermediate DEW Line Site at Ross Point. Provided all sites identified during the assessment are avoided, there are no further concerns. The AIA of this location included the participation of Richard Angivrana from the local community of Cambridge Bay, who acted as wildlife monitor and participated in the identification and recording of the heritage resource sites.

7. CLOSURE

We trust the above meets your present requirements. If you have any questions or require additional details, please contact the undersigned.

GOLDER ASSOCIATES LTD.

Report prepared by:

Brad Novecosky, M.A.
Senior Archaeologist

Report reviewed by:

David Blower, Ph.D., RPA
Associate, Senior Archaeologist

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APPENDIX I

PHOTOGRAPH LOG

PIN-D AIA PHOTO LOG

Photo Number	Comment
09-21A photo 1	PIN-D from air
09-21A photo 2	PIN-D from air
09-21A photo 3	PIN-D from air
09-21A photo 4	PIN-D from air
09-21A photo 5	PIN-D from air
09-21A photo 6	PIN-D from air
09-21A photo 7	PIN-D from air
09-21A photo 8	general photos of PIN-D and surrounding terrain
09-21A photo 9	general photos of PIN-D and surrounding terrain
09-21A photo 10	general photos of PIN-D and surrounding terrain
09-21A photo 11	general photos of PIN-D and surrounding terrain
09-21A photo 12	general photos of PIN-D and surrounding terrain
09-21A photo 13	general photos of PIN-D and surrounding terrain
09-21A photo 14	general photos of PIN-D and surrounding terrain
09-21A photo 15	general photos of PIN-D and surrounding terrain
09-21A photo 16	general photos of PIN-D and surrounding terrain
09-21A photo 17	general photos of PIN-D and surrounding terrain
09-21A photo 18	Site 1 - cache (C1)
09-21A photo 19	Site 1 - cache (C1)
09-21A photo 20	Site 1 - cache (C1)
09-21A photo 21	Site 1 - cache (C2)
09-21A photo 22	Site 1 - cache (C2)
09-21A photo 23	Site 1 - cache (C3)
09-21A photo 24	Site 1 - cache (C3)
09-21A photo 25	Site 1 - cache (C4)
09-21A photo 26	Site 1 - cache (C4)
09-21A photo 27	Site 1 - cache (C4) and Richard Angivrana
09-21A photo 28	Site 1 - cache (C5)
09-21A photo 29	Site 1 - cache (C5)
09-21A photo 30	Site 1 - lithic and bone scatter
09-21A photo 31	Site 1 - lithic scatter
09-21A photo 32	Site 1 - cache (C6)
09-21A photo 33	Site 1 - cache (C6)
09-21A photo 34	Site 1 - cache (C7)
09-21A photo 35	Site 1 - cache (C7)
09-21A photo 36	Site 1 - rusty tin can lid beside cache(C7)
09-21A photo 37	Site 1 - tent outline (R1)

PIN-D AIA PHOTO LOG (CONTINUED)

Photo Number	Comment
09-21A photo 38	Site 1 - tent outline (R1)
09-21A photo 39	Site 1 - ring of rocks with large rock in center (WYP 004)
09-21A photo 40	Site 1 - ring of rocks with large rock in center (WYP 004)
09-21A photo 41	Site 1 - cache (C8)
09-21A photo 42	Site 1 - cache (C8)
09-21A photo 43	Site 1 - tent outline (R2)
09-21A photo 44	Site 1 - tent outline (R2)
09-21A photo 45	Site 1 - tin can and Richard Angivrana
09-21A photo 46	Site 1 - canvas under rocks
09-21A photo 47	Site 1 - micro blades and endscraper
09-21A photo 48	Site 1 - micro blades and endscraper
09-21A photo 49	Site 1 - plywood shack
09-21A photo 50	Site 1 - plywood shack
09-21A photo 51	general photos of PIN-D and surrounding terrain
09-21A photo 52	general photos of PIN-D and surrounding terrain
09-21A photo 53	general photos of PIN-D and surrounding terrain
09-21A photo 54	general photos of PIN-D and surrounding terrain
09-21A photo 55	general photos of PIN-D and surrounding terrain
09-21A photo 56	general photos of PIN-D and surrounding terrain
09-21A photo 57	general photos of PIN-D and surrounding terrain
09-21A photo 58	road to freshwater lake north of airfield
09-21A photo 59	road to freshwater lake north of airfield
09-21A photo 60	Modern Camp - 5 tent rings on road
09-21A photo 61	Modern Camp - 5 tent rings on road
09-21A photo 62	Modern Camp - 5 tent rings on road
09-21A photo 63	Modern Camp - 5 tent rings on road
09-21A photo 64	PIN-D from air
09-21A photo 65	PIN-D from air
09-21A photo 66	west beach area
09-21A photo 67	west beach area
09-21A photo 68	west beach area
09-21A photo 69	west beach area
09-21A photo 70	Old trap still set - WYP 014
09-21A photo 71	Old trap still set - WYP 014
09-21A photo 72	Site 2 - tent outline (R7)
09-21A photo 73	Site 2 - tent outline (R7)
09-21A photo 74	Site 2 - tent outline (R7)
09-21A photo 75	Site 3 - cache (C9)

PIN-D AIA PHOTO LOG (CONTINUED)

Photo Number	Comment
09-21A photo 76	Site 3 - cache (C9)
09-21A photo 77	Site 3 - cache (C9)
09-21A photo 78	general photos of PIN-D and surrounding terrain
09-21A photo 79	general photos of PIN-D and surrounding terrain
09-21A photo 80	Site 3 - cache (C10)
09-21A photo 81	Site 3 - cache (C10)
09-21A photo 82	Site 3 - cache (C11)
09-21A photo 83	Site 3 - cache (C11)
09-21A photo 84	Site 3 - cache (C12)
09-21A photo 85	Site 3 - cache (C12)
09-21A photo 86	metal scafolding dump
09-21A photo 87	Site 3 - cache (C13) cache 1
09-21A photo 88	Site 3 - 2 caches (C13)
09-21A photo 89	Site 3 - 2 caches (C13)
09-21A photo 90	Site 3 - cache (C13) cache 2
09-21A photo 91	general photos of PIN-D and surrounding terrain
09-21A photo 92	general photos of PIN-D and surrounding terrain
09-21A photo 93	Site 4 - collapsed cache (C14)
09-21A photo 94	Site 4 - collapsed cache (C14)
09-21A photo 95	Site 4 - collapsed cache (C15)
09-21A photo 96	Site 4 - collapsed cache (C15)
09-21A photo 97	WYP 016 - possible collapsed marker
09-21A photo 98	WYP 017 - possible collapsed marker
09-21A photo 99	WYP 017 - possible collapsed marker
09-21A photo 100	Site 4 - scattered and collapsed cache (C16)
09-21A photo 101	Site 4 - scattered and collapsed cache (C16)
09-21A photo 102	general photos of PIN-D and surrounding terrain
09-21A photo 103	general photos of PIN-D and surrounding terrain
09-21A photo 104	general photos of PIN-D and surrounding terrain
09-21A photo 105	general photos of PIN-D and surrounding terrain
09-21A photo 106	general photos of PIN-D and surrounding terrain
09-21A photo 107	general photos of PIN-D and surrounding terrain
09-21A photo 108	general photos of PIN-D and surrounding terrain
09-21A photo 109	general photos of PIN-D and surrounding terrain
09-21A photo 110	general photos of PIN-D and surrounding terrain
09-21A photo 111	general photos of PIN-D and surrounding terrain
09-21A photo 112	hunting blind
09-21A photo 113	hunting blind

PIN-D AIA PHOTO LOG (CONTINUED)

Photo Number	Comment
09-21A photo 114	inuksuk
09-21A photo 115	Site 5 - cache (C17)
09-21A photo 116	Site 5 - cache (C17)
09-21A photo 117	Site 5 - cache (C17)
09-21A photo 118	PIN-D from air
09-21A photo 119	PIN-D from air
09-21A photo 120	PIN-D from air