Updating of the Northern Granular Resources Information

Final Project Report

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DIAND Map Resources

Introduction

This report describes work done under Supply & Services Canada Contract # **038ST.A7134-3-0077** in support of the Northern Granular Resources Mapping system, developed by the Department of Indian Affairs & Northern Development (DIAND).

The system has been developed around Earth and Ocean Research (EOR) Limited's inFOcus geographic data management software that interfaces to the QUIKMAP mapping engine. Work done under previous contracts has involved the agglomeration of information sets relating to granular resources and organization of the information into a working management tool. The objectives under this contract included the following:

1. Review and update the "Map Listings" database prepared by EOR for DIAND on previous contracts against existing DIAND digital data (databases, basemaps, etc.) for Northern Granular Resources and against hard copy maps and reports currently stored at EOR.
2. Add to the above database, the series of maps of the Beaufort Sea, developed by Steve Blasco of the Atlantic Geoscience Center (AGC), and include the following specific themes under items to be digitized as part of this contract: physiographic provinces, Holocene sediment thickness and sedimentation rates.
3. Review the DIAND holdings and list any other mapped information on granular resources and other related themes that have not yet been digitized, and prepare a "Candidate list," from which candidates for digitization could be chosen
4. Digitize selected information, based on feedback from the Scientific Authority
5. Prepare a series of maps to demonstrate any newly digitized information
6. Update the "Map Listings" database, to indicate newly digitized information
7. Return all DIAND maps, reports, and hard copy information supplied by DIAND to EOR on this and previous contracts

8. Provide map products as specified in the contract, including NTS maps, DCW for NWT and Yukon, NATLUS, QUIKMAP for Windows, and QUIKIMAGE
9. Project report, at end of project.

New Digital Maps & Databases

Beaufort Bathymetry & Physiographic Regions
O'Connor & Assoc. Ltd.

Scale

Digitized at a scale of 1:250,000.

Projection

Digitized in Transverse Mercator

Process

Using the O'Connor basemap bathymetric contours were digitized as separate lines and the appropriate values attached to those lines. On the same basemap the physiographic regions' boundary lines were digitized as a single basemap layer.

Problems

Due to the length of the O'Connor Maps it was necessary to calibrate only small sections of the map at a time digitize data and then re-calibrate in a new area of the map. This was the only way to maintain a RMS value that was accurate enough for digitizing.

Format

The bathymetric and physiographic information is stored as database and basemap format. The basemap format was then used as the background layer on which the other O'Connor data was digitized.

File Names

The bathmetric and physiographic database is known as BATHY.dbf the memo file containing polygon data is known as BATHY.fpt. The bathmetric and physiographic basemap is known as BATHY.bmf.

Sedimentation Rate Beaufort
O'Connor & Assoc. Ltd.

Scale

Digitized at a scale of 1:250,000 Sedimentation values are expressed as (mm/a).

Projection

Digitized in Transverse Mercator

Process

Using the bathymetry basemap, including the physiographic regions, each polygon area from the hard copy map which contained data was digitized as a separate polygon and assigned a unique key identifier which uses a two letter code representing the region the polygon is in. For example a polygon in the Niglik Channel is digitized and assigned a

key "NC01_<0.5". NC represents the Niglik Channel, 01 is a sequential number in order of digitizing followed by an underscore, space, followed by the sedimentation rate value for that polygon. The sedimentation rate values are also stored separately within the database field entitled SED_RATE.

As an additional exercise the sedimentation rate values were grouped into range of minimum and maximum values and the groups' color coded.

Problems

Due to the length of the hardcopy O'Connor maps it was necessary to calibrate small sections of the map, digitize data and then re-calibrate in a new area of the map. This was the only way to maintain a RMS value that was accurate enough for digitizing.

Format

The sedimentation rates are stored as database information only.

File Names

The sedimentation rate database is known as SED_RATE.dbf the memo file containing polygon data is known as SED_RATE.fpt.

Holocene Sediment Thickness Beaufort O'Connor & Assoc. Ltd.

Scale

Digitized at a scale of 1:250,000. Sediment thickness is expressed in meters.

Projection

Digitized in Transverse Mercator

Process

Using the bathymetry basemap, including the physiographic regions, each polygon area from the hard copy map which contained data was digitized as a separate polygon and assigned a unique key identifier which uses a two letter code representing the region the polygon is in. For example a polygon in the Tingmiark Plain is digitized and assigned a key "TP03_7.0" TP represents the Tingmiark Plain, 03 is the sequential number in order of digitizing, followed by an underscore space followed by the sediment thickness in meters for that polygon. The sediment thickness values are also stored separately within the database field entitled SED_THIK.

As an additional exercise the sediment thickness values were grouped into range of minimum and maximum values and the groups' color coded.

Problems

Due to the length of the hardcopy O'Connor maps it was necessary to calibrate small sections of the map, digitize data and then re-calibrate in a new area of the map. This was the only way to maintain a RMS value that was accurate enough for digitizing.

Format

The sediment thickness values are stored as database information only.

File Names

The sediment thickness database is known as SED_THIK.dbf. The memo file containing polygon data is known as SED_THIK.fpt.

Location of Bathymetric Shadow Zones
O'Connor & Assoc. Ltd.

Scale

Digitized at a scale of 1:250,000.

Projection

Digitized in Transverse Mercator

Process

Using the bathymetry basemap including the physiographic regions, each polygon area from the hard copy map was digitized as a separate polygon and assigned a numeric identifier which is a sequential representation of the order in which the areas were digitizing. The bathymetric shadow zones have no other attributes or numerical values.

Problems

Due to the length of the hardcopy O'Connor maps it was necessary to calibrate small sections of the map, digitize data and then re-calibrate in a new area of the map. This was the only way to maintain a RMS value that was accurate enough for digitizing.

Format

The bathymetric shadow zones are stored as database information only.

File Names

The bathymetric shadow zones database is known as SHADOWS.dbf. The memo file containing polygon data is known as SHADOWS.fpt.

Edlok Site Survey: Structure on Horizon 1
Late Miocene Unconformity

Scale

Digitized at a scale of 1:10,000 with a contour interval of two meters.

Projection

Digitized in Transverse Mercator

Process

Using the EDLOK basemap structure contours were digitized as separate lines and the appropriate values attached to those lines.

Problems

No significant problems were encountered. Digitizing was straight forward and the RMS error was well within the acceptable level.

Format

The Structure on Horizon 1(Late Miocene Unconformity) is stored as database information only.

File Names

The Structure on Horizon 1(Late Miocene Unconformity) database is known as HORIZON1.dbf. The memo file containing polygon data is known as HORIZON1.fpt.

Edlok Site Survey: Anomaly Map
Geomarine Assoc. Ltd.

Scale

Digitized at a scale of 1:10,000 with a contour interval of two meters.

Projection

Digitized in Transverse Mercator

Process

Using the EDLOK basemap structure contours were digitized as separate lines and the appropriate values attached to those lines.

Problems

No significant problems were encountered. Digitizing was straight forward and the RMS error was well within the acceptable level.

Format

The anomaly map is stored as database information only.

File Names

The anomaly map database is known as ANOMALY.dbf. The memo file containing polygon data is known as ANOMALY.fpt.

Banks Island Borrow Study Survey #2, Cape Kellet Fix Mark Dome Survey

Scale

Digitized at a scale of 1:50,000 with a contour interval of two meters.

Projection

Digitized in Transverse Mercator

Process

The Banks Island map digitized into two major themes: bathymetry and geology. The bathymetric data was digitized and saved in basemap and database format. The geological information is saved as database information.

Problems

No significant problems were encountered. Digitizing was straight forward and the RMS error was well within the acceptable level.

Format

The bathymetric data was digitized and saved in basemap and database format. The geological information is saved as database information.

File Names

The bathymetric data was digitized and saved in QUIKMAP basemap format as BANKS_BA.BMF and database format as BANKS_BA.DBF and the memo file containing polygon data is known as BANKS_BA.FPT. The geological information is saved as database information and is saved in a file called BANKS.DBF and the memo file containing polygon data is known as BANKS.FPT.

Candidates Not Digitized

As a requirement of this contract Earth & Ocean Research reviewed your digital data holdings against the data previously digitized by EOR for the Department of Indian Affairs & Northern Development on previous contracts. The hard copy data sources were subdivided into two broad categories those being, track plots maps and non-track plots maps. Track plot maps were not digitized unless specifically requested.

The following lists of maps contain non-track plot data that was reviewed by the scientific authority and for the stated reasons was not digitized by EOR for this contract.

Atlantic Geoscience Center (Blasco Maps*)

O'Connor & Assoc. Ltd.	Summary of Ice Info. 1973 to 1984	1:250,000	85/04/15
O'Connor & Assoc. Ltd.	Sea Floor Gradient Beaufort Sea	1:250,000	85/09/16
O'Connor & Assoc. Ltd.	King Point Quarry 1985 Borehole Locations	1:10,000	85/06/17

The scientific authority indicated that the maps listed above were of marginal value for digitizing and therefore were not digitized under this contract.

The Sachs Harbour map is not georeferenced and would require considerable effort to accurately position. This map is being kept at EOR in the event that it is decided to have it digitized under a future contract.

French Arctic Con.	Sand & Gravel Aggregate Deposits Sachs Harbour	1:10,000	91/09/00

Edlok Site Survey Maps**

Geomarine Assoc. Ltd.	Edlok Site Survey: Track Plot & Grab Sample Map N/A	1:10,000	
McEllhanney	Edlok-Adlartok Regional Line: Antenna Locations, Multi-Channel Seismic Lines	1:50,000	85/09/22

The scientific authority indicated that the maps listed above were of marginal value for digitizing and therefore they were not digitized under this contract. These maps are being kept at EOR in the event that it is decided to have them digitized under a future contract.

Other Miscellaneous Maps

O'Connor & Assoc. Ltd.	Herchel Island, Distribution & Orientation of Ice Scours	1:50,000	85/02/00

The scientific authority indicated that the map listed above was of marginal value for digitizing and therefore it was not digitized under this contract. This map is being kept at EOR in the event that it is decided to have it digitized under a future contract.

DIAND Map Listings Database

The map listings' database structure was created under a previous DIAND contract. Work completed under the current contract included adding more detail to existing records and creating new records for additional maps. This updated "Map Listings" database (FoxPro .DBF)

*All "Blasco" maps are mylar

** Edlok Maps are paper copies.

contains 279 individual records and fits on a single 3.5" floppy diskette, labeled "DIAND Hard copy Map Catalogue".

During an earlier stage of the contract EOR manually reviewed the DIAND data holdings here at Earth & Ocean Research. From this review a list of maps containing data which was not digitized by EOR was submitted to the scientific authority for review. To complete the updating process each record and consequently each map was visually inspected for information to input into the appropriate fields in the database. At the completion of digitizing the database was again manually reviewed and updated to include new digital maps.

Description of Database "HCMAPCAT.DBF"

Structure for table: c:\\hcmapcat.dbf

Number of data records: 279

Date of last update: 06/29/94

Memo file block size: 64

	Field Name	Type	Width	Decimal
1.	KEY	Numeric	5	
2.	TUBE	Numeric	5	2
3.	SURVEYOR	Character	10	
4.	LOCATION	Character	30	
5.	MAP_NAME	Character	85	
6.	YEAR	Character	4	
7.	SITE_NO	Character	6	
8.	MAPINFO	Character	44	
9.	ENCLOSURE	Character	10	
10.	PROJECT	Character	10	
11.	DIGITL_MAP	Character	12	
12.	DATA_YEARS	Character	10	
13.	MONTH	Character	5	
14.	OTHER	Character	30	
15.	FIELD	Character	6	
16.	DATA_TYPE	Character	1	
17.	MN_LAT_DEG	Numeric	8	5
18.	MN_LON_DEG	Numeric	9	5
19.	MX_LAT_DEG	Numeric	8	5
20.	MX_LON_DEG	Numeric	9	5
21.	STH_NRTHNG	Numeric	7	
22.	NRT_NRTHNG	Numeric	7	
23.	EST_EASTNG	Numeric	6	

24. WST_EASTNG	Numeric	6	
25. SYM_LN_TYP	Numeric	2	
26. SIZE_THICK	Numeric	3	
27. DATA_COLOR	Numeric	3	
28. SYM_ANGLE	Numeric	3	
29. LN_PLY	Memo	10	
30. HATCH_PATT	Numeric	2	
31. LBL_TEXT	Character	30	
32. LBL_SIZE	Numeric	3	
33. LBL_COLOR	Numeric	3	
34. LBL_FONT	Character	8	
35. LBL_ANGLE	Numeric	5	
36. PLY_AREA	Numeric	14	3
37. LN_PLY_LEN	Numeric	14	3
38. HIDN_LEN	Numeric	5	1
39. VIS_LEN	Numeric	14	3
40. OPERATION	Character	5	

Appendix C contains a hard copy report, listing the contents of the DIAND Hard copy Map Catalogue "hcmapcat.dbf" for specified field names. The field names contained in the report were chosen to reflect the most important information available in the database; number of record, tube number (as marked on each map), geographic location of map information, map name and description, and map information describing general content of map.

National Topographic Series Maps

National Topographic Database Series digital basemaps (scale 1:250,000) for the area along the coastline of the Beaufort Sea between Baillie Island and the MacKenzie Delta were ordered from the Products and Services Division of Geomatics Canada in Autocad .DXF line format. Upon receipt of the basemaps EOR converted the .DXF format to QUIKMAP .BMF format, and setup the basemap layer information. A known limitation with the NTS maps is that the contours are collected in a single basemap layer. This limitation is not unique to the maps ordered under this contract, this limitation is a national problem with all NTS maps.

(The scientific authority also expressed interest in maps 106N - Arctic Red Lake, 106O - Travaillant Lake, 97F - Malloch Hill, and 107A - Crossley Lakes, these maps have not been ordered, as they were outside the budget of this contract.)

1. NTS 106M - **Fort MacPherson**
2. NTS 107B - **Aklavik**
3. NTS 107C - **MacKenzie Delta**
4. NTS 107D - **Stanton**
5. NTS 107E - **Cape Dalhousie**

6. NTS 117A - **Blow River**

7. NTS 117D - **Herschel Island**

Partial NTS maps on the Canada - U.S border (117B & 117C) are provided at no additional charge.

Please note that this a proprietary data licensed to the scientific authority. Distribution of this data is strictly prohibited.

Digital Chart of the World

This contract also expanded the regional mapping resources of the Northern Granular Resources Mapping System through the provision of the digital basemap, the "Digital Chart of the World for North West Territories".

A detailed description of the Digital Chart of the World for North West Territories follows in Appendix A.

Digital Chart of the World, North West Territories

The Digital Chart of the World for North West Territories, is a 1:1,000,000 scale map and database compatiable with QUIKMAP for Windows and provided to the scientific authority in QUIKMAP .BMF and .DBF format.

A detailed description of the Digital Chart of the World for North West Territories follows in Appendix A.

Digital Chart of the World, Yukon Territories

Digital basemap, (scale 1:1,000,000); maps, and databases in QUIKMAP .BMF and .DBF format, PC Backup on three 3.5" floppy diskettes.

A detailed description of the Digital Chart of the World for North West Territories follows in Appendix A.

Please note that this a proprietary data licensed to the scientific authority. Distribution of this data is strictly prohibited.

National Land Use Database

This contract also expanded the landuse database resources of the Northern Granular Resources Mapping System through the provision of the digital database, "NATLUS".

NATLUS is a mappable database digitized at various scales which is compatiable with QUIKMAP for Windows and provided to the scientific authority in QUIKMAP .DBF format on a single 3.5" floppy diskette as a self-extracting PKZIP executable file.

A detailed description of NATLUS follows in Appendix B.

Please note that this a proprietary data licensed to the scientific authority. Distribution of this data is strictly prohibited.

QUIKMAP for Windows

A Windows version of the desktop mapping software (QUIKMAP for Windows Version 1.01) was provided as part of this contract to the scientific authority. This software has expanded the functionality of the Northern Granular Resources Mapping system due to the user friendly Windows interface and compatibility with other Windows based products.

This software was developed at EOR and every effort was taken to ensure compatibility with existing QUIKMAP (DOS) basemaps (.bmf/.bml) and database files(.dbf/.lgd). Despite this some problems or incompatibilities may still exist. If you encounter problems reading existing data, please let us know and we will try to diagnose and correct the problems. Note that although this version of QUIKMAP can read/write many QUIKMAP (DOS) files, it may not write formats compatible with the DOS version.

Finally, this version will only read/display database files in the .DBF format. The support for many other formats (including a superset of those currently supported by the DOS version) is available, please contact us for information.

What's New in QUIKMAP for Windows

1. Drawing Speed improvements.
2. More Cartographic Projections.
3. New Toolbar/Ribbon support.
4. QUIKMAP keyboard support.
5. On-line help, context sensitive help and users manual.
6. Support for bitmaps using Windows Paint Brush utility. If you have a Windows viewer you prefer, you can modify the QMW.INI file in your Windows to allow you to access that viewer.
7. Recent files list added to file menu.
8. Clipboard support.
9. New View/Edit Data Table
10. ODBC Support for FOXPRO databases.
11. Drawing order user selectable for databases and basemaps.
12. Transparent area (polygon) hatch patterns.

Please note that this proprietary software licensed to the scientific authority. Distribution of this software is strictly prohibited.

QUIKIMAGE

A Windows version of the raster based image processing software (QUIKIMAGE Version 1.0) was provided as part of this contract to the scientific authority. This software has expanded the functionality of the Northern Granular Resources Mapping system due to the user friendly Windows interface, compatibility with QUIKMAP for Windows, and as a raster based image processing system QUIKIMAGE can create and overlay vector line data on raster satellite images, and aerial photographs.

Full installation and operating instructions are provide in the QUIKIMAGE users manual.

Please note that this is proprietary software licensed to the scientific authority. Distribution of this software is strictly prohibited.

Recommendations for Future Work

With the completion of this contract a number of issues remain regarding the future use of DIAND data holdings. Using the new Windows technology a complete 'conversion' of the DIAND digital inventory should be made creating and converting legend files, .ESL workspace files, and compiling a full colour catalogue of all the maps and databases.

As stated in the section regarding the NTS maps there is a limitation with the topological structure of basemap layer contour lines. The problem of having all the contours collected on to a single basemap.BMF layer could be remedied by EOR in a supplementary contract. However, this work is conditional upon the National Geomatics Center responding to recommendations issued to it by EOR and the Scientific Authority.

Earth & Ocean Research is in the position to provide DIAND with a Windows interface for their IDRISI raster GIS software. Using an interface to IDRISI new interpretative maps and databases could be made, and colour images printed out for DIAND, as part of the above catalogue.

As part of this contract Earth & Ocean Research provided DIAND with a product known as QUIKIMAGE this raster/vector based image processing software has potential for providing DIAND with the ability to use satellite and aerial photography for map making, spatial analysis, and terrain modeling. A pilot project to demonstrate the full capabilities of this technology for granular resource management would be worth consideration.

Appendix A

Digital Chart of the World (DCW)

Digital Chart of the World

The Digital Chart of the World (DCW) database is a geographic database designed for use by the military as a small scale basemap. The primary sources of information for the geographic database are the Operational Navigation Charts and the Jet Navigation Charts developed by the Defense Mapping Agency. The DCW Digest format was converted to QUIKMAP basemap and database format for provision to QUIKMAP users.

Digital Chart of the World, Basemaps and Databases

Installation:

The data is stored on floppy disks in PKZIP format . To install, place the first disk in the floppy drive and type :

```
A:\INSTALL A: C:
```

(Where A: is the source drive and C: is the destination directory. The destination may include a path - e.g. C:\CANADA\ )

The install program will unpack the data into the indicated destination. Insert additional disks as requested.

Data Organization:

The basemaps and databases are located in and under the directory named for each region e.g.: Data for NorthWest Territories (NT) is located in the following directory structure :

Directory Structure :

NT

NT\MAPS

NT\MAPS\NT_CSLN ; Coastline , Political Boundaries

NT\MAPS\NT_CONT ; Contours

NT\MAPS\NT_CULT ; Cultural Landmarks

NT\MAPS\NT_DRAI ; Drainage

NT\MAPS\NT_OFTR ; Ocean Features

NT\MAPS\NT_PHSG ; Physiography

NT\MAPS\NT_ROAD ; Roads

NT\MAPS\NT_RAIL ; Railways

NT\MAPS\NT_TRAN ; Transportation Structures

NT\MAPS\NT_UTIL ; Utilities

Each basemap is named with the two letter regional prefix + an underscore character followed by the basemap name (e.g. NT_CSLN).

Databases

Each of the databases included in the DCW is described below in terms of datatype and features. It should be noted that not all features are represented in the NT & YT databases.

The databases are located in the top directory (e.g. NT). They have the same naming scheme as the basemaps except for point data databases. These have the additional letter 'P' at the end of the database name (e.g. NT_POPLP.DBF).

CSLN : Coastline , Political Boundaries

Data Type : Polygons

Feature Codes (POPYTYPE) :

1. Land
2. Open Ocean
3. Polar Ice
4. Pack Ice
5. Shelf Ice

POPL: Populated Places

Data Type : Polygons

Feature Codes (PPPYTYPE) :

1. Built up areas
2. Kampongs (Villages)

POPLP: Populated Places

Data Type : Points

Feature Codes (PPPTTYPE) :

1. Populated Places (no Subcategories)
2. Populated Places (associated with place names in built up areas)
3. Villages
4. Kampongs (Villages)
5. Circular Village

LCOV : Land Cover

Data Type : Polygons

Feature Codes (LCPYTYPE) :

1. Rice Fields
2. Cranberry Bogs
3. Cultivated Areas , Gardens
4. Peat Cuttings
5. Salt Pans
6. Fish Ponds / Hatcheries
7. Quarries/ Strip Mines/ Mine Dumps/ Blasting Areas
8. Oil / Gas Fields
9. Lava Flows
10. Distorted Surface Areas
11. Unconsolidated Materials
12. Landmark Areas , Natural
13. Inundated Areas
14. Undifferentiated Wetlands

VEGA: Vegetation

Data Type : Polygons

Note : This data is limited to the lower 48 US States.

Feature Codes (VGPYTYPE) :

1. Herbaceous Rangeland
2. Shrub and Brush Rangeland
3. Mixed Rangeland
4. Deciduous Forest Land
5. Evergreen Forest Land
6. Mixed Forest Land
7. Bare Ground Tundra
8. Other

AERO : Aeronautical (Airports)

Data Type : Points

Feature Codes (AEPTTYPE) :

1. Active Civil
2. Active Civil and Military
3. Active Military
4. Other
5. Added from source

CULT: Cultural Features

Data Type : Points

Feature Codes : None

The type is indicated by the text field CLPTLABEL.

DRAI: Drainage (Lakes)

Data Type : Polygons

Feature Codes (DNPYTYPE) :

1. Inland Water - Perennial

2. Inland Water - Non Perennial
3. Wet Sand
4. Snow fields , Glaciers , Ice

Basemaps

Each of the basemaps included in the DCW contains a series of layers as described below in terms of layer name and description. It should be noted that not all features are represented in the NT & YT databases.

CSLN: Coastline , Political Boundaries

Layers :

POL10	Coastline
POL7	Coastal Closure Line
POL1	International boundary, Dejure
POL4	Administrative boundary, primary
POL6	Treaty or occupancy line
POL8	Ocean demarcation Line
POL9	Ice line
POL11	Ice/Water line
POL13	International Date Line
POL88	Connector
BOUNDARY	Bounding Polygon

CONT: Contours

Layers :

HYL0	Contour: 0 Feet
HYL1000	Contour: 1000 Feet
HYL2000	Contour: 2000 Feet
HYL3000	Contour: 3000 Feet
HYL4000	Contour: 4000 Feet
HYL5000	Contour: 5000 Feet
HYL6000	Contour: 6000 Feet
HYL7000	Contour: 7000 Feet
HYL8000	Contour: 8000 Feet
HYL9000	Contour: 9000 Feet
HYL10000	Contour: 10000 Feet
HYL11000	Contour: 11000 Feet
HYL12000	Contour: 12000 Feet
HYL13000	Contour: 13000 Feet
HYL14000	Contour: 14000 Feet
HYL15000	Contour: 15000 Feet
HYL16000	Contour: 16000 Feet
HYL17000	Contour: 17000 Feet
HYL18000	Contour: 18000 Feet
HYL19000	Contour: 19000 Feet
BOUNDARY	Bounding Polygon

CULT: Cultural Landmarks

Layers :

CLL1	Aband Tramway
CLL2	Aerial Cable
CLL3	Aerial Cableway
CLL4	Aerial Tramway
CLL5	Area Deliminating Line
CLL6	Barrage
CLL7	Barrages
CLL8	Breakwater
CLL9	Cable
CLL10	Cable Span
CLL11	Cable Spans
CLL12	Cableway
CLL13	Cog Train
CLL14	Dam
CLL15	Drag Strip
CLL16	Flood Control Dams
CLL17	Grand Coulee Dam
CLL18	Jetties
CLL19	Jetty
CLL20	Other/Unknown
CLL21	Pier
CLL22	Piers
CLL23	Sea Walls
CLL24	Tramway
CLL25	Unknown Water Feature
CLL26	Unknown/other Land Feature
CLL27	Unknown/other Water Feature
CLL28	Walls
CLL29	Weir
CLL30	Wharf
BOUNDARY	Bounding Polygon

DRAI: Drainage (Streams)

Layers :

DNL1	Streams,rivers,channelized rivers
DNL2	Inland shorelines
DNL3	Wet sand limits
DNL4	Canals,aqueducts,flumes,penstocks,kanats
DNL5	Glacial limits
DNL6	Snowfield,glacier,land ice to water ice or ocean
DNL8	Connectors
BOUNDARY	Bounding Polygon

OFTR: Ocean Features

Layers :

OFL1	Miscellaneous ocean features
OFL2	Reefs
OFL3	Maritime area limits

BOUNDARY	Bounding Polygon

PHSG: Physiography

Layers :

PHL1	Levees, dikes, and eskers
PHL3	Escarpments, bluffs, cliffs
PHL5	Ice cliffs
PHL6	Crater
BOUNDARY	Bounding Polygon

RAIL: Railroads

Layers :

RRL1	Single track railroads
RRL2	Multiple track railroads
RRL3	Light railroads
RRL8	Connectors
BOUNDARY	Bounding Polygon

ROAD: Roads

Layers :

RDL1	Dual lane highways (divided)
RDL2	Primary or secondary roads or highways
RDL3	Tracks, trails or footpaths
RDL8	Connector
BOUNDARY	Bounding Polygon

TRAN: Transportation Structures

Layers :

TSL1	Roads
TSL2	Railroads
BOUNDARY	Bounding Polygon

UTIL: Utilities

Layers:

UTL1	Power transmission lines
UTL2	Telephone or telegraph lines
UTL3	Above ground pipelines
UTL4	Underground pipelines
BOUNDARY	Bounding Polygon

Appendix B

NATLUS The National Land Use Database System

NATLUS (National Land Use Database for NWT and Yukon in .DBF database format) sent to you on a single 3.5" floppy diskette as a self-extracting PKZIP executable file.

Purpose

The goal of the NATLUS compilation is to create a single source database system that contains accurate polyline information of all restricted access lands in Canada.

Before NATLUS, land use information was dispersed among all levels of government and the private sector with no logical method of cross referencing or unified display. The limitations of hard copy storage of land use boundaries prevents the accurate overlay of multi-source information for land use conflict analysis. The integration of this information into a single database management system provides users with the ability to view and create hard copy output of related land use boundaries, with no restriction of source scale, projection or medium.

Within the inFOcus/QUIKMAP software environment users can use a variety of criteria to select land use information specific to their area of interest, and then display that information on a basemap of the users definition. Individual land use entities, either polyline areas or database points, can be interrogated on screen for specific data information contained in NATLUS, or for user defined, customized, database fields. The data display may be stylized to clarify land use conflict (through hatching, labeling and colourization), and then printed, plotted or exported in several data formats.

Source

The information contained within the NATLUS database system is compiled from dozens of hard copy maps and digital files. The current version, 2.02, (March 1993) contains over 6600 individual database records, each geographically referenced and coded with a unique identifier. When land use features are supplied with polyline information they are displayed on a map as an outlined area. Very small land use features, or those for which an accurate boundary is unavailable, are displayed as symbol points.

Description

The NATLUS master land-use database file, CANATLUS, is part of an integrated system of several files used to describe land-use data. There are currently 8 support database files used to further define field entries contained in the master file and its principle support file, GIMM, though only the master file is required for actual data display. Each support database lists the potential entries of each field as well as the long hand description of a field entry. Through this system of coded cross referencing the user is able to quickly define data search procedures based on specific data classes.

The following are descriptions of the database files used by the NATLUS system.

CANATLUS - A detailed description of each field is given later in this report. In short, it contains: a field for the entity name, a unique identifier, relational fields to other government land-use database, fields to describe land use type, location, status, and the source of the polyline or point location.

DATACATn - Each record of the CANATLUS master file is defined on three levels;

DATACAT1 - Data Category Level 1...General entity type. In the case of CANATLUS all entities refer to land-use, so this support file is not included. It contains a list of several potential entity applications, e.g. land use, political, natural resource, environmental, etc.

DATACAT2 - Data Category Level 2...Land-use general classification. Links to CANATLUS field NATLUTP (National Land Use Type Primary). Land-use definitions are grouped into 7 classes and numbered accordingly. These include; Parks and Recreation, Native Lands, Defense, etc.

DATACAT3 - Data Category Level 3...Specific Land Use type. Links to CANATLUS field NATLUTS (National Land Use Type Secondary) Each potential land use type is given a 3 character code and listed in this file. For example, provincial parks are abbreviated as PVP, national parks as NAP, and ecological reserves as ECR. Refer to this code listing before making data selections based on a specific land use classification.

GIMM - The principle support file, GIMM (Geographic Information Management Master), describes the hard copy or digital source for each entry in the CANATLUS master database file. It contains a list of codes which link to the field GIMMCODE in the CANATLUS database, together with a coded, detailed description of the source map or file from which the entity originated. This is also a mapable database, meaning you can display on a basemap of Canada the geographic extent of each source hard copy map or digital file. Each of the following files are GIMM support databases.

REGION - The geographic region of the source map.

INTEGRIT - Data integrity. Legal, traditional, etc.

QUALCODE - Source data quality code.

SCALCODE - Digitizing scale code.

SRCEINST - Source institution.

FORMCODE - Format code. Describes the format of the source data.

CANATLUS Field Description

Each land use entity is represented by a single database record containing the following fields. Field names are in italics and followed by field type and string length.

Key - Char. 10 This field was originally used as an aid during data compilation but is now available to the user for data management functions such as flagging, sequential numbering, coding, etc.

Name - Char. 45 The official name of the land use feature. This portion of NATLUS is currently under development. Using a relational database structure linking NATLUS to the Toponomy Database of Canada, all named land use records will have the name field populated. A pilot project is complete for British Columbia, completely populating the name field for all named features. Other provinces will follow with each NATLUS revision.

Top_Unq_ID - Char. 7 Relational field for direct correlation of features with the Toponomy Database of Canada's unique identifier.

Fed_Facenum - Char. 6 Relational field for direct correlation of features with the Federal Lands' Database, Facenum - unique identifier.

Con_Newid - Num. 4 Relational field for direct correlation of features with Environment Canada's Conservation Areas Database.

Data_type - Char. 1 Indicates if data is in polyline (P) or symbol (S) form.

Natlusno - Char. 10 The unique identifier for each NATLUS entity. The first two characters of this code indicate the province and the following three characters indicate the land use type (from the Natluts field), numbers are assigned sequentially during compilation.

Prov - Char. 2 Code used to indicate province, also used by Natlusno.

Prov_Descr - Char. 15 Full province name.

Natlutp - Char. 2 NATLUS primary land use type. Field descriptions are contained in support database file DATACAT2.

1. Parks, Recreation, conservation.
2. Native land, native land claims
3. Dept. of National Defense land
4. Natural Resource
5. Urban Areas
6. Utilities
7. Transportation

Natluts - Char. 3 NATLUS secondary land use type. Field descriptions are contained in support database file DATACAT3. Three character code used to define land use category. e.g.

PVP Provincial Park

NIR Native Indian Reserve

Descriptn - Char. 30 Description of land use type coded in Natluts.

Status - Char. 3 Defines land use status.
EST Established
POP Proposed

Milucode - Char. 2 Mining land use Code.

A. Prohibited Access
B. Restricted Activity
C. Conditional Access/Activity
D. Potential Land Use Conflict

Gimmcode - Char. 10 Indicates the hard copy or digital source for the record/feature location. Code definitions available in support database - GIMM. Field population not complete.

Sym_Ln_Typ - Num. 2_0 Symbol and line type codes. Descriptions are found in the QUIKMAP manual.

Size_Thick - Num. 3_0 Size and thickness of the symbol or line. Descriptions are found in the QUIKMAP manual.

Data_Color - Num. 3_0 Color of the symbol or line. Descriptions are found in the QUIKMAP manual.

Sym_Angle - Num. 3_0 Angle of the symbol in degrees.

Ln_Ply - Memo Contains the vector description of polylines, contained in NATLUS.dbf.

Hatch_Patt - Num. 2_0 Hatch pattern of polyline area. Descriptions are found in the QUIKMAP manual.

Lbl_text - Char. 30 User defined label text for map display.

Lbl_size - Num. 3_0 Size in pixels for label text.

Lbl_font - Char. 8 Font of label text. Descriptions are found in the QUIKMAP manual.

Lbl_Color - Num. 3_0 Color of label text. Descriptions are found in the QUIKMAP manual.

Lbl_Angle - Num. 5_0 Angle of label text in degrees.

Pub_Area - Num. 14_3 Published area, either from digital or hard copy source, in hectares.

Ply_Area - Num. 14_3 Polyline area calculated from CANATLUS database in hectares.

Ln_Ply_Len - Num. 14_3 Length of polyline in meters.

Operation - Char. 6 Field used to tag records.
T True = Tagged
F False = Untagged

Structure & Version Number

The NATLUS structure has undergone two major revisions since its original inception. This latest version, 2, includes the addition of the relational field Con_newid, an increase in character length for the name field, and the inclusion of the Pub_area field.

Structural changes are demonstrated with new version numbers. The addition of new data is represented by a change in the revision number, both numbers ascend numerically. The current edition of NATLUS, 2.02, breaks down to version 2, revision .02.

Natlus database files can be ordered in provincial or national format. The first two characters of the database file name indicate the geographic extent of the data, CANATLUS.dbf includes all of Canada while YTNATLUS.dbf includes only data for the Yukon Territories.

Appendix C

Map Listings Database (Hardcopy Report)

Record	Tube	Location	Map_Name	Type
1	1.01	KAUBVIK	Drillsite Survey Esso Resources (Fox Maps)	Drillsite Survey
2	1.02	KADLUK	Drillsite Survey Esso Resources (Fox Maps)	Drillsite Survey
3	1.03	W. NIPTERK	Drillsite Survey Esso Resources (Fox Maps)	Drillsite Survey
4	1.04	NIPTERK	Drillsite Survey Esso Resources (Fox Maps)	Drillsite Survey
5	1.05	KADLUK	Drillsite Survey Esso Resources (Fox Maps)	Drillsite Survey
6	2.01	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
7	2.02	UNARK	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
8	2.03	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
9	2.04	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
10	2.05	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
11	2.06	ISSUNGNAK O-61	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
12	2.07	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
13	2.08	PULLEN E-17	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
14	2.09	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
15	2.10	IVIK	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
16	3.01	82J10-84629	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
17	3.02	ISSUNGNAK O-61	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
18	3.03	AMERK	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
19	3.04	KARNAK K-06	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
20	3.05	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
21	3.06	KADLUK O-07	Drillsite Survey Esso Resources (Fox Maps)	Drillsite Survey
22	3.07	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
23	3.08	(Fox Maps)	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
24	3.09	ISSERK / ITIYOK I-27	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
25	3.10	AMERK O-09	Site Survey Data Esso Resources (Fox Maps)	Site Survey Data
26	4.01	Beaufort Sea	Site Survey Index	Index
27	4.02	Beaufort Sea	BOREHOLE & WELLSITE LOCATIONS	Borehole
28	4.03	Beaufort Sea	Regional Seismic Lines & Site Survey Boundary	Seismic Lines
29	4.04	Beaufort Sea	Regional Seismic Lines & Site Survey Boundary	Seismic Lines
30	4.05	Beaufort Sea	Regional Seismic Lines & Site Survey Boundary	Seismic Lines
31	4.06	Pullen Island	LOCATION MAP PULLEN ISLAND	
32	4.07	KASLUTUT	FIX MARK LOCATION MAP	Fix Mark
33	4.08	SOUTH KOAKOAK	SOUTH KOAKOAK - SHOTPOINT LOCATION MAP	
34	4.09	MacKenzie Bay	REGIONAL TRACK PLOT - ENCL:2	TRAKPLOT
35	4.10	AKPAK WELLSITE	SHOTPOINT LOCATION MAP	
36	4.11	Beaufort Sea	Regional Seismic Lines	Seismic Lines
37	4.12	Beaufort Sea	Regional Seismic Lines	Seismic Lines
38	4.13	Beaufort Sea	Regional Seismic Lines	Seismic Lines
39	4.14	Beaufort Sea	Regional Seismic Lines	Seismic Lines
40	4.15	Beaufort Sea	Regional Seismic Lines	Seismic Lines
41	4.16	Beaufort Sea	Regional Seismic Lines	Seismic Lines
42	4.17	Beaufort Sea	Regional Seismic Lines	Seismic Lines
43	5.01	Beaufort Sea / Mackenzie	SHALLOW SEISMIC DATA 1983-86 - ENCL:1	Seismic Data
44	5.02	Beaufort Sea / Mackenzie	SHALLOW SEISMIC DATA 1983-86 - ENCL:2	Seismic Data
45	5.03	Beaufort Sea / Mackenzie	SHALLOW SEISMIC DATA 1983-86 - ENCL:3	Seismic Data
46	5.04	Beaufort Sea / Mackenzie	SHALLOW SEISMIC DATA 1983-86 - ENCL:4	Seismic Data
47	5.05	Beaufort Sea / Mackenzie	SHALLOW SEISMIC DATA 1983-86 - ENCL:5	Seismic Data
48	5.06	Beaufort Sea / Mackenzie	SHALLOW SEISMIC DATA 1983-86 - ENCL:6	Seismic Data
49	6.01	Beaufort Sea	Index Map	Index
50	6.02	North of Mackenzie Bay	SEISMIC LINES - NORTH OF MACKENZIE BAY	Seismic Lines
51	6.04	Mackenzie Bay	SEISMIC LINES & CORE SITES MACKENZIE BAY	Seismic Lines
52	6.05	Kugmallit Bay	SEISMIC LINES & CORE SITES KUGMALLIT BAY	Seismic Lines
53	6.06	South Central Beaufort Sea	INTERPRETED SEISMIC PROFILE '89	

Record	Tube	Location	Map_Name	Type
54	6.07	Barter Island to Toker Point	GOVERMENT BASEMAPS BATHYMETRY	BATHYMETRY
55	7.01	Beaufort Sea	DUMPSITE PROGRAM EOR SITE B SURVEY TRACK PLOT	TRAKPLOT
56	7.02	Beaufort Sea	DUMPSITE PROGRAM EOR SITE B SURVEY BATHYMETRY	BATHYMETRY
57	8.01	Beaufort Sea	TULLY 86 - CRUISE TRACK PLOT EASTERN PORTION SHEET 3 OF 3	TRAKPLOT
58	8.02	Beaufort Sea	TULLY 86 - CRUISE TRACK PLOT EASTERN PORTION SHEET 1 OF 3	TRAKPLOT
59	8.03	Beaufort Sea	LAUNCH WORK '86	
60	8.04	Beaufort Sea	TULLY 86 - CRUISE TRACK PLOT EASTERN PORTION SHEET 2 OF 3	TRAKPLOT
61	8.05	Beaufort Sea	BOREHOLE MTW1: SEISMIC, LITHOLOGIC, AND GEOTECHNICAL CORRELATION	Borehole
62	8.06	Beaufort Sea	TULLY 86 - SEISMIC SECTION TY85035	
63	8.07	Beaufort Sea	TULLY 86 - SEISMIC SECTION TY85023	
64	9.01	NAHIDIK	NAHIDIK 86 - AGC/BIO - SEISMIC LINES - DWG NO. 1	Seismic Lines
65	9.02	AMAULIGAK TO	AMAULIGAK TO NORTH POINT PIPELINE CORRIDOR - GULF -EOR-88-06	
66	9.03	NAHIDIK	NAHIDIK 83 - TRACK LINES	TRAKPLOT
67	9.04	NAHIDIK	NAHIDIK 85 - TRACK PLOT - FEDERAL HIGH RESOLUTION	TRAKPLOT
68	9.05	NAHIDIK	NAHIDIK 83 - NAVIGATION	
69	9.06	NAHIDIK	NAHIDIK 86 - AGC/BIO SEISMIC LINES - DWG NO. 2	Seismic Lines
70	9.08	NAHIDIK	NAHIDIK 86 - AGC/BIO SEISMIC LINES - DWG NO. 1	Seismic Lines
71	9.09	NAHIDIK	NAHIDIK 86 - AGC/BIO ICE SCOUR LINES - DWG NO. 1	Ice Scour
72	9.10	NAHIDIK	NAHIDIK 86 - AGC/BIO ICE SCOUR LINES - DWG NO. 2	Ice Scour
73	9.11	NAHIDIK	NAHIDIK 88 - CES - SEISMIC SHOTPOINT LOCATIONS	
74	9.12	NAHIDIK	NAHIDIK 88 - CES - SEISMIC SHOTPOINT LOCATIONS ISSERK AREA	
75	10.01	MACKENZIE TROUGH	OCCUR. OF HIGH APPLITUDE (POSSIBLY GAS CHARGED) REFLECTORS - ENCL 32	
76	10.02	MACKENZIE TROUGH	TIME STRUCTURE ON HORIZON 6 - ENCL 31, 84-35	Horizon
77	10.03	MACKENZIE TROUGH	TIME STRUCTURE ON HORIZON 5 - ENCL 29, 84-35	Horizon
78	10.04	YUKON SHELF	SHALLOW BURIED CHANNELS ON THE YUKON SHELF - ENC 18	
79	10.05	YUKON SHELF	SURFICIAL SEISMO STRATIGRAPHY - 85	Stratigraphy
80	10.06	YUKON SHELF	SOUTHERN BEAUFORT SEA - SURVEY LOCATION MAY - 84-35	
81	10.07	YUKON SHELF	MICROPROFILER CORSS-SECTIONS 1 - ENCL 8, 84-35	
82	10.08	YUKON SHELF	SURFICIAL SEDIMENTS VISUAL DESCRIPTIONS - ENCL. 5, 84-35	
83	10.09	YUKON SHELF	BOTTOM SAMPLE LOCATIONS - ENCL. 4, 84-35	
84	10.10	MACKENZIE TROUGH	THICKNESS OF SEDIMENTS ON HORIZON 4 - ENCL 28, 84-35	Horizon
85	10.11	MACKENZIE TROUGH	TIME STRUCTURE ON HORIZON 4 - ENCL 27, 84-35	Horizon
86	10.12	MACKENZIE TROUGH	TIME STRUCTURE ON HORIZON 3 - ENCL 26, 84-35	Horizon
87	10.13	MACKENZIE TROUGH	THICKNESS OF SEDIMENTS ON HORIZON 2 - ENCL. 25, 84-35	Horizon
88	10.14	MACKENZIE TROUGH	TIME STRUCTURE ON HORIZON 2 - ENCL 24, 84-35	Horizon
89	10.15	MACKENZIE TROUGH	TIME STRUCTURE ON HORIZON 1 - ENCL 23, 84-35	Horizon
90	10.16	YUKON SHELF	AIRGUN PROFILES 4 - ENCL 22, 84-35	PROFILES
91	10.17	YUKON SHELF	AIRGUN PROFILES 3 - ENCL 21, 84-35	PROFILES
92	10.18	YUKON SHELF	THICKNESS OF SEDIMENTS ON HORIZON 12 - ENCL 16, 84-35	Horizon
93	10.19	YUKON SHELF	SURFICIAL SEISMO STRATIGRAPHY - ENCL 17, 84-35	Stratigraphy

Record	Tube	Location	Map_Name	Type
94	10.20	YUKON SHELF	DEPTH STRUCTURE ON HORIZON 12 - ENCL 15, 84-35	Horizon
95	10.21	YUKON SHELF	THICKNESS OF SEDIMENTS ON HORIZON 9 - ENCL 14, 84-35	Horizon
96	10.22	YUKON SHELF	DEPTH STRUCTURE ON HORIZON 9 - ENCL 13, 84-35	Horizon
97	10.23	YUKON COAST	AIRGUN PROFILES 2 - ENCL 12, 84-35	PROFILES
98	10.24	YUKON COAST	AIRGUN PROFILES 1 - ENCL 11, 84-35	PROFILES
99	10.25	YUKON SHELF	MICORPROFILER CROSS SECTIONS 3 - ENCL 10, 84-35	
100	10.26	YUKON SHELF	MICROFILER CROSS - SECTIONS 2 - ENCL 9, 84-35	
101	10.27	MACKENZIE TROUGH	THICKNESS OF SEDIMENTS ON HORIZON 5 - ENCL 30, 84-35	Horizon
102	11.01	YUKON SHELF	TRACK PLOT '84 M/V BANKSLAND - FIG 7	TRAKPLOT
103	11.02	MACKENZIE BAY	GEOPHYSICAL SURVEY LINES 200-208 M/V BANKSLAND 84	
104	11.03	HERSCHEL ISLAND	GEOPHYSICAL LINES - UNCORRECTED DEPTHS M/V BANKSLAND 84	
105	11.04	YUKON COAST -	HERSCHEL ISLAND - Soundings in Meters - WA 10167, 1984	Soundings
106	11.05	MACKENZIE TROUGH	TRACK PLOT (FIGURE 9) 1984	TRAKPLOT
107	12.01	NETSERK	SURVEY OF ABANDONED ARTIFICIAL ISLAND	
108	12.02	NETSERK	SURVEY OF ABANDONED ARTIFICIAL ISLAND	
109	12.03	PULLEN PINGOS	ENVIRONMENTAL PROTECTION SERVICE DUMPSITE SURVEY - WA10177	
110	12.04	MACKENZIE TROUGH	ENVIRONMENTAL PROTECTION SERVICE DUMPSITE SURVEY - WA10178	
111	12.05	YUKON COAST	Yukon Coast - Herschel Island - Soundings in Meters	Soundings
112	12.06	BEAUFORT SEA	Beaufort Sea - Survey soundings in meters	Soundings
113	12.07	BEAUFORT SEA	Beaufort Sea - shipping corridor survey soundings in meters	Soundings
114	12.08	BEAUFORT SEA	Beaufort Sea - Soundings in Meters	Soundings
115	12.09	FRANKLIN BAY	FRANKLIN BAY Summer Hbr. & Wise Bay- Soundings in Meters	Soundings
116	12.10	FRANKLIN BAY - WISE	FRANKLIN BAY - Wise Bay- Soundings in Meters	Soundings
117	12.11	FRANKLIN BAY -	FRANKLIN BAY - SUMMERS HARBOUR Soundings in Meters	Soundings
118	12.12	AMUNDSEN GULF	AMUNDSEN GULF - Soundings in Meters Sheet 6	Soundings
119	12.13	BEAUFORT SEA	BEAUFORT SEA (EASTERN PORTION) - Shipping Corridor Survey Soundings in Meters	Soundings
120	12.14	BEAUFORT SEA	BEAUFORT SEA (CENTRAL PORTION) - Shipping Corridor Survey	Soundings
121	12.15	BAILLIE	BAILLIE ISLAND-OBSERVATION Point-Soundings in meters	Soundings
122	12.16	YUKON	YUKON COAST-HERSCHEL ISLAND soundings in meters	Soundings
123	12.17	KUGMALLIT BAY	KUGMALLIT BAY-Soundings in Meters	Soundings
124	12.18	MACKENZIE RIVER	MacKenzie River Delta-Channel to Oliver Islands Soundings in Meters	Soundings
125	12.19	MACKENZIE RIVER	MacKenzie River Delta-Shallow Bay Soundings in Meters	Soundings
126	12.20	ENTRANCE TO	ENTRANCE to TUKTOYAKTUK Hbr -Soundings in Meters	Soundings
127	12.21	APPROACHES TO	Approaches to TUKTOYAKTUK Hbr -Soundings in Meters	Soundings
128	12.22	AMUNDSEN GULF	AMUNDSEN GULF-Soundings in Meters	Soundings
129	12.23	AMUNDSEN GULF	AMUNDSEN GULF-Soundings in Meters	Soundings
130	12.24	AMUNDSEN GULF	AMUNDSEN GULF-Soundings in Meters	Soundings
131	13.01	YUKON COAST	YUKON COAST - Bathymetry - Contoured from WA10167	BATHYMETRY
132	13.07	WESTERN BEAUFORT	WESTERN BEAUFORT SHELF Granular Resource Potential Sample ID & Description	
133	13.08	YUKON SHELF AND	YUKON SHELF AND SLOPE Near Surface Geology Trak Plot	Trak Plot
134	13.09	WESTERN BEAUFORT	WESTERN BEAUFORT SHELF Granular Resource Potential Seismic stratigraphy	Stratigraphy

Record	Tube	Location	Map_Name	Type
135	13.10	MACKENZIE TROUGH	MACKENZIE TROUGH Axial Line Drawings Line TY85	
136	13.11	Beaufort Sea	BEAUFORT SEA Examination of Reported Shoal	
137	14.02	Beaufort Sea	Beaufort Sea Shallow Seismic Data 1970-1980	Seismic Data
138	14.03	Beaufort Sea	Beaufort Sea Shallow Seismic Data 1981-82	Seismic Data
139	14.04	Beaufort Sea	Beaufort Sea Side Scan Sonar 1970-1980	Side Scan Sonar
140	15.01	KUGMALLIT BAY	KUGMALLIT BAY - Soundings in Meters	Soundings
141	15.02	HUTCHISON BAY	HUTCHISON BAY - Soundings in Feet	Soundings
142	15.03	BEAUFORT SEA	Beaufort Sea - Soundings in Meters	Soundings
143	15.04	BEAUFORT SEA	Beaufort Sea - Soundings in Meters	Soundings
144	15.05	TOKER PT. TO	TOKER PT. TO HUTCHISON BAY Soundings in Feet	Soundings
145	15.06	KUGMALLIT BAY	KUGMALLIT BAY - Soundings in Meters	Soundings
146	15.07	KUGMALLIT BAY	KUGMALLIT BAY - Soundings in Meters	Soundings
147	15.08	KUGMALLIT BAY	KUGMALLIT BAY - Soundings in Meters	Soundings
148	15.09	KUGMALLIT BAY	KUGMALLIT BAY - Soundings in Meters	Soundings
149	15.10	KUGMALLIT BAY	KUGMALLIT BAY - Soundings in Meters	Soundings
150	16.01	Beaufort Sea	Beaufort Sea Borehole & wellsite locations	Borehole
151	16.02	Beaufort Sea	Beaufort Sea Regional Seismic Lines	Seismic Lines
152	16.03	Beaufort Sea	Beaufort Sea Regional Seismic Lines	Seismic Lines
153	16.04	Beaufort Sea	Beaufort Sea Regional Seismic Lines	Seismic Lines
154	16.05	Beaufort Sea	Beaufort Sea Regional Lines Index Map	Index
155	17.01	NORTH UKALERK	NORTH UKALERK - Fix Mark Location Map	Fix Mark
156	17.02	ISSERK	Isserk - Fix Mark Location Map	Fix Mark
157	17.03	IMMIUGAK SITE	IMMIUGAK SITE - Site Track Plots Test Location Encl.	TRAKPLOT
158	17.04	BEAUFORT SEA	BEAUFORT SEA Regional Line Interpretations/Fix Mark Location Map	Fix Mark
159	17.05	ONKSOK	ONKSOK - Fix Mark Location Map	Fix Mark
160	17.06	ADLARTOK	ADLARTOK - Site Track Plots Test Location Encl.	TRAKPLOT
161	17.07	SAUVRAK - PITSIULAK	SAUVRAK - PITSIULAK AREA-Fix Mark Location Map	Fix Mark
162	17.08	AMAULIGAK	AMAULIGAK - Fix Mark Location Map	Fix Mark
163	17.09	KOGYUK	KOGYUK - Track Plots	TRAKPLOT
164	18.00	KOGYUK	KOGYUK	
165	18.01	NERLERK RIDGE	NERLERK RIDGE - Shot Point Location Map	Shot Point
166	18.02	HERSCHEL ISLAND	HERSCHEL ISLAND Gravel Search North/Shot Point Location Map	Shot Point
167	18.03	KOGYUK	KOGYUK Fix Mark Location Map	Fix Mark
168	18.04	SOUTH KAGLULIK	SOUTH KAGLULIK - Shot Point Location Map	Shot Point
169	18.05	TIMGMIARK UKALERK	TIMGMIARK UKALERK - Shot Point Location Map	Shot Point
170	18.06	SAUVRAK	SAUVRAK- Preliminary Fix Mark Location Map	Fix Mark
171	18.07	WEST	WEST TINGMIARK,KOGYUK,E AMAULI Region Borrow Investigation	
172	18.08	TINGMIARK - K91	TINGMIARK - K91 Survey Trakplot	TRAKPLOT
173	18.09	ARLUK E-90	ARLUK E-90 Fix Mark Map	Fix Mark
174	18.10	W. TINGMAIRK	W. TINGMAIRK - Fix Mark Location Map	Fix Mark
175	18.11	SAUVRAK - PITSIULAK	SAUVRAK - PITSIULAK AREA - Fix Mark Location Map	Fix Mark
176	18.12	UVILUK	UVILUK - Shot Point Location Map	Shot Point
177	18.13	NORTH ISSUNGNAK	NORTH ISSUNGNAK WELLSITE- Shot Point Location Map	Shot Point
178	18.14	UVILUK P66	UVILUK P66 - Fix Mark Location Map	Fix Mark
179	18.15	RUFUS RIVER & MASIK	RUFUS RIVER & MASIK RIVER AREA Fix Mark Location Map	Fix Mark
180	18.16	SOUTH UKALERK SITE	SOUTH UKALERK SITE Seismic Data Basemap	Seismic Data
181	18.17	HERSCHEL	HERSCHEL Island - Shot Point Location Map	Shot Point
182	18.18	TARSUIT	TARSUIT - Shot Point Location Map	Shot Point
183	18.19	KUGDJUK	KUGDJUK - Fix Mark Location Map	Fix Mark

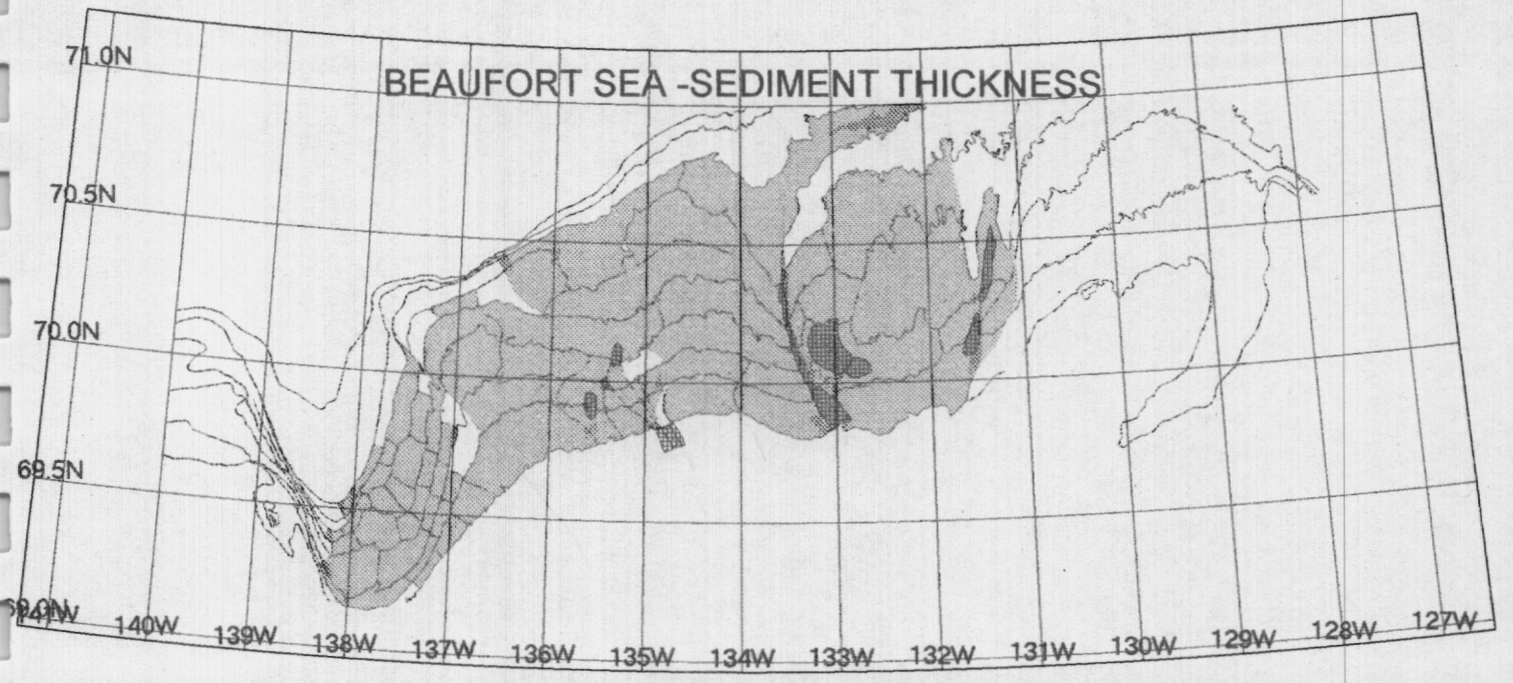
Record	Tube	Location	Map_Name	Type
184	18.20	KRINGALIK	KRINGALIK - Fix Mark Location Map 1981-82	Fix Mark
185	18.21	ISSERK	ISSERK Shotpoint Location Map	
186	19.01	BEAUFORT SEA	BEAUFORT SEA	
187	19.02	BEAUFORT SEA	BEAUFORT SEA Basemap Block Names	
188	19.03	EDLOK - ADLARTOK	EDLOK - ADLARTOK Regional Line Antenna Location	
189	19.04	TULLY	Tully Trak Plots	TRAKPLOT
190	19.05	TULLY	Tully Trak Plots	TRAKPLOT
191	19.06	TULLY	Tully Trak Plots	TRAKPLOT
192	19.07	TULLY	Tully Trak Plots	TRAKPLOT
193	19.08	W.(NATSEK PLAIN)TO	W.(NATSEK PLAIN)TO E.(AMUNDS)	
194	19.09	EDLOK	EDLOK Site Survey Structure on Horizon 1	Horizon
195	19.10	EDLOK	EDLOK Site Survey Anomaly Map	Anomaly
196	19.11	EDLOK	EDLOK Site Bathymetry	BATHYMETRY
197	19.12	EDLOK	EDLOK Site Survey Trak Plot & Grab Samples	TRAKPLOT
198	19.13	UKALERK C-50	UKALERK C-50 Anomaly Map	Anomaly
199	20.01	NERLERK B-67	NERLERK B-67 Fix Mark Location Map	Fix Mark
200	20.02	BEAUFORT SEA	BEAUFORT SEA 1981 Seismic, sites, coreholes	
201	20.03	KENALOOAK J-94	KENALOOAK J-94 Anomaly Map	Anomaly
202	20.04	BAILLIE ISLAND	BAILLIE ISLAND Regional Line DHR-81	
203	20.05	KOPANOAR	KOPANOAR Fix Mark Location Map	Fix Mark
204	20.06	KAGLULIK A-75	KAGLULIK A-75 Anomaly Map	Anomaly
205	20.07	MITERK I-40	MITERK I-40 Refraction Survey Track Plot	TRAKPLOT
206	20.08	SUILIK I-05	SUILIK I-05 Fix Mark Location Map	Fix Mark
207	20.09	BANKS ISLAND	BANKS ISLAND Shot Point Location Map	Shot Point
208	20.10	KOPANOAR F-15	KOPANOAR F-15	
209	20.11	SISSUAK	SISSUAK Site Survey Trak Plot	TRAKPLOT
210	20.12	PUYOK C-100	PUYOK C-100 Fix Mark Location Map	Fix Mark
211	20.13	IRLALUK C-35	IRLALUK C-35 Fix Mark Map	Fix Mark
212	20.14	NATSEK E-56	NATSEK E-56 Survey Trakplot	TRAKPLOT
213	20.15	NERLERK RIDGE	NERLERK RIDGE Location Map	
214	20.16	HERSCHEL ISLAND	HERSCHEL ISLAND Location Map	
215	20.17	NERLERK M-98	NERLERK M-98 Anomaly Map	Anomaly
216	20.18	NATIAK O-44	NATIAK O-44 Fix Mark Location Map	Fix Mark
217	20.19	KOAKOAK B-35	KOAKOAK B-35 Fix Mark Location Map	Fix Mark
218	20.20	SIULIK C-07	SIULIK C-07 Fix Mark Plot	Fix Mark
219	20.21	KAGLULIK P-72	KAGLULIK P-72 Fix Mark Location Map	Fix Mark
220	20.22	AIVERK I-45	AIVERK I-45 Fix Mark Location Map	Fix Mark
221	20.23	KOPANOAR M-35	KOPANOAR M-35 Fix Mark Location Map	Fix Mark
222	20.24	SILUKOAK F-96	SILUKOAK F-96 Anomaly Map	Anomaly
223	20.25	KAGLULIK	KAGLULIK Shot Point Location Map	Shot Point
224	20.26	KOAKOAK D-11 & I-04	KOAKOAK D-11 & I-04 Navigation & Sideline Mosaic	
225	21.01	ERKSAK BORROW	ERKSAK BORROW BLOCK Isopach surficial cover	Isopach
226	21.02	ERKSAK	ERKSAK Granular Materials Depth & Thickness	
227	21.03	SOUTH CENTRAL	SOUTH CENTRAL BEAUFORT SEA Industry Trak Lines Past 1979	
228	21.04	SOUTH CENTRAL	SOUTH CENTRAL BEAUFORT SEA Gov't Trak Plots 1970-83	TRAKPLOT
229	21.05	ERKSAK	ERKSAK Hand Drafted Contour Plots	Contour Plots
230	21.06	ERKSAK	ERKSAK Hand Drafted Contour Plots	Contour Plots
231	21.07	ERKSAK	ERKSAK Hand Drafted Contour Plots	Contour Plots
232	21.08	ERKSAK	ERKSAK Hand Drafted Contour Plots	Contour Plots
233	22.00	YUKON SHELF	YUKON SHELF Working Drawings	Working Drawings
234	22.00	YUKON SHELF	YUKON SHELF Working Drawings	Working Drawings

Record	Tube	Location	Map_Name	Type
235	22.00	MACKENZIE TROUGH	MACKENZIE TROUGH Working Drawings	Working Drawings
236	22.00	MACKENZIE TROUGH	MACKENZIE TROUGH Working Drawings	Working Drawings
237	22.00	EAST MACKENZIE	EAST MACKENZIE TROUGH Working Drawings	Working Drawings
238	22.01	MACKENZIE TROUGH	MACKENZIE TROUGH Working Drawings	Working Drawings
239	22.02	YUKON COAST	YUKON COAST Working Drawings	Working Drawings
240	22.03	YUKON SHELF	YUKON SHELF Working Drawings	Working Drawings
241	22.03	YUKON SHELF	YUKON SHELF Near Surface Geology Trak Plot	TRAKPLOT
242	22.04	WEST HERSCHEL AREA	WEST HERSCHEL AREA Working Drawings	Working Drawings
243	22.05	MACKENZIE TROUGH	MACKENZIE TROUGH Near Surface Geology -Regional Lines	
244	22.07	HERSCHEL BASIN	HERSCHEL BASIN Trak Plot	TRAKPLOT
245	23.00	Yukon Territory	Kingpoint Quarry Project - Topographic Map and Boreholes Dwg #H-1	Borehole
246	23.01	King Point, Yukon	Terrain Map, Drawing #H-2	
247	23.02	Banks Island	Banks Island Borrow Study - Banks Isl. Survey #2 - Cape Kellet Fix Mark Map, PL III	Fix Mark
248	23.03	Herschel Island	Herschel Island Gravel Inventory - Bathymetry - Dwg. D.3	BATHYMETRY
249	23.04	Herschel Island	Herschel Island Gravel Inventory - Loc. of Observed Ripple Marks - Dwg D.5	
250	23.05	Herschel Island	Herschel Island Gravel Inventory - Distribution of Granular Resources - Dwg. D.8	
251	23.06	Herschel Island	Herschel Island Gravel Inv. - Isopach Map of Recent Laminated Sediments - Dwg. D.6	Isopach
252	23.07	Herschel Island	Herschel Isl. Gravel Inv.-Composite Plot of all 1984 Antenna Loc. MV Norweta Dwg D.2	
253	23.08	Herschel Island	Herschel Island Gravel Inv. - Dist. and Orientation of Observed Ice Scour Dwg. d.4	Ice Scour
254	23.09	Herschel Island	Herschel Island Gravel Invetnory - Track Lines - Dwg. D.1	TRAKPLOT
255	23.10	MacKenzie Bay	Test Hole Locations, Drawing #H-3	Test Hole Locations
256	23.11	Banks Island	Banks Island Borrow Study - Banks Isl. Survey #2 - Regional Fix Mark Map, PL II	Fix Mark
257	23.12	Banks Island	Banks Island Borrow Study - Banks Isl. Survey #2 - Regional Line Fix Mark Map, PL I	Fix Mark
258	23.13	Herschel Island	Herschel Island Gravel Inventory - Morphology of Modern Arctic Iaspir - Dwg. D.7	
259	24.01	West. Beaufort Shelf	Granular Resource Potential - Depth Structure on Horizon, 15, 85-37, Encl:6	Horizon
260	24.02	Western Beaufort Sea	Granular Res. Pot - Samp. Indent. and Descrip., 85-37, Encl:8	
261	24.03	West. Beaufort Shelf	Granular Resource Potential - Surficial Seismo Stratigraphy, 85-37, Encl:3	Stratigraphy
262	24.04	Yukon Coast	Near Surface Geology - Bathymetry, 84-35, Encl:2	BATHYMETRY
263	24.05	West. Beaufort Shelf	Granular Resource Potential - Granular Resources, 85-37, Encl:9	
264	24.06	West. Beaufort Shelf	Granular Resource Potential - Isopach on Horizon 11, 85-37, Encl:5	Isopach
265	24.07	West. Beaufort Shelf	Granular Resource Potential - Depth Structure on Horizon 11, 85-37, Encl:4	Horizon
266	24.08	West. Beaufort Shelf	Granular Resource Potential - Location Diagram: Seismic Line Coverage, 85-37, Encl:1	
267	24.09	Yukon Shelf & Slope	Near Surface Geology & Isopach on Horizon 15, 85-37, Encl:7	Isopach
268	25.01	Herschel Island	Herschel Island Sources of rock and granular materials	
269	25.02	Aklavik	Aklavik Sources of rock and granular materials	
270	25.03	Blow River East	Blow River East Sources of rock and granular materials	
271	25.04	Demarcation Point	Demarcation Point Sources of rock and granular materials	
272	25.05	Blow River West	Blow River West Sources of rock and granular materials	
273	26.01	Tuktoyuktuk Peninsula	Holocene Sediment Thickness - Dwg. No. A-3	Holocene

Record	Tube	Location	Map_Name	Type
274	26.02	Tuktoyuktuk Peninsula	Sea Floor Gradient - Dwg. No. A-1	
275	26.03	Tuktoyuktuk Peninsula	Location of Bathymetric Shadow Zones - Dwg. No. A-2	
276	26.04	Tuktoyuktuk Peninsula	Sedimentation Rate - Dwg. No. A-4	
277	26.05	Tuktoyuktuk Peninsula	Summary of Ice Information - Dwg. No. A-5	
278	26.06	Banks Island Sachs	Sand and Gravel Aggregate Deposits - File No. 406-801	
279	26.07	Mackenzie Bay	Kingpoint Quarry Project Borehole Locations Dwg. H-1	Borehole

Appendix D

New Digital Information (Hardcopy Maps)


BEAUFORT SEA -SEDIMENT THICKNESS
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70.5N
70.0N
69.5N
69.0N
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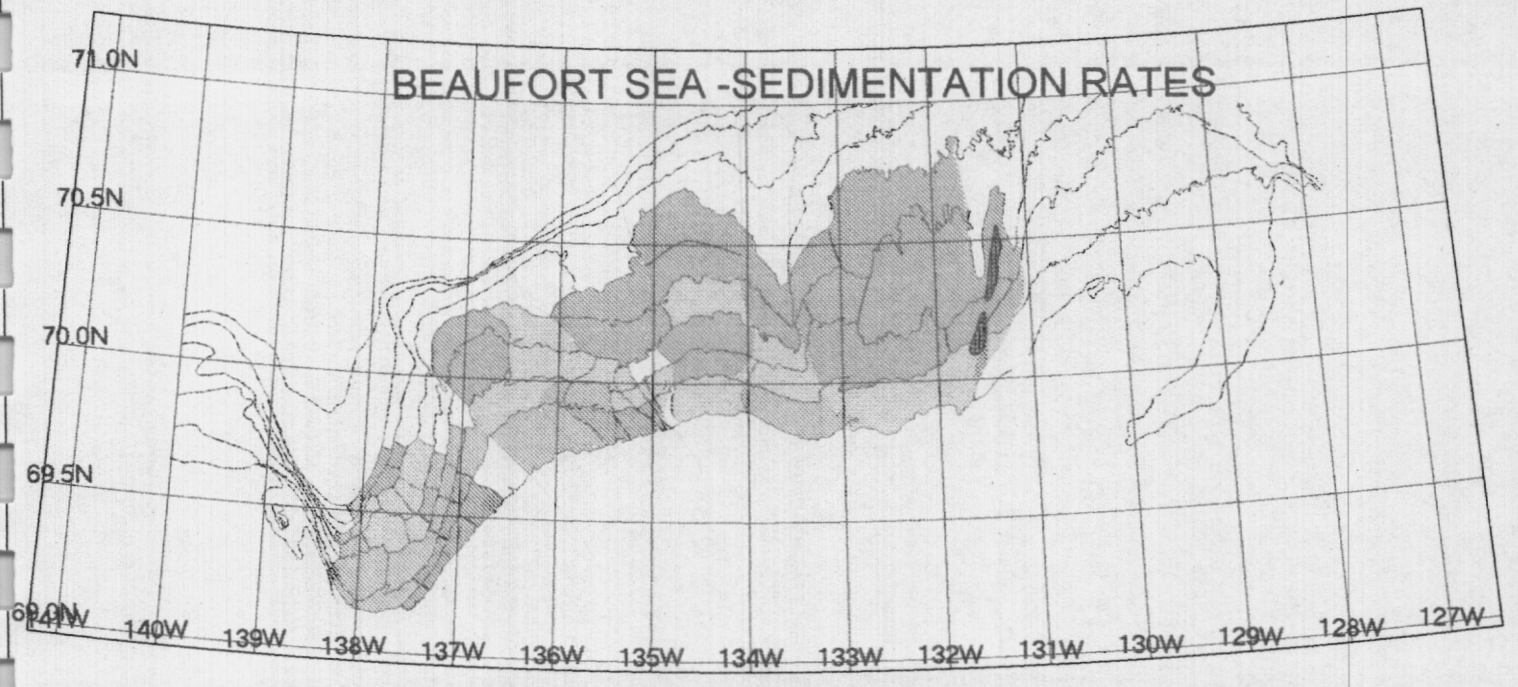
140W
139W
138W
137W
136W
135W
134W
133W
132W
131W
130W
129W
128W
127W


BEAUFORT SEA -SEDIMENTATION RATES
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70.0N
69.5N
69.0N
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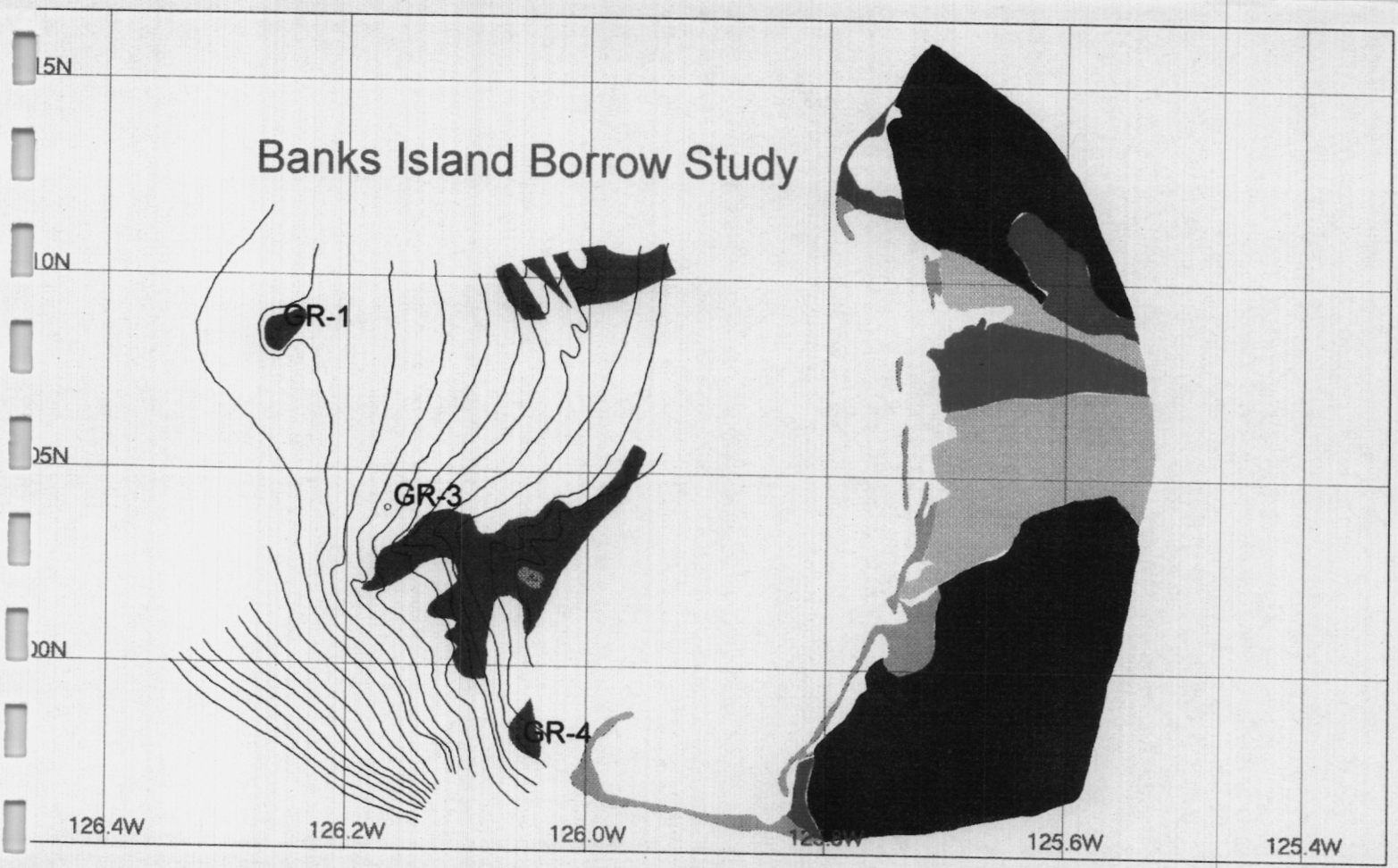
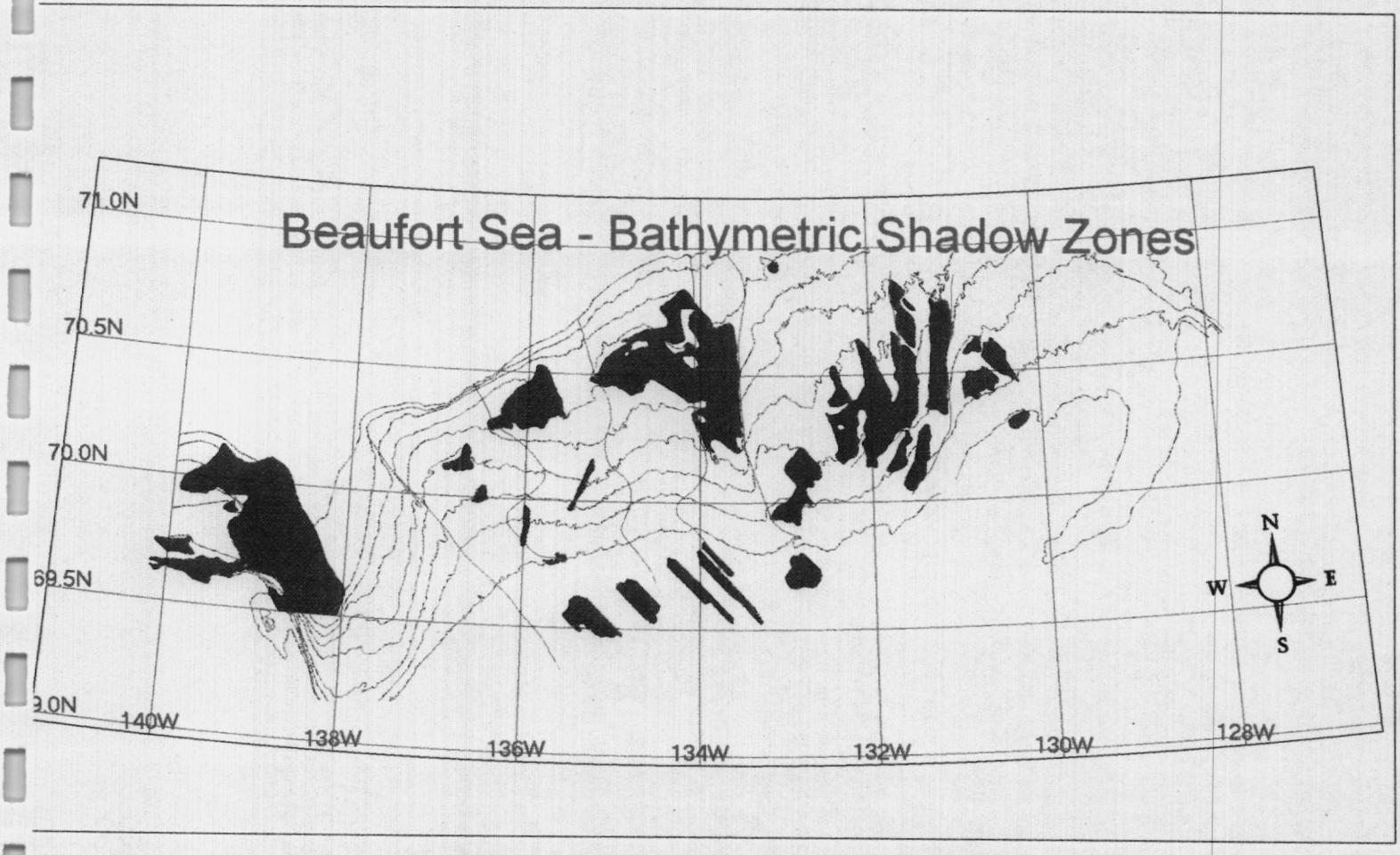
139W
138W
137W
136W
135W
134W
133W
132W
131W
130W
129W
128W
127W


Banks Island Borrow Study
GR-1
GR-3
GR-4
126.4W
126.2W
126.0W
125.6W
125.4W


Beaufort Sea - Bathymetric Shadow Zones
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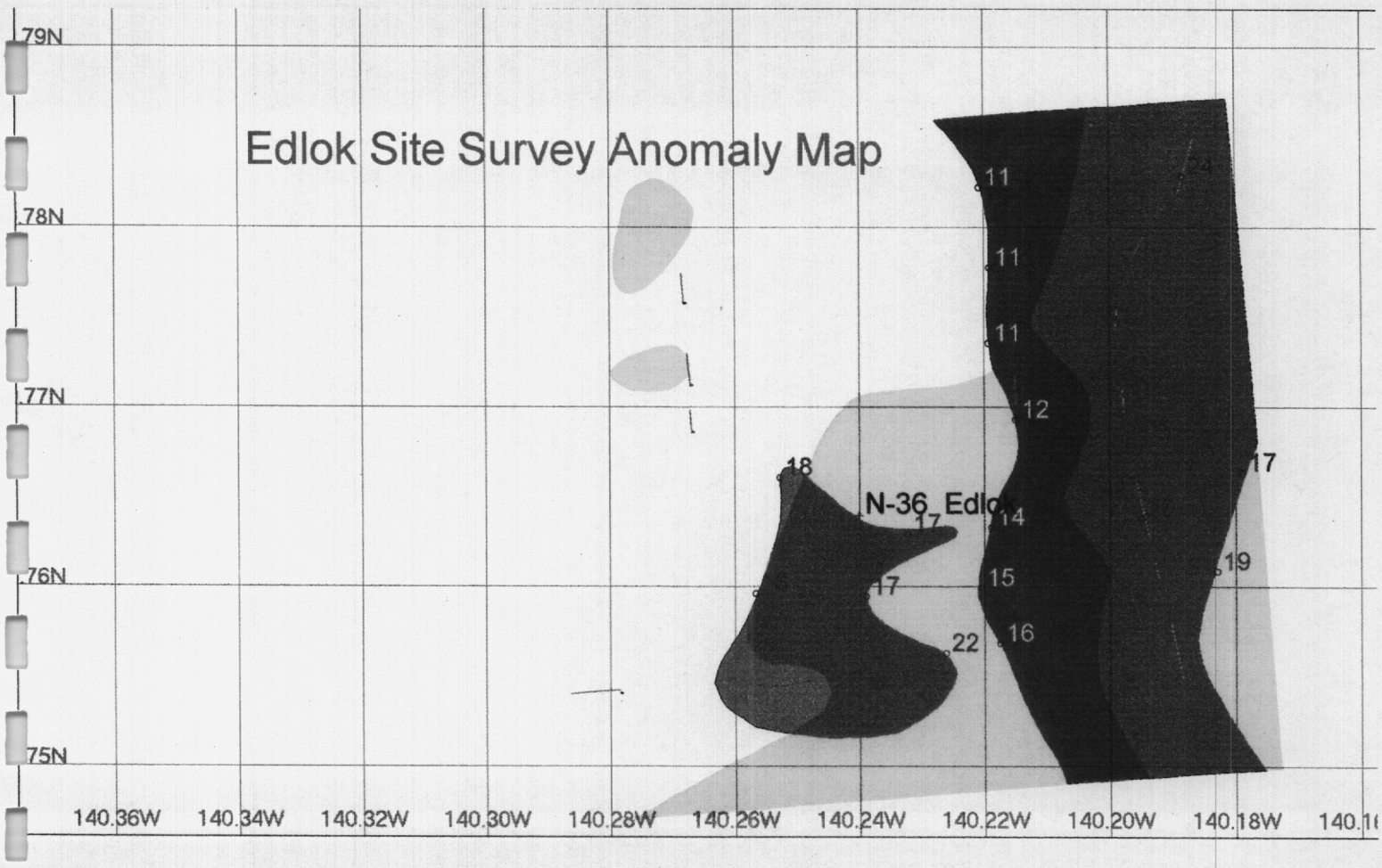
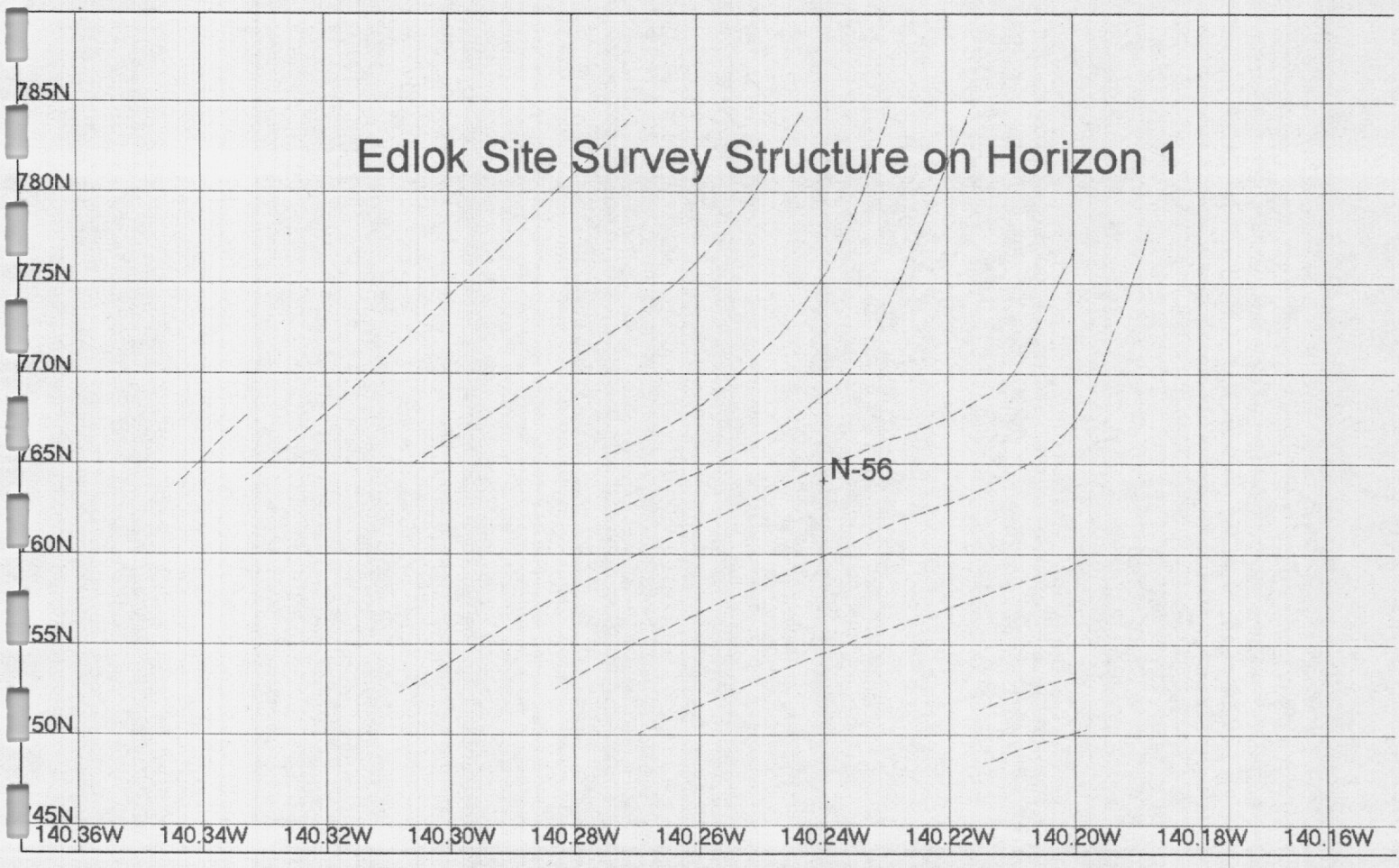
70.5N
70.0N
69.5N
140W
138W
136W
134W
132W
130W
128W
N
W
E
S


Edlok Site Survey Anomaly Map
79N
78N
77N
76N
75N
140.36W
140.34W
140.32W
140.30W
140.28W
140.26W
140.24W
140.22W
140.20W
140.18W
11
11
11
12
18
17
N-36_Edlo
17
14
19
17
15
22
16


Edlok Site Survey Structure on Horizon 1
785N
780N
775N
770N
765N
760N
755N
750N
745N
140.36W
140.34W
140.32W
140.30W
140.28W
140.26W
140.24W
140.22W
140.20W
140.18W
140.16W
N-56