STANDARD OPERATING PROCEDURE MANUAL FOR DAMOS MONITORING ACTIVITIES VOLUME I

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I. STANDARD OPERATING PROCEDURES FOR PRECISION NAVIGATION AND BATHYMETRIC AND SIDE SCAN SURVEYS

1.0 SAIC NAVIGATION AND DATA ACQUISTION SYSTEM

One of the keys to the success of the DAMOS program is the ability to detect subtle changes in the morphology of the sea floor and to accurately locate sampling station in an around the dredged material disposal areas in New England. In order to accomplish this , Science Applications International Corporation (SAIC) has provided a state of the art computerized navigation and data acquisition system. This system is capable of accepting navigational data simultaneously from a large number of commercially available positioning systems. These systems include Del Norte Trisponders, Motorola Mini-Rangers and LORAN-C receivers. In addition, the computer system can accept data from a wide variety of environmental monitors including depth sounders, current meters, CTD's and thermistor arrays. While recording environmental and geodetic positioning data, the SAIC navigation system also provides an easily interpreted graphic position display to the ship's helmsman enabling him to steer the ship to a predetermined destination with a high degree of repeatability. This feature is essential for obtaining sediment and water samples which can be used in time series studies to assess the impact of dredged material disposal. In addition, the helmsman's display enables the ship to steer highly accurate lanes when conducting bathymetric or sidescan sonar surveys. Surveys conducted in this manner can then be statistically compared to generate estimates of disposal volume and to make evident subtle changes which might otherwise be masked by the bottom topography.

1.1 Positioning System

For most of the work conducted under the DAMOS program, a Del Norte Trisponder Positioning system is used to accurately determine the position of the research vessel. Shore stations are established at known points (see Section 1.2) to provide optimum geometry for accurate fixes in the area of interest. The master unit is secured on the research vessel and distances from the fathometer transducer (for bathymetric surveys) or from the sampling wire shieve (for sediment and REMOTS surveys) are measured. At any time the distance from any shore station to the master unit is known to with an accuracy of 1 meter. To maintain this high degree of accuracy, the units are calibrated over a known distance before each deployment.

The SAIC Navigation System records the distance from the two shore stations and sets up an X-Y coordinate system with the zero point at one shore station. All positions taken during surveys are determined as X and Y values in meters. Values for latitude and longitude are calculated for output purposes.

1.2 Geodetic Control Points

In order to accomplish precise navigation , SAIC has developed a system of shore stations covering the New England coast as well as the north shore of Long Island. These shore stations consist primarily of lighthouses maintained by the U.S. Coast Guard but some stations are located over benchmarks established by the U.S. Geological Survey or the Army Corps of Engineers. In all cases, good horizontal control data are available for these stations and their geodetic positions are known to at least third order accuracy. Each disposal site is associated with at least two shore stations and by locating a Del Norte Trisponder at these stations, the SAIC navigation system can calculate the survey vessel's geodetic position to an accurcy of +/- 2 meters.

2.0 PRECISION BATHYMETRY

Using the SAIC Navigation System to provide accurate positioning, bathymetric surveys (see Section 4.0) are conducted using one of several fathometers. For depths up to 50 meters, a Raytheon fathometer with a 200 kHz transducer is used to measure water depth. The signal is digitized and recorded by the system computer with time and position. The fathometer is calibrated with a bar check before and after each use by suspending a reflector plate at fixed distances below the transducer. For depths greater than 50 meters, similar procedures are followed using an EDO 4034A fathometer, EDO 261 C Digitrak unit, and a 24 kHz transducer. For maximum depth resolution, depth is recorded in feet to the nearest tenth.

Bathymetric surveys are usually conducted with survey lanes 25 meters apart. Surveys covering larger areas are conducted with a lane spacing of 50 meters. The smaller lane spacing provides better resolution for volume difference calculations that are performed on subsequent surveys at the same disposal site. In order to calculate volume difference, it is imperative that survey transects be replicated with extreme accuracy and therefore, the video displays for helmsman control on the vessel are critical. To construct contour plots of a disposal site, the recorded depths are corrected for tide and draft and gridded into cells. Each cell is a rectangle centered on the transect with a vertical side equal to the lane width. Each depth measured is entered into a cell and weighted according to its distance from the center of the cell. The weighted depth valve in each cell is used in the contouring routine. Volume difference calculations compare the corrected depth values for each cell with a previous survey and determine the volume change. These volume differences can also be used to construct a plot of difference contours. Vertical profiles of corrected depths along each survey lane can also be constructed.

3.0 SIDE SCAN SURVEYS

Side Scan Sonar Surveys are conducted to characterize the distribution of dredged material within disposal sites by detecting differences in bottom substrate. The reflectance value of a material (sand, mud, rocks, etc.) is recorded on paper as distinct density gradients. Large rocks or obstructions return strong signals while soft material returns significantly weaker ones. Recently deposited dredged material also exhibits a strong reflected signal tht provides an indication of the spatial distribution of material. A Klein Side Scan is used on DAMOS which consists of a towed "fish" that "flys" above the bottom sending and receiving sonar signals from each side. The width of area covered is controlled by the depth above bottom and settings of the instruments. Survey lane spacing is selected to gain complete coverage of the area by overlapping lane information. Time fixes determined from the SAIC Navigation & Data Acquisition System are recorded and marked on the side scan record so that accurate positions can be determined. The actual survey lane traces are then aligned to provide a mosaic of the bottom.

4.0 STANDARD SURVEYS FOR DISPOSAL SITES IN NEW ENGLAND

In order to make the quantitative comparison of bathymetric and sidescan sonar surveys meaningful, it is essential that each survey covers the same geographical area with the degree of accuracy that is allowed by sea conditions and helmsman's skill. For this reason, SAIC has created a number of standard surveys which cover the disposal sites within New England.

What follows is a comprehensive discussion of the surveys currently in use which cover the DAMOS disposal sites. There will be a brief description of the 12 disposal sites currently under study. In addition, there is a detailed description of the shore stations currently in use including the geodetic position of each station as well as the logistics of occupying each station.

There are currently 12 active or recently active disposal sites under study by the DAMOS program. In geographical order from north to south these are:

SITE	STATE	SUB-SITES
ROCKLAND	MAINE	0
PORTLAND	MAINE	0
CAPE ARUNDEL	MAINE	0
ISLES OF SHOALS	NEW HAMPSHIRE	0
FOUL AREA	MASSACHUSETTS	2
BOSTON LIGHTSHIP	MASSACHUSETTS	0
WELLFLEET	MASSACHUSETTS	0
BRENTON REEF	RHODE ISLAND	0
NEW LONDON	CONNECTICUT	4
CORNFIELD SHOALS	CONNECTICUT	0
CENTRAL LONG ISLAND SOUND	CONNECTICUT	10
WESTERN LONG ISLAND SOUND	CONNECTICUT	2

In some cases, a bathymetric survey has been created which covers an entire disposal site while in others, individual surveys have been created to cover separate sub-sites within a larger area where a large survey grid would be impractical. All charts currently in use by DAMOS utilize a Mercator projection and all horizontal and vertical distance units are in meters. In addition, all bearings are in degrees and measured from true north unless otherwise specified.

4.1 Rockland Disposal Site

The Rockland disposal site is a 0.5 nautical mile square centered about 44° 07.1'N by 69° 00.3'W and is located approximately 3.3 NM northeast of Rockland Harbor, Maine. The Del Norte shore stations in use at this site are located at Dead Man's Point (Table I-4-1) Rockport, Maine and Owl's Head Lighthouse (Table I-4-2), in Owl's Head, Maine. There are currently 2 surveys which are run at Rockland. Survey "ROCK" (Table I-4-3, Figure I-4-1) is a bathymetric survey which covers this disposal site while survey "ROCKSCN" (Table I-4-4, Figure I-4-2) is a sidescan sonar survey covering the same area.

4.2 Portland Disposal Site

The Portland Disposal Site is a 1 nautical mile square centered about 43 ° 34.1'N by 70 ° 01.8 'W and is located approximately 6 nautical miles due east of Cape Elizabeth, Maine. The Del Norte shore stations in use at this site are Portland Head (Table I-4-5) and Cape Elizabeth (Table I-4-6) lighthouses. There is currently 1 survey in use at this site. Survey "Portland" (Table I-4-7, Figure I-4-3) is a bathymetric survey which covers this site.

4.3 Cape Arundel Disposal Site

The Cape Arundel Disposal Site is a 500 yard diameter circle centered about 43° 17.8'N by 70° 27.2'W and is located approximately 2 3/4 nautical miles south southeast of Cape Porpoise, Maine. The Del Norte shore stations in use at this site are the Kennebunk River Breakwater light (Table I-4-8) and the Moody Beach fire control tower (Table I-4-9) located in Wells, Maine. There are currently 2 surveys in use at this site. Survey "CADS" (Table I-4-10, Figure I-4-4) is a bathymetric survey covering the site and survey "CADSSCN" (Table I-4-11) Figure I-4-5) is a sidescan sonar survey covering a slightly larger area.

4.4 Isles of Shoals Disposal Site

The Isles of Shoals Disposal Site is a 1 nautical mile square centered about 42° 59.1 'N by 70° 33.1 'W and is located approximately 3 1/3 nautical miles east northeast of White Island in the Isles of Shoals. The Del Norte shore stations in use at this site are the U.S.C.G. benchmark "COVE"

TABLE I-4-1

DEADMAN POINT

GENERAL

Station Name:	Deadman Point
Location:	Rockport, Maine
Purpose:	Rockland Disposal Site GREEN STATION
Structure:	Bronze USGS disk stamped into rock ledge.
North Latitude:	44° 10' 17.815"
West Longitude:	69° 03' 17.790"
Chart:	13006

LOGISTICAL

Contact:	Contact Mr. Fisher at (207) 594-4497 He is the owner of the property and will notify the caretaker that you are coming.
Key:	No key is needed.
Power:	2 12VDC batteries
Street Directions:	Get onto US Route 1 North. Continue for 4-5 miles towards the village of Rockport. Bear about 75° right onto Pascal Avenue. There will be a red schoolhouse on your left. Go through the small village of Rockport, bear right at the library onto Russell Avenue and continue for 1 to 1 1/2 miles. Turn right onto Calderwood Lane and go through the golf course. Continue on into the woods on the main black topped road. Bear left on the gravel driveway. The main road turns to dirt and bears right. Continue to the end and park on the edge of

TABLE I-4-1 (cont.)

the driveway circle. Benchmark is outside of low rock wall at extreme tip of land south of driveway and has a bronze disk stamped into the rock ledge.

PROCEDURE

Needed materials:	1 Del Norte Trisponder 1 Sector Antenna 1 Power Cable 1 Tripod 2 12V Batteries Electrical Tape 1 Compass
Setup:	Mount the trisponder on the tripod directly over the benchmark stamped in the rock ledge. Tape all connections.
Aiming:	Aim the trisponder towards bearing 160 degrees magnetic.

TABLE I-4-2

DESCRIPTION OWL'S HEAD LIGHTHOUSE

GENERAL

Station Name:	Owl's Head
Location:	Rockland, Maine
Purpose:	Rockland Disposal Site RED STATION
Structure:	Cylindrical Lighthouse
North Latitude	44° 05.526'
West Longitude	69° 02.677'
Chart:	13006

LOGISTICAL

Contact:	Contact Lt.jg. Scott Kremmes at 1st District Headquarters at (617) 223-3634, to obtain permission to occupy this station. He will inform the keeper of your intention.
Key:	This station is manned, but key may be needed.
Power:	AC power is available at the top of the lighthouse.
Street Directions:	Take route 1 into Rockland. Turn right onto route 73 to Owl's Head. Follow signs to Owl's Head and turn left onto North Shore Road. Turn left on Main Street across from the Owl's Head post office. Turn left onto Lighthouse Point Road and follow it to the end. Lighthouse should be visible.

TABLE I-4-2 (Cont.)

PROCEDURE

Needed Materials:	1 Del Norte Trisponder 1 Sector Antenna 1 Power Cable 1 5' Iron Mounting Pipe 2 12V Batteries or 1 24V Power Supply Electrical Tape Compass 2 Hose Clamps
Setup:	Mount the trisponder on the railing on the northeast sector of the lighthouse. Tape all connections.
Aiming:	Aim the trisponder towards the disposal buoy at 060° M.

Table I-4-3

Parameters for PARAMIBOCK
Page 1

Transponder parameters:

Antenna height	0.00
Number of stations	2
Station name	OWL'S HEAD LIGHT RED
Station code	72
Latitude	44 05.526N
Longitude	069 02.677W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00
Station name	DEAD MAN'S POINT GREEN
Station code	86
Latitude	44 10.287N
Longitude	069 03.258W
x	-826.87
y	8841.46
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-3 (Cont.)

Parameters for FARMINGU
Page 4

Chart parameters:

Center latitude	44 07.053N
Center longitude	065 06.204W
Center x	3305.00
Center y	2901.55
Scale	1 / 7500
Skew	0.00
Central parallel	44 05.528N
Central meridian	065 02.677W
x offset	0.00
y offset	-3830520.00
Scale at the origin	0.71940195
Mercator projection	
Scaling latitude	44 05.528N

Table I-4-3 (Cont.)

Parameters for [illegible]
Page 5

Survey parameters:

Survey name	ROCKLAND, MAINE
Start latitude	44 07.417N
Start longitude	069 00.650W
Start x	2705.52
Start y	3502.55
Center latitude	44 07.083N
Center longitude	069 00.200W
Center x	3305.52
Center y	2902.55
Lane length	1200.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	15

Survey lanes:

1	Start	44 07.417N	069 00.650W	2705.52	3502.55
	End	44 07.417N	068 59.751W	3905.52	3502.55
2	Start	44 07.390N	068 59.751W	3905.52	3452.55
	End	44 07.390N	069 00.650W	2705.52	3452.55
3	Start	44 07.363N	069 00.650W	2705.52	3402.55
	End	44 07.363N	068 59.751W	3905.52	3402.55
4	Start	44 07.336N	068 59.751W	3905.52	3352.55
	End	44 07.336N	069 00.650W	2705.52	3352.55
5	Start	44 07.309N	069 00.650W	2705.52	3302.55
	End	44 07.309N	068 59.751W	3905.52	3302.55
6	Start	44 07.282N	068 59.751W	3905.52	3252.55
	End	44 07.282N	069 00.650W	2705.52	3252.55
7	Start	44 07.255N	069 00.650W	2705.52	3202.55
	End	44 07.255N	068 59.751W	3905.52	3202.55
8	Start	44 07.228N	068 59.751W	3905.52	3152.55
	End	44 07.228N	069 00.650W	2705.52	3152.55
9	Start	44 07.201N	069 00.650W	2705.52	3102.55
	End	44 07.201N	068 59.751W	3905.52	3102.55
10	Start	44 07.174N	068 59.751W	3905.52	3052.55
	End	44 07.174N	069 00.650W	2705.52	3052.55
11	Start	44 07.147N	069 00.650W	2705.52	3002.55
	End	44 07.147N	068 59.751W	3905.52	3002.55
12	Start	44 07.120N	068 59.751W	3905.52	2952.55
	End	44 07.120N	069 00.650W	2705.52	2952.55
13	Start	44 07.093N	069 00.650W	2705.52	2902.55
	End	44 07.093N	068 59.751W	3905.52	2902.55
14	Start	44 07.066N	068 59.751W	3905.52	2852.55
	End	44 07.066N	069 00.650W	2705.52	2852.55
15	Start	44 07.039N	069 00.650W	2705.52	2802.55
	End	44 07.039N	068 59.751W	3905.52	2802.55
16	Start	44 07.012N	068 59.751W	3905.52	2752.55
	End	44 07.012N	069 00.650W	2705.52	2752.55

Table I-4-3 (Cont.)

Parameters for PARAM:ROCK
Page 2

17	Start___	44 06.985N	069 00.650W	2705.52	2702.55
	End_____	44 06.985N	068 59.751W	3905.52	2702.55
18	Start___	44 06.958N	068 59.751W	3905.52	2652.55
	End_____	44 06.958N	069 00.650W	2705.52	2652.55
19	Start___	44 06.931N	069 00.650W	2705.52	2602.55
	End_____	44 06.931N	068 59.751W	3905.52	2602.55
20	Start___	44 06.904N	068 59.751W	3905.52	2552.55
	End_____	44 06.904N	069 00.650W	2705.52	2552.55
21	Start___	44 06.877N	069 00.650W	2705.52	2502.55
	End_____	44 06.877N	068 59.751W	3905.52	2502.55
22	Start___	44 06.850N	068 59.751W	3905.52	2452.55
	End_____	44 06.850N	069 00.650W	2705.52	2452.55
23	Start___	44 06.823N	069 00.650W	2705.52	2402.55
	End_____	44 06.823N	068 59.751W	3905.52	2402.55
24	Start___	44 06.796N	068 59.751W	3905.52	2352.55
	End_____	44 06.796N	069 00.650W	2705.52	2352.55
25	Start___	44 06.769N	069 00.650W	2705.52	2302.55
	End_____	44 06.769N	068 59.751W	3905.52	2302.55

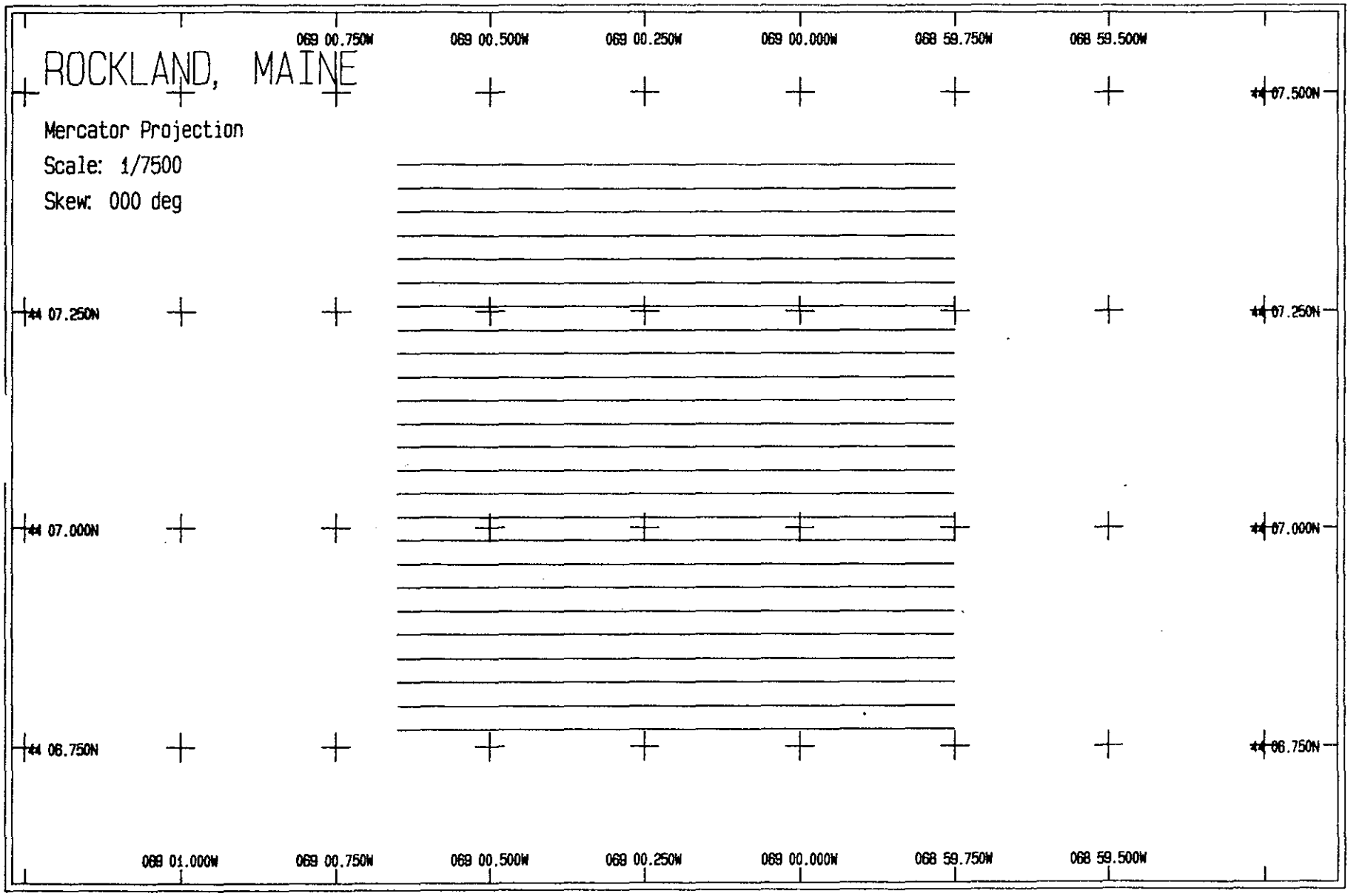

ROCKLAND, MAINE
Mercator Projection
Scale: 1/7500
Skew: 000 deg
069 00.750W
069 00.500W
069 00.250W
069 00.000W
068 59.750W
068 59.500W
44 07.500N
44 07.250N
44 07.000N
44 06.750N
069 01.000W
069 00.750W
069 00.500W
068 00.250W
069 00.000W
068 59.750W
068 59.500W

Figure I-4-1.

Table I-4-4.

Parameters for PARAMPROJECT
Page 4

Chart parameters.

Center latitude	44 07.093N
Center longitude	069 00.201W
Center x	3305.00
Center y	2902.55
Scale	1 / 7500
Skew	0.00
Central parallel	44 05.526N
Central meridian	066 02.577W
x offset	0.00
y offset	-05205520.08
Scale at the origin	0.71940185
Mercator projection	
Scaling latitude	44 05.526N

Table I-4-4 (Cont.)

Parameters for [illegible]
Page 5

Survey parameters:

Survey name	ROCKLAND, MAINE
Start latitude	44 07.417N
Start longitude	069 00.650W
Start x	2705.52
Start y	3502.55
Center latitude	44 07.093N
Center longitude	069 00.200W
Center x	3305.52
Center y	2902.55
Lane length	1200.00
Lane bearing	90.00
Lane spacing	100.00
Number of lanes	13

Survey lanes:

1	Start	44 07.417N	069 00.650W	2705.52	3502.55
	End	44 07.417N	068 59.751W	3905.52	3502.55
2	Start	44 07.363N	069 59.751W	3905.52	3402.55
	End	44 07.363N	069 00.650W	2705.52	3402.55
3	Start	44 07.309N	069 00.650W	2705.52	3302.55
	End	44 07.309N	068 59.751W	3905.52	3302.55
4	Start	44 07.255N	068 59.751W	3905.52	3202.55
	End	44 07.255N	069 00.650W	2705.52	3202.55
5	Start	44 07.201N	069 00.650W	2705.52	3102.55
	End	44 07.201N	068 59.751W	3905.52	3102.55
6	Start	44 07.147N	068 59.751W	3905.52	3002.55
	End	44 07.147N	069 00.650W	2705.52	3002.55
7	Start	44 07.093N	069 00.650W	2705.52	2902.55
	End	44 07.093N	068 59.751W	3905.52	2902.55
8	Start	44 07.039N	068 59.751W	3905.52	2802.55
	End	44 07.039N	069 00.650W	2705.52	2802.55
9	Start	44 06.985N	069 00.650W	2705.52	2702.55
	End	44 06.985N	068 59.751W	3905.52	2702.55
10	Start	44 06.931N	068 59.751W	3905.52	2602.55
	End	44 06.931N	069 00.650W	2705.52	2602.55
11	Start	44 06.877N	069 00.650W	2705.52	2502.55
	End	44 06.877N	068 59.751W	3905.52	2502.55
12	Start	44 06.823N	068 59.751W	3905.52	2402.55
	End	44 06.823N	069 00.650W	2705.52	2402.55
13	Start	44 06.769N	069 00.650W	2705.52	2302.55
	End	44 06.769N	068 59.751W	3905.52	2302.55

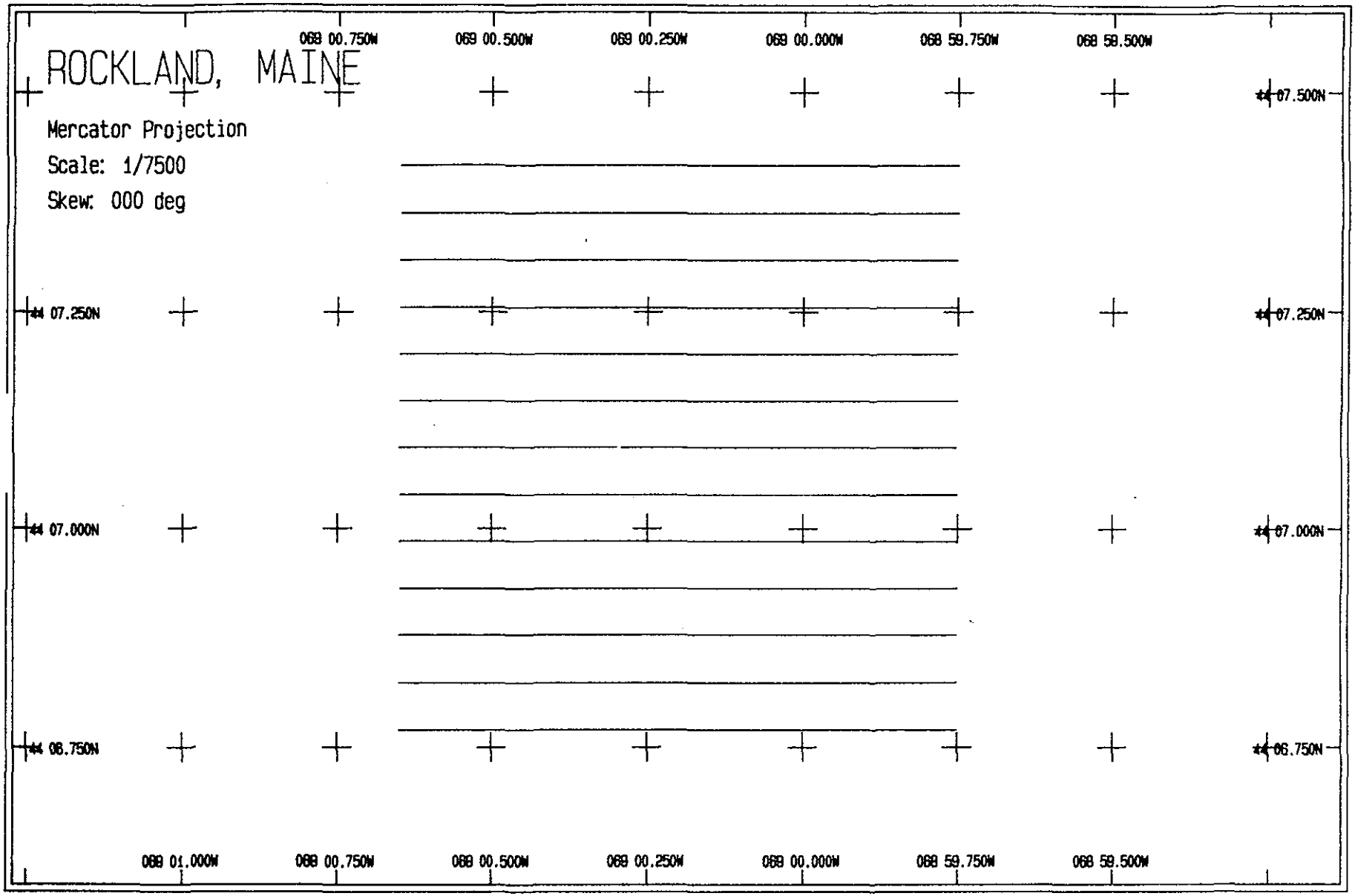

ROCKLAND, MAINE
Mercator Projection
Scale: 1/7500
Skew: 000 deg
069 00.750W
069 00.500W
069 00.250W
069 00.000W
068 59.750W
068 59.500W
07.500N
07.250N
07.000N
06.750N
069 01.000W
069 00.750W
069 00.500W
069 00.250W
069 00.000W
068 59.750W
068 59.500W

Figure I-4-2.

Table I-4-5

PORTLAND HEAD LIGHT

GENERAL

Station name:	Portland Head Light
Location:	Cape Cottage, Maine
Purpose:	Portland Dumpsite GREEN STATION
Structure:	Tall, white cylindrical lighthouse with black steel lightroom. Two catwalks.
North Latitude:	43.3738117
West Longitude:	70.1250233
Chart:	13288

LOGISTICAL

Contact:	Inform Coast Guard Group, South Portland of your intentions at 207-799-5531. The contact there is Mr. Bremmer. The lighthouse is manned by two petty officers and they should also be contacted prior to arrival at 207-799-2661.
Key:	No key is required.
Power:	AC power is available both at ground level and immediately below the lightroom.
Street directions:	From Portland, take the Million Dollar Bridge to South Portland. Bear left (north) onto Rt. 1. Continue about 1.5 miles and turn right onto Shore Road and follow signs to Portland Head or Cape Elizabeth. Continue on Shore Road for 3-4 miles and turn left into Fort Williams State Park. The lighthouse is located there. Park in public parking until contact is made with the keepers. They will then allow you to park inside the compound.

PROCEDURE

Need materials:	1 Del Norte Trisponder 1 sector antenna 1 power cable 1 5' pipe with coupler 1 power supply or 2 batteries 2 hose clamps electrical tape carpenter's level compass
Set up:	Set up the trisponder on the southeast stanchion on the upper catwalk. Run cable through most convenient vent and down to the second level. Tape the cable securely to prevent wind chafe. Power supply or batteries can be placed in the room below the lightroom.
Aiming:	Aim the trisponder towards bearing 129 degrees magnetic.

NOTES

This station is manned continuously. They turn off the beacon when persons are in the tower so try to keep night operations to a minimum. The lighthouse is an historic showplace and they are particular about appearances. Measure offset bearings and distance and inform ship. Take bearings away from steel structures.

Table I-4-6

CAPE ELIZABETH LIGHT

GENERAL

Station name:	Cape Elizabeth Light
Location:	Cape Elizabeth, Maine
Purpose:	Portland Dumpsite RED STATION
Structure:	White cylindrical lighthouse with black steel light room. Two catwalks.
North latitude:	43.3395932
West Longitude:	70.1203402
Chart:	13288

LOGISTICAL

Contact:	Contact Chief Morris at Coast Guard Group, South Portland at 207-799-5531 to gain permission to use the lighthouse.
Key:	Standard A to N key is in SAI possession or is available at Portland Coast Guard.
Power:	AC power is available in the upper level.
Street directions:	From Portland, take the Million Dollar Bridge to South Portland. Bear left (north) onto Rt. 1. Continue about 1.5 miles and turn right onto Shore Road and follow signs to Portland Head and Cape Elizabeth. Continue past Fort Williams about 3-4 ,miles and turn left onto Two Lights Road. In approximately 3 miles, you will encounter Lighthouse Drive on the left. This road leads directly to the lighthouse. Make contact with the man living in the keepers house as this is private property and you should ask permission before using his driveway.

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 power cable 1 5' pipe with coupler 1 power supply or two batteries 2 hose clamps extension cord carpenter's level electrical tape compass
Set up:	Mount the trisponder on eastern stantion preferably on the upper catwalk. Attempt to route the cable into the lighthouse through any convenient opening. If this is not possible, the batteries may be left exposed on the catwalk. Tape all cables to prevent wind chafe.
Aiming:	Aim the trisponder towards bearing 110 degrees magnetic.

NOTES

Measure offset bearing and distance and inform ship. Take bearings away from metalic structures. The Portland Marine Operator transmitting fascilities are located at this site so interference may make VHF communications difficult.

Table I-4-7

Parameters for PARAM:PORTLAND
Page 1

Transponder parameters:

Antenna height	0.00
Number of stations	2
Station name	CAPE ELIZABETH LIGHT
Station code	72
Latitude	43 33.959N
Longitude	070 12.034W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00
Station name	PORTLAND HEAD LIGHT
Station code	82
Latitude	43 37.381N
Longitude	070 12.502W
x	-630.59
y	8339.30
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-7 (Cont.)

Parameters for PARAMIPORTLAND
Page 4

Chart parameters:

Center latitude	43 34.106N
Center longitude	070 02.006W
Center x	13499.55
Center y	272.26
Scale	1 / 4000
Skew	0.00
Central parallel	43 33.959N
Central meridian	070 12.034W
x offset	0.00
y offset	-3896355.93
Scale at the origin	0.72574854
Mercator projection	
Scaling latitude	43 33.959N

Table I-4-7 (Cont.)

Parameters for PARAMPORTLAND
Page 5

Survey parameters:

Survey name	PORTLAND
Start latitude	43 34.242N
Start longitude	070 02.342W
Start x	13050.40
Start y	523.17
Center latitude	43 34.107N
Center longitude	070 02.008W
Center x	13500.40
Center y	273.17
Lane length	900.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	21

Survey lanes:

1	Start	43 34.242N	070 02.342W	13050.40	523.17
	End	43 34.242N	070 01.674W	13950.40	523.17
2	Start	43 34.228N	070 01.674W	13950.40	498.17
	End	43 34.228N	070 02.342W	13050.40	498.17
3	Start	43 34.215N	070 02.342W	13050.40	473.17
	End	43 34.215N	070 01.674W	13950.40	473.17
4	Start	43 34.201N	070 01.674W	13950.40	448.17
	End	43 34.201N	070 02.342W	13050.40	448.17
5	Start	43 34.188N	070 02.342W	13050.40	423.17
	End	43 34.188N	070 01.674W	13950.40	423.17
6	Start	43 34.174N	070 01.674W	13950.40	398.17
	End	43 34.174N	070 02.342W	13050.40	398.17
7	Start	43 34.161N	070 02.342W	13050.40	373.17
	End	43 34.161N	070 01.674W	13950.40	373.17
8	Start	43 34.147N	070 01.674W	13950.40	348.17
	End	43 34.147N	070 02.342W	13050.40	348.17
9	Start	43 34.134N	070 02.342W	13050.40	323.17
	End	43 34.134N	070 01.674W	13950.40	323.17
10	Start	43 34.120N	070 01.674W	13950.40	298.17
	End	43 34.120N	070 02.342W	13050.40	298.17
11	Start	43 34.107N	070 02.342W	13050.40	273.17
	End	43 34.107N	070 01.674W	13950.40	273.17
12	Start	43 34.093N	070 01.674W	13950.40	248.17
	End	43 34.093N	070 02.342W	13050.40	248.17
13	Start	43 34.080N	070 02.342W	13050.40	223.17
	End	43 34.080N	070 01.674W	13950.40	223.17
14	Start	43 34.066N	070 01.674W	13950.40	198.17
	End	43 34.066N	070 02.342W	13050.40	198.17
15	Start	43 34.053N	070 02.342W	13050.40	173.17
	End	43 34.053N	070 01.674W	13950.40	173.17
16	Start	43 34.039N	070 01.674W	13950.40	148.17
	End	43 34.039N	070 02.342W	13050.40	148.17

Table I-4-7 (Cont.)

Parameters for PORTLAND
Page 5

17	Start___	43 34.025N	070 01.342W	13050.40	123.17
	End_____	43 34.025N	070 01.674W	13950.40	123.17
18	Start___	43 34.012N	070 01.674W	13950.40	98.17
	End_____	43 34.012N	070 02.342W	13050.40	98.17
19	Start___	43 33.999N	070 02.342W	13050.40	73.17
	End_____	43 33.999N	070 01.674W	13950.40	73.17
20	Start___	43 33.985N	070 01.674W	13950.40	48.17
	End_____	43 33.985N	070 02.342W	13050.40	48.17
21	Start___	43 33.972N	070 02.342W	13050.40	23.17
	End_____	43 33.972N	070 01.674W	13950.40	23.17

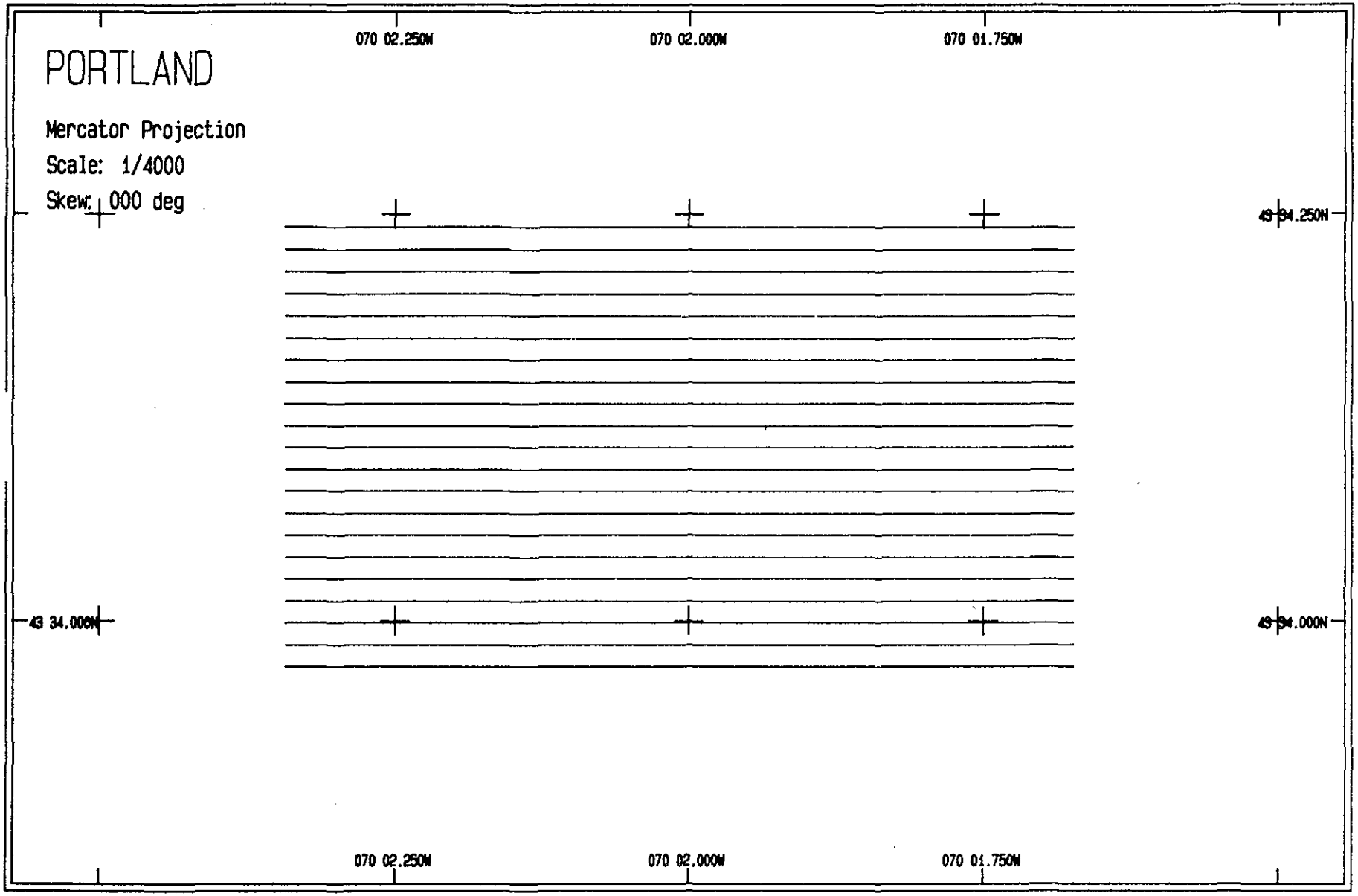

PORTLAND
Mercator Projection
Scale: 1/4000
Skew: 000 deg
070 02.250W
070 02.000W
070 01.750W
43 34.250N
43 34.000N

Figure I-4-3.

Table I-4-8

KENNEBUNK RIVER BREAKWATER LIGHT

GENERAL

Station Name:	Kennebunk River
Location:	Kennebunk, Maine
Purpose:	Cape Arundel Disposal Site GREEN STATION
Structure:	24' high, red, angle-iron framework tower. No catwalk.
North Latitude:	43.2075633
West Longitude:	-70.28590233
Chart:	13286

LOGISTICAL

Contact:	Contact Chief Morris at Coast Guard Group, South Portland at 207-799-5531 to gain permission to use the lighthouse.
Key:	No key is needed
Power:	2 12VDC batteries
Street Directions:	From Kennebunkport. After crossing Kennebunk River going east on Rte. 9 take the first right and follow this road approximately 1.5 miles, past Chick's Marina and the Kennebunk Yacht Club, to a fork in the road. Take the right hand road and 50 yards ahead on the right is the entrance to the town beach parking lot. Go in and lighthouse is visible on left.

Table I-4-8 (Cont.)

PROCEDURES

Needed Materials:	1 Del Norte Trisponder 1 sector antenna 1 power cable 2 5' pipes with couplers 2 hose clamps electrical tape compass
Set Up:	Clamp the 10' section of pipe to the side of the ladder with 4 1/2 or 5' of pipe above the top of the tower. If you do not want to stand on the top of the tower, loosely clamp the pipe, put the trisponder on it, and slide the whole rig up to the desired height. Tape cables to prevent wind chafe.
Aiming:	Aim the trisponder towards bearing 240 degrees magnetic.

Table I-4-9

WELLS BEACH FIRE CONTROL TOWER

GENERAL

Station Name:	Wells Beach
Location:	Wells, Maine
Purpose:	Cape Arundel Disposal Site RED STATION
Structure:	3 story, white and red square tower with catwalk and wooden observation room.
North Latitude:	43.171983
West Longitude:	-70.3432185
Chart:	13286

LOGISTICAL

Contact:	The tower is now owned by Garnsey Bros. Real Estate, and is used as their office. Call Agnes Garthwaite at 207-646-8301 for permission to set-up. Office hourse are 9:15-5:00, and strong efforts to arrive and depart during these hours are advised. Agnes has let us in late in the past, but this is not guaranteed.
Key:	No key is available.
Power:	AC power is available on the 1st and 2nd floors.
Street Directions:	From 95N. Take York exit and follow signs to Rt. 1. Take a right (south-bound) onto Rt. 1 and follow approx. 1 mile to light. Sign for "Wells Beach" on right, take a left down hill, towards coast. Go right, and take a right. Follow along the shore approx. 1.75 miles until tower is visible on left. Tower has a Garnsey Bros. Real Estate sign on it.

Table I-4-9 (Cont.)

PROCEDURES

Needed Materials:	1 Del Norte Trisponder 1 sector antenna 1 power cable 1 5' pipe with coupler 1 power supply or two batteries 2 hose clamps 1 AC extension cord (25-50') electrical tape screwdriver compass
Set Up:	Set up pipe and trisponder on northeast of railing. Run cable through vent on west side of tower. Power supply or batteries can be placed in access hatch.
Aiming:	Aim the trisponder towards bearing 75 degrees magnetic.

Table I-4-10

Parameters for PARAM:CADS
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2
Station name	MOODY BEACH RED
Station code	82
Latitude	43 17.198N
Longitude	070 34.322W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00
Station name	KENNEBUNKPORT BREAKWATER LIGHT G
Station code	92
Latitude	43 20.833N
Longitude	070 28.352W
x	8075.54
y	6744.57
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-10 (Cont.)

Parameters for EMPAM:CMUT
Page 4

Chart parameters:

Center latitude	43 19.027N
Center longitude	070 21.150W
Center x	9702.00
Center y	1535.00
Scale	1 / 4000
Skew	0.00
Central parallel	43 17.158N
Central meridian	070 34.322W
x offset	0.00
y offset	-3883247.09
Scale at the origin	0.72909357
Mercator projection	
Scaling latitude	43 17.188N

Table I-4-10 (Cont.)

Parameters for PARAM:CAUS
Page 5

Survey parameters:

Survey name	CAPE ARUNDEL
Start latitude	43 18.270N
Start longitude	070 27.371W
Start x	9402.00
Start y	1985.00
Center latitude	43 18.027N
Center longitude	070 27.150W
Center x	9702.00
Center y	1535.00
Lane length	600.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	37

Survey lanes:

1	Start	43 18.270N	070 27.371W	9402.00	1985.00
	End	43 18.270N	070 26.928W	10002.00	1985.00
2	Start	43 18.257N	070 26.928W	10002.00	1960.00
	End	43 18.257N	070 27.371W	9402.00	1960.00
3	Start	43 18.243N	070 27.371W	9402.00	1935.00
	End	43 18.243N	070 26.928W	10002.00	1935.00
4	Start	43 18.230N	070 26.928W	10002.00	1910.00
	End	43 18.230N	070 27.371W	9402.00	1910.00
5	Start	43 18.216N	070 27.371W	9402.00	1885.00
	End	43 18.216N	070 26.928W	10002.00	1885.00
6	Start	43 18.203N	070 26.928W	10002.00	1860.00
	End	43 18.203N	070 27.371W	9402.00	1860.00
7	Start	43 18.189N	070 27.371W	9402.00	1835.00
	End	43 18.189N	070 26.928W	10002.00	1835.00
8	Start	43 18.176N	070 26.928W	10002.00	1810.00
	End	43 18.176N	070 27.371W	9402.00	1810.00
9	Start	43 18.162N	070 27.371W	9402.00	1785.00
	End	43 18.162N	070 26.928W	10002.00	1785.00
10	Start	43 18.149N	070 26.928W	10002.00	1760.00
	End	43 18.149N	070 27.371W	9402.00	1760.00
11	Start	43 18.135N	070 27.371W	9402.00	1735.00
	End	43 18.135N	070 26.928W	10002.00	1735.00
12	Start	43 18.122N	070 26.928W	10002.00	1710.00
	End	43 18.122N	070 27.371W	9402.00	1710.00
13	Start	43 18.108N	070 27.371W	9402.00	1685.00
	End	43 18.108N	070 26.928W	10002.00	1685.00
14	Start	43 18.095N	070 26.928W	10002.00	1660.00
	End	43 18.095N	070 27.371W	9402.00	1660.00
15	Start	43 18.081N	070 27.371W	9402.00	1635.00
	End	43 18.081N	070 26.928W	10002.00	1635.00
16	Start	43 18.068N	070 26.928W	10002.00	1610.00
	End	43 18.068N	070 27.371W	9402.00	1610.00

Table I-4-10 (Cont.)

Parameters for PARAM:CADS
Page 6

17	Start	43	18.054N	070	27.371W	9402.00	1585.00
	End	43	18.054N	070	26.928W	10002.00	1585.00
18	Start	43	18.041N	070	26.928W	10002.00	1560.00
	End	43	18.041N	070	27.371W	9402.00	1560.00
19	Start	43	18.027N	070	27.371W	9402.00	1535.00
	End	43	18.027N	070	26.928W	10002.00	1535.00
20	Start	43	18.014N	070	26.928W	10002.00	1510.00
	End	43	18.014N	070	27.371W	9402.00	1510.00
21	Start	43	18.000N	070	27.371W	9402.00	1485.00
	End	43	18.000N	070	26.928W	10002.00	1485.00
22	Start	43	17.987N	070	26.928W	10002.00	1460.00
	End	43	17.987N	070	27.371W	9402.00	1460.00
23	Start	43	17.973N	070	27.371W	9402.00	1435.00
	End	43	17.973N	070	26.928W	10002.00	1435.00
24	Start	43	17.960N	070	26.928W	10002.00	1410.00
	End	43	17.960N	070	27.371W	9402.00	1410.00
25	Start	43	17.946N	070	27.371W	9402.00	1385.00
	End	43	17.946N	070	26.928W	10002.00	1385.00
26	Start	43	17.933N	070	26.928W	10002.00	1360.00
	End	43	17.933N	070	27.371W	9402.00	1360.00
27	Start	43	17.919N	070	27.371W	9402.00	1335.00
	End	43	17.919N	070	26.928W	10002.00	1335.00
28	Start	43	17.906N	070	26.928W	10002.00	1310.00
	End	43	17.906N	070	27.371W	9402.00	1310.00
29	Start	43	17.892N	070	27.371W	9402.00	1285.00
	End	43	17.892N	070	26.928W	10002.00	1285.00
30	Start	43	17.879N	070	26.928W	10002.00	1260.00
	End	43	17.879N	070	27.371W	9402.00	1260.00
31	Start	43	17.865N	070	27.371W	9402.00	1235.00
	End	43	17.865N	070	26.928W	10002.00	1235.00
32	Start	43	17.852N	070	26.928W	10002.00	1210.00
	End	43	17.852N	070	27.371W	9402.00	1210.00
33	Start	43	17.838N	070	27.371W	9402.00	1185.00
	End	43	17.838N	070	26.928W	10002.00	1185.00
34	Start	43	17.825N	070	26.928W	10002.00	1160.00
	End	43	17.825N	070	27.371W	9402.00	1160.00
35	Start	43	17.811N	070	27.371W	9402.00	1135.00
	End	43	17.811N	070	26.928W	10002.00	1135.00
36	Start	43	17.798N	070	26.928W	10002.00	1110.00
	End	43	17.798N	070	27.371W	9402.00	1110.00
37	Start	43	17.784N	070	27.371W	9402.00	1085.00
	End	43	17.784N	070	26.928W	10002.00	1085.00

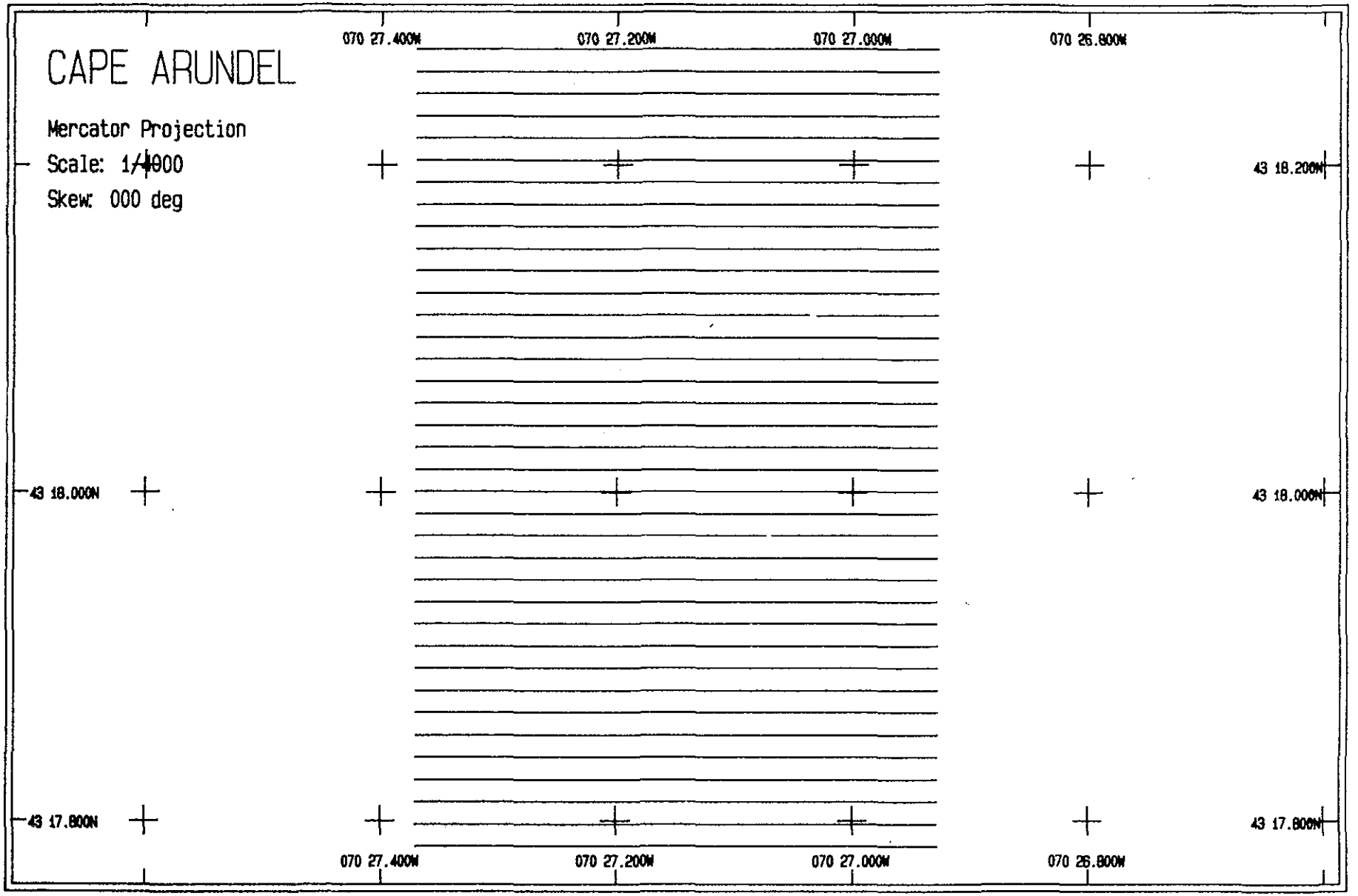

CAPE ARUNDEL
Mercator Projection
Scale: 1/4000
Skew: 000 deg
070 27.400W
070 27.200W
070 27.000W
070 26.800W
43 18.200N
43 18.000N
43 17.800N

Figure I-4-4.

Table I-4-11

Parameters for PARAMICADSSON
Page 4

Chart parameters:

Center latitude	43 18.000N
Center longitude	070 25.632W
Center x	10402.00
Center y	1485.00
Scale	1 / 10000
Skew	0.00
Central parallel	43 17.198N
Central meridian	070 34.322W
x offset	0.00
y offset	-3883247.05
Scale at the origin	0.72909357
Mercator projection	
Scaling latitude	43 17.198N

Table I-4-11 (Cont.)

Parameters for PARAMICADSSON
Page 5

Survey parameters:

Survey name	CAPE ARUNDEL
Start latitude	43 18.486N
Start longitude	070 27.371W
Start x	9402.00
Start y	2385.00
Center latitude	43 18.000N
Center longitude	070 26.632W
Center x	10402.00
Center y	1485.00
Lane length	2000.00
Lane bearing	90.00
Lane spacing	100.00
Number of lanes	15

Survey lanes:

1	Start	43 18.486N	070 27.371W	9402.00	2385.00
	End	43 18.486N	070 25.893W	11402.00	2385.00
2	Start	43 18.432N	070 25.893W	11402.00	2285.00
	End	43 18.432N	070 27.371W	9402.00	2285.00
3	Start	43 18.378N	070 27.371W	9402.00	2185.00
	End	43 18.378N	070 25.893W	11402.00	2185.00
4	Start	43 18.324N	070 25.893W	11402.00	2085.00
	End	43 18.324N	070 27.371W	9402.00	2085.00
5	Start	43 18.270N	070 27.371W	9402.00	1985.00
	End	43 18.270N	070 25.893W	11402.00	1985.00
6	Start	43 18.216N	070 25.893W	11402.00	1885.00
	End	43 18.216N	070 27.371W	9402.00	1885.00
7	Start	43 18.162N	070 27.371W	9402.00	1785.00
	End	43 18.162N	070 25.893W	11402.00	1785.00
8	Start	43 18.108N	070 25.893W	11402.00	1685.00
	End	43 18.108N	070 27.371W	9402.00	1685.00
9	Start	43 18.054N	070 27.371W	9402.00	1585.00
	End	43 18.054N	070 25.893W	11402.00	1585.00
10	Start	43 18.000N	070 25.893W	11402.00	1485.00
	End	43 18.000N	070 27.371W	9402.00	1485.00
11	Start	43 17.946N	070 27.371W	9402.00	1385.00
	End	43 17.946N	070 25.893W	11402.00	1385.00
12	Start	43 17.892N	070 25.893W	11402.00	1285.00
	End	43 17.892N	070 27.371W	9402.00	1285.00
13	Start	43 17.838N	070 27.371W	9402.00	1185.00
	End	43 17.838N	070 25.893W	11402.00	1185.00
14	Start	43 17.784N	070 25.893W	11402.00	1085.00
	End	43 17.784N	070 27.371W	9402.00	1085.00
15	Start	43 17.730N	070 27.371W	9402.00	985.00
	End	43 17.730N	070 25.893W	11402.00	985.00
16	Start	43 17.676N	070 25.893W	11402.00	885.00
	End	43 17.676N	070 27.371W	9402.00	885.00

Table I-4-11 (Cont.)

Parameters for PARAM:CADSSIN
Page 6

17	Start___	43 17.622N	070 27.371W	9402.00	785.00
	End_____	43 17.622N	070 25.893W	11402.00	785.00
18	Start___	43 17.566N	070 25.893W	11402.00	685.00
	End_____	43 17.566N	070 27.371W	9402.00	685.00
19	Start___	43 17.514N	070 27.371W	9402.00	585.00
	End_____	43 17.514N	070 25.893W	11402.00	585.00

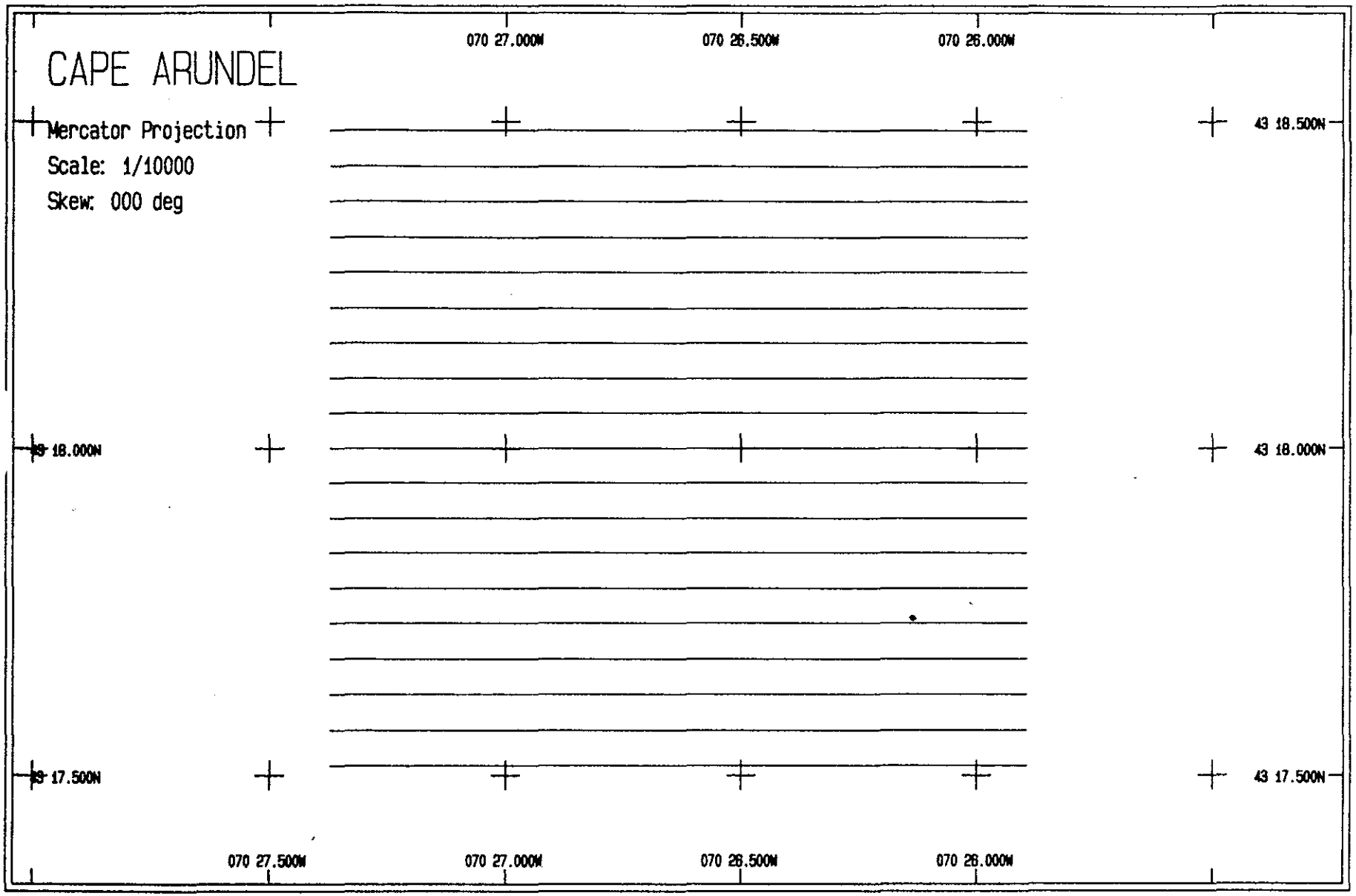

CAPE ARUNDEL
Mercator Projection
Scale: 1/10000
Skew: 000 deg
070 27.000W
070 26.500W
070 26.000W
43 18.500N
43 18.000N
43 17.500N
070 27.500W
070 27.000W
070 26.500W
070 26.000W

Figure I-4-5.

located in York, Maine (Table I-4-12) and the Plum Island Lighthouse (Table I-4-13) located in Newburyport, Massachusetts. There is currently one survey in use at this site. The survey "IOS" (Table I-4-14, Figure I-4-6) is a bathymetric survey which covers this site.

4.5 Foul Area Disposal Site

The Foul Area Disposal Site consists of a 2 nautical mile diameter circle centered about 42° 25.7'N by 70° 34.0'W and is located approximately 14.5 nautical miles southeast of Marblehead, Massachusetts. There are currently 2 subsites within this area. These are the Foul Area North centered at 42° 25.630'N by 70° 34.778'W and the Foul Area South centered at 42° 25.076'N by 70° 34.763'W. The Del Norte shore stations in use at this site are Marblehead Lighthouse (Table I-4-15) located in Marblehead, Massachusetts and Eastern Point Lighthouse in Gloucester, Massachusetts (Table I-4-16). There are currently four surveys in use at this site. Survey "FADS" (Table I-4-17, Figure I-4-7) is a combination bathymetric and sidescan sonar survey which covers the entire disposal site. Survey "FADSNS" (Table I-4-18, Figure I-4-8) covers the same area as survey "FADS" with the exception that the lanes are rotated 90 degrees to compensate for southerly sea conditions. Survey "FAN" (Table I-4-19, Figure I-4-9) is a smaller bathymetric survey which covers the Foul Area North subsite. Similarly, the survey "FAS" (Table I-4-20, Figure I-4-10) covers the Foul Area South.

4.6 Boston Lightship Disposal Site

The Boston Lightship Disposal Site is located at 42° 21.180'N by 70° 41.037'W. The Del Norte shore station in use at this site are the same as those for the Foul Area. There is currently one survey in use at this site. Survey "LIGHT" (Table I-4-21, Figure I-4-11) is a bathymetric survey which covers this area.

4.7 Wellfleet Disposal Site

The Wellfleet Disposal Site is a point located at 41° 54.4'N by 70° 13.3'W which is approximately 7 nautical miles northwest of Wellfleet Harbor on Cape Cod. The Del Norte shore stations in use at this site are located at the Cape Cod Canal East Entrance Breakwater Light (Table 4-22) and at the Rock Harbor Breakwater Light (Table I-4-23). There is currently one survey in use at this site. Survey "WELLFLEET" (Table I-4-24, Figure I-4-12) is a bathymetric survey which covers this site.

4.8 Brenton Reef Disposal Site

The Brenton Reef Disposal Site is a 1 nautical mile square centered about 41° 23.42'N by 71° 17.95'W and is located approximately 4 1/2 nautical miles south southeast of Brenton Point in Newport, Rhode Island. This site is rotated

Table I-4-12

YORK HARBOR

GENERAL

Station name:	York Harbor
Location:	Western Point, York, Maine
Purpose:	Isle of Shoals GREEN STATION
Structure:	None
North Latitude:	43.069964
West Longitude:	70.3830198
Chart:	13286

LOGISTICAL

Contact:	None
Key:	No key is necessary
Power:	There is no AC power available at this site.
Street directions:	NOTE: THESE DIRECTIONS WERE OBTAINED THIRD HAND SO THEY CANNOT BE GUARANTEED!! From Rt. I95, take exit to York. Drive completely through the town of York and approximately 1/2 mile past the town, you will turn right. There will be a marina on the left and salt marshes all around. At the end of the marshes, turn left and take the first right. Bear left for about 1/4 mile until you encounter a long row of mailboxes on the left side of the road. Turn left after the mailboxes. You may encounter a chain across the road. If so, this is as far as you may drive. Drive or walk to the cliff at the water's edge. There is a brass benchmark imbedded in the cliff. It is stamped with the word "COVE" and is located approximately 2-3 feet from the edge of the cliff.

Table I-4-12 (Cont.)

PROCEDURE

Needed materials:	1 Del Norte Trisponder 1 sector antenna 1 power cable 1 tripod 2 batteries 50' light line 2 wood stakes 1 sledge hammer carpenter's level compass electrical tape
Set up:	Mount the trisponder on the tripod and erect this assembly directly over the "COVE" benchmark. Tie the tripod to the ground using the line and stakes. Tape the battery clips to the terminal posts.
Aiming:	Aim the trisponder towards bearing 170 degrees magnetic.

NOTES

Due to the exposed nature of this site, this station must be manned at all times and broken down each night. Take bearings away from metalic structures.

Table I-4-13

NEWBURYPORT HARBOR LIGHT

GENERAL

Station name:	Newburyport Harbor (Plum Island) Light
Location:	Plum Island, Parker River National Wildlife Refuge, Newburyport, Massachusetts
Purpose:	Isle of Shoals RED STATION
Structure:	Short cylindrical white wooden lighthouse with black steel light room. One catwalk.
North Latitude:	42.4890152
West Longitude:	70.4916942
Chart:	13278

LOGISTICAL

Contact:	Call B.M.C. Griffen at Coast Guard Station, Merrimack River at 617-223-5647 to obtain permission to use the lighthouse.
Key:	Key must be obtained from Coast Guard Station, Merrimack River. This is NOT a standard A to N lock.
Power:	Availability of power at this site is uncertain.
Street directions:	From Rt. I95, take exit to Rt. 113, Newburyport. In Newburyport, Coast Guard Station is on the waterfront. Exiting the Coast Guard Station, turn left out of the driveway. Continue down Seawall Street. It will turn into the Plum Island Turnpike and pass a small sod airstrip on the right. Continue on the road to Plum Island and turn left with the road at the shoreline. This leads directly to the lighthouse.

Table I-4-13 (Cont.)

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 power cable 1 5' pipe with coupler 2 hose clamps 1 power supply or 2 batteries carpenter's level compass electrical tape
Set up:	Mount the trisponder on a southeast catwalk stanchion utilizing a 5' pipe. There is no way to run the cable into the lighthouse so it will be necessary to leave the batteries exposed on the catwalk. Tape the clips onto the battery terminals.
Aiming:	Aim the trisponder towards bearing 065 degrees magnetic.

NOTES

This lighthouse is unmanned. Do not obstruct the television system on the catwalk. Measure offset bearing and distance and inform ship. Take bearings away from metalic structures.

Table I-4-14

Parameters for PARAM:10s
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2

Station name	PLUM ISLAND LIGHT
Station code	72
Latitude	42 48.902N
Longitude	070 49.169W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Station name	YORK HARBOR
Station code	82
Latitude	43 06.996N
Longitude	070 38.302W
x	14613.67
y	33584.71
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-14 (Cont.)

Parameters for PARAM:IOS
Page 4

Chart parameters:

Center latitude	42 58.675N
Center longitude	070 32.929W
Center x	22137.38
Center y	18119.55
Scale	1 / 6000
Skew	0.00
Central parallel	42 48.902N
Central meridian	070 45.189W
x offset	0.00
y offset	-3860515.85
Scale at the origin	0.73470103
Mercator projection	
Scaling latitude	42 48.902N

Table I-4-10 (Cont.)

Parameters for PARAM:108
Page 5

Survey parameters:

Survey name	ISLES OF SHOALS
Start latitude	42 58.000N
Start longitude	070 33.480W
Start x	21387.26
Start y	18723.55
Center latitude	42 58.677N
Center longitude	070 32.929W
Center x	22137.26
Center y	18123.55
Lane length	1500.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	25

Survey lanes:

1	Start	42 58.000N	070 33.480W	21387.26	18723.55
	End	42 58.000N	070 32.379W	22887.26	18723.55
2	Start	42 58.974N	070 32.379W	22887.26	18673.55
	End	42 58.974N	070 33.480W	21387.26	18673.55
3	Start	42 58.947N	070 33.480W	21387.26	18623.55
	End	42 58.947N	070 32.379W	22887.26	18623.55
4	Start	42 58.920N	070 32.379W	22887.26	18573.55
	End	42 58.920N	070 33.480W	21387.26	18573.55
5	Start	42 58.893N	070 33.480W	21387.26	18523.55
	End	42 58.893N	070 32.379W	22887.26	18523.55
6	Start	42 58.866N	070 32.379W	22887.26	18473.55
	End	42 58.866N	070 33.480W	21387.26	18473.55
7	Start	42 58.839N	070 33.480W	21387.26	18423.55
	End	42 58.839N	070 32.379W	22887.26	18423.55
8	Start	42 58.812N	070 32.379W	22887.26	18373.55
	End	42 58.812N	070 33.480W	21387.26	18373.55
9	Start	42 58.785N	070 33.480W	21387.26	18323.55
	End	42 58.785N	070 32.379W	22887.26	18323.55
10	Start	42 58.758N	070 32.379W	22887.26	18273.55
	End	42 58.758N	070 33.480W	21387.26	18273.55
11	Start	42 58.731N	070 33.480W	21387.26	18223.55
	End	42 58.731N	070 32.379W	22887.26	18223.55
12	Start	42 58.704N	070 32.379W	22887.26	18173.55
	End	42 58.704N	070 33.480W	21387.26	18173.55
13	Start	42 58.677N	070 33.480W	21387.26	18123.55
	End	42 58.677N	070 32.379W	22887.26	18123.55
14	Start	42 58.650N	070 32.379W	22887.26	18073.55
	End	42 58.650N	070 33.480W	21387.26	18073.55
15	Start	42 58.623N	070 33.480W	21387.26	18023.55
	End	42 58.623N	070 32.379W	22887.26	18023.55
16	Start	42 58.596N	070 32.379W	22887.26	17973.55
	End	42 58.596N	070 33.480W	21387.26	17973.55

Table I-4-10 (Cont.)

Parameters for PARAM:IOS
Page 6

17	Start___	42 58.570N	070 33.480W	21387.26	17823.55
	End_____	42 58.570N	070 32.379W	22887.26	17823.55
18	Start___	42 58.543N	070 32.379W	22887.26	17573.55
	End_____	42 58.543N	070 33.480W	21387.26	17573.55
19	Start___	42 58.516N	070 33.480W	21387.26	17823.55
	End_____	42 58.516N	070 32.379W	22887.26	17823.55
20	Start___	42 58.489N	070 32.379W	22887.26	17773.55
	End_____	42 58.489N	070 33.480W	21387.26	17773.55
21	Start___	42 58.462N	070 33.480W	21387.26	17723.55
	End_____	42 58.462N	070 32.379W	22887.26	17723.55
22	Start___	42 58.435N	070 32.379W	22887.26	17673.55
	End_____	42 58.435N	070 33.480W	21387.26	17673.55
23	Start___	42 58.408N	070 33.480W	21387.26	17623.55
	End_____	42 58.408N	070 32.379W	22887.26	17623.55
24	Start___	42 58.381N	070 32.379W	22887.26	17573.55
	End_____	42 58.381N	070 33.480W	21387.26	17573.55
25	Start___	42 58.354N	070 33.480W	21387.26	17523.55
	End_____	42 58.354N	070 32.379W	22887.26	17523.55

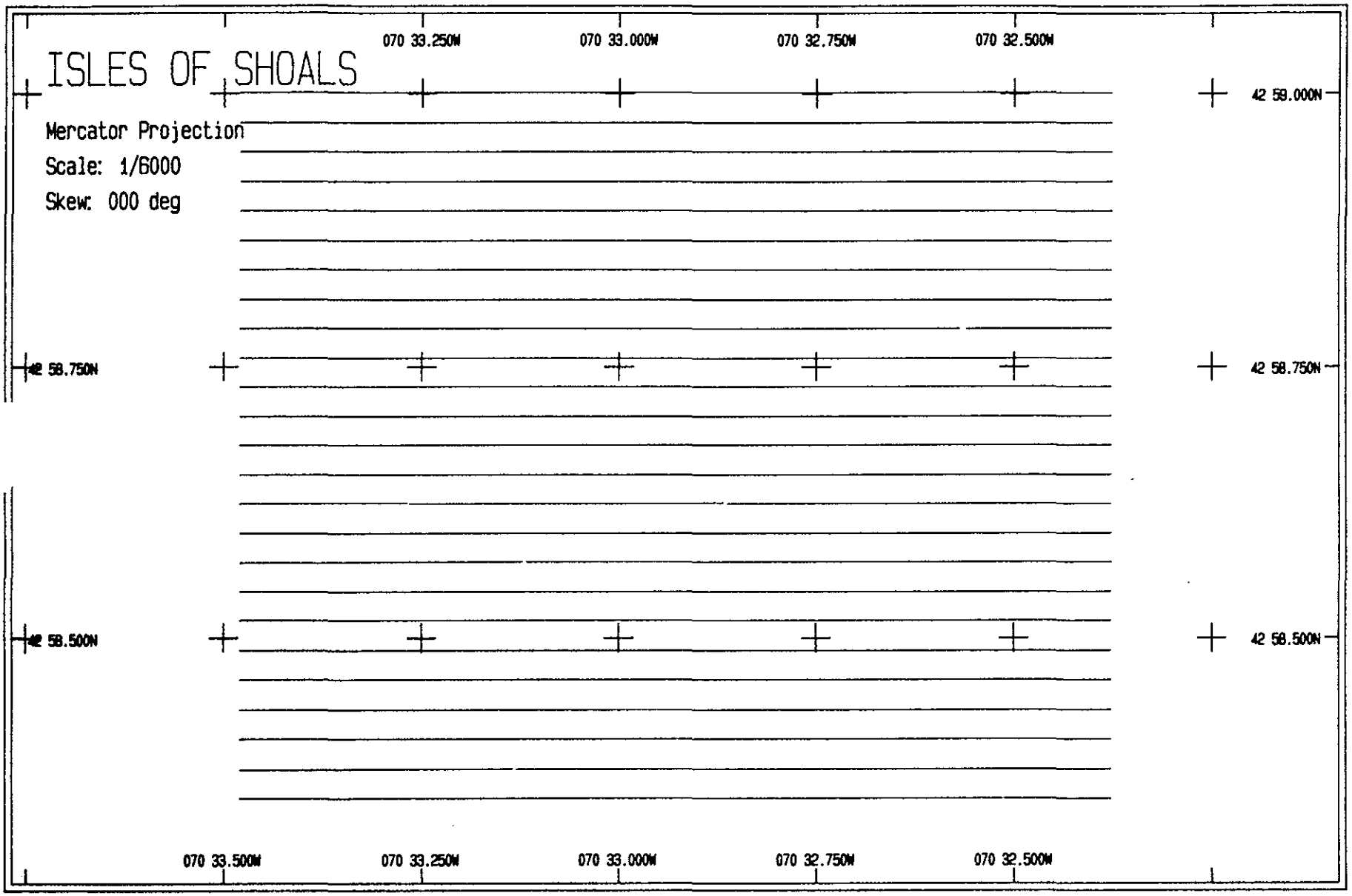

ISLES OF SHOALS
Mercator Projection
Scale: 1/6000
Skew: 000 deg
070 33.250W
070 33.000W
070 32.750W
070 32.500W
42 59.000N
42 58.750N
42 58.500N
070 33.500W
070 33.250W
070 33.000W
070 32.750W
070 32.500W

Figure I-4-6.

Table I-4-15

MARBLEHEAD NECK LIGHT

GENERAL

Station Name:	Marblehead Neck
Location:	Marblehead, MA
Purpose:	Boston Foul Ground RED STATION
Structure:	130' brown steel framework tower with enclosed circular staircase leading to light room. One catwalk.
North Latitude:	42.3001978
West Longitude:	-70.5005087
Chart:	13006

LOGISTICAL

Contact:	Contact USCG Div. 1 in Boston at 617-223-3632. In the past, J.G. Hebert has been very helpful, so start by asking for him.
Key:	Standard A to N key. Held by SAI or available at USCG Div. 1.
Power:	110 AC power is available in the light room.
Street Directions:	North on 128 (95). Exit at Rt. 114 east and follow signs to Marblehead, approx. 10 miles. When you see a fire station on the right, take the next right. There is a blinking yellow light and a sign for Marblehead Neck. Go straight through the next light and follow Neck Road around harbor onto neck. Once on Marblehead neck, bear left at two forks in succession and drive until lighthouse appears straight ahead.

Table I-4-15 (Cont.)

PROCEDURES

Needed Materials:	1 Del Norte Trisponder 1 sector antenna 1 power cable 1 5' pipe with coupler 1 24VDC power supply 2 hose clamps electrical tape
Set Up:	Place pipe of trisponder on southeast side of catwalk. Cable fits through vents to hook to power supply.
Aiming:	Aim the trisponder towards bearing 180 degrees magnetic.

Table I-4-16

EASTERN POINT LIGHT

GENERAL

Station name:	Eastern Point Light
Location:	Eastern Point, Cape Ann, Gloucester, Massachusetts
Purpose:	Boston dumpsites GREEN STATION
Structure:	Short white cylindrical lighthouse with black steel light room and attached keeper's house. One catwalk.
North Latitude:	42.34809
West Longitude:	70.39899
Chart:	13267

LOGISTICAL

Contact:	Call P.O. Mone at 617-283-0116 prior to arrival. We have made contact with him in the past and he is quite helpful.
Key:	No key is necessary.
Power:	AC power is available at this site.
Street directions:	Follow Rt. 128 north till it ends and proceed through the trafic light bearing slightly left up a short hill. At Knutsen Square, bear right at the flag pole. Enter Eastern Point and the main road will veer to the left but you should continue straight. Bear right at the fork which will lead to the lighthouse.
Alternate:	Dog Bar

Table I-4-16 (Cont.)

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 power cable 1 5' pipe with coupler 2 hose clamps 1 power supply or 2 batteries carpenter's level compass electrical tape
Set up:	Mount the trisponder on the southern rail stanchion and feed cable into lighthouse through any convenient opening.
Aiming:	Aim the trisponder towards bearing 170 degrees magnetic.

Table I-4-17

Parameters for PARAM:RADS
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	1

Station name	MARBLEHEAD LIGHT RED STATION
Station code	82
Latitude	42 30.320N
Longitude	070 50.051W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Station name	EASTERN POINT LIGHT GREEN
Station code	92
Latitude	42 34.805N
Longitude	070 38.888W
x	13507.00
y	8311.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-17 (Cont.)

Parameters for PARAM:FADS
Page 4

Chart parameters:

Center latitude	42 29.700N
Center longitude	070 34.000W
Center x	21966.17
Center y	-8547.56
Scale	1 / 24000
Skew	0.00
Central parallel	42 30.320N
Central meridian	070 50.051W
x offset	0.00
y offset	-3845237.76
Scale at the origin	0.73835610
Mercator projection	
Scaling latitude	42 30.320N

Table I-4-17 (Cont.)

Parameters for PMRAN:FA05
Page 5

Survey parameters:

Survey name	FOUL AREA
Start latitude	42 26.984N
Start longitude	070 35.734W
Start x	19613.00
Start y	-6173.00
Center latitude	42 26.700N
Center longitude	070 34.000W
Center x	21886.00
Center y	-6543.00
Lane length	4750.00
Lane bearing	90.00
Lane spacing	250.00
Number of lanes	20

Survey lanes:

1	Start	42 26.984N	070 35.734W	19613.00	-6173.00
	End	42 26.984N	070 32.266W	24363.00	-6173.00
2	Start	42 26.849N	070 32.266W	24363.00	-6423.00
	End	42 26.849N	070 35.734W	19613.00	-6423.00
3	Start	42 26.714N	070 35.734W	19613.00	-6673.00
	End	42 26.714N	070 32.266W	24363.00	-6673.00
4	Start	42 26.578N	070 32.266W	24363.00	-6923.00
	End	42 26.578N	070 35.734W	19613.00	-6923.00
5	Start	42 26.443N	070 35.734W	19613.00	-7173.00
	End	42 26.443N	070 32.266W	24363.00	-7173.00
6	Start	42 26.308N	070 32.266W	24363.00	-7423.00
	End	42 26.308N	070 35.734W	19613.00	-7423.00
7	Start	42 26.173N	070 35.734W	19613.00	-7673.00
	End	42 26.173N	070 32.266W	24363.00	-7673.00
8	Start	42 26.038N	070 32.266W	24363.00	-7923.00
	End	42 26.038N	070 35.734W	19613.00	-7923.00
9	Start	42 25.903N	070 35.734W	19613.00	-8173.00
	End	42 25.903N	070 32.266W	24363.00	-8173.00
10	Start	42 25.767N	070 32.266W	24363.00	-8423.00
	End	42 25.767N	070 35.734W	19613.00	-8423.00
11	Start	42 25.632N	070 35.734W	19613.00	-8673.00
	End	42 25.632N	070 32.266W	24363.00	-8673.00
12	Start	42 25.497N	070 32.266W	24363.00	-8923.00
	End	42 25.497N	070 35.734W	19613.00	-8923.00
13	Start	42 25.362N	070 35.734W	19613.00	-9173.00
	End	42 25.362N	070 32.266W	24363.00	-9173.00
14	Start	42 25.227N	070 32.266W	24363.00	-9423.00
	End	42 25.227N	070 35.734W	19613.00	-9423.00
15	Start	42 25.091N	070 35.734W	19613.00	-9673.00
	End	42 25.091N	070 32.266W	24363.00	-9673.00
16	Start	42 24.956N	070 32.266W	24363.00	-9923.00
	End	42 24.956N	070 35.734W	19613.00	-9923.00

Table I-4-17 (Cont.)

Parameters for PARAM:PADS
Page 6

17	Start____	42 24.621N	070 35.734W	19613.00	-10173.00
	End_____	42 24.621N	070 32.266W	24363.00	-10173.00
18	Start____	42 24.666N	070 32.266W	24363.00	-10423.00
	End_____	42 24.666N	070 35.734W	19613.00	-10423.00
19	Start____	42 24.550N	070 35.734W	19613.00	-10673.00
	End_____	42 24.550N	070 32.266W	24363.00	-10673.00
20	Start____	42 24.415N	070 32.266W	24363.00	-10923.00
	End_____	42 24.415N	070 35.734W	19613.00	-10923.00

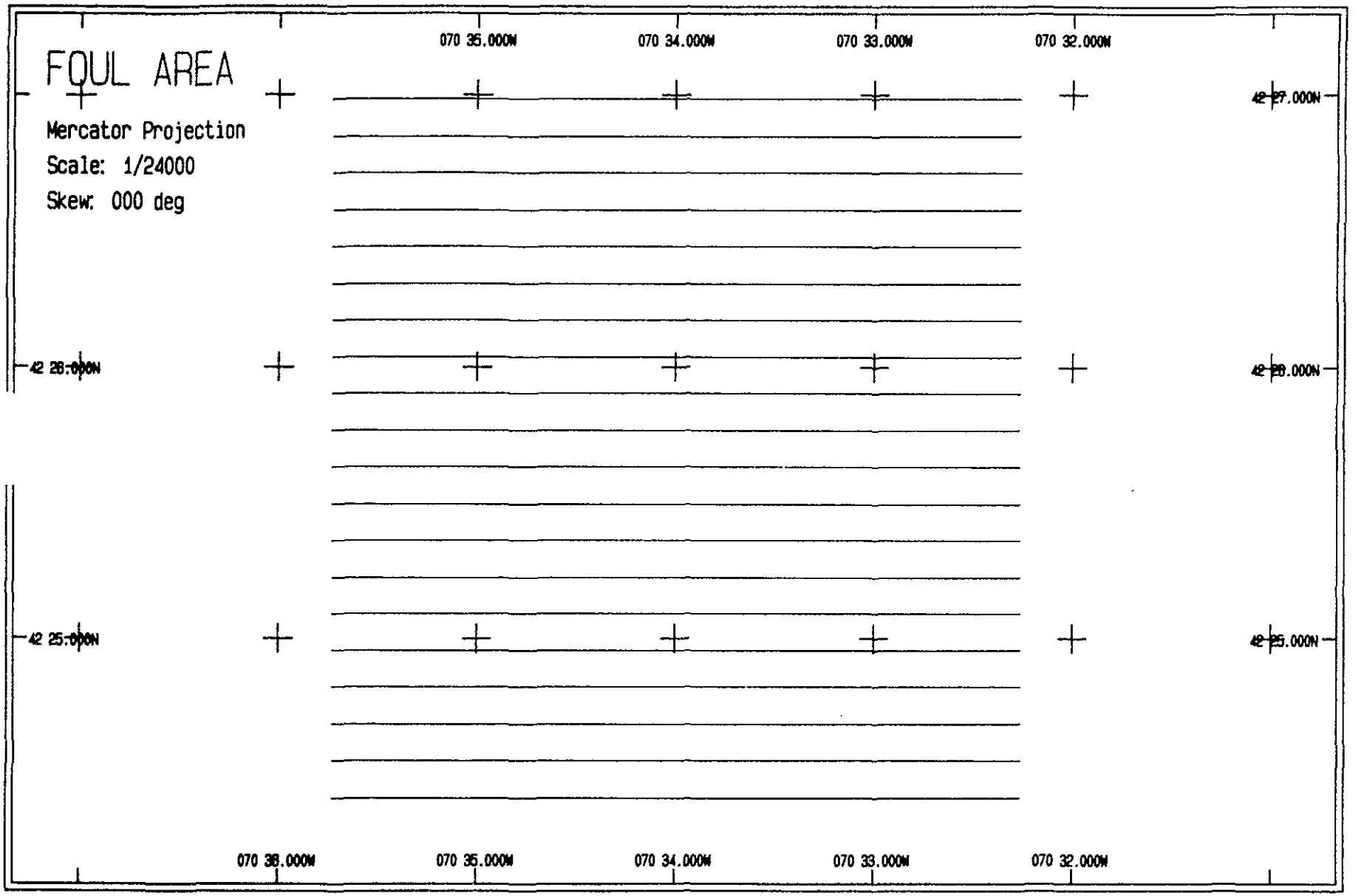

FOUL AREA
Mercator Projection
Scale: 1/24000
Skew: 000 deg
070 35.000W
070 34.000W
070 33.000W
070 32.000W
42 27.000N
42 26.000N
42 25.000N
070 36.000W
070 35.000W
070 34.000W
070 33.000W
070 32.000W

Figure I-4-7.

Table I-4-18

Parameters for PARAM:PADSNS
Page 4

Chart parameters:

Center latitude	42 25.700N
Center longitude	070 34.000W
Center x	21586.17
Center y	-8547.59
Scale	1 / 24000
Skew	0.00
Central parallel	42 30.320N
Central meridian	070 50.051W
x offset	0.00
y offset	-3845237.76
Scale at the origin	0.73535810
Mercator projection	
Scaling latitude	42 30.320N

Table I-4-18 (Cont.)

Parameters for PARAM:FADSNS
Page 5

Survey parameters:

Survey name	FOUL AREA
Start latitude	42 26.984N
Start longitude	070 35.734W
Start x	19613.00
Start y	-6173.00
Center latitude	42 25.700N
Center longitude	070 34.000W
Center x	21988.00
Center y	-8548.00
Lane length	4750.00
Lane bearing	180.00
Lane spacing	-250.00
Number of lanes	20

Survey lanes:

1	Start	42 26.984N	070 35.734W	19613.00	-6173.00
	End	42 24.415N	070 35.734W	19613.00	-10923.00
2	Start	42 24.415N	070 35.551W	19863.00	-10923.00
	End	42 26.984N	070 35.551W	19863.00	-6173.00
3	Start	42 26.984N	070 35.369W	20113.00	-6173.00
	End	42 24.415N	070 35.369W	20113.00	-10923.00
4	Start	42 24.415N	070 35.186W	20363.00	-10923.00
	End	42 26.984N	070 35.186W	20363.00	-6173.00
5	Start	42 26.984N	070 35.004W	20613.00	-6173.00
	End	42 24.415N	070 35.004W	20613.00	-10923.00
6	Start	42 24.415N	070 34.821W	20863.00	-10923.00
	End	42 26.984N	070 34.821W	20863.00	-6173.00
7	Start	42 26.984N	070 34.639W	21113.00	-6173.00
	End	42 24.415N	070 34.639W	21113.00	-10923.00
8	Start	42 24.415N	070 34.456W	21363.00	-10923.00
	End	42 26.984N	070 34.456W	21363.00	-6173.00
9	Start	42 26.984N	070 34.274W	21613.00	-6173.00
	End	42 24.415N	070 34.274W	21613.00	-10923.00
10	Start	42 24.415N	070 34.091W	21863.00	-10923.00
	End	42 26.984N	070 34.091W	21863.00	-6173.00
11	Start	42 26.984N	070 33.909W	22113.00	-6173.00
	End	42 24.415N	070 33.909W	22113.00	-10923.00
12	Start	42 24.415N	070 33.726W	22363.00	-10923.00
	End	42 26.984N	070 33.726W	22363.00	-6173.00
13	Start	42 26.984N	070 33.544W	22613.00	-6173.00
	End	42 24.415N	070 33.544W	22613.00	-10923.00
14	Start	42 24.415N	070 33.361W	22863.00	-10923.00
	End	42 26.984N	070 33.361W	22863.00	-6173.00
15	Start	42 26.984N	070 33.179W	23113.00	-6173.00
	End	42 24.415N	070 33.179W	23113.00	-10923.00
16	Start	42 24.415N	070 32.996W	23363.00	-10923.00
	End	42 26.984N	070 32.996W	23363.00	-6173.00

Table I-4-18 (Cont.)

Parameters for PARAM:FADSN:
Page 6

17	Start____	42 26.984N	070 32.614W	23613.00	-6173.00
	End_____	42 24.415N	070 32.614W	23613.00	-10523.00
18	Start____	42 24.415N	070 32.651W	23853.00	-10523.00
	End_____	42 26.984N	070 32.651W	23853.00	-6173.00
19	Start____	42 26.984N	070 32.449W	24113.00	-6173.00
	End_____	42 24.415N	070 32.449W	24113.00	-10523.00
20	Start____	42 24.415N	070 32.265W	24363.00	-10523.00
	End_____	42 26.984N	070 32.265W	24363.00	-6173.00

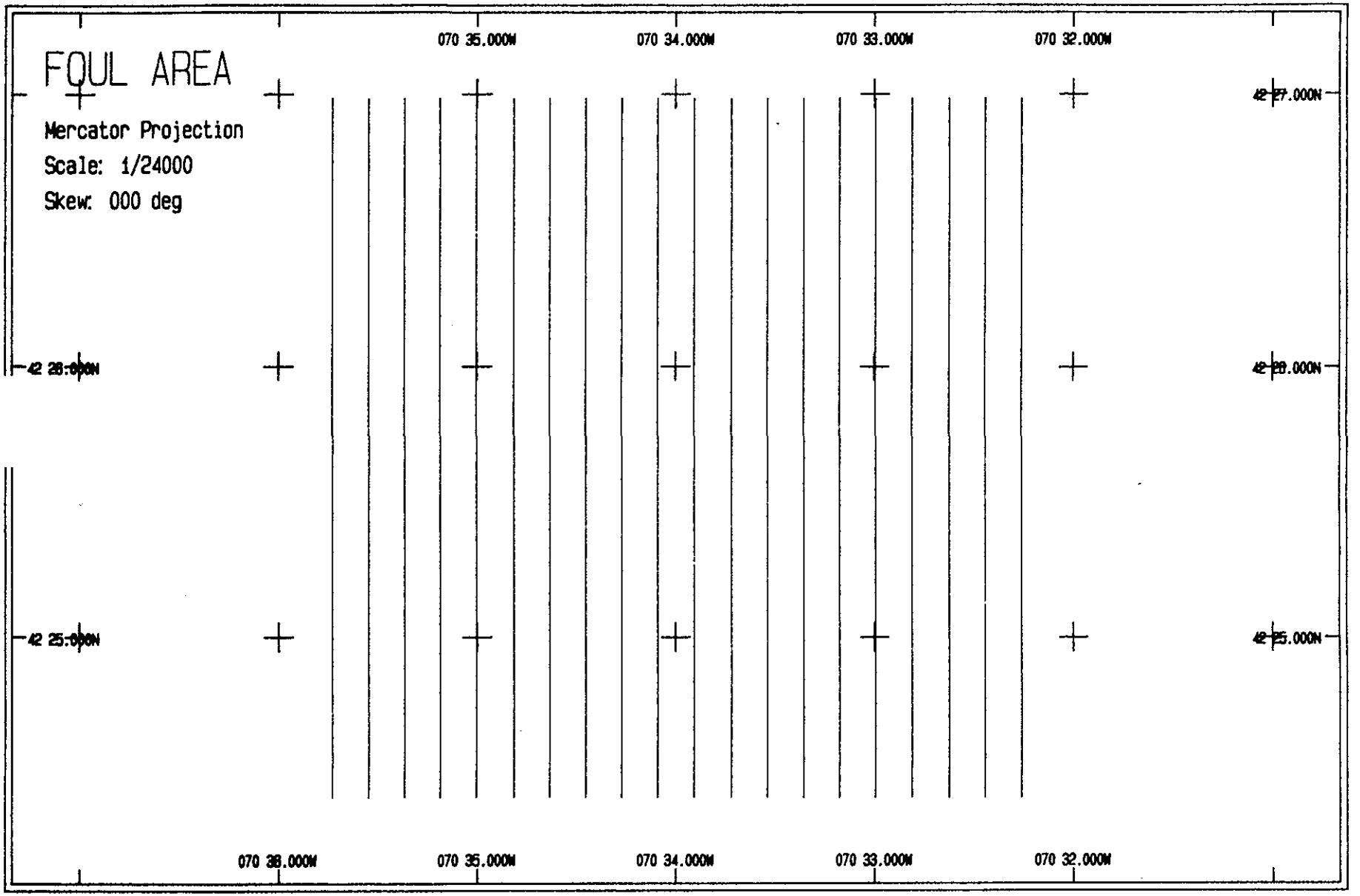

FOUL AREA
Mercator Projection
Scale: 1/24000
Skew: 000 deg
070 35.000W
070 34.000W
070 33.000W
070 32.000W
42 27.000N
42 26.000N
42 25.000N
070 36.000W
070 35.000W
070 34.000W
070 33.000W
070 32.000W

Figure I-4-8.

Table I-4-19

Parameters for PARAMIPAN
Page 4

Chart parameters:

Center latitude	42 35.630N
Center longitude	070 54.777W
Center x	20323.19
Center y	-8677.00
Scale	1 / 4000
Skew	0.00
Central parallel	42 30.320N
Central meridian	070 50.051W
x offset	0.00
y offset	-3845237.78
Scale at the origin	0.73835510
Mercator projection	
Scaling latitude	42 30.320N

Table I-4-19 (Cont.)

Parameters for PARAMIFAN
Page 5

Survey parameters:

Survey name	FOUL AREA NORTH
Start latitude	42 25.414N
Start longitude	070 35.070W
Start x	20523.00
Start y	-9077.00
Center latitude	42 25.830N
Center longitude	070 34.778W
Center x	20923.00
Center y	-8677.00
Lane length	900.00
Lane bearing	0.00
Lane spacing	25.00
Number of lanes	33

Survey lanes:

1	Start	42 25.414N	070 35.070W	20523.00	-9077.00
	End	42 25.846N	070 35.070W	20523.00	-8277.00
2	Start	42 25.846N	070 35.051W	20548.00	-8277.00
	End	42 25.414N	070 35.051W	20548.00	-9077.00
3	Start	42 25.414N	070 35.033W	20573.00	-9077.00
	End	42 25.846N	070 35.033W	20573.00	-8277.00
4	Start	42 25.846N	070 35.015W	20598.00	-8277.00
	End	42 25.414N	070 35.015W	20598.00	-9077.00
5	Start	42 25.414N	070 34.997W	20623.00	-9077.00
	End	42 25.846N	070 34.997W	20623.00	-8277.00
6	Start	42 25.846N	070 34.978W	20648.00	-8277.00
	End	42 25.414N	070 34.978W	20648.00	-9077.00
7	Start	42 25.414N	070 34.960W	20673.00	-9077.00
	End	42 25.846N	070 34.960W	20673.00	-8277.00
8	Start	42 25.846N	070 34.942W	20698.00	-8277.00
	End	42 25.414N	070 34.942W	20698.00	-9077.00
9	Start	42 25.414N	070 34.924W	20723.00	-9077.00
	End	42 25.846N	070 34.924W	20723.00	-8277.00
10	Start	42 25.846N	070 34.905W	20748.00	-8277.00
	End	42 25.414N	070 34.905W	20748.00	-9077.00
11	Start	42 25.414N	070 34.887W	20773.00	-9077.00
	End	42 25.846N	070 34.887W	20773.00	-8277.00
12	Start	42 25.846N	070 34.869W	20798.00	-8277.00
	End	42 25.414N	070 34.869W	20798.00	-9077.00
13	Start	42 25.414N	070 34.851W	20823.00	-9077.00
	End	42 25.846N	070 34.851W	20823.00	-8277.00
14	Start	42 25.846N	070 34.832W	20848.00	-8277.00
	End	42 25.414N	070 34.832W	20848.00	-9077.00
15	Start	42 25.414N	070 34.814W	20873.00	-9077.00
	End	42 25.846N	070 34.814W	20873.00	-8277.00
16	Start	42 25.846N	070 34.796W	20898.00	-8277.00
	End	42 25.414N	070 34.796W	20898.00	-9077.00

Table I-4-19 (Cont.)

Parameters for PARAM:FAN
Page 6

17	Start___	42 25.414N	070 34.778W	20923.00	-8077.00
	End_____	42 25.846N	070 34.778W	20923.00	-8277.00
18	Start___	42 25.846N	070 34.759W	20948.00	-8277.00
	End_____	42 25.414N	070 34.759W	20948.00	-8077.00
19	Start___	42 25.414N	070 34.741W	20973.00	-8077.00
	End_____	42 25.846N	070 34.741W	20973.00	-8277.00
20	Start___	42 25.846N	070 34.723W	20998.00	-8277.00
	End_____	42 25.414N	070 34.723W	20998.00	-8077.00
21	Start___	42 25.414N	070 34.705W	21023.00	-8077.00
	End_____	42 25.846N	070 34.705W	21023.00	-8277.00
22	Start___	42 25.846N	070 34.686W	21048.00	-8277.00
	End_____	42 25.414N	070 34.686W	21048.00	-8077.00
23	Start___	42 25.414N	070 34.668W	21073.00	-8077.00
	End_____	42 25.846N	070 34.668W	21073.00	-8277.00
24	Start___	42 25.846N	070 34.650W	21098.00	-8277.00
	End_____	42 25.414N	070 34.650W	21098.00	-8077.00
25	Start___	42 25.414N	070 34.632W	21123.00	-8077.00
	End_____	42 25.846N	070 34.632W	21123.00	-8277.00
26	Start___	42 25.846N	070 34.613W	21148.00	-8277.00
	End_____	42 25.414N	070 34.613W	21148.00	-8077.00
27	Start___	42 25.414N	070 34.595W	21173.00	-8077.00
	End_____	42 25.846N	070 34.595W	21173.00	-8277.00
28	Start___	42 25.846N	070 34.577W	21198.00	-8277.00
	End_____	42 25.414N	070 34.577W	21198.00	-8077.00
29	Start___	42 25.414N	070 34.559W	21223.00	-8077.00
	End_____	42 25.846N	070 34.559W	21223.00	-8277.00
30	Start___	42 25.846N	070 34.540W	21248.00	-8277.00
	End_____	42 25.414N	070 34.540W	21248.00	-8077.00
31	Start___	42 25.414N	070 34.522W	21273.00	-8077.00
	End_____	42 25.846N	070 34.522W	21273.00	-8277.00
32	Start___	42 25.846N	070 34.504W	21298.00	-8277.00
	End_____	42 25.414N	070 34.504W	21298.00	-8077.00
33	Start___	42 25.414N	070 34.486W	21323.00	-8077.00
	End_____	42 25.846N	070 34.486W	21323.00	-8277.00

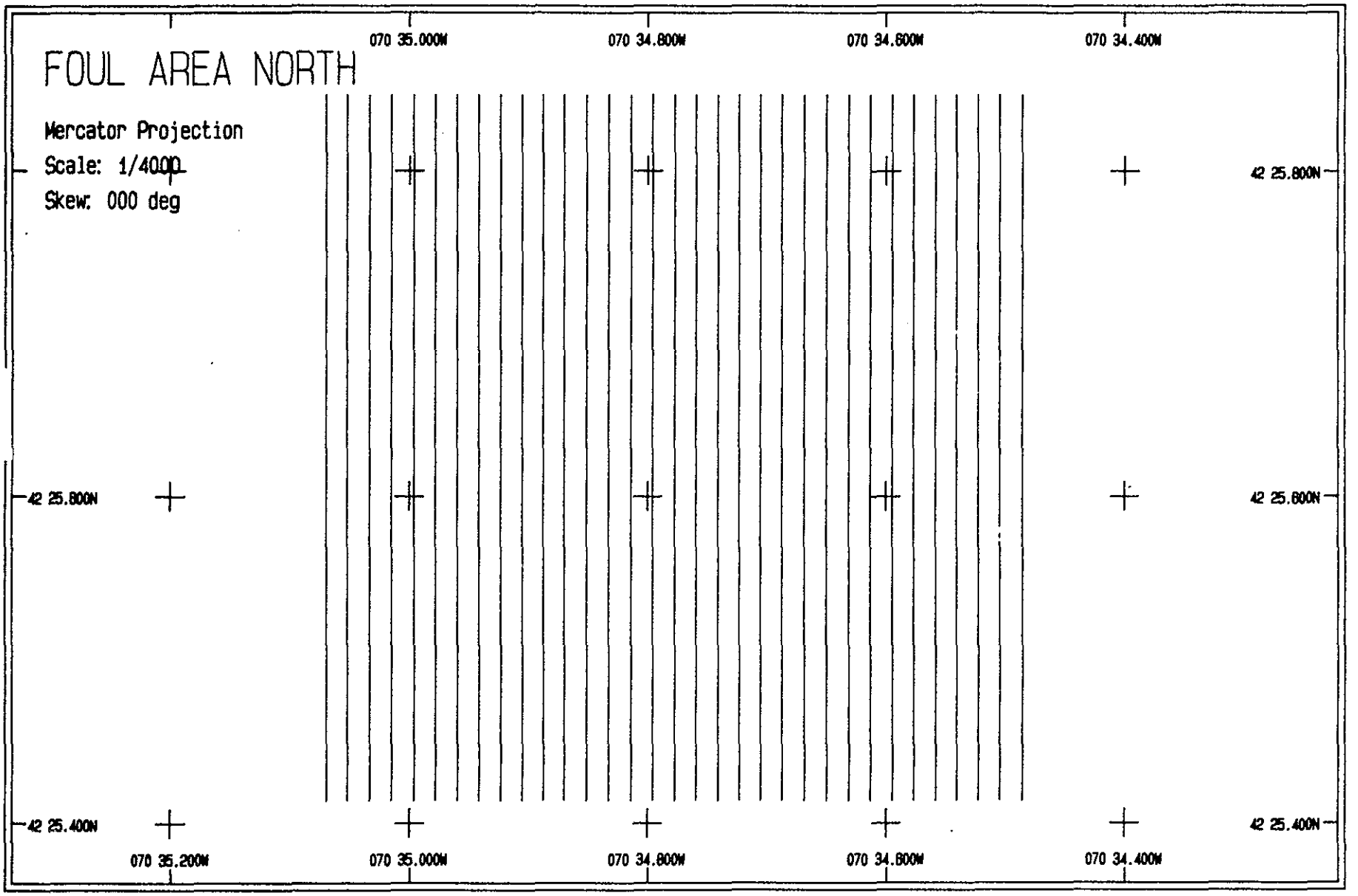

FOUL AREA NORTH
Mercator Projection
Scale: 1/4000
Skew: 000 deg
070 35.000W
070 34.800W
070 34.600W
070 34.400W
42 25.800N
42 25.600N
42 25.400N
070 35.200W
070 35.000W
070 34.800W
070 34.600W
070 34.400W
42 25.800N
42 25.600N
42 25.400N

Figure I-4-9.

Table I-4-20

Parameters for PARAM:CAS
Page 4

Chart parameters:

Center latitude	42 25.076N
Center longitude	070 34.763W
Center x	20943.00
Center y	-9702.00
Scale	1 / 4000
Skew	0.00
Central parallel	42 30.320N
Central meridian	070 50.051W
x offset	0.00
y offset	-3845237.78
Scale at the origin	0.73835610
Mercator projection	
Scaling latitude	42 30.320N

Table I-4-20 (Cont.)

Parameters for PARAM:PAS
Page 5

Survey parameters:

Survey name	FOUL AREA SOUTH
Start latitude	42 25.292N
Start longitude	070 35.055W
Start x	20543.00
Start y	-9302.00
Center latitude	42 25.076N
Center longitude	070 34.763W
Center x	20943.00
Center y	-9701.00
Lane length	800.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	33

Survey lanes:

1	Start	42 25.292N	070 35.055W	20543.00	-9302.00
	End	42 25.292N	070 34.471W	21343.00	-9302.00
2	Start	42 25.278N	070 34.471W	21343.00	-9327.00
	End	42 25.278N	070 35.055W	20543.00	-9327.00
3	Start	42 25.265N	070 35.055W	20543.00	-9352.00
	End	42 25.265N	070 34.471W	21343.00	-9352.00
4	Start	42 25.251N	070 34.471W	21343.00	-9377.00
	End	42 25.251N	070 35.055W	20543.00	-9377.00
5	Start	42 25.238N	070 35.055W	20543.00	-9402.00
	End	42 25.238N	070 34.471W	21343.00	-9402.00
6	Start	42 25.224N	070 34.471W	21343.00	-9427.00
	End	42 25.224N	070 35.055W	20543.00	-9427.00
7	Start	42 25.211N	070 35.055W	20543.00	-9452.00
	End	42 25.211N	070 34.471W	21343.00	-9452.00
8	Start	42 25.197N	070 34.471W	21343.00	-9477.00
	End	42 25.197N	070 35.055W	20543.00	-9477.00
9	Start	42 25.184N	070 35.055W	20543.00	-9502.00
	End	42 25.184N	070 34.471W	21343.00	-9502.00
10	Start	42 25.170N	070 34.471W	21343.00	-9527.00
	End	42 25.170N	070 35.055W	20543.00	-9527.00
11	Start	42 25.157N	070 35.055W	20543.00	-9552.00
	End	42 25.157N	070 34.471W	21343.00	-9552.00
12	Start	42 25.143N	070 34.471W	21343.00	-9577.00
	End	42 25.143N	070 35.055W	20543.00	-9577.00
13	Start	42 25.130N	070 35.055W	20543.00	-9602.00
	End	42 25.130N	070 34.471W	21343.00	-9602.00
14	Start	42 25.116N	070 34.471W	21343.00	-9627.00
	End	42 25.116N	070 35.055W	20543.00	-9627.00
15	Start	42 25.103N	070 35.055W	20543.00	-9652.00
	End	42 25.103N	070 34.471W	21343.00	-9652.00
16	Start	42 25.089N	070 34.471W	21343.00	-9677.00
	End	42 25.089N	070 35.055W	20543.00	-9677.00

Table I-4-20 (Cont.)

Parameters for PnRAN:PnS
Page 6

17	Start___	42 25.076N	070 35.055W	20543.00	-9702.00
	End_____	42 25.076N	070 34.471W	21343.00	-9702.00
18	Start___	42 25.062N	070 34.471W	21343.00	-9727.00
	End_____	42 25.062N	070 35.055W	20543.00	-9727.00
19	Start___	42 25.049N	070 35.055W	20543.00	-9752.00
	End_____	42 25.049N	070 34.471W	21343.00	-9752.00
20	Start___	42 25.035N	070 34.471W	21343.00	-9777.00
	End_____	42 25.035N	070 35.055W	20543.00	-9777.00
21	Start___	42 25.022N	070 35.055W	20543.00	-9802.00
	End_____	42 25.022N	070 34.471W	21343.00	-9802.00
22	Start___	42 25.008N	070 34.471W	21343.00	-9827.00
	End_____	42 25.008N	070 35.055W	20543.00	-9827.00
23	Start___	42 24.994N	070 35.055W	20543.00	-9852.00
	End_____	42 24.994N	070 34.471W	21343.00	-9852.00
24	Start___	42 24.981N	070 34.471W	21343.00	-9877.00
	End_____	42 24.981N	070 35.055W	20543.00	-9877.00
25	Start___	42 24.967N	070 35.055W	20543.00	-9902.00
	End_____	42 24.967N	070 34.471W	21343.00	-9902.00
26	Start___	42 24.954N	070 34.471W	21343.00	-9927.00
	End_____	42 24.954N	070 35.055W	20543.00	-9927.00
27	Start___	42 24.940N	070 35.055W	20543.00	-9952.00
	End_____	42 24.940N	070 34.471W	21343.00	-9952.00
28	Start___	42 24.927N	070 34.471W	21343.00	-9977.00
	End_____	42 24.927N	070 35.055W	20543.00	-9977.00
29	Start___	42 24.913N	070 35.055W	20543.00	-10002.00
	End_____	42 24.913N	070 34.471W	21343.00	-10002.00
30	Start___	42 24.900N	070 34.471W	21343.00	-10027.00
	End_____	42 24.900N	070 35.055W	20543.00	-10027.00
31	Start___	42 24.886N	070 35.055W	20543.00	-10052.00
	End_____	42 24.886N	070 34.471W	21343.00	-10052.00
32	Start___	42 24.873N	070 34.471W	21343.00	-10077.00
	End_____	42 24.873N	070 35.055W	20543.00	-10077.00
33	Start___	42 24.859N	070 35.055W	20543.00	-10102.00
	End_____	42 24.859N	070 34.471W	21343.00	-10102.00

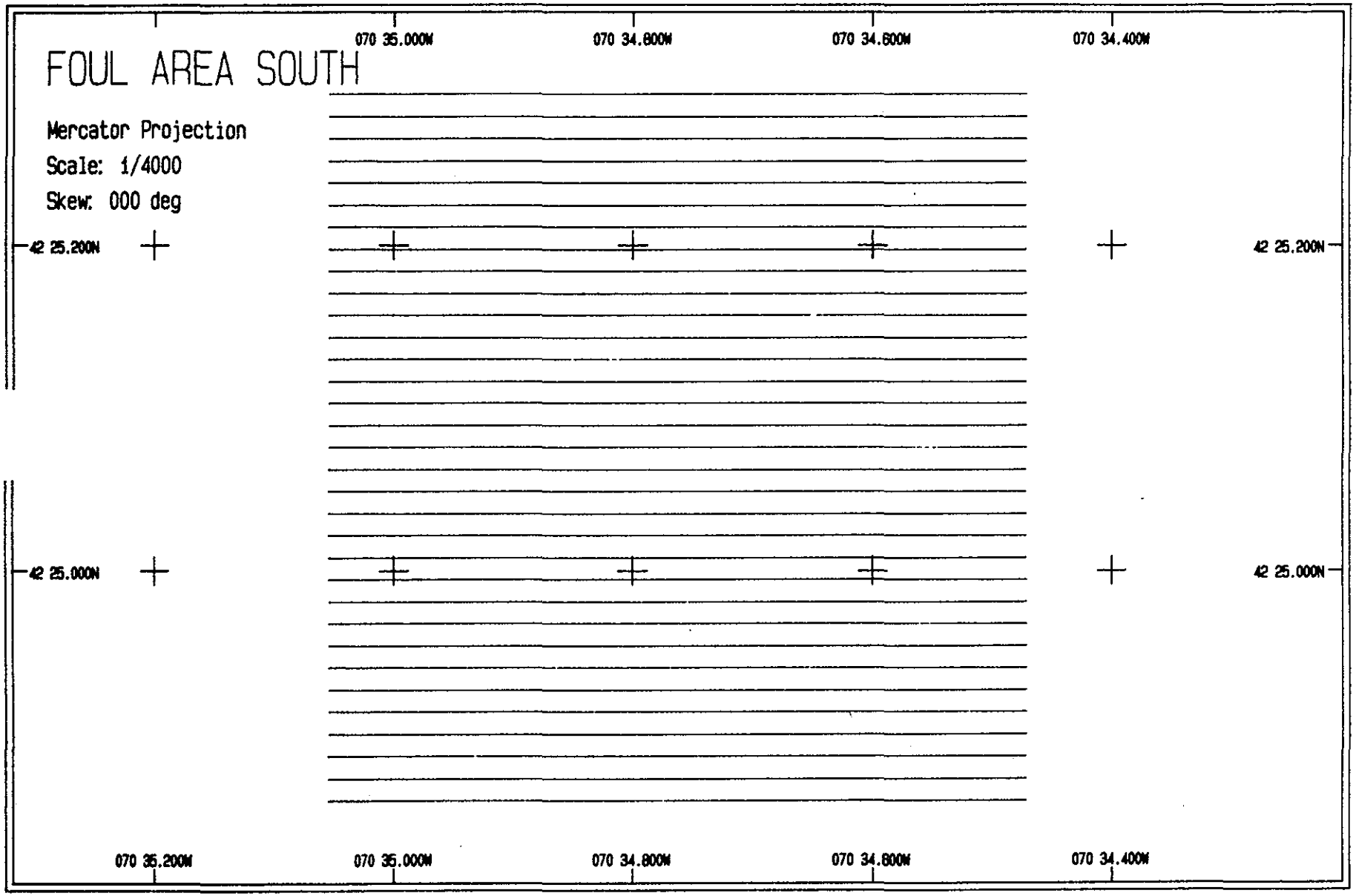

FOUL AREA SOUTH
Mercator Projection
Scale: 1/4000
Skew: 000 deg
070 35.000W
070 34.800W
070 34.600W
070 34.400W
42 25.200N
42 25.000N
070 35.200W

Figure I-4-10.

Table I-4-21

Parameters for PARAM:LIGHT
Page 1

Transponder parameters:

Antenna height	0.00
Number of stations	2

Station name	MARBLEHEAD LIGHT RED
Station code	82
Latitude	42 30.320N
Longitude	070 50.051W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Station name	EASTERN POINT LIGHT GREEN
Station code	92
Latitude	42 34.806N
Longitude	070 39.889W
x	13907.00
y	8311.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-21 (Cont.)

Parameters for PARAM.CHRT
Page 4

Chart parameters:

Center latitude	42 21.180N
Center longitude	070 41.042W
Center x	12340.64
Center y	-16901.04
Scale	1 / 15000
Skew	0.00
Central parallel	42 30.320N
Central meridian	070 50.051W
x offset	0.00
y offset	-3845237.78
Scale at the origin	0.73835610
Mercator projection	
Scaling latitude	42 30.320N

Table I-4-21 (Cont.)

Parameters for PARAM:LIGHT
Page 5

Survey parameters:

Survey name	BOSTON LIGHTSHIP
Start latitude	42 21.992N
Start longitude	070 42.040W
Start x	10973.46
Start y	-15400.23
Center latitude	42 21.180N
Center longitude	070 41.037W
Center x	12348.46
Center y	-16900.23
Lane length	2750.00
Lane bearing	90.00
Lane spacing	150.00
Number of lanes	21

Survey lanes:

1	Start	42 21.992N	070 42.040W	10973.46	-15400.23
	End	42 21.992N	070 40.033W	13723.46	-15400.23
2	Start	42 21.911N	070 40.033W	13723.46	-15550.23
	End	42 21.911N	070 42.040W	10973.46	-15550.23
3	Start	42 21.830N	070 42.040W	10973.46	-15700.23
	End	42 21.830N	070 40.033W	13723.46	-15700.23
4	Start	42 21.749N	070 40.033W	13723.46	-15850.23
	End	42 21.749N	070 42.040W	10973.46	-15850.23
5	Start	42 21.667N	070 42.040W	10973.46	-16000.23
	End	42 21.667N	070 40.033W	13723.46	-16000.23
6	Start	42 21.586N	070 40.033W	13723.46	-16150.23
	End	42 21.586N	070 42.040W	10973.46	-16150.23
7	Start	42 21.505N	070 42.040W	10973.46	-16300.23
	End	42 21.505N	070 40.033W	13723.46	-16300.23
8	Start	42 21.424N	070 40.033W	13723.46	-16450.23
	End	42 21.424N	070 42.040W	10973.46	-16450.23
9	Start	42 21.342N	070 42.040W	10973.46	-16600.23
	End	42 21.342N	070 40.033W	13723.46	-16600.23
10	Start	42 21.261N	070 40.033W	13723.46	-16750.23
	End	42 21.261N	070 42.040W	10973.46	-16750.23
11	Start	42 21.180N	070 42.040W	10973.46	-16900.23
	End	42 21.180N	070 40.033W	13723.46	-16900.23
12	Start	42 21.099N	070 40.033W	13723.46	-17050.23
	End	42 21.099N	070 42.040W	10973.46	-17050.23
13	Start	42 21.018N	070 42.040W	10973.46	-17200.23
	End	42 21.018N	070 40.033W	13723.46	-17200.23
14	Start	42 20.936N	070 40.033W	13723.46	-17350.23
	End	42 20.936N	070 42.040W	10973.46	-17350.23
15	Start	42 20.855N	070 42.040W	10973.46	-17500.23
	End	42 20.855N	070 40.033W	13723.46	-17500.23
16	Start	42 20.774N	070 40.033W	13723.46	-17650.23
	End	42 20.774N	070 42.040W	10973.46	-17650.23

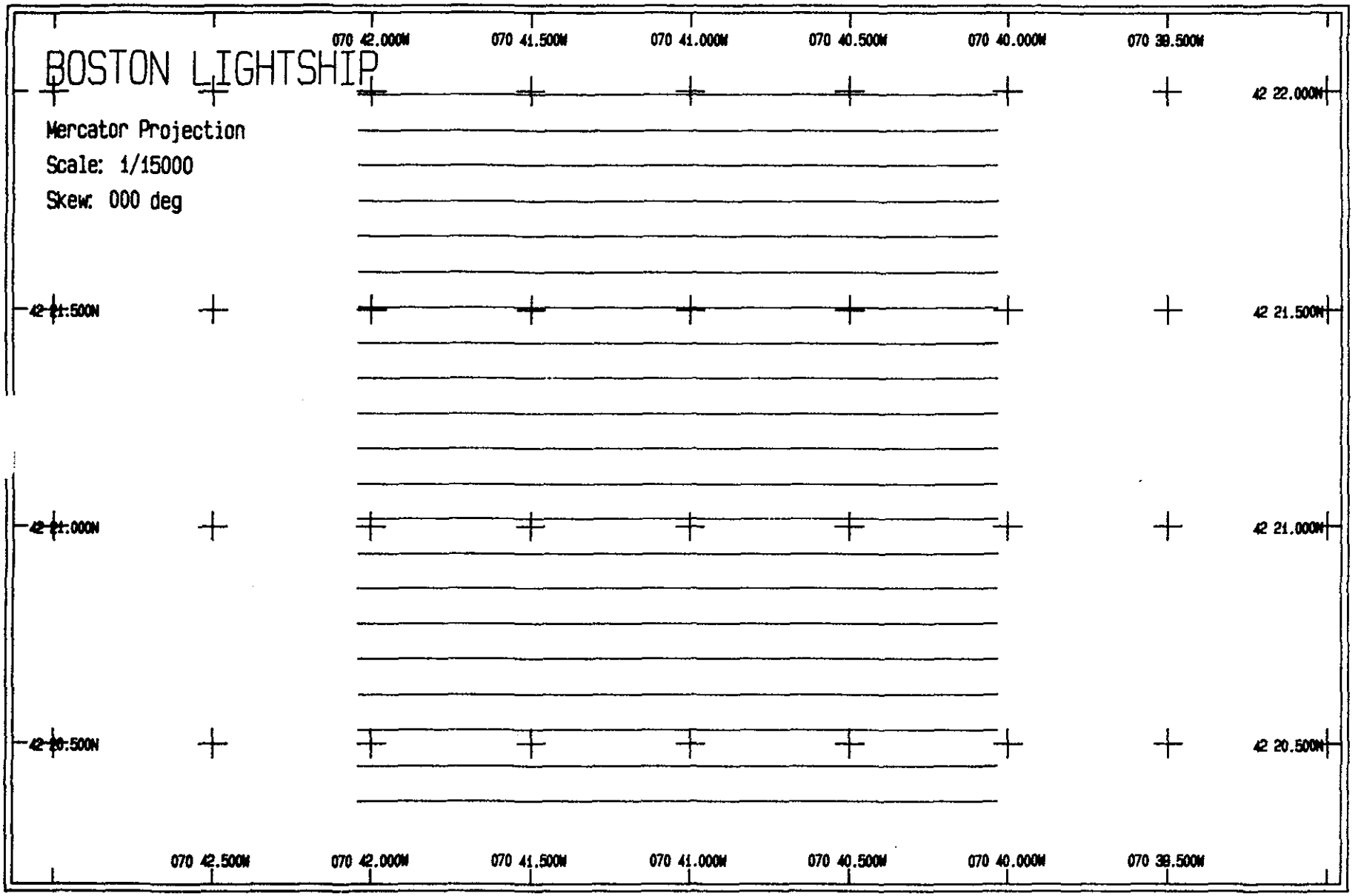

BOSTON LIGHTSHIP
Mercator Projection
Scale: 1/15000
Skew: 000 deg
070 42.000W
070 41.500W
070 41.000W
070 40.500W
070 40.000W
070 39.500W
42 22.000N
42 21.500N
42 21.000N
42 20.500N
070 42.500W

Figure I-4-11.

Table I-4-22
CAPE COD CANAL

GENERAL

Station name:	Cape Cod Canal East Entrance Breakwater Light
Location:	Cape Cod Canal, Bourne, Massachusetts
Purpose:	Wellfleet dumpsite GREEN STATION
Structure:	Red steel skeleton tower on end of breakwater.
North Latitude:	41.4677863
West Longitude:	70.2942453
Chart:	13246

LOGISTICAL

Contact:	Call P.O. Anderson at Coast Guard Station, Sandwich at 617-888-0020 and inform them of your intentions. They may be confused and tell you to call the Corps of Engineers , you should inform them that we already have permission from the Corps but that you need their OK to use the light tower.
Key:	No key is necessary
Power:	No power is available at this site.
Street directions:	From western end of Sagamore Bridge, take Rt. 6 north and follow signs to Scusset Beach. After entering the parking lot of the beach, the light will be visible in the distance. Park in the northeast corner of the parking lot. You will have to walk out to the end of the breakwater. Good luck.

Table I-4-22 (Cont.)

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 Sector antenna 1 power cable 1 power cable extension 1 5' pipe with coupler 2 hose clamps 2 batteries 50' light line carpenter's level compass electrical tape
Set up:	The most difficult part of this station is transporting the equipment to the site. The simplest method is to use a small boat weather permitting. Otherwise, it is strongly recommended that at least two persons be used in this set up. Mount the trisponder on the southeast stanchion at the top of the tower. Place the batteries on any of the three platforms. Tape cable to the tower and tape all connections.
Aiming:	Aim the trisponder towards bearing 075 degrees magnetic.

NOTES

During rough weather, this can be a dangerous station to set up and should not be attempted alone. This set up requires working in close proximity to a fog horn. Under foggy conditions, hearing protection should be used. This station is in a state park so be prepared to pay an admission charge. Measure offset bearing and distance and inform ship. Take bearings away from metalic structures. This location is frequented by numerous fishermen so make the batteries as inconspicuous as possible.

Table I-4-23

ROCK HARBOR LIGHT

GENERAL

Station name:	Rock Harbor Breakwater Light
Location:	Rock Harbor, Cape Cod, Orleans, Massachusetts
Purpose:	Wellfleet dumpsite RED STATION
Structure:	Red steel skeleton tower on short breakwater.
North Latitude:	41.4795
West Longitude:	70.0055
Chart:	13246

LOGISTICAL

Contact:	None
Key:	No key is necessary
Power:	There is no power available at this station
Street directions:	From Sandwich, follow Rt. 6 east to the Orleans/Brewster exit. At the end of the ramp, turn left to "ALL ORLEANS POINTS". Go north on Main Street and turn left onto Rock Harbor Road. Light will be visible as you enter the parking lot.

Table I-4-23 (Cont.)

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 power cable 2 5' pipes with couplers 3 hose clamps 2 batteries carpenter's level compass electrical tape
Set up:	Mount the trisponder on a 10' pipe and secure it to the northeast stanchion of the light tower. Tape the cable to prevent wind chafe and place the batteries in the fog horn housing.
Aiming:	Aim the trisponder towards bearing 320 degrees magnetic.

NOTES

This is a private aid and is not under the jurisdiction of the Coast Guard. Due to the high traffic in this area, this station must be manned at all times and broken down each night. During high moon tides, the breakwater may be submerged. VHF communications at this location are poor. In the area where Main Street passes over Rt. 6, there is a sandy shoulder where radio coverage is quite good. Measure offset bearing and distance and inform ship. Take bearings away from steel structure.

Table I-4-24

Parameters for PARAM:WELLFLEET
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2

Station name	ROCK HARBOR LIGHT
Station code	72
Latitude	41 47.850N
Longitude	070 00.550W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Station name	CC CANAL BREAKWATER LIGHT
Station code	82
Latitude	41 46.779N
Longitude	070 29.425W
x	-39997.46
y	-2158.08
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-24 (Cont.)

Parameters for PARAM:WELLFLEET
Page 4

Chart parameters:

Center latitude	41 54.413N
Center longitude	070 13.300W
Center x	-17661.74
Center y	11973.43
Scale	1 / 3000
Skew	0.00
Central parallel	41 47.950N
Central meridian	070 00.550W
x offset	0.00
y offset	-3809545.06
Scale at the origin	0.74660903
Mercator projection	
Scaling latitude	41 47.950N

Table I-4-24 (Cont.)

Parameters for PARAM:WELLFLEET
Page 5

Survey parameters:

Survey name	WELLFLEET
Start latitude	41 54.250N
Start longitude	070 13.517W
Start x	-17961.49
Start y	11672.17
Center latitude	41 54.412N
Center longitude	070 13.300W
Center x	-17661.49
Center y	11972.17
Lane length	600.00
Lane bearing	0.00
Lane spacing	25.00
Number of lanes	25

Survey lanes:

1	Start	41 54.250N	070 13.517W	-17961.49	11672.17
	End	41 54.574N	070 13.517W	-17961.49	12272.17
2	Start	41 54.574N	070 13.499W	-17936.49	12272.17
	End	41 54.250N	070 13.499W	-17936.49	11672.17
3	Start	41 54.250N	070 13.480W	-17911.49	11672.17
	End	41 54.574N	070 13.480W	-17911.49	12272.17
4	Start	41 54.574N	070 13.462W	-17886.49	12272.17
	End	41 54.250N	070 13.462W	-17886.49	11672.17
5	Start	41 54.250N	070 13.444W	-17861.49	11672.17
	End	41 54.574N	070 13.444W	-17861.49	12272.17
6	Start	41 54.574N	070 13.426W	-17836.49	12272.17
	End	41 54.250N	070 13.426W	-17836.49	11672.17
7	Start	41 54.250N	070 13.408W	-17811.49	11672.17
	End	41 54.574N	070 13.408W	-17811.49	12272.17
8	Start	41 54.574N	070 13.390W	-17786.49	12272.17
	End	41 54.250N	070 13.390W	-17786.49	11672.17
9	Start	41 54.250N	070 13.372W	-17761.49	11672.17
	End	41 54.574N	070 13.372W	-17761.49	12272.17
10	Start	41 54.574N	070 13.354W	-17736.49	12272.17
	End	41 54.250N	070 13.354W	-17736.49	11672.17
11	Start	41 54.250N	070 13.336W	-17711.49	11672.17
	End	41 54.574N	070 13.336W	-17711.49	12272.17
12	Start	41 54.574N	070 13.318W	-17686.49	12272.17
	End	41 54.250N	070 13.318W	-17686.49	11672.17
13	Start	41 54.250N	070 13.300W	-17661.49	11672.17
	End	41 54.574N	070 13.300W	-17661.49	12272.17
14	Start	41 54.574N	070 13.282W	-17636.49	12272.17
	End	41 54.250N	070 13.282W	-17636.49	11672.17
15	Start	41 54.250N	070 13.264W	-17611.49	11672.17
	End	41 54.574N	070 13.264W	-17611.49	12272.17
16	Start	41 54.574N	070 13.246W	-17586.49	12272.17
	End	41 54.250N	070 13.246W	-17586.49	11672.17

Table I-4-24 (Cont.)

Parameters for PARAM:WELLFIELD
Page 6

17	Start___	41 54.250N	070 13.228W	-17561.49	11672.17
	End_____	41 54.574N	070 13.228W	-17561.49	12272.17
18	Start___	41 54.574N	070 13.210W	-17536.49	12272.17
	End_____	41 54.250N	070 13.210W	-17536.49	11672.17
19	Start___	41 54.250N	070 13.192W	-17511.49	11672.17
	End_____	41 54.574N	070 13.192W	-17511.49	12272.17
20	Start___	41 54.574N	070 13.174W	-17486.49	12272.17
	End_____	41 54.250N	070 13.174W	-17486.49	11672.17
21	Start___	41 54.250N	070 13.156W	-17461.49	11672.17
	End_____	41 54.574N	070 13.156W	-17461.49	12272.17
22	Start___	41 54.574N	070 13.138W	-17436.49	12272.17
	End_____	41 54.250N	070 13.138W	-17436.49	11672.17
23	Start___	41 54.250N	070 13.120W	-17411.49	11672.17
	End_____	41 54.574N	070 13.120W	-17411.49	12272.17
24	Start___	41 54.574N	070 13.101W	-17386.49	12272.17
	End_____	41 54.250N	070 13.101W	-17386.49	11672.17
25	Start___	41 54.250N	070 13.083W	-17361.49	11672.17
	End_____	41 54.574N	070 13.083W	-17361.49	12272.17

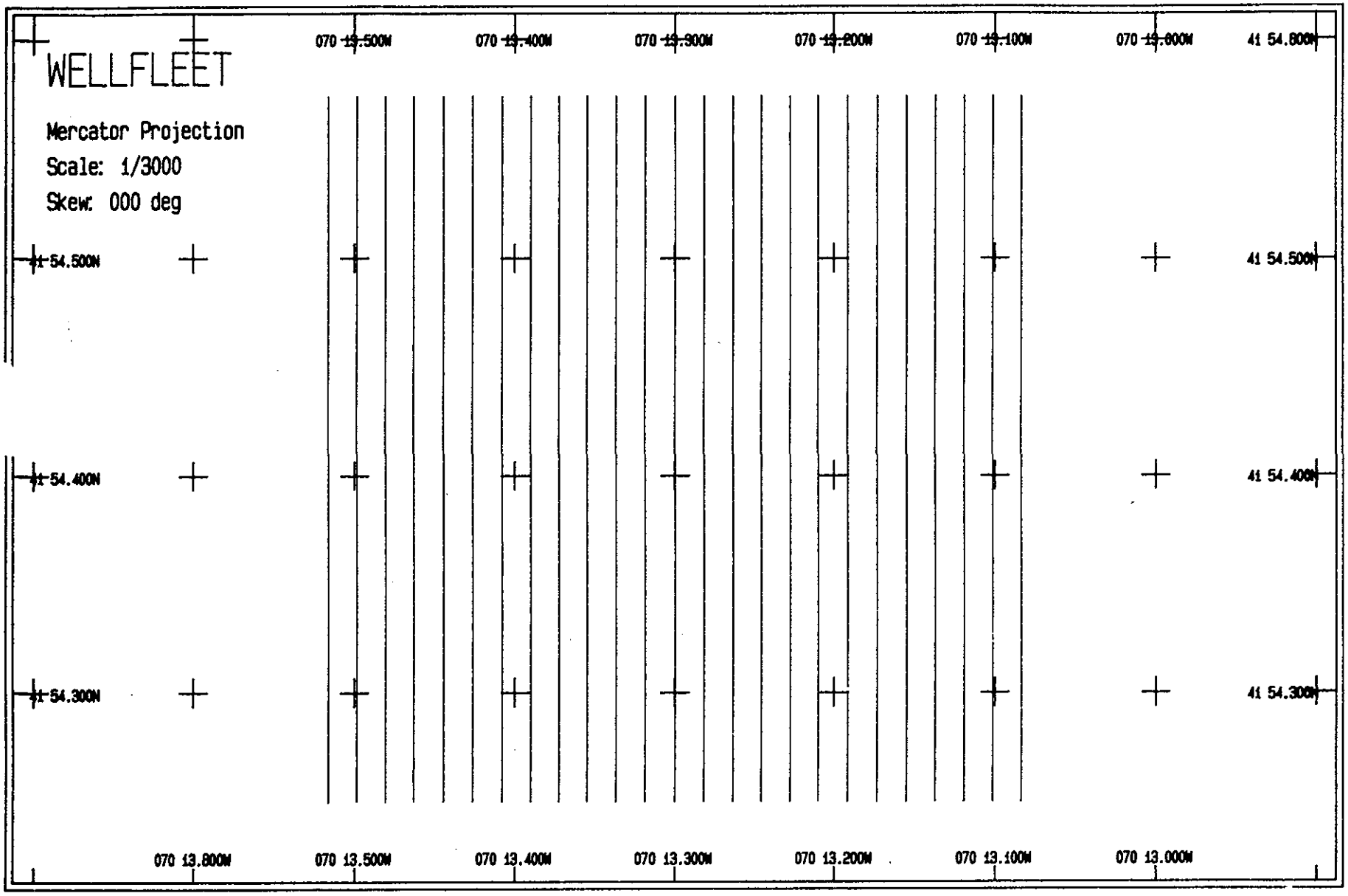

WELLFLEET
Mercator Projection
Scale: 1/3000
Skew: 000 deg
070 13.500W
070 13.400W
070 13.300W
070 13.200W
070 13.100W
070 13.000W
41 54.500N
41 54.400N
41 54.300N
070 13.800W
070 13.500W
070 13.400W
070 13.300W
070 13.200W
070 13.100W
070 13.000W

Figure I-4-12.

30° clockwise from true north. The Del Norte shore stations in use at this site are located at Beavertail Point Lighthouse (Table I-4-25) and Point Judith Lighthouse (Table I-4-26). There is currently one survey in use at this site. Survey "BRENTON" (Table I-4-27, Figure I-4-13) is a bathymetric survey which covers this area.

4.9 New London Disposal Site

The New London Disposal site is a one nautical mile square centered about 41° 16.1'N by 72° 04.6'W and is located approximately 2.4 nautical miles southeast of Goshen Point. The Del Norte shore stations in use at this site are the Millstone Nuclear Power Station (Table I-4-28) located in Waterford and the New London Harbor lighthouse (Table I-4-29) in New London, Connecticut. There are currently two surveys in use at this site. Survey "NLON" (Table I-4-30, Figure I-4-14) is a bathymetric survey which covers the entire disposal site and survey "NLONSCN" (Table I-4-31, Figure I-4-15) is a sidescan sonar survey covering the same area.

4.10 Cornfield Shoal Disposal Site

The Cornfield Shoal disposal site is 1 nautical mile square centered at 41° 12.68'N by 72° 21.52'W and is located approximately 2 1/3 nautical miles south of the mouth of the Connecticut River. There is currently one bathymetric survey in use at this site. Survey "CORNFIELD" (Table I-4-32, Figure I-4-16) covers the entire disposal site.

4.11 Central Long Island Sound Disposal Site

The Central Long Island Sound (CLIS) disposal site is 2 nautical miles long and 1 nautical mile wide, with the major axis running true east-west. This site is centered about 41° 08.95'N by 72°52.85'W and is located approximately 6 nautical miles southeast of New Haven Harbor. The Del Norte shore stations in use at this site are Stratford Point lighthouse (Table I-4-33) in Lordship and Lighthouse Point Lighthouse (Table I-4-34) in East Haven. There are currently eight surveys in use at this site. Survey "FVP" (Table I-4-35, Figure I-4-17) is a bathymetric survey covering the Field Verification Program site and is centered about 41° 09.388'N by 72° 51.682'W. Survey "STNH-N" (Table I-4-36, Figure I-4-18) is a bathymetric survey covering the Stamford - New Haven North site centered about 41° 09.246'N by 72° 52.750'W. Survey "STNH-S" (Table I-4-37, Figure I-4-19) is a bathymetric survey covering the Stamford-New Haven site centered about 41° 08.494'N by 72° 52.788'W. Survey "NORWALK" (Table I-4-38, Figure I-4-20) is a bathymetric survey covering the Norwalk disposal mound centered at 41° 08.914'N by 72° 53.489'W. Survey "NHAV-83" (Table I-4-39, Figure I-4-21) covers the New Haven 1983 project mound and is centered at 41° 08.508'N by 72° 53.320'W. Survey "MQRDS" (Table I-4-40, Figure I-4-22) covers the Mill and Quinipiac River disposal site and is centered at 41° 08.567'N by 72°

Table I-4-25

BEAVERTAIL LIGHT

GENERAL

Station name:	Beavertail Point Lighthouse
Location:	Beavertail State Park; Jamestown, Rhode Island
Purpose:	Brenton Reef Dumpsite GREEN STATION
North Latitude:	41.2695577
West Longitude:	71.2399488
Chart:	13218

LOGISTICAL

Contact:	Call P.O. Letourneau at Bristol Coast Guard 401-253-9585 prior to commencing operations and after securing.
Key:	Standard A to N key is in SAI possession or is available at Bristol Coast Guard.
Power:	AC power is available both at ground level and in the room below the light room.
Street directions:	From Newport, cross Newport Bridge on Rt. 138. Immediately after the toll booth, exit right for Jamestown Center. At stop sign, turn left and continue around right hand curve at water's edge. Turn right onto Narragansett Avenue and proceed through town about 3/4 mile. Turn left at flashing yellow light opposite Post Office onto Southwest Avenue. Continue about 4-5 miles past beach on left and abandoned naval radar station on right. This road will take you directly to the lighthouse. You may park directly in front of the lighthouse if the traffic will allow.

Table I-4-25 (Cont.)

PROCEDURE

Need materials:	1 Del Norte trisponder 1 sector antenna 1 5' pipe with coupler 1 power cable 1 power supply or 2 batteries 2 hose clamps carpenter's level compass electrical tape
Set up:	Set up the trisponder on the south side of the lighthouse using the 5' pipe and 2 hose clamps. Tape the power cable to the rail and run it into the lighthouse under the door. Use large cracks in the bottom of the door to avoid crimping the cable.
Aiming:	Aim the trisponder towards bearing 144 degrees magnetic.

NOTES

Station is manned by a Rhode Island Park Ranger during the summer months but he has no jurisdiction over the lighthouse itself and he has no key. Station is unmanned during the winter months. Be wary of tourists entering the light tower. Do not disturb any other navigation equipment present. If another trisponder is encountered, make note of the model numbers and codes used. Measure offset bearing and distance and inform ship. Take bearings away from metalic structures. For late night operations, it is advisable to contact the Jamestown Police and inform them of your operations at 401-423-1212.

Table I-4-26

POINT JUDITH LIGHT

GENERAL

Station Name:	Point Judith Lighthouse
Location:	Point Judith, Narragansett, RI
Purpose:	Brenton Reef Dumpsite RED STATION
Structure:	Cylindrical lighthouse with white lower half and black upper half
North Latitude:	41.2165537
West Longitude:	71.2891375
Chart:	13218

LOGISTICAL

Contact:	Contact P.O. Downey or the O.D. at Point Judith Coast Guard at 401-789-0444.
Key:	Standard A to N key is in SAI possession or is available at the site.
Power:	AC power is available both at ground level and in room below light room.
Street Directions:	From Newport, follow Rte 138 across Jamestown into North Kingstown. Turn left at traffic light at the top of the hill onto Rte 1A. Continue south for approximately 13 miles. Bear left at Camp Cronin and the lighthouse should be visible in the distance. Advise Coast Guard personnel of your intentions immediately upon arrival, otherwise they will not allow you to park on the station.

Table I-4-26 (Cont.)

PROCEDURES

Needed Materials:	1 Del Norte Trisponder 1 sector antenna 1 power cable 1 3' pipe 1 power supply or 2 batteries 2 hose clamps carpenter's level electrical tape
Set Up:	Mount trisponder on northeast side of lighthouse using 1 3' pipe and 2 hose clamps. There should be a p8iece of white tape marking the proper location. Take care to mount the unit below the light path. The power cable should be routed through the vent hole directly above the access hatch and down the stairs into the room below the lightroom. This is the preferred location for the power source, but it is possible to use a power cable extension and mount the power at ground level. Do not allow the power cables to obstruct stairs.
Aiming:	Aim the Trisponder toward bearing 094 degrees magnetic.

NOTES

Point Judith Coast Guard is a Search and Rescue (SAR) base and is therefore manned continuously. Be wary of tourists entering the light tower. Do not disturb any other navigation stations present. If another trisponder is encountered, make note of the model numbers and codes used. Take bearings away from metal structures. Measure offset bearing and distance and inform ship. Take care not to leave hand prints on the brass light mechanism.

Table I-4-27

Parameters for PARAM:BRENTON
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2

Station name	POINT JUDITH
Station code	72
Latitude	41 21.655N
Longitude	071 28.914W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Station name	BEAVERTAIL LIGHT
Station code	82
Latitude	41 26.856N
Longitude	071 23.995W
x	6859.99
y	9817.69
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-27 (Cont.)

Parameters for PARAM:BRENTON
Page 4

Chart parameters:

Center latitude	41 23.377N
Center longitude	071 18.479W
Center x	14553.04
Center y	3187.65
Scale	1 / 10000
Skew	0.00
Central parallel	41 21.655N
Central meridian	071 28.914W
x offset	0.00
y offset	-3786347.80
Scale at the origin	0.75167353
Mercator projection	
Scaling latitude	41 21.655N

Table I-4-27 (Cont.)

Parameters for PARAM:BRENTON
Page 5

Survey parameters:

Survey name	BRENTON REEF
Start latitude	41 23.126N
Start longitude	071 19.288W
Start x	13423.60
Start y	2722.62
Center latitude	41 23.378N
Center longitude	071 18.480W
Center x	14551.66
Center y	3189.63
Lane length	1800.00
Lane bearing	25.00
Lane spacing	50.00
Number of lanes	34

Survey lanes:

1	Start	41 23.126N	071 19.288W	13423.60	2722.62
	End	41 24.007N	071 18.743W	14184.32	4353.97
2	Start	41 23.995N	071 18.710W	14229.63	4332.84
	End	41 23.115N	071 19.256W	13468.92	2701.48
3	Start	41 23.103N	071 19.223W	13514.23	2680.35
	End	41 23.984N	071 18.678W	14274.95	4311.71
4	Start	41 23.973N	071 18.645W	14320.26	4290.58
	End	41 23.092N	071 19.191W	13559.55	2659.22
5	Start	41 23.080N	071 19.158W	13604.86	2638.09
	End	41 23.961N	071 18.613W	14365.58	4269.45
6	Start	41 23.950N	071 18.581W	14410.89	4248.31
	End	41 23.069N	071 19.126W	13650.18	2618.96
7	Start	41 23.058N	071 19.093W	13695.50	2595.83
	End	41 23.938N	071 18.548W	14456.21	4227.18
8	Start	41 23.927N	071 18.516W	14501.52	4208.05
	End	41 23.046N	071 19.061W	13740.81	2574.70
9	Start	41 23.035N	071 19.028W	13786.13	2553.57
	End	41 23.916N	071 18.483W	14546.84	4184.92
10	Start	41 23.904N	071 18.451W	14592.15	4163.79
	End	41 23.023N	071 18.996W	13831.44	2532.44
11	Start	41 23.012N	071 18.964W	13876.76	2511.31
	End	41 23.893N	071 18.418W	14637.47	4142.66
12	Start	41 23.881N	071 18.386W	14682.79	4121.53
	End	41 23.000N	071 18.931W	13922.07	2490.18
13	Start	41 22.989N	071 18.899W	13967.39	2469.04
	End	41 23.870N	071 18.353W	14728.10	4100.40
14	Start	41 23.859N	071 18.321W	14773.42	4079.27
	End	41 22.978N	071 18.866W	14012.70	2447.91
15	Start	41 22.966N	071 18.834W	14058.02	2426.78
	End	41 23.847N	071 18.288W	14818.73	4058.14
16	Start	41 23.836N	071 18.256W	14864.05	4037.01
	End	41 22.955N	071 18.801W	14103.33	2405.65

Table I-4-27 (Cont.)

Parameters for PARAM:BRFNTON
Page 6

17	Start	41	22.943N	071	18.759W	14148.65	2384.52
	End	41	23.824N	071	18.223W	14909.36	4015.87
18	Start	41	23.813N	071	18.191W	14954.68	3994.74
	End	41	22.933N	071	18.736W	14193.96	2363.39
19	Start	41	22.921N	071	18.704W	14239.28	2342.26
	End	41	23.807N	071	18.158W	14999.99	3973.61
20	Start	41	23.790N	071	18.125W	15045.31	3952.48
	End	41	22.909N	071	18.671W	14284.60	2321.13
21	Start	41	22.898N	071	18.639W	14329.91	2300.00
	End	41	23.779N	071	18.093W	15090.62	3831.35
22	Start	41	23.767N	071	18.061W	15135.94	3810.22
	End	41	22.886N	071	18.606W	14375.23	2278.87
23	Start	41	22.875N	071	18.574W	14420.54	2257.73
	End	41	23.756N	071	18.028W	15181.25	3889.09
24	Start	41	23.744N	071	17.996W	15226.57	3867.96
	End	41	22.864N	071	18.541W	14465.86	2236.60
25	Start	41	22.852N	071	18.509W	14511.17	2215.47
	End	41	23.733N	071	17.963W	15271.89	3846.83
26	Start	41	23.722N	071	17.931W	15317.20	3825.70
	End	41	22.841N	071	18.476W	14556.49	2194.34
27	Start	41	22.829N	071	18.444W	14601.80	2173.21
	End	41	23.710N	071	17.898W	15362.52	3804.57
28	Start	41	23.699N	071	17.866W	15407.83	3783.43
	End	41	22.818N	071	18.411W	14647.12	2152.08
29	Start	41	22.806N	071	18.379W	14692.43	2130.95
	End	41	23.687N	071	17.833W	15453.15	3762.30
30	Start	41	23.676N	071	17.801W	15498.46	3741.17
	End	41	22.795N	071	18.346W	14737.75	2109.82
31	Start	41	22.784N	071	18.314W	14783.06	2088.69
	End	41	23.665N	071	17.768W	15543.78	3720.04
32	Start	41	23.653N	071	17.736W	15589.09	3698.91
	End	41	22.772N	071	18.281W	14828.38	2067.56
33	Start	41	22.761N	071	18.249W	14873.70	2046.43
	End	41	23.642N	071	17.703W	15634.41	3677.78
34	Start	41	23.630N	071	17.671W	15679.72	3656.65
	End	41	22.749N	071	18.216W	14919.01	2025.29

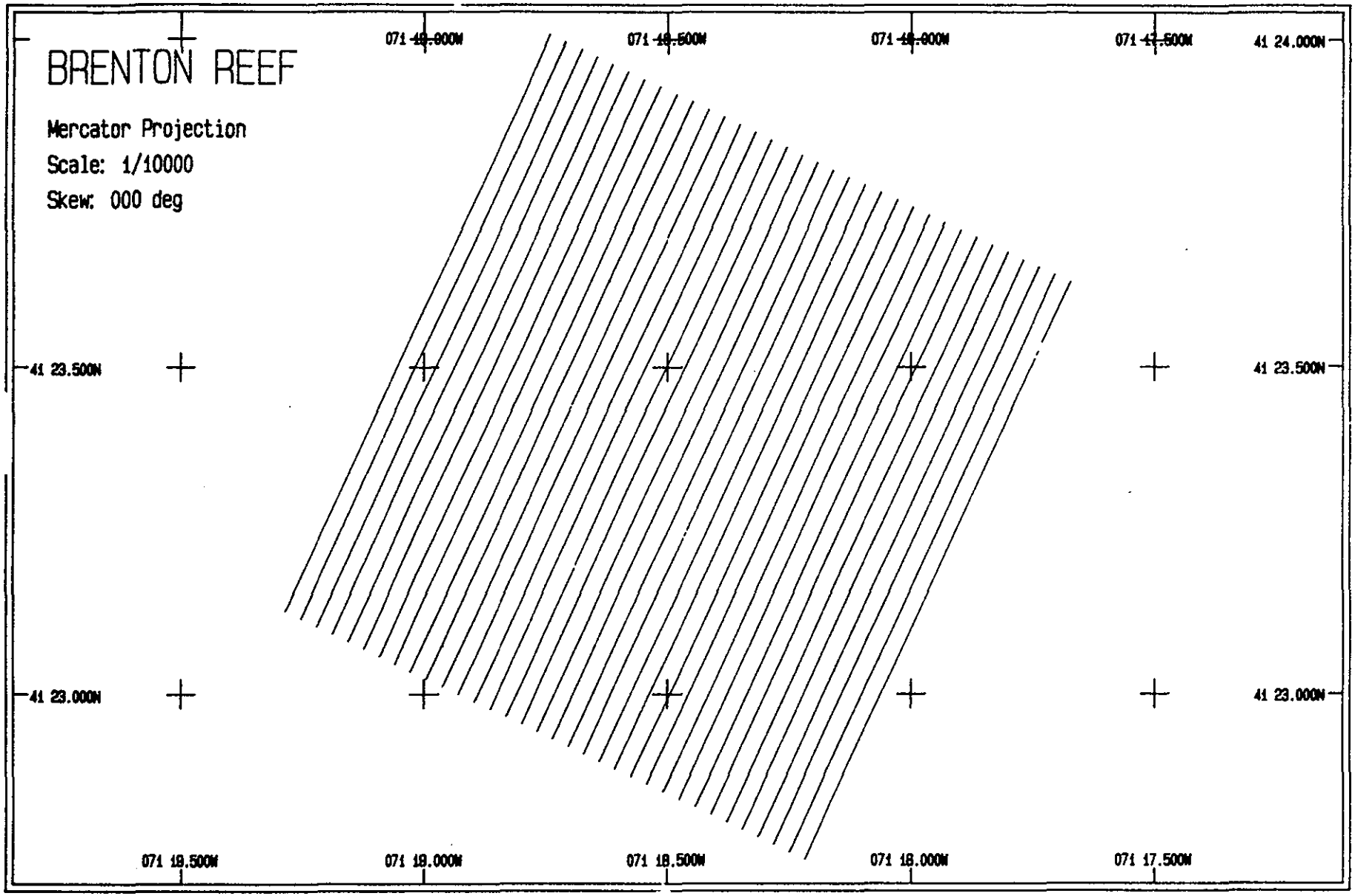

BRENTON REEF
Mercator Projection
Scale: 1/10000
Skew: 000 deg
071 19.000W
071 18.500W
071 18.000W
071 17.500W
41 24.000N
41 23.500N
41 23.000N

Figure I-4-13.

Table I-4-28

MILLSTONE POINT

GENERAL

Station name:	Millstone Point
Location:	Millstone Nuclear Power Station; Niantic, Connecticut
Purpose:	New London dumpsite RED STATION
Structure:	None
North Latitude:	41.1831196
West Longitude:	72.0987337
Chart:	12354

LOGISTICAL

Contact:	Contact Security Coordinator Leon Brown and Ms. Patricia Weekly, Chief of Security, by mail as far in advance as possible. The letter should state the purpose of the visit, names of persons wishing access to the facility, description and license numbers of all vehicles and the dates of the proposed visits. A confirming phone call immediately prior to the visit is advisable at 203-447-1791.
Key:	No key is required.
Power:	No AC power is available at this site.
Street directions:	From Mystic, take the downtown New London exit off of Rt. I95. In downtown New London, go south on Bank Street continuing past the turnoff for N.U.S.C. Continue up the hill for several miles until the Millstone entrance and guard tower appear on the left. Turn left and continue down and bear left at the flashing light. Bear right until you encounter the first guard station. Explain that you have clearance from Mr. Brown to go to the meteorological tower. They will make some calls and allow you to pass. Follow the road around to the

Table I-4-28 (Cont.)

right to the vehicle inspection station. You may be required to submit to a vehicle inspection but will most likely be passed on to the next check point. At the third and final gate, you will need the truck registration and two forms of identification with your picture on them. You must explain what you are doing and that you have been cleared. They will give you a windshield pass. This security procedure must be repeated each and every time you enter the facility. Turn left into the parking lot. You will encounter a circular driveway and as you go around the drive, you will see a small white sign that says "WITNESS POST". This is the trisponder site.

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 tripod 1 power cable 2 batteries carpenter's level compass
Set up:	Benchmark is located under a pile of rocks at the base of the sign. Set up and level the tripod over this spot and set up the trisponder.
Aiming:	Aim the trisponder towards bearing 133 degrees magnetic.

NOTES

This station should be broken down each night but may remain set up if necessary as the area is heavily guarded.

Table I-4-29

NEW LONDON LIGHT

GENERAL

Station name:	New London Harbor Light
Location:	New London, Connecticut
Purpose:	New London dumpsite GREEN STATION
Structure:	Tall (89'), white octagonal lighthouse with black steel light room.
North Latitude:	41.1899149
West Longitude:	72.0541424
Chart:	12354

LOGISTICAL

Contact:	Call Coast Guard New London Aids to Navigation at 203-447-1040 and speak with Mr. Gladeau or P.O. Miller. Inform them of your intentions and request permission to use the lighthouse. They may be under the impression that you wish to use the New London Ledge Lighthouse which is incorrect. Inquire as to whether or not the combination lock has been changed and, if so, what the new one is. P.O. Miller may be the only one who knows the combination. After 4:00 PM, contact New London Coast Guard as Aids to Navigation will be closed.
Key:	This lighthouse is secured with a combination lock. As of Summer of 1982, the combination was "1040" but this is changed periodically.
Power:	AC power is available both at ground level and in the light room.

Street directions:	From Mystic, take the downtown New London exit. Go into downtown New London and go south on Bank Street. Follow signs to N.U.S.C. At the first large intersection (boatyard on the left), take a left. Follow the road past Crocker Marina on the left, past the railroad underpass to N.U.S.C. and turn left under the next underpass onto Pequot Avenue. Continue south along the shore past Mitchell College and the lighthouse will become visible several hundred yards down the road on the left. An elderly woman lives in the keeper's house. She is familiar with the operation and is quite friendly. You may park on the property.

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 5' pipe with coupler 1 power cable 1 power supply or 2 batteries 1 100' extension cord 1 3 prong to 2 prong cheater plug 2 hose clamps carpenter's level compass electrical tape
Set up:	Set up the trisponder on the southeast side of the lighthouse out of the light path if possible using the 5' pipe and the hose clamps. Pass the power cable through the most convenient vent hole. If the power supply is used, it must be located in the light room but batteries may be located one level down.
Aiming:	Aim the trisponder towards bearing 180 degrees magnetic.

Table I-4-29 (Cont.)

NOTES

As you enter the lighthouse, there are two gray switch boxes on the right hand wall of the passageway. The rightmost switch turns on the building lights. Take care not to trip the leftmost switch as this controls the main light. On site light bulbs are often burned out so a flashlight and spare bulbs are advisable. Use caution when working on catwalk as the railing is very low. Be wary of tourists entering the light tower. Measure offset bearing and distance and inform ship. There is often a Mini-Ranger installed at this location but it doesn't interfere with our operation. This station is unmanned.

Table I-4-30

Parameters for PARAM:NLON
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2

Station name	MILSTONE POINT
Station code	72
Latitude	41 18.312N
Longitude	072 09.873W
x	0.00
y	0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Station name	NEW LONDON HARBOR LIGHT
Station code	82
Latitude	41 18.891N
Longitude	072 05.414W
x	6224.04
y	1257.88
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-30 (Cont.)

Parameters for PARAM:NLON
Page 4

Chart parameters:

Center latitude	41 16.158N
Center longitude	072 04.502W
Center x	7487.00
Center y	-3986.27
Scale	1 / 10000
Skew	0.00
Central parallel	41 18.312N
Central meridian	072 09.873W
x offset	0.00
y offset	-3783384.44
Scale at the origin	0.75231433
Mercator projection	
Scaling latitude	41 18.312N

Table I-4-30 (Cont.)

Parameters for PARAM:NLON
Page 5

Survey parameters:

Survey name	NEW LONDON
Start latitude	41 16.645N
Start longitude	072 05.254W
Start x	6448.34
Start y	-3085.72
Center latitude	41 16.158N
Center longitude	072 04.501W
Center x	7498.34
Center y	-3385.72
Lane length	2100.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	37

Survey lanes:

1	Start	41 16.645N	072 05.254W	6448.34	-3085.72
	End	41 16.645N	072 03.749W	8548.34	-3085.72
2	Start	41 16.617N	072 03.749W	8548.34	-3135.72
	End	41 16.617N	072 05.254W	6448.34	-3135.72
3	Start	41 16.590N	072 05.254W	6448.34	-3185.72
	End	41 16.590N	072 03.749W	8548.34	-3185.72
4	Start	41 16.563N	072 03.749W	8548.34	-3235.72
	End	41 16.563N	072 05.254W	6448.34	-3235.72
5	Start	41 16.536N	072 05.254W	6448.34	-3285.72
	End	41 16.536N	072 03.749W	8548.34	-3285.72
6	Start	41 16.509N	072 03.749W	8548.34	-3335.72
	End	41 16.509N	072 05.254W	6448.34	-3335.72
7	Start	41 16.482N	072 05.254W	6448.34	-3385.72
	End	41 16.482N	072 03.749W	8548.34	-3385.72
8	Start	41 16.455N	072 03.749W	8548.34	-3435.72
	End	41 16.455N	072 05.254W	6448.34	-3435.72
9	Start	41 16.428N	072 05.254W	6448.34	-3485.72
	End	41 16.428N	072 03.749W	8548.34	-3485.72
10	Start	41 16.401N	072 03.749W	8548.34	-3535.72
	End	41 16.401N	072 05.254W	6448.34	-3535.72
11	Start	41 16.374N	072 05.254W	6448.34	-3585.72
	End	41 16.374N	072 03.749W	8548.34	-3585.72
12	Start	41 16.347N	072 03.749W	8548.34	-3635.72
	End	41 16.347N	072 05.254W	6448.34	-3635.72
13	Start	41 16.320N	072 05.254W	6448.34	-3685.72
	End	41 16.320N	072 03.749W	8548.34	-3685.72
14	Start	41 16.293N	072 03.749W	8548.34	-3735.72
	End	41 16.293N	072 05.254W	6448.34	-3735.72
15	Start	41 16.266N	072 05.254W	6448.34	-3785.72
	End	41 16.266N	072 03.749W	8548.34	-3785.72
16	Start	41 16.239N	072 03.749W	8548.34	-3835.72
	End	41 16.239N	072 05.254W	6448.34	-3835.72

Table I-4-30 (Cont.)

Parameters for PARAM:NLON
Page 6

17	Start	41 16.212N	072 05.254W	6448.34	-3885.72
	End	41 16.212N	072 03.749W	8548.34	-3885.72
18	Start	41 16.185N	072 03.749W	8548.34	-3935.72
	End	41 16.185N	072 05.254W	6448.34	-3935.72
19	Start	41 16.158N	072 05.254W	6448.34	-3985.72
	End	41 16.158N	072 03.749W	8548.34	-3985.72
20	Start	41 16.131N	072 03.749W	8548.34	-4035.72
	End	41 16.131N	072 05.254W	6448.34	-4035.72
21	Start	41 16.104N	072 05.254W	6448.34	-4085.72
	End	41 16.104N	072 03.749W	8548.34	-4085.72
22	Start	41 16.077N	072 03.749W	8548.34	-4135.72
	End	41 16.077N	072 05.254W	6448.34	-4135.72
23	Start	41 16.050N	072 05.254W	6448.34	-4185.72
	End	41 16.050N	072 03.749W	8548.34	-4185.72
24	Start	41 16.023N	072 03.749W	8548.34	-4235.72
	End	41 16.023N	072 05.254W	6448.34	-4235.72
25	Start	41 15.996N	072 05.254W	6448.34	-4285.72
	End	41 15.996N	072 03.749W	8548.34	-4285.72
26	Start	41 15.969N	072 03.749W	8548.34	-4335.72
	End	41 15.969N	072 05.254W	6448.34	-4335.72
27	Start	41 15.942N	072 05.254W	6448.34	-4385.72
	End	41 15.942N	072 03.749W	8548.34	-4385.72
28	Start	41 15.915N	072 03.749W	8548.34	-4435.72
	End	41 15.915N	072 05.254W	6448.34	-4435.72
29	Start	41 15.888N	072 05.254W	6448.34	-4485.72
	End	41 15.888N	072 03.749W	8548.34	-4485.72
30	Start	41 15.861N	072 03.749W	8548.34	-4535.72
	End	41 15.861N	072 05.254W	6448.34	-4535.72
31	Start	41 15.834N	072 05.254W	6448.34	-4585.72
	End	41 15.834N	072 03.749W	8548.34	-4585.72
32	Start	41 15.807N	072 03.749W	8548.34	-4635.72
	End	41 15.807N	072 05.254W	6448.34	-4635.72
33	Start	41 15.780N	072 05.254W	6448.34	-4685.72
	End	41 15.780N	072 03.749W	8548.34	-4685.72
34	Start	41 15.753N	072 03.749W	8548.34	-4735.72
	End	41 15.753N	072 05.254W	6448.34	-4735.72
35	Start	41 15.726N	072 05.254W	6448.34	-4785.72
	End	41 15.726N	072 03.749W	8548.34	-4785.72
36	Start	41 15.699N	072 03.749W	8548.34	-4835.72
	End	41 15.699N	072 05.254W	6448.34	-4835.72
37	Start	41 15.672N	072 05.254W	6448.34	-4885.72
	End	41 15.672N	072 03.749W	8548.34	-4885.72

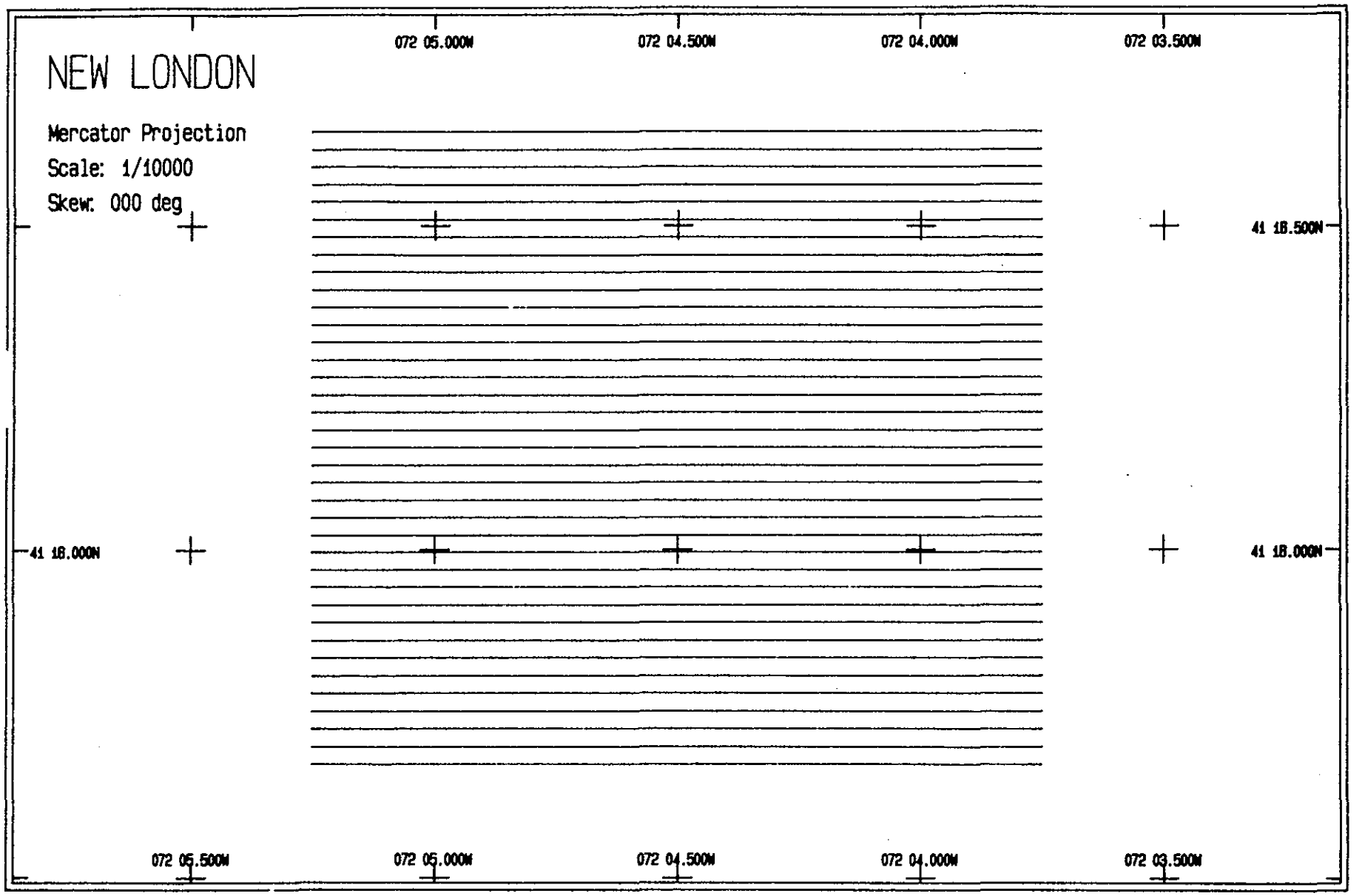

NEW LONDON
Mercator Projection
Scale: 1/10000
Skew: 000 deg
072 05.000W
072 04.500W
072 04.000W
072 03.500W
41 18.500N
41 18.000N
41 18.000N
072 05.500W
072 05.000W
072 04.500W
072 04.000W
072 03.500W

Figure I-4-14.

Table I-4-31

Parameters for PARAM:NLONSCN
Page 4

Chart parameters:

Center latitude	41 15.236N
Center longitude	072 04.583W
Center x	7370.30
Center y	-3840.66
Scale	1 / 10000
Skew	0.00
Central parallel	41 18.312N
Central meridian	072 05.873W
x offset	0.00
y offset	-3782384.44
Scale at the origin	0.75231423
Mercator projection	
Scaling latitude	41 18.312N

Table I-4-31 (Cont.)

Parameters for PARAM:NLONSCN
Page 5

Survey parameters:

Survey name	NEW LONDON SCAN
Start latitude	41 16.831N
Start longitude	072 05.308W
Start x	8371.77
Start y	-2740.23
Center latitude	41 16.237N
Center longitude	072 04.592W
Center x	7371.77
Center y	-3840.23
Lane length	2000.00
Lane bearing	90.00
Lane spacing	100.00
Number of lanes	23

Survey lanes:

1	Start	41 16.831N	072 05.308W	8371.77	-2740.23
	End	41 16.831N	072 03.876W	8371.77	-2740.23
2	Start	41 16.777N	072 03.876W	8371.77	-2840.23
	End	41 16.777N	072 05.308W	8371.77	-2840.23
3	Start	41 16.723N	072 05.308W	8371.77	-2940.23
	End	41 16.723N	072 03.876W	8371.77	-2940.23
4	Start	41 16.669N	072 03.876W	8371.77	-3040.23
	End	41 16.669N	072 05.308W	8371.77	-3040.23
5	Start	41 16.615N	072 05.308W	8371.77	-3140.23
	End	41 16.615N	072 03.876W	8371.77	-3140.23
6	Start	41 16.561N	072 03.876W	8371.77	-3240.23
	End	41 16.561N	072 05.308W	8371.77	-3240.23
7	Start	41 16.507N	072 05.308W	8371.77	-3340.23
	End	41 16.507N	072 03.876W	8371.77	-3340.23
8	Start	41 16.453N	072 03.876W	8371.77	-3440.23
	End	41 16.453N	072 05.308W	8371.77	-3440.23
9	Start	41 16.399N	072 05.308W	8371.77	-3540.23
	End	41 16.399N	072 03.876W	8371.77	-3540.23
10	Start	41 16.345N	072 03.876W	8371.77	-3640.23
	End	41 16.345N	072 05.308W	8371.77	-3640.23
11	Start	41 16.291N	072 05.308W	8371.77	-3740.23
	End	41 16.291N	072 03.876W	8371.77	-3740.23
12	Start	41 16.237N	072 03.876W	8371.77	-3840.23
	End	41 16.237N	072 05.308W	8371.77	-3840.23
13	Start	41 16.183N	072 05.308W	8371.77	-3940.23
	End	41 16.183N	072 03.876W	8371.77	-3940.23
14	Start	41 16.129N	072 03.876W	8371.77	-4040.23
	End	41 16.129N	072 05.308W	8371.77	-4040.23
15	Start	41 16.075N	072 05.308W	8371.77	-4140.23
	End	41 16.075N	072 03.876W	8371.77	-4140.23
16	Start	41 16.020N	072 03.876W	8371.77	-4240.23
	End	41 16.020N	072 05.308W	8371.77	-4240.23

Table I-4-31 (Cont.)

Parameters for PARAM:NLONSON
Page 6

17	Start___	41	15.956N	072 05.308W	8371.77	-4340.23
	End_____	41	15.956N	072 03.876W	8371.77	-4340.23
18	Start___	41	15.917N	072 03.876W	8371.77	-4440.23
	End_____	41	15.917N	072 05.308W	8371.77	-4440.23
19	Start___	41	15.858N	072 05.308W	8371.77	-4540.23
	End_____	41	15.858N	072 03.876W	8371.77	-4540.23
20	Start___	41	15.804N	072 03.876W	8371.77	-4640.23
	End_____	41	15.804N	072 05.308W	8371.77	-4640.23
21	Start___	41	15.750N	072 05.308W	8371.77	-4740.23
	End_____	41	15.750N	072 03.876W	8371.77	-4740.23
22	Start___	41	15.696N	072 03.876W	8371.77	-4840.23
	End_____	41	15.696N	072 05.308W	8371.77	-4840.23
23	Start___	41	15.642N	072 05.308W	8371.77	-4940.23
	End_____	41	15.642N	072 03.876W	8371.77	-4940.23

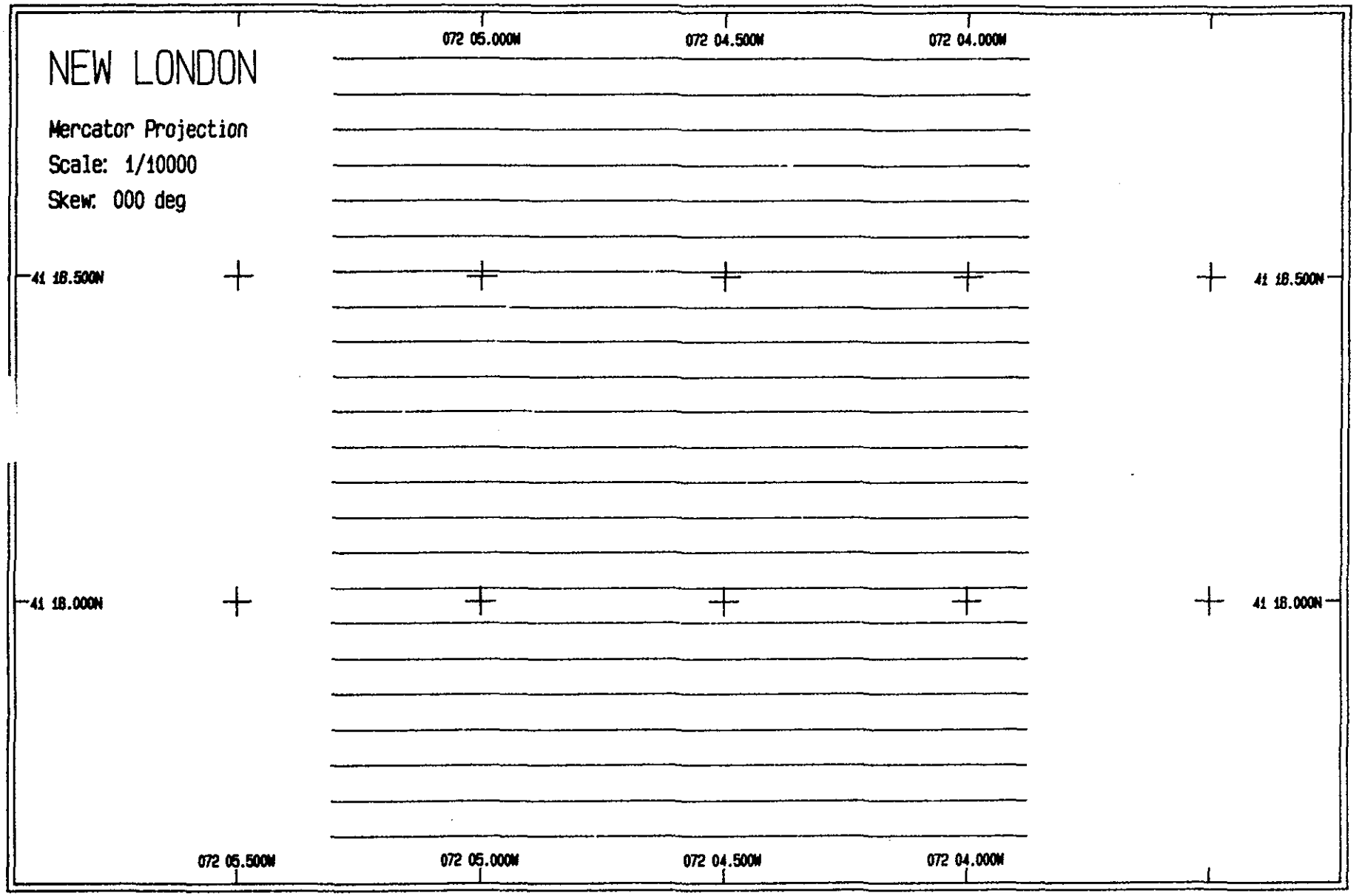

NEW LONDON
Mercator Projection
Scale: 1/10000
Skew: 000 deg
072 05.000W
072 04.500W
072 04.000W
41 18.500N
41 18.000N
072 05.500W

Figure I-4-15.

Table I-4-32

Parameters for PARAM:CORNFIELD
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2

Station name	
Station code	72
Latitude	41 16.118N
Longitude	072 28.408W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Station name	
Station code	82
Latitude	41 16.282N
Longitude	072 20.917W
x	10880.66
y	303.12
Elevation	0.00
Calibration	0.00
Measurement error	1.00

Table I-4-32 (Cont.)

Parameters for PARAM:CORNFIELD
Page 4

Chart parameters:

Center latitude	41 12.477N
Center longitude	072 21.531W
Center x	9603.82
Center y	-6735.92
Scale	1 / 8000
Skew	0.00
Central parallel	41 16.118N
Central meridian	072 28.408W
x offset	0.00
y offset	-3781434.91
Scale at the origin	0.75273448
Mercator projection	
Scaling latitude	41 16.118N

Table I-4-32 (Cont.)

Parameters for PARAM:CORNFIELD
Page 5

Survey parameters:

Survey name	CORNFIELD SHOALS
Start latitude	41 12.977N
Start longitude	072 22.192W
Start x	8680.75
Start y	-5810.58
Center latitude	41 12.477N
Center longitude	072 21.530W
Center x	9605.75
Center y	-6735.58
Lane length	1850.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	38

Survey lanes:

1	Start	41 12.977N	072 22.192W	8680.75	-5810.58
	End	41 12.977N	072 20.867W	10530.75	-5810.58
2	Start	41 12.950N	072 20.867W	10530.75	-5860.58
	End	41 12.950N	072 22.192W	8680.75	-5860.58
3	Start	41 12.923N	072 22.192W	8680.75	-5910.58
	End	41 12.923N	072 20.867W	10530.75	-5910.58
4	Start	41 12.896N	072 20.867W	10530.75	-5960.58
	End	41 12.896N	072 22.192W	8680.75	-5960.58
5	Start	41 12.869N	072 22.192W	8680.75	-6010.58
	End	41 12.869N	072 20.867W	10530.75	-6010.58
6	Start	41 12.842N	072 20.867W	10530.75	-6060.58
	End	41 12.842N	072 22.192W	8680.75	-6060.58
7	Start	41 12.815N	072 22.192W	8680.75	-6110.58
	End	41 12.815N	072 20.867W	10530.75	-6110.58
8	Start	41 12.788N	072 20.867W	10530.75	-6160.58
	End	41 12.788N	072 22.192W	8680.75	-6160.58
9	Start	41 12.761N	072 22.192W	8680.75	-6210.58
	End	41 12.761N	072 20.867W	10530.75	-6210.58
10	Start	41 12.734N	072 20.867W	10530.75	-6260.58
	End	41 12.734N	072 22.192W	8680.75	-6260.58
11	Start	41 12.707N	072 22.192W	8680.75	-6310.58
	End	41 12.707N	072 20.867W	10530.75	-6310.58
12	Start	41 12.680N	072 20.867W	10530.75	-6360.58
	End	41 12.680N	072 22.192W	8680.75	-6360.58
13	Start	41 12.653N	072 22.192W	8680.75	-6410.58
	End	41 12.653N	072 20.867W	10530.75	-6410.58
14	Start	41 12.626N	072 20.867W	10530.75	-6460.58
	End	41 12.626N	072 22.192W	8680.75	-6460.58
15	Start	41 12.599N	072 22.192W	8680.75	-6510.58
	End	41 12.599N	072 20.867W	10530.75	-6510.58
16	Start	41 12.572N	072 20.867W	10530.75	-6560.58
	End	41 12.572N	072 22.192W	8680.75	-6560.58

Table I-4-32 (Cont.)

Parameters for PARAM:CORNER:D
Page 6

17	Start	41 12.545N	072 22.192W	8680.75	-6610.58
	End	41 12.545N	072 20.867W	10530.75	-6610.58
18	Start	41 12.518N	072 20.867W	10530.75	-6660.58
	End	41 12.518N	072 22.192W	8680.75	-6660.58
19	Start	41 12.491N	072 22.192W	8680.75	-6710.58
	End	41 12.491N	072 20.867W	10530.75	-6710.58
20	Start	41 12.464N	072 20.867W	10530.75	-6760.58
	End	41 12.464N	072 22.192W	8680.75	-6760.58
21	Start	41 12.437N	072 22.192W	8680.75	-6810.58
	End	41 12.437N	072 20.867W	10530.75	-6810.58
22	Start	41 12.410N	072 20.867W	10530.75	-6860.58
	End	41 12.410N	072 22.192W	8680.75	-6860.58
23	Start	41 12.382N	072 22.192W	8680.75	-6910.58
	End	41 12.382N	072 20.867W	10530.75	-6910.58
24	Start	41 12.355N	072 20.867W	10530.75	-6960.58
	End	41 12.355N	072 22.192W	8680.75	-6960.58
25	Start	41 12.328N	072 22.192W	8680.75	-7010.58
	End	41 12.328N	072 20.867W	10530.75	-7010.58
26	Start	41 12.301N	072 20.867W	10530.75	-7060.58
	End	41 12.301N	072 22.192W	8680.75	-7060.58
27	Start	41 12.274N	072 22.192W	8680.75	-7110.58
	End	41 12.274N	072 20.867W	10530.75	-7110.58
28	Start	41 12.247N	072 20.867W	10530.75	-7160.58
	End	41 12.247N	072 22.192W	8680.75	-7160.58
29	Start	41 12.220N	072 22.192W	8680.75	-7210.58
	End	41 12.220N	072 20.867W	10530.75	-7210.58
30	Start	41 12.193N	072 20.867W	10530.75	-7260.58
	End	41 12.193N	072 22.192W	8680.75	-7260.58
31	Start	41 12.166N	072 22.192W	8680.75	-7310.58
	End	41 12.166N	072 20.867W	10530.75	-7310.58
32	Start	41 12.139N	072 20.867W	10530.75	-7360.58
	End	41 12.139N	072 22.192W	8680.75	-7360.58
33	Start	41 12.112N	072 22.192W	8680.75	-7410.58
	End	41 12.112N	072 20.867W	10530.75	-7410.58
34	Start	41 12.085N	072 20.867W	10530.75	-7460.58
	End	41 12.085N	072 22.192W	8680.75	-7460.58
35	Start	41 12.058N	072 22.192W	8680.75	-7510.58
	End	41 12.058N	072 20.867W	10530.75	-7510.58
36	Start	41 12.031N	072 20.867W	10530.75	-7560.58
	End	41 12.031N	072 22.192W	8680.75	-7560.58
37	Start	41 12.004N	072 22.192W	8680.75	-7610.58
	End	41 12.004N	072 20.867W	10530.75	-7610.58
38	Start	41 11.977N	072 20.867W	10530.75	-7660.58
	End	41 11.977N	072 22.192W	8680.75	-7660.58

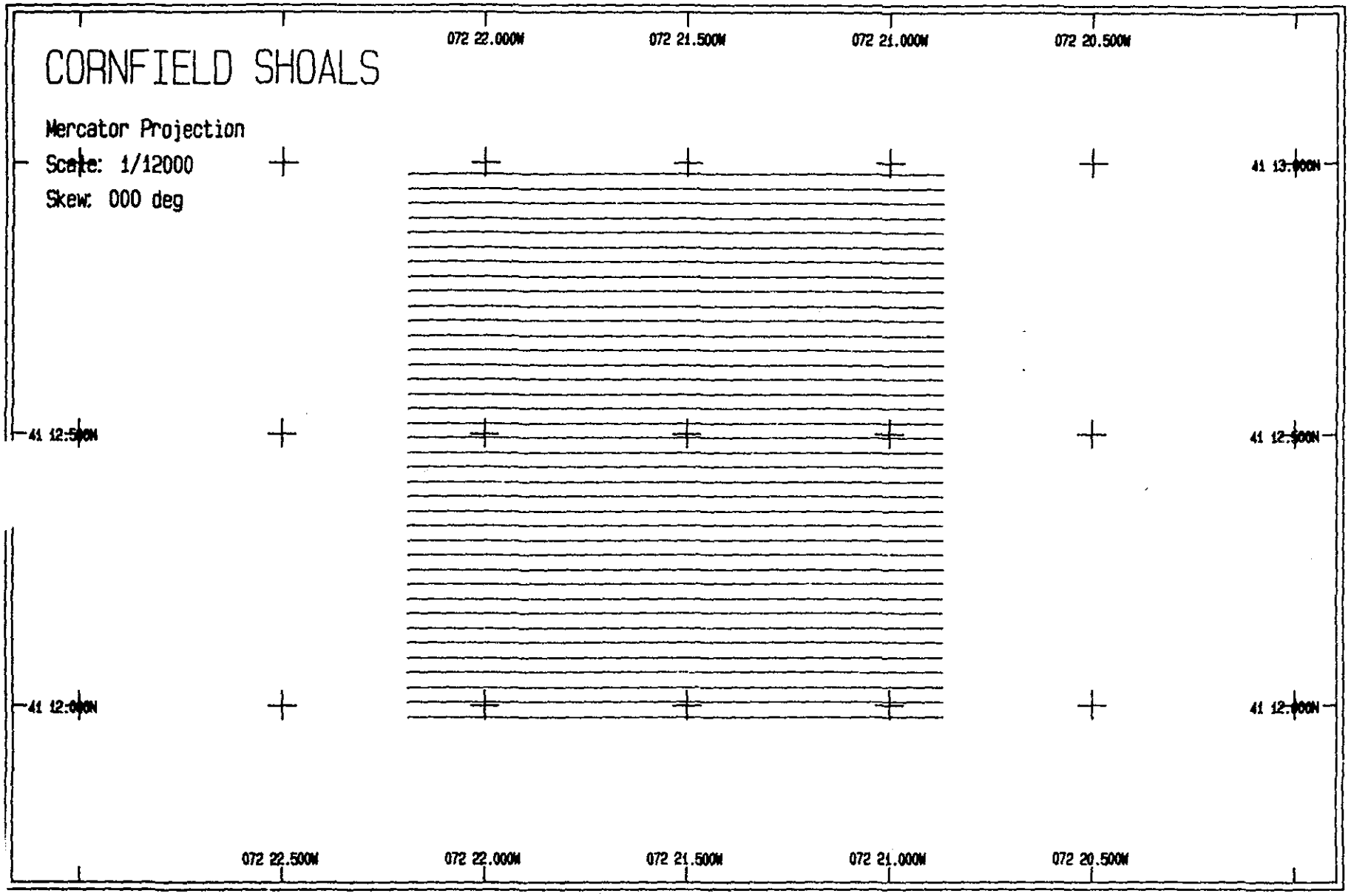

CORNFIELD SHOALS
Mercator Projection
Scale: 1/12000
Skew: 000 deg
072 22.000W
072 21.500W
072 21.000W
072 20.500W
41 13:000N
41 12:500N
41 12:000N
072 22.500W
072 22.000W
072 21.500W
072 21.000W
072 20.500W

Figure I-4-16.

Table I-4-33

STRATFORD POINT

GENREAL

Station name:	Stratford Point Light
Location:	Stratford Point; Lordship, Connecticut
Purpose:	New Haven dumpsites RED STATION
Structure:	Short cylindrical lighthouse with black horizontal stripe in the middle. Flat platform on top.
North Latitude:	41.0911332
West Longitude:	73.0622628
Chart:	12354

LOGISTICAL

Contact:	Call Chief Shouelamite (who lives in the lighthouse and heads the A to N team) at New Haven Coast Guard Aids to Navigation (AtoN) at 203-773-2407.
Key:	Key is in SAI possession or is available at New Haven Coast Guard Aids to Navigation. Lock IS NOT a standard A to N lock.
Power:	AC power is available in the upper level.
Street directions:	From New Haven, take Rt. I95 south to the Surf Avenue exit (exit 30). Go left at the stop sign at the end of the ramp and then turn left at the traffic light. Bear right at the fork near the airport. Go through the town of Lordship until you encounter a traffic light with a church on the right. Bear slightly right onto Prospect Drive and follow this road until the lighthouse comes into view.

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 power cable 1 power supply or 2 batteries 1 5' pipe with coupler 2 hose clamps 1 3 prong to 2 prong cheater plug carpenter's level compass electrical tape
Set up:	Mount the trisponder on the eastern side of the lighthouse utilizing the railing stanchion. Run the power cable out thru air vent behind door. Use boat hook to snag cable. Retape vent when done. The power supply or batteries may be placed in the equipment room. Also place warning sign on Trisponder.
Aiming:	Aim the trisponder towards bearing 100 degrees magnetic.

NOTES

The man living adjacent to the lighthouse is a retired Coast Guardsman and he is quite protective of the lighthouse and he may investigate your activities. He may also roll a boulder to block the lighthouse driveway. Replace this rock behind you every time you depart. Do not trespass on his property. Do not disturb any environmental monitoring equipment which may be present in the equipmant room. Measure offset bearing and distance and inform ship. Take bearings away from metalic structures. This station is not manned.

Table I-4-34

LIGHTHOUSE POINT

GENERAL

Station name:	Lighthouse Point Light (Old New Haven Light)
Location:	Lighthouse Point Park; East Haven, Connecticut
Purpose:	New Haven Dumpsites GREEN STATION Morris Cove Borrow Pit RED STATION
North Latitude:	41.1493218
West Longitude:	72.5425397
Chart:	12354

LOGISTICAL

Contact:	Year round park superintendant is Bernie Summers. Contact him prior to operations at 203-787-8005.
Key:	Key is in SAI possession. This key also unlocks the main gate to the park. You will need a thin screwdriver or other such tool to trip the Cape Cod type latch on the lighthouse door.
Power:	There is NO AC power at this station.
Street directions:	From New Haven proper, take Rt. I95 north and take the second exit (exit 50) after crossing the New Haven Harbor Bridge. At the top of the ramp, continue through the first traffic light and turn right at the second light onto Townsend Avenue. Continue about 3 miles until you encounter a four way intersection with a fire station on the right. Bear right here down Lighthouse Road. The lighthouse is located in the park. Ignore the "DO NOT ENTER" sign and take the dirt access road to the lighthouse. Do not drive past the lighthouse as the road turns into soft sand! Should the park be closed (dusk in winter), you must enter the park through the exit gate and use the lighthouse key to unlock the gate. Lock the gate behind you both upon arriving and departing.

Table I-4-34 (Cont.)

PROCEDURE

Needed materials:	1 Del Norte trisponder 1 sector antenna 1 power cable 1 5' pipe with coupler 2 hose clamps 2 batteries 1 thin screwdriver or equivalent 1 Del Norte extension power cord carpenter's level electrical tape compass flashlight
Set up:	Mount the trisponder on the south side of the catwalk utilizing a railing stanchion. Tape the power cable to the rail and feed it through a convenient vent hole. Run the cable down the hatch and, using the extension cable, run the cable down the stairs as far as is possible and the batteries will be placed here.
Aiming:	Aim the trisponder towards bearing 184 degrees magnetic.

NOTES

This lighthouse is abandoned and is therefore unmanned. The lighthouse has not been maintained in quite a while and is in very poor condition. Do not exert pressure on the catwalk railing as it's structural integrity is doubtful. The ladder leading to the lightroom is wobbly so use caution. There is no lighting at all at this station so a flashlight is essential. Under no circumstances attempt to occupy this location without an adequate light source. This lighthouse is a pigeon nesting area. Upon entering the lighthouse, bang the door and generally make noise. This should convince the pigeons to leave. Do not disturb nests on the stairs as they often contain eggs or nestlings. Pigeon excrement makes the stairs quite slippery. Measure offset bearing and distance and inform ship. Take bearings away from metalic structures.

For Morris Cove work move Trisponder to north side of lighthouse. Aim toward bearing 20 degrees magnetic.

Table I-4-35

Parameters for PARAM:FVP
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2

Station name	STRATFORD
Station code	72
Latitude	41 09.112N
Longitude	073 06.227W
x	-0.00
y	-0.01
Elevation	0.00
Calibration	0.00
Measurement error	3.00

Station name	LIGHTHOUSE POINT
Station code	82
Latitude	41 14.931N
Longitude	072 54.255W
x	16749.18
y	10779.45
Elevation	0.00
Calibration	0.00
Measurement error	3.00

Parameters for PARAM:FVP
Page 4

Chart parameters:

Center latitude	41 08.950N
Center longitude	072 52.850W
Center x	18715.00
Center y	-300.00
Scale	1 / 12000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 06.227W
x offset	0.00
y offset	-3775184.68
Scale at the origin	0.75407394
Mercator projection	
Scaling latitude	41 09.112N

Parameters for PROGRAM:FVP
Page 5

Survey parameters:

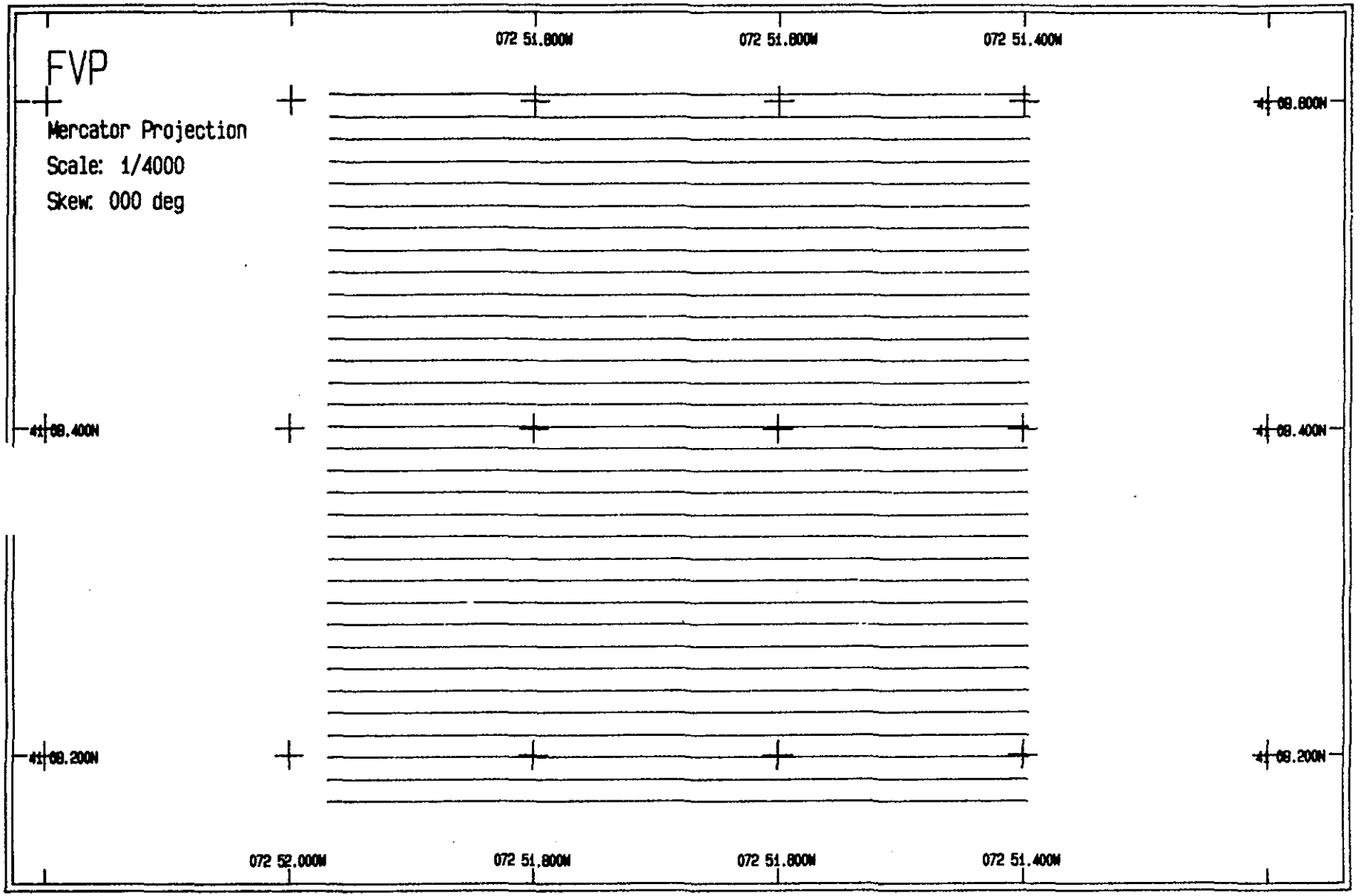
Survey name	CLIS MASTER
Start latitude	41 09.450N
Start longitude	072 54.173W
Start x	16864.00
Start y	626.00
Center latitude	41 08.950N
Center longitude	072 52.850W
Center x	18714.00
Center y	-299.00
Lane length	3700.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	38

Survey lanes:

1	Start	41 09.450N	072 54.173W	16864.00	626.00
	End	41 09.450N	072 51.528W	20564.00	626.00
2	Start	41 09.423N	072 51.528W	20564.00	576.00
	End	41 09.423N	072 54.173W	16864.00	576.00
3	Start	41 09.396N	072 54.173W	16864.00	526.00
	End	41 09.396N	072 51.528W	20564.00	526.00
4	Start	41 09.369N	072 51.528W	20564.00	476.00
	End	41 09.369N	072 54.173W	16864.00	476.00
5	Start	41 09.342N	072 54.173W	16864.00	426.00
	End	41 09.342N	072 51.528W	20564.00	426.00
6	Start	41 09.315N	072 51.528W	20564.00	376.00
	End	41 09.315N	072 54.173W	16864.00	376.00
7	Start	41 09.288N	072 54.173W	16864.00	326.00
	End	41 09.288N	072 51.528W	20564.00	326.00
8	Start	41 09.261N	072 51.528W	20564.00	276.00
	End	41 09.261N	072 54.173W	16864.00	276.00
9	Start	41 09.234N	072 54.173W	16864.00	226.00
	End	41 09.234N	072 51.528W	20564.00	226.00
10	Start	41 09.207N	072 51.528W	20564.00	176.00
	End	41 09.207N	072 54.173W	16864.00	176.00
11	Start	41 09.180N	072 54.173W	16864.00	126.00
	End	41 09.180N	072 51.528W	20564.00	126.00
12	Start	41 09.153N	072 51.528W	20564.00	76.00
	End	41 09.153N	072 54.173W	16864.00	76.00
13	Start	41 09.126N	072 54.173W	16864.00	26.00
	End	41 09.126N	072 51.528W	20564.00	26.00
14	Start	41 09.099N	072 51.528W	20564.00	-24.00
	End	41 09.099N	072 54.173W	16864.00	-24.00
15	Start	41 09.072N	072 54.173W	16864.00	-74.00
	End	41 09.072N	072 51.528W	20564.00	-74.00
16	Start	41 09.045N	072 51.528W	20564.00	-124.00
	End	41 09.045N	072 54.173W	16864.00	-124.00

Parameters for PARAM:FVP
Page 6

17	Start	41 09.018N	072 54.173W	16864.00	-174.00
	End	41 09.018N	072 51.528W	20564.00	-174.00
18	Start	41 08.991N	072 51.528W	20564.00	-224.00
	End	41 08.991N	072 54.173W	16864.00	-224.00
19	Start	41 08.964N	072 54.173W	16864.00	-274.00
	End	41 08.964N	072 51.528W	20564.00	-274.00
20	Start	41 08.937N	072 51.528W	20564.00	-324.00
	End	41 08.937N	072 54.173W	16864.00	-324.00
21	Start	41 08.910N	072 54.173W	16864.00	-374.00
	End	41 08.910N	072 51.528W	20564.00	-374.00
22	Start	41 08.883N	072 51.528W	20564.00	-424.00
	End	41 08.883N	072 54.173W	16864.00	-424.00
23	Start	41 08.856N	072 54.173W	16864.00	-474.00
	End	41 08.856N	072 51.528W	20564.00	-474.00
24	Start	41 08.829N	072 51.528W	20564.00	-524.00
	End	41 08.829N	072 54.173W	16864.00	-524.00
25	Start	41 08.802N	072 54.173W	16864.00	-574.00
	End	41 08.802N	072 51.528W	20564.00	-574.00
26	Start	41 08.775N	072 51.528W	20564.00	-624.00
	End	41 08.775N	072 54.173W	16864.00	-624.00
27	Start	41 08.748N	072 54.173W	16864.00	-674.00
	End	41 08.748N	072 51.528W	20564.00	-674.00
28	Start	41 08.721N	072 51.528W	20564.00	-724.00
	End	41 08.721N	072 54.173W	16864.00	-724.00
29	Start	41 08.694N	072 54.173W	16864.00	-774.00
	End	41 08.694N	072 51.528W	20564.00	-774.00
30	Start	41 08.667N	072 51.528W	20564.00	-824.00
	End	41 08.667N	072 54.173W	16864.00	-824.00
31	Start	41 08.640N	072 54.173W	16864.00	-874.00
	End	41 08.640N	072 51.528W	20564.00	-874.00
32	Start	41 08.613N	072 51.528W	20564.00	-924.00
	End	41 08.613N	072 54.173W	16864.00	-924.00
33	Start	41 08.586N	072 54.173W	16864.00	-974.00
	End	41 08.586N	072 51.528W	20564.00	-974.00
34	Start	41 08.559N	072 51.528W	20564.00	-1024.00
	End	41 08.559N	072 54.173W	16864.00	-1024.00
35	Start	41 08.532N	072 54.173W	16864.00	-1074.00
	End	41 08.532N	072 51.528W	20564.00	-1074.00
36	Start	41 08.505N	072 51.528W	20564.00	-1124.00
	End	41 08.505N	072 54.173W	16864.00	-1124.00
37	Start	41 08.477N	072 54.173W	16864.00	-1174.00
	End	41 08.477N	072 51.528W	20564.00	-1174.00
38	Start	41 08.450N	072 51.528W	20564.00	-1224.00
	End	41 08.450N	072 54.173W	16864.00	-1224.00


FVP
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Scale: 1/4000
Skew: 000 deg
072 51.800W
072 51.800W
072 51.400W
41 09.800N
41 09.400N
41 09.200N
072 52.000W
072 51.800W
072 51.800W
072 51.400W

Figure I-4-17

Table I-4-36

Parameters for PAPRM:STNH-W
Page 4

Chart parameters:

Center latitude	41 09.245N
Center longitude	072 52.750W
Center x	19854.00
Center y	249.00
Scale	1 / 3000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 06.227W
x offset	0.00
y offset	-3775184.58
Scale at the origin	0.754073394
Mercator projection	
Scaling latitude	41 09.112N

Table I-4-36 (Cont.)

Parameters for PARAM:STNH-N
Page 5

Survey parameters:

Survey name	STNH-NORTH
Start latitude	41 09.408N
Start longitude	072 52.965W
Start x	18553.95
Start y	548.97
Center latitude	41 09.346N
Center longitude	072 52.750W
Center x	18853.85
Center y	248.97
Lane length	600.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	25

Survey lanes:

1	Start	41 09.408N	072 52.965W	18553.95	548.97
	End	41 09.408N	072 52.536W	19153.95	548.97
2	Start	41 09.395N	072 52.536W	19153.95	523.97
	End	41 09.395N	072 52.965W	18553.95	523.97
3	Start	41 09.381N	072 52.965W	18553.95	498.97
	End	41 09.381N	072 52.536W	19153.95	498.97
4	Start	41 09.368N	072 52.536W	19153.95	473.97
	End	41 09.368N	072 52.965W	18553.95	473.97
5	Start	41 09.354N	072 52.965W	18553.95	448.97
	End	41 09.354N	072 52.536W	19153.95	448.97
6	Start	41 09.341N	072 52.536W	19153.95	423.97
	End	41 09.341N	072 52.965W	18553.95	423.97
7	Start	41 09.327N	072 52.965W	18553.95	398.97
	End	41 09.327N	072 52.536W	19153.95	398.97
8	Start	41 09.314N	072 52.536W	19153.95	373.97
	End	41 09.314N	072 52.965W	18553.95	373.97
9	Start	41 09.300N	072 52.965W	18553.95	348.97
	End	41 09.300N	072 52.536W	19153.95	348.97
10	Start	41 09.287N	072 52.536W	19153.95	323.97
	End	41 09.287N	072 52.965W	18553.95	323.97
11	Start	41 09.273N	072 52.965W	18553.95	298.97
	End	41 09.273N	072 52.536W	19153.95	298.97
12	Start	41 09.260N	072 52.536W	19153.95	273.97
	End	41 09.260N	072 52.965W	18553.95	273.97
13	Start	41 09.246N	072 52.965W	18553.95	248.97
	End	41 09.246N	072 52.536W	19153.95	248.97
14	Start	41 09.233N	072 52.536W	19153.95	223.97
	End	41 09.233N	072 52.965W	18553.95	223.97
15	Start	41 09.219N	072 52.965W	18553.95	198.97
	End	41 09.219N	072 52.536W	19153.95	198.97
16	Start	41 09.206N	072 52.536W	19153.95	173.97
	End	41 09.206N	072 52.965W	18553.95	173.97

Table I-4-36 (Cont.)

Parameters for PARAMISTNH-N
Page 6

17	Start___	41 09.192N	072 52.965W	18553.95	148.97
	End_____	41 09.192N	072 52.536W	19153.95	148.97
18	Start___	41 09.179N	072 52.536W	19153.95	123.97
	End_____	41 09.179N	072 52.965W	18553.95	123.97
19	Start___	41 09.165N	072 52.965W	18553.95	98.97
	End_____	41 09.165N	072 52.536W	19153.95	98.97
20	Start___	41 09.152N	072 52.536W	19153.95	73.97
	End_____	41 09.152N	072 52.965W	18553.95	73.97
21	Start___	41 09.138N	072 52.965W	18553.95	48.97
	End_____	41 09.138N	072 52.536W	19153.95	48.97
22	Start___	41 09.125N	072 52.536W	19153.95	23.97
	End_____	41 09.125N	072 52.965W	18553.95	23.97
23	Start___	41 09.111N	072 52.965W	18553.95	-1.03
	End_____	41 09.111N	072 52.536W	19153.95	-1.03
24	Start___	41 09.098N	072 52.536W	19153.95	-26.03
	End_____	41 09.098N	072 52.965W	18553.95	-26.03
25	Start___	41 09.084N	072 52.965W	18553.95	-51.03
	End_____	41 09.084N	072 52.536W	19153.95	-51.03

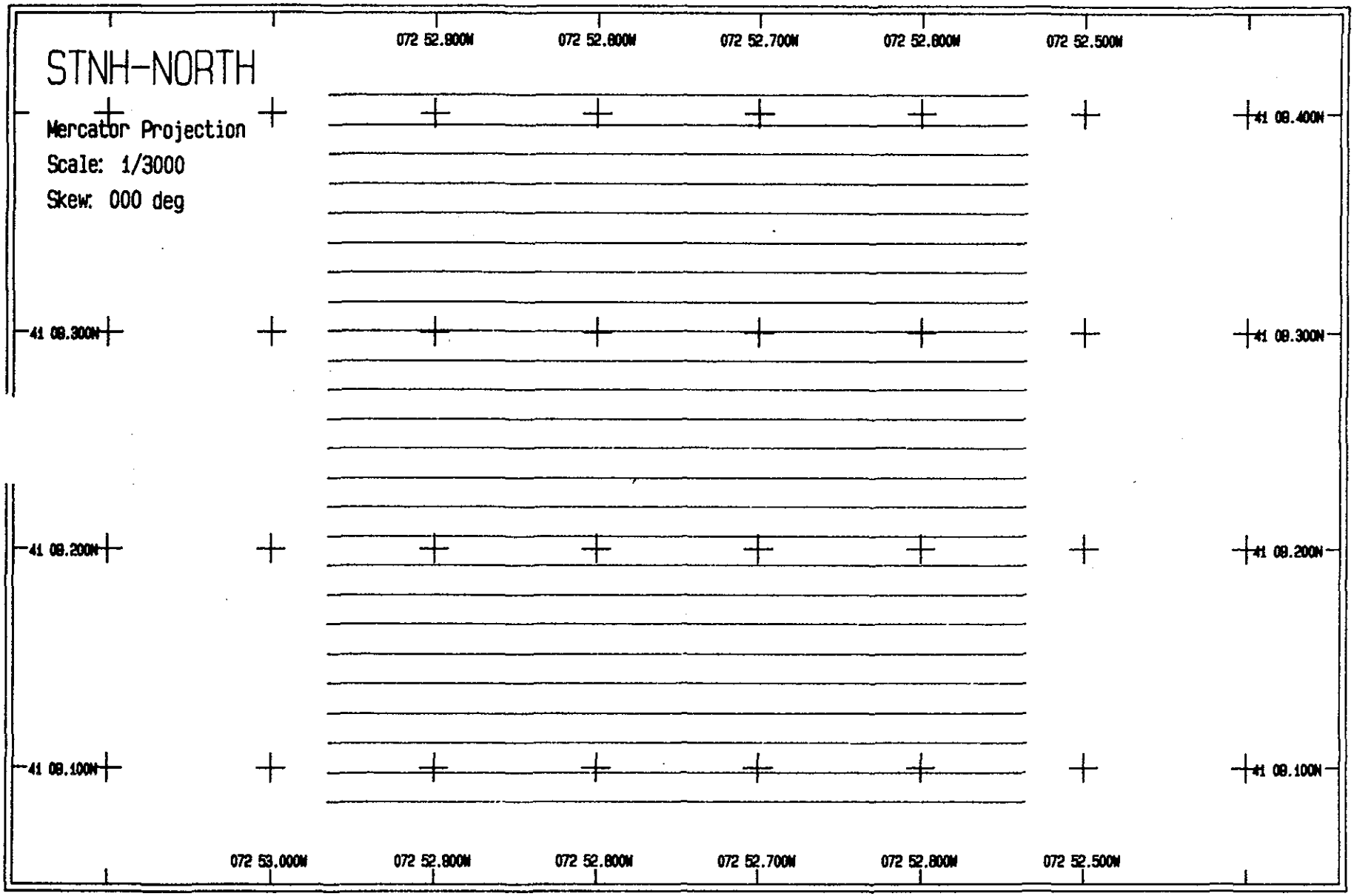

STNH-NORTH
Mercator Projection
Scale: 1/3000
Skew: 000 deg
072 52.900W
072 52.800W
072 52.700W
072 52.600W
072 52.500W
41 09.400N
41 09.300N
41 09.200N
41 09.100N
072 53.000W
072 52.900W
072 52.800W
072 52.700W
072 52.600W
072 52.500W

Figure I-4-18

Table I-4-37

Parameters for PARAM:STNH-F
Page 4

Chart parameters:

Center latitude	41 08.484N
Center longitude	072 52.788W
Center x	18601.00
Center y	-1143.00
Scale	1 / 4000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 06.227W
x offset	0.00
y offset	-3775164.66
Scale at the origin	0.75407394
Mercator projection	
Scaling latitude	41 09.112N

Table I-4-37 (Cont.)

Parameters for PARAM:STNH-S
Page 5

Survey parameters:

Survey name	STNH-SOUTH
Start latitude	41 08.656N
Start longitude	072 53.074W
Start x	18401.00
Start y	-843.00
Center latitude	41 08.494N
Center longitude	072 52.788W
Center x	18601.00
Center y	-1143.00
Lane length	800.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	25

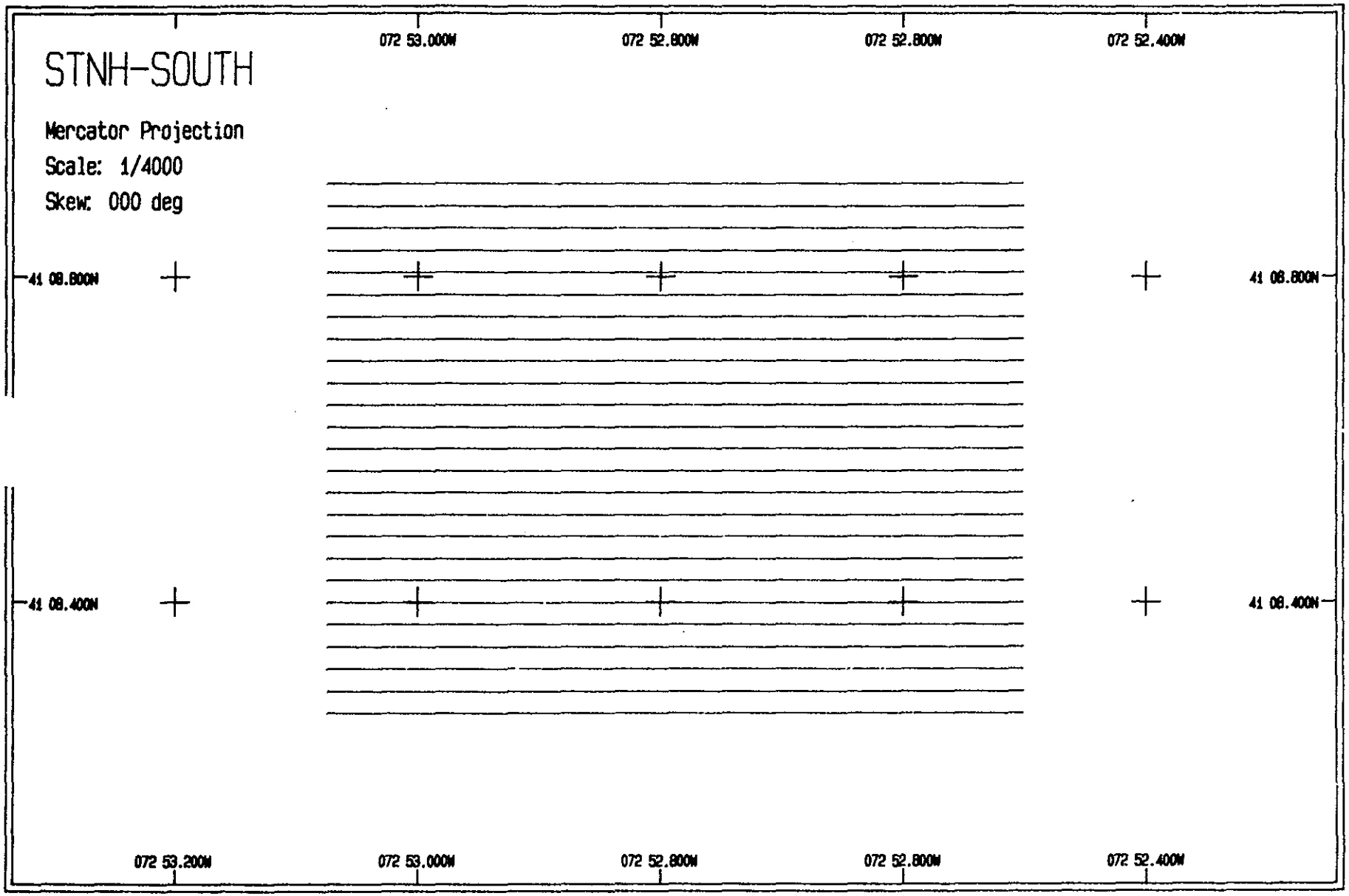
Survey lanes:

1	Start	41 08.656N	072 53.074W	18401.00	-843.00
	End	41 08.656N	072 52.502W	19201.00	-843.00
2	Start	41 08.643N	072 52.502W	19201.00	-868.00
	End	41 08.643N	072 53.074W	18401.00	-868.00
3	Start	41 08.629N	072 53.074W	18401.00	-893.00
	End	41 08.629N	072 52.502W	19201.00	-893.00
4	Start	41 08.616N	072 52.502W	19201.00	-918.00
	End	41 08.616N	072 53.074W	18401.00	-918.00
5	Start	41 08.602N	072 53.074W	18401.00	-943.00
	End	41 08.602N	072 52.502W	19201.00	-943.00
6	Start	41 08.589N	072 52.502W	19201.00	-968.00
	End	41 08.589N	072 53.074W	18401.00	-968.00
7	Start	41 08.575N	072 53.074W	18401.00	-993.00
	End	41 08.575N	072 52.502W	19201.00	-993.00
8	Start	41 08.562N	072 52.502W	19201.00	-1018.00
	End	41 08.562N	072 53.074W	18401.00	-1018.00
9	Start	41 08.548N	072 53.074W	18401.00	-1043.00
	End	41 08.548N	072 52.502W	19201.00	-1043.00
10	Start	41 08.535N	072 52.502W	19201.00	-1068.00
	End	41 08.535N	072 53.074W	18401.00	-1068.00
11	Start	41 08.521N	072 53.074W	18401.00	-1093.00
	End	41 08.521N	072 52.502W	19201.00	-1093.00
12	Start	41 08.508N	072 52.502W	19201.00	-1118.00
	End	41 08.508N	072 53.074W	18401.00	-1118.00
13	Start	41 08.494N	072 53.074W	18401.00	-1143.00
	End	41 08.494N	072 52.502W	19201.00	-1143.00
14	Start	41 08.481N	072 52.502W	19201.00	-1168.00
	End	41 08.481N	072 53.074W	18401.00	-1168.00
15	Start	41 08.467N	072 53.074W	18401.00	-1193.00
	End	41 08.467N	072 52.502W	19201.00	-1193.00
16	Start	41 08.454N	072 52.502W	19201.00	-1218.00
	End	41 08.454N	072 53.074W	18401.00	-1218.00

Table I-4-37 (Cont.)

Parameters for PARAM:STNH-S
Page 8

17	Start___	41	08.440N	072 53.074W	18401.00	-1243.00
	End_____	41	08.440N	072 52.502W	19201.00	-1243.00
18	Start___	41	08.427N	072 52.502W	19201.00	-1268.00
	End_____	41	08.427N	072 53.074W	18401.00	-1268.00
19	Start___	41	08.413N	072 53.074W	18401.00	-1293.00
	End_____	41	08.413N	072 52.502W	19201.00	-1293.00
20	Start___	41	08.400N	072 52.502W	19201.00	-1318.00
	End_____	41	08.400N	072 53.074W	18401.00	-1318.00
21	Start___	41	08.386N	072 53.074W	18401.00	-1343.00
	End_____	41	08.386N	072 52.502W	19201.00	-1343.00
22	Start___	41	08.373N	072 52.502W	19201.00	-1368.00
	End_____	41	08.373N	072 53.074W	18401.00	-1368.00
23	Start___	41	08.359N	072 53.074W	18401.00	-1393.00
	End_____	41	08.359N	072 52.502W	19201.00	-1393.00
24	Start___	41	08.346N	072 52.502W	19201.00	-1418.00
	End_____	41	08.346N	072 53.074W	18401.00	-1418.00
25	Start___	41	08.332N	072 53.074W	18401.00	-1443.00
	End_____	41	08.332N	072 52.502W	19201.00	-1443.00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Mercator Projection
Scale: 1/4000
Skew: 000 deg
072 53.000W
072 52.800W
072 52.800W
072 52.400W
41 08.800N
41 08.400N
072 53.200W
072 53.000W
072 52.800W
072 52.800W
072 52.400W

Figure I-4-19

Table I-4-38

Parameters for FARMINGDALE
Page 4

Chart parameters:

Center latitude	41 08.914N
Center longitude	072 53.488W
Center x	17820.00
Center y	-387.00
Scale	1 / 4000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 06.227W
x offset	0.00
y offset	-3775184.68
Scale at the origin	0.75407394
Mercator projection	
Scaling latitude	41 09.112N

Table I-4-38 (Cont.)

Parameters for PARAM:NORWALK
Page 5

Survey parameters:

Survey name	NORWALK
Start latitude	41 09.143N
Start longitude	072 53.740W
Start x	17470.00
Start y	58.00
Center latitude	41 08.914N
Center longitude	072 53.489W
Center x	17820.00
Center y	-367.00
Lane length	700.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	35

Survey lanes:

1	Start	41 09.143N	072 53.740W	17470.00	58.00
	End	41 09.143N	072 53.239W	18170.00	58.00
2	Start	41 09.130N	072 53.239W	18170.00	33.00
	End	41 09.130N	072 53.740W	17470.00	33.00
3	Start	41 09.118N	072 53.740W	17470.00	8.00
	End	41 09.118N	072 53.239W	18170.00	8.00
4	Start	41 09.103N	072 53.239W	18170.00	-17.00
	End	41 09.103N	072 53.740W	17470.00	-17.00
5	Start	41 09.089N	072 53.740W	17470.00	-42.00
	End	41 09.089N	072 53.239W	18170.00	-42.00
6	Start	41 09.076N	072 53.239W	18170.00	-67.00
	End	41 09.076N	072 53.740W	17470.00	-67.00
7	Start	41 09.062N	072 53.740W	17470.00	-92.00
	End	41 09.062N	072 53.239W	18170.00	-92.00
8	Start	41 09.049N	072 53.239W	18170.00	-117.00
	End	41 09.049N	072 53.740W	17470.00	-117.00
9	Start	41 09.035W	072 53.740W	17470.00	-142.00
	End	41 09.035N	072 53.239W	18170.00	-142.00
10	Start	41 09.022N	072 53.239W	18170.00	-167.00
	End	41 09.022N	072 53.740W	17470.00	-167.00
11	Start	41 09.008N	072 53.740W	17470.00	-192.00
	End	41 09.008N	072 53.239W	18170.00	-192.00
12	Start	41 08.995N	072 53.239W	18170.00	-217.00
	End	41 08.995N	072 53.740W	17470.00	-217.00
13	Start	41 08.981N	072 53.740W	17470.00	-242.00
	End	41 08.981N	072 53.239W	18170.00	-242.00
14	Start	41 08.968N	072 53.239W	18170.00	-267.00
	End	41 08.968N	072 53.740W	17470.00	-267.00
15	Start	41 08.954N	072 53.740W	17470.00	-292.00
	End	41 08.954N	072 53.239W	18170.00	-292.00
16	Start	41 08.941N	072 53.239W	18170.00	-317.00
	End	41 08.941N	072 53.740W	17470.00	-317.00

Table I-4-38 (Cont.)

Parameters for PARAM:NORWALK
Page 6

17	Start___	41 08.977N	072 53.740W	17470.00	-342.00
	End_____	41 08.977N	072 53.239W	18170.00	-342.00
18	Start___	41 08.914N	072 53.239W	18170.00	-367.00
	End_____	41 08.914N	072 53.740W	17470.00	-367.00
19	Start___	41 08.900N	072 53.740W	17470.00	-392.00
	End_____	41 08.900N	072 53.239W	18170.00	-392.00
20	Start___	41 08.887N	072 53.239W	18170.00	-417.00
	End_____	41 08.887N	072 53.740W	17470.00	-417.00
21	Start___	41 08.873N	072 53.740W	17470.00	-442.00
	End_____	41 08.873N	072 53.239W	18170.00	-442.00
22	Start___	41 08.860N	072 53.239W	18170.00	-467.00
	End_____	41 08.860N	072 53.740W	17470.00	-467.00
23	Start___	41 08.846N	072 53.740W	17470.00	-492.00
	End_____	41 08.846N	072 53.239W	18170.00	-492.00
24	Start___	41 08.832N	072 53.239W	18170.00	-517.00
	End_____	41 08.832N	072 53.740W	17470.00	-517.00
25	Start___	41 08.819N	072 53.740W	17470.00	-542.00
	End_____	41 08.819N	072 53.239W	18170.00	-542.00
26	Start___	41 08.805N	072 53.239W	18170.00	-567.00
	End_____	41 08.805N	072 53.740W	17470.00	-567.00
27	Start___	41 08.792N	072 53.740W	17470.00	-592.00
	End_____	41 08.792N	072 53.239W	18170.00	-592.00
28	Start___	41 08.778N	072 53.239W	18170.00	-617.00
	End_____	41 08.778N	072 53.740W	17470.00	-617.00
29	Start___	41 08.765N	072 53.740W	17470.00	-642.00
	End_____	41 08.765N	072 53.239W	18170.00	-642.00
30	Start___	41 08.751N	072 53.239W	18170.00	-667.00
	End_____	41 08.751N	072 53.740W	17470.00	-667.00
31	Start___	41 08.738N	072 53.740W	17470.00	-692.00
	End_____	41 08.738N	072 53.239W	18170.00	-692.00
32	Start___	41 08.724N	072 53.239W	18170.00	-717.00
	End_____	41 08.724N	072 53.740W	17470.00	-717.00
33	Start___	41 08.711N	072 53.740W	17470.00	-742.00
	End_____	41 08.711N	072 53.239W	18170.00	-742.00
34	Start___	41 08.697N	072 53.239W	18170.00	-767.00
	End_____	41 08.697N	072 53.740W	17470.00	-767.00
35	Start___	41 08.684N	072 53.740W	17470.00	-792.00
	End_____	41 08.684N	072 53.239W	18170.00	-792.00

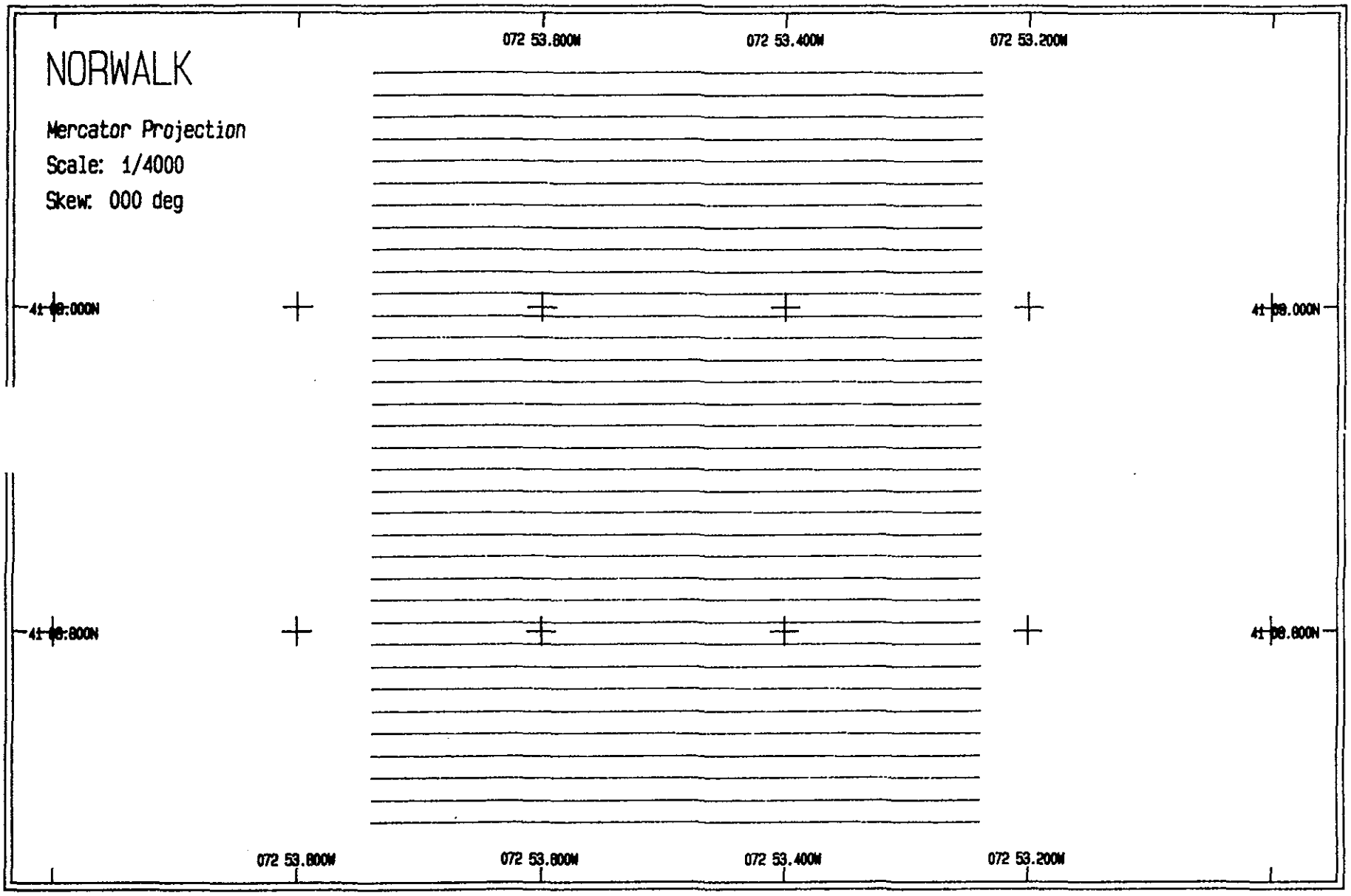
NORWALK
Mercator Projection
Scale: 1/4000
Skew: 000 deg
072 53.800W
072 53.400W
072 53.200W
41 08.000N
41 08.800N

Figure I-4-20

Table I-4-39

Parameters for PARAM:NhAV-83
Page 4

Chart parameters:

Center latitude	41 08.505N
Center longitude	072 53.320W
Center x	18057.00
Center y	-1118.00
Scale	1 / 4000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 06.227W
x offset	0.00
y offset	-3775184.88
Scale at the origin	0.75407394
Mercator projection	
Scaling latitude	41 09.112N

Table I-4-39 (Cont.)

Parameters for FARAM:NHAV-83
Page 5

Survey parameters:

Survey name	NHAV-83
Start latitude	41 08.724N
Start longitude	072 53.606W
Start x	17657.00
Start y	-718.00
Center latitude	41 08.508N
Center longitude	072 53.320W
Center x	18057.00
Center y	-1118.00
Lane length	800.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	33

Survey lanes:

1	Start	41 08.724N	072 53.606W	17657.00	-718.00
	End	41 08.724N	072 53.034W	18457.00	-718.00
2	Start	41 08.710N	072 53.034W	18457.00	-743.00
	End	41 08.710N	072 53.606W	17657.00	-743.00
3	Start	41 08.697N	072 53.606W	17657.00	-768.00
	End	41 08.697N	072 53.034W	18457.00	-768.00
4	Start	41 08.683N	072 53.034W	18457.00	-793.00
	End	41 08.683N	072 53.606W	17657.00	-793.00
5	Start	41 08.670N	072 53.606W	17657.00	-818.00
	End	41 08.670N	072 53.034W	18457.00	-818.00
6	Start	41 08.656N	072 53.034W	18457.00	-843.00
	End	41 08.656N	072 53.606W	17657.00	-843.00
7	Start	41 08.643N	072 53.606W	17657.00	-868.00
	End	41 08.643N	072 53.034W	18457.00	-868.00
8	Start	41 08.629N	072 53.034W	18457.00	-893.00
	End	41 08.629N	072 53.606W	17657.00	-893.00
9	Start	41 08.616N	072 53.606W	17657.00	-918.00
	End	41 08.616N	072 53.034W	18457.00	-919.00
10	Start	41 08.602N	072 53.034W	18457.00	-943.00
	End	41 08.602N	072 53.606W	17657.00	-943.00
11	Start	41 08.589N	072 53.606W	17657.00	-968.00
	End	41 08.589N	072 53.034W	18457.00	-968.00
12	Start	41 08.575N	072 53.034W	18457.00	-993.00
	End	41 08.575N	072 53.606W	17657.00	-993.00
13	Start	41 08.562N	072 53.606W	17657.00	-1018.00
	End	41 08.562N	072 53.034W	18457.00	-1018.00
14	Start	41 08.548N	072 53.034W	18457.00	-1043.00
	End	41 08.548N	072 53.606W	17657.00	-1043.00
15	Start	41 08.535N	072 53.606W	17657.00	-1068.00
	End	41 08.535N	072 53.034W	18457.00	-1068.00
16	Start	41 08.521N	072 53.034W	18457.00	-1093.00
	End	41 08.521N	072 53.606W	17657.00	-1093.00

Table I-4-39 (Cont.)

Parameters for PARAM:NHAV-83
Page 6

17	Start	41 08.508N	072 53.606W	17657.00	-1118.00
	End	41 08.508N	072 53.034W	18457.00	-1118.00
18	Start	41 08.494N	072 53.034W	18457.00	-1143.00
	End	41 08.494N	072 53.606W	17657.00	-1143.00
19	Start	41 08.481N	072 53.606W	17657.00	-1168.00
	End	41 08.481N	072 53.034W	18457.00	-1168.00
20	Start	41 08.467N	072 53.034W	18457.00	-1193.00
	End	41 08.467N	072 53.606W	17657.00	-1193.00
21	Start	41 08.454N	072 53.606W	17657.00	-1218.00
	End	41 08.454N	072 53.034W	18457.00	-1218.00
22	Start	41 08.440N	072 53.034W	18457.00	-1243.00
	End	41 08.440N	072 53.606W	17657.00	-1243.00
23	Start	41 08.427N	072 53.606W	17657.00	-1268.00
	End	41 08.427N	072 53.034W	18457.00	-1268.00
24	Start	41 08.413N	072 53.034W	18457.00	-1293.00
	End	41 08.413N	072 53.606W	17657.00	-1293.00
25	Start	41 08.400N	072 53.606W	17657.00	-1318.00
	End	41 08.400N	072 53.034W	18457.00	-1318.00
26	Start	41 08.386N	072 53.034W	18457.00	-1343.00
	End	41 08.386N	072 53.606W	17657.00	-1343.00
27	Start	41 08.373N	072 53.606W	17657.00	-1368.00
	End	41 08.373N	072 53.034W	18457.00	-1368.00
28	Start	41 08.359N	072 53.034W	18457.00	-1393.00
	End	41 08.359N	072 53.606W	17657.00	-1393.00
29	Start	41 08.346N	072 53.606W	17657.00	-1418.00
	End	41 08.346N	072 53.034W	18457.00	-1418.00
30	Start	41 08.332N	072 53.034W	18457.00	-1443.00
	End	41 08.332N	072 53.606W	17657.00	-1443.00
31	Start	41 08.319N	072 53.606W	17657.00	-1468.00
	End	41 08.319N	072 53.034W	18457.00	-1468.00
32	Start	41 08.305N	072 53.034W	18457.00	-1493.00
	End	41 08.305N	072 53.606W	17657.00	-1493.00
33	Start	41 08.292N	072 53.606W	17657.00	-1518.00
	End	41 08.292N	072 53.034W	18457.00	-1518.00

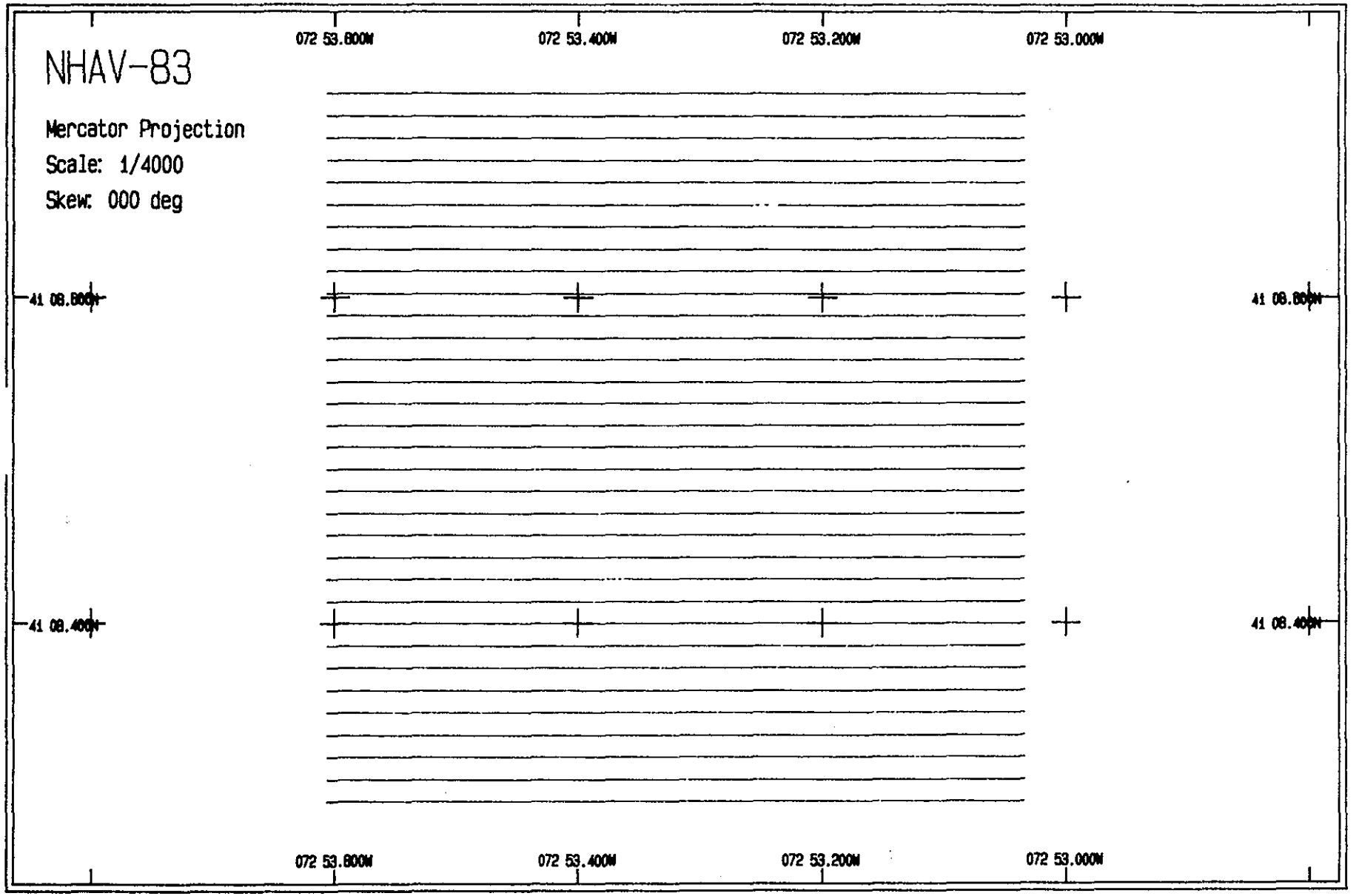
NHAV-83
Mercator Projection
Scale: 1/4000
Skew: 000 deg
072 53.800W
072 53.400W
072 53.200W
072 53.000W
41 08.800N
41 08.400N

Figure I-4-21

Table I-4-40

Parameters for PnBnM:NORDS
Page 4

Chart parameters:

Center latitude	41 08.567N
Center longitude	072 53.885W
Center x	17252.00
Center y	-1008.00
Scale	1 / 4000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 05.227W
x offset	0.00
y offset	-3775184.69
Scale at the origin	0.75407384
Mercator projection	
Scaling latitude	41 09.112N

Table I-4-40 (Cont.)

Parameters for PARAM:MQRDS
Page 5

Survey parameters:

Survey name	MQRDS
Start latitude	41 08.783N
Start longitude	072 54.181W
Start x	16852.00
Start y	-608.00
Center latitude	41 08.557N
Center longitude	072 53.695W
Center x	17252.00
Center y	-1008.00
Lane length	800.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	33

Survey lanes:

1	Start	41 08.783N	072 54.181W	16852.00	-608.00
	End	41 08.783N	072 53.610W	17652.00	-608.00
2	Start	41 08.770N	072 53.610W	17652.00	-633.00
	End	41 08.770N	072 54.181W	16852.00	-633.00
3	Start	41 08.756N	072 54.181W	16852.00	-658.00
	End	41 08.756N	072 53.610W	17652.00	-658.00
4	Start	41 08.743N	072 53.610W	17652.00	-683.00
	End	41 08.743N	072 54.181W	16852.00	-683.00
5	Start	41 08.729N	072 54.181W	16852.00	-708.00
	End	41 08.729N	072 53.610W	17652.00	-708.00
6	Start	41 08.716N	072 53.610W	17652.00	-733.00
	End	41 08.716N	072 54.181W	16852.00	-733.00
7	Start	41 08.702N	072 54.181W	16852.00	-758.00
	End	41 08.702N	072 53.610W	17652.00	-758.00
8	Start	41 08.689N	072 53.610W	17652.00	-783.00
	End	41 08.689N	072 54.181W	16852.00	-783.00
9	Start	41 08.675N	072 54.181W	16852.00	-808.00
	End	41 08.675N	072 53.610W	17652.00	-808.00
10	Start	41 08.662N	072 53.610W	17652.00	-833.00
	End	41 08.662N	072 54.181W	16852.00	-833.00
11	Start	41 08.648N	072 54.181W	16852.00	-858.00
	End	41 08.648N	072 53.610W	17652.00	-858.00
12	Start	41 08.635N	072 53.610W	17652.00	-883.00
	End	41 08.635N	072 54.181W	16852.00	-883.00
13	Start	41 08.621N	072 54.181W	16852.00	-908.00
	End	41 08.621N	072 53.610W	17652.00	-908.00
14	Start	41 08.608N	072 53.610W	17652.00	-933.00
	End	41 08.608N	072 54.181W	16852.00	-933.00
15	Start	41 08.594N	072 54.181W	16852.00	-958.00
	End	41 08.594N	072 53.610W	17652.00	-958.00
16	Start	41 08.581N	072 53.610W	17652.00	-983.00
	End	41 08.581N	072 54.181W	16852.00	-983.00

Table I-4-40 (Cont.)

Parameters for PARAM.MOBDS
Page 6

17	Start	41 08.567N	072 54.181W	16852.00	-1008.00
	End	41 08.567N	072 53.610W	17652.00	-1008.00
18	Start	41 08.554N	072 53.610W	17652.00	-1033.00
	End	41 08.554N	072 54.181W	16852.00	-1033.00
19	Start	41 08.540N	072 54.181W	16852.00	-1058.00
	End	41 08.540N	072 53.610W	17652.00	-1058.00
20	Start	41 08.527N	072 53.610W	17652.00	-1083.00
	End	41 08.527N	072 54.181W	16852.00	-1083.00
21	Start	41 08.513N	072 54.181W	16852.00	-1108.00
	End	41 08.513N	072 53.610W	17652.00	-1108.00
22	Start	41 08.500N	072 53.610W	17652.00	-1133.00
	End	41 08.500N	072 54.181W	16852.00	-1133.00
23	Start	41 08.486N	072 54.181W	16852.00	-1158.00
	End	41 08.486N	072 53.610W	17652.00	-1158.00
24	Start	41 08.473N	072 53.610W	17652.00	-1183.00
	End	41 08.473N	072 54.181W	16852.00	-1183.00
25	Start	41 08.459N	072 54.181W	16852.00	-1208.00
	End	41 08.459N	072 53.610W	17652.00	-1208.00
26	Start	41 08.446N	072 53.610W	17652.00	-1233.00
	End	41 08.446N	072 54.181W	16852.00	-1233.00
27	Start	41 08.432N	072 54.181W	16852.00	-1258.00
	End	41 08.432N	072 53.610W	17652.00	-1258.00
28	Start	41 08.419N	072 53.610W	17652.00	-1283.00
	End	41 08.419N	072 54.181W	16852.00	-1283.00
29	Start	41 08.405N	072 54.181W	16852.00	-1308.00
	End	41 08.405N	072 53.610W	17652.00	-1308.00
30	Start	41 08.392N	072 53.610W	17652.00	-1333.00
	End	41 08.392N	072 54.181W	16852.00	-1333.00
31	Start	41 08.378N	072 54.181W	16852.00	-1358.00
	End	41 08.378N	072 53.610W	17652.00	-1358.00
32	Start	41 08.365N	072 53.610W	17652.00	-1383.00
	End	41 08.365N	072 54.181W	16852.00	-1383.00
33	Start	41 08.351N	072 54.181W	16852.00	-1408.00
	End	41 08.351N	072 53.610W	17652.00	-1408.00

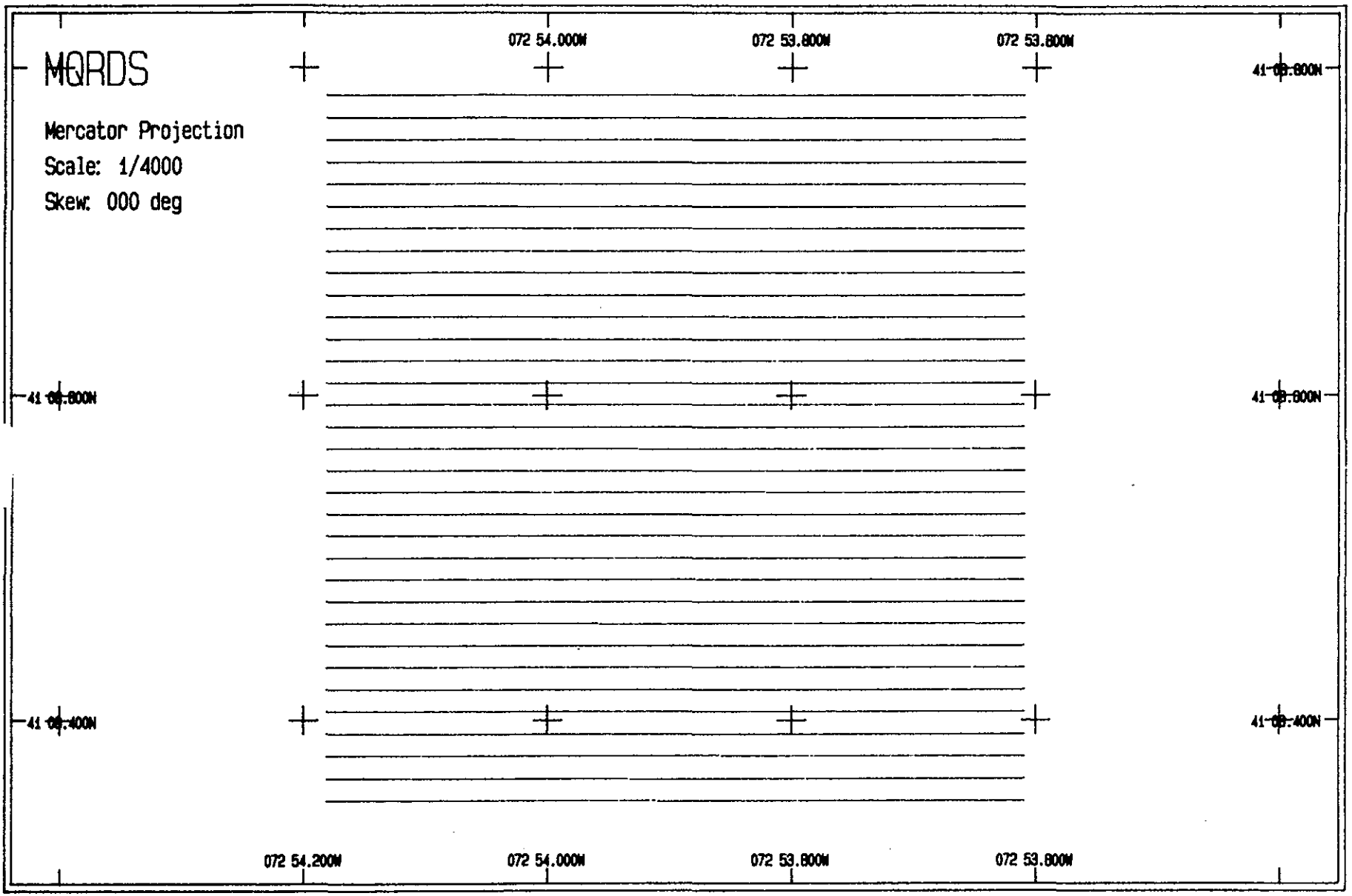
MQRDS
Mercator Projection
Scale: 1/4000
Skew: 000 deg
072 54.000W
072 53.800W
072 53.600W
41 00.800N
41 00.600N
41 00.400N
072 54.200W
072 54.000W
072 53.800W
072 53.600W

Figure I-4-22

53.895'W. Finally, surveys "CS-1" (Table I-4-41, Figure I-4-23) and "CS-2" (Table I-4-42, Figure I-4-24) are bathymetric surveys covering two cap site mounds and are centered at 41° 09.08'N by 72° 54.147'W and 41° 09.460'N by 72° 54.148'W respectively.

4.11.1 CLIS Master Survey

In addition to the surveys discussed in the section above, there exists a large scale bathymetric survey (Table I-4-43, Figure I-4-25) which covers the entire Central Long Island Sound disposal site. In conjunction with this survey are ten smaller surveys covering the eight disposal mounds previously discussed as well as two inactive disposal mounds within CLIS. These ten surveys (Table I-4-44) are set up so that their lanes fall between those of the CLIS master survey and therefore provide double resolution over the disposal mounds.

4.12 Western Long Island Sound Disposal Site

The Western Long Island Sound (WLIS) disposal site is a 1/2 nautical mile square centered at 40° 59.4'N by 73° 28.7 'W and is located approximately 2.7 nautical miles south of Long Neck Point. The Del Norte shore stations in use at this site are located at the Connecticut Light and Power Company station in Norwalk, Connecticut (Table I-4-45) and at Eaton's Neck Lighthouse in Northport, New York (Table I-4-46). There are currently three surveys in use at this site. Survey "WLIS-A" (Table I-4-47, Figure I-4-26) is a bathymetric survey covering the "A" disposal point and is centered at 40° 59.338'N by 73° 29.204'W and survey "WLIS-B" (Table I-4-48, Figure 4-27) covers disposal point "B" and is centered at 40° 59.338'N by 73° 29.490'W. Survey "WLISSCN" (Table I-4-49, Figure I-4-28) is a sidescan sonar survey which covers both of these disposal points.

Table I-4-41 (Cont.)

Parameters for PARAM:CS-1
Page 5

Survey parameters:

Survey name	CAP SITE 1
Start latitude	41 09.271N
Start longitude	072 54.433W
Start x	16500.00
Start y	284.00
Center latitude	41 09.082N
Center longitude	072 54.147W
Center x	16500.00
Center y	-56.00
Lane length	800.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	29

Survey lanes:

1	Start	41 09.271N	072 54.433W	16500.00	284.00
	End	41 09.271N	072 53.861W	17300.00	284.00
2	Start	41 09.257N	072 53.861W	17300.00	269.00
	End	41 09.257N	072 54.433W	16500.00	269.00
3	Start	41 09.244N	072 54.433W	16500.00	244.00
	End	41 09.244N	072 53.861W	17300.00	244.00
4	Start	41 09.230N	072 53.861W	17300.00	219.00
	End	41 09.230N	072 54.433W	16500.00	219.00
5	Start	41 09.217N	072 54.433W	16500.00	194.00
	End	41 09.217N	072 53.861W	17300.00	194.00
6	Start	41 09.203N	072 53.861W	17300.00	169.00
	End	41 09.203N	072 54.433W	16500.00	169.00
7	Start	41 09.190N	072 54.433W	16500.00	144.00
	End	41 09.190N	072 53.861W	17300.00	144.00
8	Start	41 09.176N	072 53.861W	17300.00	119.00
	End	41 09.176N	072 54.433W	16500.00	119.00
9	Start	41 09.163N	072 54.433W	16500.00	94.00
	End	41 09.163N	072 53.861W	17300.00	94.00
10	Start	41 09.149N	072 53.861W	17300.00	69.00
	End	41 09.149N	072 54.433W	16500.00	69.00
11	Start	41 09.136N	072 54.433W	16500.00	44.00
	End	41 09.136N	072 53.861W	17300.00	44.00
12	Start	41 09.122N	072 53.861W	17300.00	19.00
	End	41 09.122N	072 54.433W	16500.00	19.00
13	Start	41 09.109N	072 54.433W	16500.00	-6.00
	End	41 09.109N	072 53.861W	17300.00	-6.00
14	Start	41 09.095N	072 53.861W	17300.00	-31.00
	End	41 09.095N	072 54.433W	16500.00	-31.00
15	Start	41 09.082N	072 54.433W	16500.00	-56.00
	End	41 09.082N	072 53.861W	17300.00	-56.00
16	Start	41 09.068N	072 53.861W	17300.00	-81.00
	End	41 09.068N	072 54.433W	16500.00	-81.00

Table I-4-41 (Cont.)

Parameters for PARAM(SP-1)
Page 6

17	Start____	41 09.055N	072 54.433W	16500.00	-106.00
	End_____	41 09.055N	072 53.861W	17300.00	-106.00
18	Start____	41 09.041N	072 53.861W	17300.00	-131.00
	End_____	41 09.041N	072 54.433W	16500.00	-131.00
19	Start____	41 09.028N	072 54.433W	16500.00	-156.00
	End_____	41 09.028N	072 53.861W	17300.00	-156.00
20	Start____	41 09.014N	072 53.861W	17300.00	-181.00
	End_____	41 09.014N	072 54.433W	16500.00	-181.00
21	Start____	41 09.001N	072 54.433W	16500.00	-206.00
	End_____	41 09.001N	072 53.861W	17300.00	-206.00
22	Start____	41 08.987N	072 53.861W	17300.00	-231.00
	End_____	41 08.987N	072 54.433W	16500.00	-231.00
23	Start____	41 08.974N	072 54.433W	16500.00	-256.00
	End_____	41 08.974N	072 53.861W	17300.00	-256.00
24	Start____	41 08.960N	072 53.861W	17300.00	-281.00
	End_____	41 08.960N	072 54.433W	16500.00	-281.00
25	Start____	41 08.946N	072 54.433W	16500.00	-306.00
	End_____	41 08.946N	072 53.861W	17300.00	-306.00
26	Start____	41 08.933N	072 53.861W	17300.00	-331.00
	End_____	41 08.933N	072 54.433W	16500.00	-331.00
27	Start____	41 08.919N	072 54.433W	16500.00	-356.00
	End_____	41 08.919N	072 53.861W	17300.00	-356.00
28	Start____	41 08.906N	072 53.861W	17300.00	-381.00
	End_____	41 08.906N	072 54.433W	16500.00	-381.00
29	Start____	41 08.892N	072 54.433W	16500.00	-406.00
	End_____	41 08.892N	072 53.861W	17300.00	-406.00

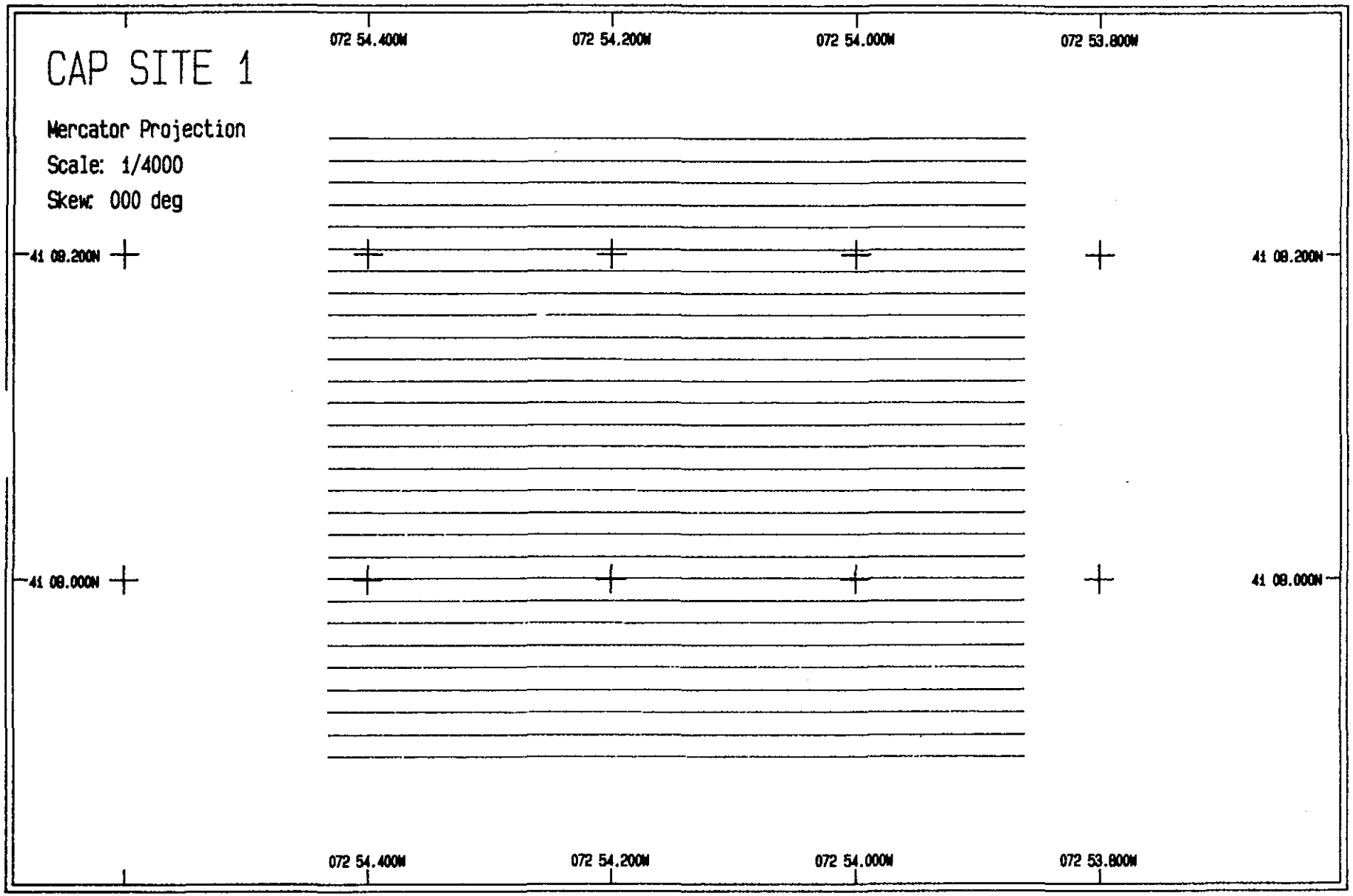
CAP SITE 1
Mercator Projection
Scale: 1/4000
Skew: 000 deg
072 54.400W
072 54.200W
072 54.000W
072 53.800W
41 09.200N
41 09.000N

Figure I-4-23

Table I-4-42

Parameters for PARAMIF4-2
Page 4

Chart parameters:

Center latitude	41 09.460N
Center longitude	072 54.146W
Center x	15699.00
Center y	644.00
Scale	1 / 4000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 06.227W
x offset	0.00
y offset	-3775184.68
Scale at the origin	0.75407384
Mercator projection	
Scaling latitude	41 09.112N

Table I-4-42 (Cont.)

Parameters for PARAM:09-2
Page 5

Survey parameters:

Survey name	CAP SITE 2
Start latitude	41 09.649N
Start longitude	072 54.434W
Start x	16499.00
Start y	994.00
Center latitude	41 09.480N
Center longitude	072 54.148W
Center x	16899.00
Center y	644.00
Lane length	800.00
Lane bearing	90.00
Lane spacing	25.00
Number of lanes	29

Survey lanes:

1	Start	41 09.649N	072 54.434W	16499.00	994.00
	End	41 09.649N	072 53.862W	17299.00	994.00
2	Start	41 09.635N	072 53.862W	17299.00	969.00
	End	41 09.635N	072 54.434W	16499.00	969.00
3	Start	41 09.622N	072 54.434W	16499.00	944.00
	End	41 09.622N	072 53.862W	17299.00	944.00
4	Start	41 09.608N	072 53.862W	17299.00	919.00
	End	41 09.608N	072 54.434W	16499.00	919.00
5	Start	41 09.595N	072 54.434W	16499.00	894.00
	End	41 09.595N	072 53.862W	17299.00	894.00
6	Start	41 09.581N	072 53.862W	17299.00	869.00
	End	41 09.581N	072 54.434W	16499.00	869.00
7	Start	41 09.568N	072 54.434W	16499.00	844.00
	End	41 09.568N	072 53.862W	17299.00	844.00
8	Start	41 09.554N	072 53.862W	17299.00	819.00
	End	41 09.554N	072 54.434W	16499.00	819.00
9	Start	41 09.541N	072 54.434W	16499.00	794.00
	End	41 09.541N	072 53.862W	17299.00	794.00
10	Start	41 09.527N	072 53.862W	17299.00	769.00
	End	41 09.527N	072 54.434W	16499.00	769.00
11	Start	41 09.514N	072 54.434W	16499.00	744.00
	End	41 09.514N	072 53.862W	17299.00	744.00
12	Start	41 09.500N	072 53.862W	17299.00	719.00
	End	41 09.500N	072 54.434W	16499.00	719.00
13	Start	41 09.487N	072 54.434W	16499.00	694.00
	End	41 09.487N	072 53.862W	17299.00	694.00
14	Start	41 09.473N	072 53.862W	17299.00	669.00
	End	41 09.473N	072 54.434W	16499.00	669.00
15	Start	41 09.460N	072 54.434W	16499.00	644.00
	End	41 09.460N	072 53.862W	17299.00	644.00
16	Start	41 09.446N	072 53.862W	17299.00	619.00
	End	41 09.446N	072 54.434W	16499.00	619.00

Table I-4-42 (Cont.)

Parameters for PARAM:CS-2
Page 6

17	Start	41 09.433N	072 54.434W	16499.00	594.00
	End	41 09.433N	072 53.862W	17299.00	594.00
18	Start	41 09.419N	072 53.862W	17299.00	569.00
	End	41 09.419N	072 54.434W	16499.00	569.00
19	Start	41 09.405N	072 54.434W	16499.00	544.00
	End	41 09.405N	072 53.862W	17299.00	544.00
20	Start	41 09.397N	072 53.862W	17299.00	519.00
	End	41 09.397N	072 54.434W	16499.00	519.00
21	Start	41 09.379N	072 54.434W	16499.00	494.00
	End	41 09.379N	072 53.862W	17299.00	494.00
22	Start	41 09.365N	072 53.862W	17299.00	469.00
	End	41 09.365N	072 54.434W	16499.00	469.00
23	Start	41 09.352N	072 54.434W	16499.00	444.00
	End	41 09.352N	072 53.862W	17299.00	444.00
24	Start	41 09.338N	072 53.862W	17299.00	419.00
	End	41 09.338N	072 54.434W	16499.00	419.00
25	Start	41 09.325N	072 54.434W	16499.00	394.00
	End	41 09.325N	072 53.862W	17299.00	394.00
26	Start	41 09.311N	072 53.862W	17299.00	369.00
	End	41 09.311N	072 54.434W	16499.00	369.00
27	Start	41 09.298N	072 54.434W	16499.00	344.00
	End	41 09.298N	072 53.862W	17299.00	344.00
28	Start	41 09.284N	072 53.862W	17299.00	319.00
	End	41 09.284N	072 54.434W	16499.00	319.00
29	Start	41 09.271N	072 54.434W	16499.00	294.00
	End	41 09.271N	072 53.862W	17299.00	294.00

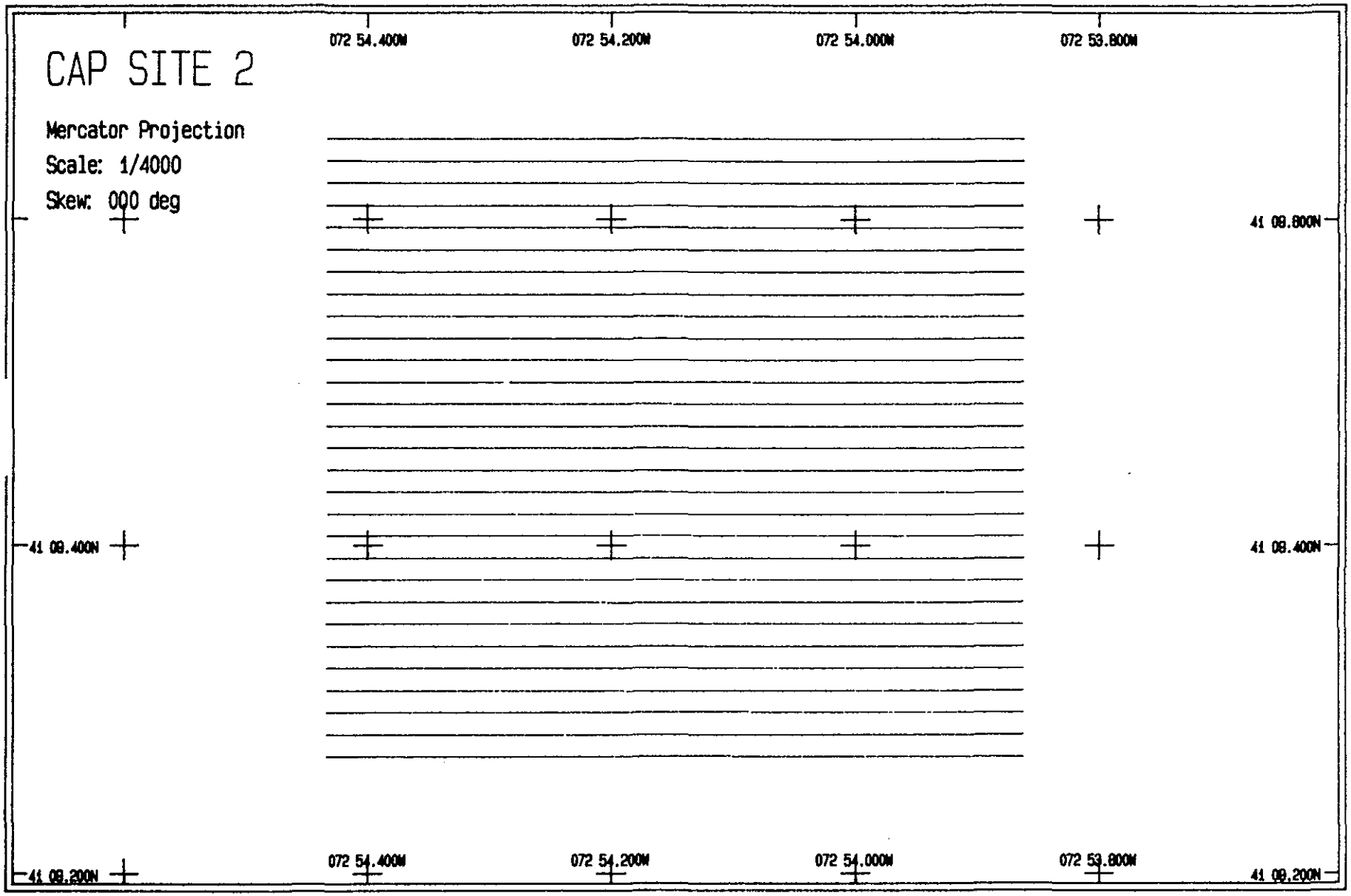
CAP SITE 2
Mercator Projection
Scale: 1/4000
Skew: 000 deg
072 54.400W
072 54.200W
072 54.000W
072 53.800W
41 09.800N
41 09.400N
41 09.200N

Figure I-4-24

Table I-4-43

Parameters for PARAM:CL1S
Page 4

Chart parameters:

Center latitude	41 08.950N
Center longitude	072 52.950W
Center x	18575.00
Center y	-300.00
Scale	1 / 15000
Skew	0.00
Central parallel	41 09.112N
Central meridian	073 06.227W
x offset	0.00
y offset	-3775184.68
Scale at the origin	0.75407394
Mercator projection	
Scaling latitude	41 09.112N

Parameters for PARAM:CLIS
Page 5

Survey parameters:

Survey name	CLIS MASTER
Start latitude	41 09.544N
Start longitude	072 54.361W
Start x	16600.00
Start y	800.00
Center latitude	41 08.950N
Center longitude	072 52.950W
Center x	18575.00
Center y	-300.00
Lane length	3950.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	45

Survey lanes:

1	Start	41 09.544N	072 54.361W	16600.00	800.00
	End	41 09.544N	072 51.538W	20550.00	800.00
2	Start	41 09.517N	072 51.538W	20550.00	750.00
	End	41 09.517N	072 54.361W	16600.00	750.00
3	Start	41 09.490N	072 54.361W	16600.00	700.00
	End	41 09.490N	072 51.538W	20550.00	700.00
4	Start	41 09.463N	072 51.538W	20550.00	650.00
	End	41 09.463N	072 54.361W	16600.00	650.00
5	Start	41 09.436N	072 54.361W	16600.00	600.00
	End	41 09.436N	072 51.538W	20550.00	600.00
6	Start	41 09.409N	072 51.538W	20550.00	550.00
	End	41 09.409N	072 54.361W	16600.00	550.00
7	Start	41 09.382N	072 54.361W	16600.00	500.00
	End	41 09.382N	072 51.538W	20550.00	500.00
8	Start	41 09.355N	072 51.538W	20550.00	450.00
	End	41 09.355N	072 54.361W	16600.00	450.00
9	Start	41 09.328N	072 54.361W	16600.00	400.00
	End	41 09.328N	072 51.538W	20550.00	400.00
10	Start	41 09.301N	072 51.538W	20550.00	350.00
	End	41 09.301N	072 54.361W	16600.00	350.00
11	Start	41 09.274N	072 54.361W	16600.00	300.00
	End	41 09.274N	072 51.538W	20550.00	300.00
12	Start	41 09.247N	072 51.538W	20550.00	250.00
	End	41 09.247N	072 54.361W	16600.00	250.00
13	Start	41 09.220N	072 54.361W	16600.00	200.00
	End	41 09.220N	072 51.538W	20550.00	200.00
14	Start	41 09.193N	072 51.538W	20550.00	150.00
	End	41 09.193N	072 54.361W	16600.00	150.00
15	Start	41 09.166N	072 54.361W	16600.00	100.00
	End	41 09.166N	072 51.538W	20550.00	100.00
16	Start	41 09.139N	072 51.538W	20550.00	50.00
	End	41 09.139N	072 54.361W	16600.00	50.00

Parameters for PARAM:CL15
Page 6

17	Start	41 09.112N	072 54.361W	16600.00	-0.00
	End	41 09.112N	072 51.538W	20550.00	-0.00
18	Start	41 09.085N	072 51.538W	20550.00	-50.00
	End	41 09.085N	072 54.361W	16600.00	-50.00
19	Start	41 09.058N	072 54.361W	16600.00	-100.00
	End	41 09.058N	072 51.538W	20550.00	-100.00
20	Start	41 09.031N	072 51.538W	20550.00	-150.00
	End	41 09.031N	072 54.361W	16600.00	-150.00
21	Start	41 09.004N	072 54.361W	16600.00	-200.00
	End	41 09.004N	072 51.538W	20550.00	-200.00
22	Start	41 08.977N	072 51.538W	20550.00	-250.00
	End	41 08.977N	072 54.361W	16600.00	-250.00
23	Start	41 08.950N	072 54.361W	16600.00	-300.00
	End	41 08.950N	072 51.538W	20550.00	-300.00
24	Start	41 08.923N	072 51.538W	20550.00	-350.00
	End	41 08.923N	072 54.361W	16600.00	-350.00
25	Start	41 08.896N	072 54.361W	16600.00	-400.00
	End	41 08.896N	072 51.538W	20550.00	-400.00
26	Start	41 08.869N	072 51.538W	20550.00	-450.00
	End	41 08.869N	072 54.361W	16600.00	-450.00
27	Start	41 08.842N	072 54.361W	16600.00	-500.00
	End	41 08.842N	072 51.538W	20550.00	-500.00
28	Start	41 08.815N	072 51.538W	20550.00	-550.00
	End	41 08.815N	072 54.361W	16600.00	-550.00
29	Start	41 08.788N	072 54.361W	16600.00	-600.00
	End	41 08.788N	072 51.538W	20550.00	-600.00
30	Start	41 08.761N	072 51.538W	20550.00	-650.00
	End	41 08.761N	072 54.361W	16600.00	-650.00
31	Start	41 08.734N	072 54.361W	16600.00	-700.00
	End	41 08.734N	072 51.538W	20550.00	-700.00
32	Start	41 08.707N	072 51.538W	20550.00	-750.00
	End	41 08.707N	072 54.361W	16600.00	-750.00
33	Start	41 08.680N	072 54.361W	16600.00	-800.00
	End	41 08.680N	072 51.538W	20550.00	-800.00
34	Start	41 08.653N	072 51.538W	20550.00	-850.00
	End	41 08.653N	072 54.361W	16600.00	-850.00
35	Start	41 08.626N	072 54.361W	16600.00	-900.00
	End	41 08.626N	072 51.538W	20550.00	-900.00
36	Start	41 08.599N	072 51.538W	20550.00	-950.00
	End	41 08.599N	072 54.361W	16600.00	-950.00
37	Start	41 08.572N	072 54.361W	16600.00	-1000.00
	End	41 08.572N	072 51.538W	20550.00	-1000.00
38	Start	41 08.544N	072 51.538W	20550.00	-1050.00
	End	41 08.544N	072 54.361W	16600.00	-1050.00
39	Start	41 08.517N	072 54.361W	16600.00	-1100.00
	End	41 08.517N	072 51.538W	20550.00	-1100.00
40	Start	41 08.490N	072 51.538W	20550.00	-1150.00
	End	41 08.490N	072 54.361W	16600.00	-1150.00
41	Start	41 08.463N	072 54.361W	16600.00	-1200.00

Parameters for PARAM:CLIS
Page 7

	End	41 08.463N	072 51.538W	20550.00	-1200.00
42	Start	41 08.436N	072 51.538W	20550.00	-1250.00
	End	41 08.436N	072 54.361W	16600.00	-1250.00
43	Start	41 08.409N	072 54.361W	16600.00	-1300.00
	End	41 08.409N	072 51.538W	20550.00	-1300.00
44	Start	41 08.382N	072 51.538W	20550.00	-1350.00
	End	41 08.382N	072 54.361W	16600.00	-1350.00
45	Start	41 08.355N	072 54.361W	16600.00	-1400.00
	End	41 08.355N	072 51.538W	20550.00	-1400.00

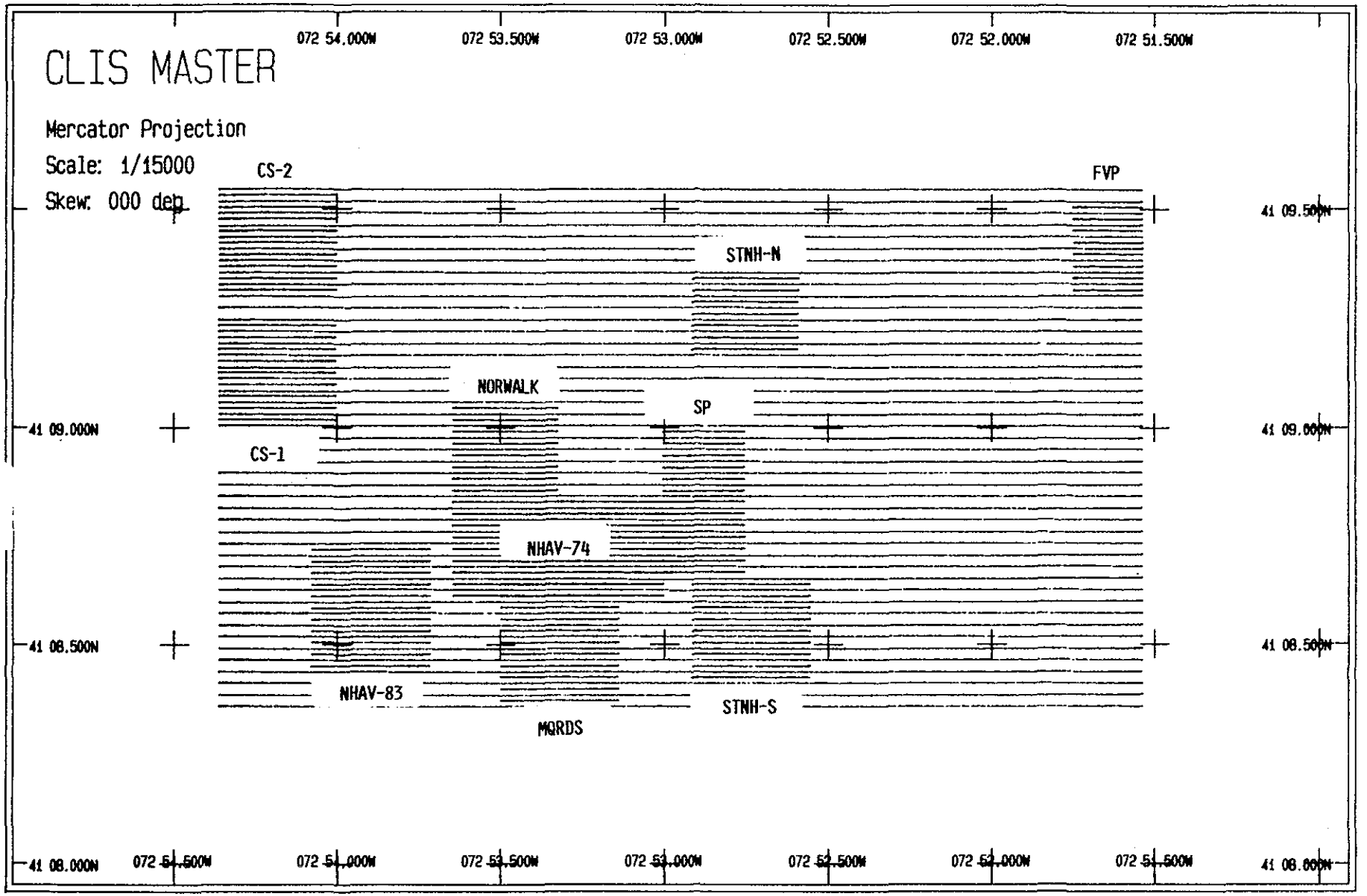
CLIS MASTER
Mercator Projection
Scale: 1/15000
Skew: 000 deg
072 54.000W
072 53.500W
072 53.000W
072 52.500W
072 52.000W
072 51.500W
41 09.500N
41 09.000N
41 08.500N
41 08.000N
CS-2
FVP
STNH-N
NORWALK
SP
CS-1
NHAV-74
NHAV-83
STNH-S
MGRDS

Figure I-4-25

Table I-4-44

Parameters for PARAM:CLIS-SP
Page 5

Survey parameters:

Survey name	CLIS-SP
Start latitude	41 08.828N
Start longitude	072 53.647W
Start x	17600.00
Start y	-525.00
Center latitude	41 08.720N
Center longitude	072 53.325W
Center x	18050.00
Center y	-725.00
Lane length	900.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	9

Survey lanes:

1	Start	41 08.828N	072 53.647W	17600.00	-525.00
	End	41 08.828N	072 53.003W	18500.00	-525.00
2	Start	41 08.801N	072 53.003W	18500.00	-575.00
	End	41 08.801N	072 53.647W	17600.00	-575.00
3	Start	41 08.774N	072 53.647W	17600.00	-625.00
	End	41 08.774N	072 53.003W	18500.00	-625.00
4	Start	41 08.747N	072 53.003W	18500.00	-675.00
	End	41 08.747N	072 53.647W	17600.00	-675.00
5	Start	41 08.720N	072 53.647W	17600.00	-725.00
	End	41 08.720N	072 53.003W	18500.00	-725.00
6	Start	41 08.693N	072 53.003W	18500.00	-775.00
	End	41 08.693N	072 53.647W	17600.00	-775.00
7	Start	41 08.666N	072 53.647W	17600.00	-825.00
	End	41 08.666N	072 53.003W	18500.00	-825.00
8	Start	41 08.639N	072 53.003W	18500.00	-875.00
	End	41 08.639N	072 53.647W	17600.00	-875.00
9	Start	41 08.612N	072 53.647W	17600.00	-925.00
	End	41 08.612N	072 53.003W	18500.00	-925.00

Parameters for PARAM:CLIS-NH74
Page 5

Survey parameters:

Survey name	CLIS-NHAV-74
Start latitude	41 08.990N
Start longitude	072 53.003W
Start x	18500.00
Start y	-225.00
Center latitude	41 08.828N
Center longitude	072 52.878W
Center x	18675.00
Center y	-525.00
Lane length	350.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	13

Survey lanes:

1	Start	41 08.990N	072 53.003W	18500.00	-225.00
	End	41 08.990N	072 52.753W	18850.00	-225.00
2	Start	41 08.963N	072 52.753W	18850.00	-275.00
	End	41 08.963N	072 53.003W	18500.00	-275.00
3	Start	41 08.936N	072 53.003W	18500.00	-325.00
	End	41 08.936N	072 52.753W	18850.00	-325.00
4	Start	41 08.909N	072 52.753W	18850.00	-375.00
	End	41 08.909N	072 53.003W	18500.00	-375.00
5	Start	41 08.882N	072 53.003W	18500.00	-425.00
	End	41 08.882N	072 52.753W	18850.00	-425.00
6	Start	41 08.855N	072 52.753W	18850.00	-475.00
	End	41 08.855N	072 53.003W	18500.00	-475.00
7	Start	41 08.828N	072 53.003W	18500.00	-525.00
	End	41 08.828N	072 52.753W	18850.00	-525.00
8	Start	41 08.801N	072 52.753W	18850.00	-575.00
	End	41 08.801N	072 53.003W	18500.00	-575.00
9	Start	41 08.774N	072 53.003W	18500.00	-625.00
	End	41 08.774N	072 52.753W	18850.00	-625.00
10	Start	41 08.747N	072 52.753W	18850.00	-675.00
	End	41 08.747N	072 53.003W	18500.00	-675.00
11	Start	41 08.720N	072 53.003W	18500.00	-725.00
	End	41 08.720N	072 52.753W	18850.00	-725.00
12	Start	41 08.693N	072 52.753W	18850.00	-775.00
	End	41 08.693N	072 53.003W	18500.00	-775.00
13	Start	41 08.666N	072 53.003W	18500.00	-825.00
	End	41 08.666N	072 52.753W	18850.00	-825.00

Parameters for PARAM:CLIS-CS-1
Page 5

Survey parameters:

Survey name	CLIS-CS-1
Start latitude	41 09.233N
Start longitude	072 54.361W
Start x	16600.00
Start y	225.00
Center latitude	41 09.125N
Center longitude	072 54.183W
Center x	16850.00
Center y	25.00
Lane length	500.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	9

Survey lanes:

1	Start	41 09.233N	072 54.361W	16600.00	225.00
	End	41 09.233N	072 54.004W	17100.00	225.00
2	Start	41 09.206N	072 54.004W	17100.00	175.00
	End	41 09.206N	072 54.361W	16600.00	175.00
3	Start	41 09.179N	072 54.361W	16600.00	125.00
	End	41 09.179N	072 54.004W	17100.00	125.00
4	Start	41 09.152N	072 54.004W	17100.00	75.00
	End	41 09.152N	072 54.361W	16600.00	75.00
5	Start	41 09.125N	072 54.361W	16600.00	25.00
	End	41 09.125N	072 54.004W	17100.00	25.00
6	Start	41 09.098N	072 54.004W	17100.00	-25.00
	End	41 09.098N	072 54.361W	16600.00	-25.00
7	Start	41 09.071N	072 54.361W	16600.00	-75.00
	End	41 09.071N	072 54.004W	17100.00	-75.00
8	Start	41 09.044N	072 54.004W	17100.00	-125.00
	End	41 09.044N	072 54.361W	16600.00	-125.00
9	Start	41 09.017N	072 54.361W	16600.00	-175.00
	End	41 09.017N	072 54.004W	17100.00	-175.00

Parameters for PARAM:CLIS-CS-2
Page 5

Survey parameters:

Survey name	CLIS-CS-2
Start latitude	41 09.531N
Start longitude	072 54.361W
Start x	16600.00
Start y	775.00
Center latitude	41 09.422N
Center longitude	072 54.183W
Center x	16850.00
Center y	575.00
Lane length	500.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	9

Survey lanes:

1	Start	41 09.531N	072 54.361W	16600.00	775.00
	End	41 09.531N	072 54.004W	17100.00	775.00
2	Start	41 09.503N	072 54.004W	17100.00	725.00
	End	41 09.503N	072 54.361W	16600.00	725.00
3	Start	41 09.476N	072 54.361W	16600.00	675.00
	End	41 09.476N	072 54.004W	17100.00	675.00
4	Start	41 09.449N	072 54.004W	17100.00	625.00
	End	41 09.449N	072 54.361W	16600.00	625.00
5	Start	41 09.422N	072 54.361W	16600.00	575.00
	End	41 09.422N	072 54.004W	17100.00	575.00
6	Start	41 09.395N	072 54.004W	17100.00	525.00
	End	41 09.395N	072 54.361W	16600.00	525.00
7	Start	41 09.368N	072 54.361W	16600.00	475.00
	End	41 09.368N	072 54.004W	17100.00	475.00
8	Start	41 09.341N	072 54.004W	17100.00	425.00
	End	41 09.341N	072 54.361W	16600.00	425.00
9	Start	41 09.314N	072 54.361W	16600.00	375.00
	End	41 09.314N	072 54.004W	17100.00	375.00

Parameters for PARAM:CLIS-NOR
Page 5

Survey parameters:

Survey name	CLIS-NORWALK
Start latitude	41 09.044N
Start longitude	072 53.647W
Start x	17600.00
Start y	-125.00
Center latitude	41 08.950N
Center longitude	072 53.486W
Center x	17825.00
Center y	-300.00
Lane length	450.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	8

Survey lanes:

1	Start	41 09.044N	072 53.647W	17600.00	-125.00
	End	41 09.044N	072 53.325W	18050.00	-125.00
2	Start	41 09.017N	072 53.325W	18050.00	-175.00
	End	41 09.017N	072 53.647W	17600.00	-175.00
3	Start	41 08.990N	072 53.647W	17600.00	-225.00
	End	41 08.990N	072 53.325W	18050.00	-225.00
4	Start	41 08.963N	072 53.325W	18050.00	-275.00
	End	41 08.963N	072 53.647W	17600.00	-275.00
5	Start	41 08.936N	072 53.647W	17600.00	-325.00
	End	41 08.936N	072 53.325W	18050.00	-325.00
6	Start	41 08.909N	072 53.325W	18050.00	-375.00
	End	41 08.909N	072 53.647W	17600.00	-375.00
7	Start	41 08.882N	072 53.647W	17600.00	-425.00
	End	41 08.882N	072 53.325W	18050.00	-425.00
8	Start	41 08.855N	072 53.325W	18050.00	-475.00
	End	41 08.855N	072 53.647W	17600.00	-475.00

Parameters for PARAM:CLIS-MGR
Page 5

Survey parameters:

Survey name	CLIS-MGRDS
Start latitude	41 08.720N
Start longitude	072 54.076W
Start x	17000.00
Start y	-725.00
Center latitude	41 08.585N
Center longitude	072 53.897W
Center x	17250.00
Center y	-975.00
Lane length	500.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	11

Survey lanes:

1	Start	41 08.720N	072 54.076W	17000.00	-725.00
	End	41 08.720N	072 53.718W	17500.00	-725.00
2	Start	41 08.693N	072 53.718W	17500.00	-775.00
	End	41 08.693N	072 54.076W	17000.00	-775.00
3	Start	41 08.666N	072 54.076W	17000.00	-825.00
	End	41 08.666N	072 53.718W	17500.00	-825.00
4	Start	41 08.639N	072 53.718W	17500.00	-875.00
	End	41 08.639N	072 54.076W	17000.00	-875.00
5	Start	41 08.612N	072 54.076W	17000.00	-925.00
	End	41 08.612N	072 53.718W	17500.00	-925.00
6	Start	41 08.585N	072 53.718W	17500.00	-975.00
	End	41 08.585N	072 54.076W	17000.00	-975.00
7	Start	41 08.558N	072 54.076W	17000.00	-1025.00
	End	41 08.558N	072 53.718W	17500.00	-1025.00
8	Start	41 08.531N	072 53.718W	17500.00	-1075.00
	End	41 08.531N	072 54.076W	17000.00	-1075.00
9	Start	41 08.504N	072 54.076W	17000.00	-1125.00
	End	41 08.504N	072 53.718W	17500.00	-1125.00
10	Start	41 08.477N	072 53.718W	17500.00	-1175.00
	End	41 08.477N	072 54.076W	17000.00	-1175.00
11	Start	41 08.450N	072 54.076W	17000.00	-1225.00
	End	41 08.450N	072 53.718W	17500.00	-1225.00

Parameters for PARAM:CLIS-FVP
Page 5

Survey parameters:

Survey name	CLIS-FVP
Start latitude	41 09.503N
Start longitude	072 51.753W
Start x	20250.00
Start y	725.00
Center latitude	41 09.409N
Center longitude	072 51.645W
Center x	20400.00
Center y	550.00
Lane length	300.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	8

Survey lanes:

1	Start	41 09.503N	072 51.753W	20250.00	725.00
	End	41 09.503N	072 51.538W	20550.00	725.00
2	Start	41 09.476N	072 51.538W	20550.00	675.00
	End	41 09.476N	072 51.753W	20250.00	675.00
3	Start	41 09.449N	072 51.753W	20250.00	625.00
	End	41 09.449N	072 51.538W	20550.00	625.00
4	Start	41 09.422N	072 51.538W	20550.00	575.00
	End	41 09.422N	072 51.753W	20250.00	575.00
5	Start	41 09.395N	072 51.753W	20250.00	525.00
	End	41 09.395N	072 51.538W	20550.00	525.00
6	Start	41 09.368N	072 51.538W	20550.00	475.00
	End	41 09.368N	072 51.753W	20250.00	475.00
7	Start	41 09.341N	072 51.753W	20250.00	425.00
	End	41 09.341N	072 51.538W	20550.00	425.00
8	Start	41 09.314N	072 51.538W	20550.00	375.00
	End	41 09.314N	072 51.753W	20250.00	375.00

Table I-4-44 (Cont.)

Parameters for PARAM:CLIS-STN
Page 5

Survey parameters:

Survey name	CLIS-STNH-N
Start latitude	41 09.341N
Start longitude	072 52.914W
Start x	18625.00
Start y	425.00
Center latitude	41 09.260N
Center longitude	072 52.753W
Center x	18850.00
Center y	275.00
Lane length	450.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	7

Survey lanes:

1	Start	41 09.341N	072 52.914W	18625.00	425.00
	End	41 09.341N	072 52.592W	19075.00	425.00
2	Start	41 09.314N	072 52.592W	19075.00	375.00
	End	41 09.314N	072 52.914W	18625.00	375.00
3	Start	41 09.287N	072 52.914W	18625.00	325.00
	End	41 09.287N	072 52.592W	19075.00	325.00
4	Start	41 09.260N	072 52.592W	19075.00	275.00
	End	41 09.260N	072 52.914W	18625.00	275.00
5	Start	41 09.233N	072 52.914W	18625.00	225.00
	End	41 09.233N	072 52.592W	19075.00	225.00
6	Start	41 09.206N	072 52.592W	19075.00	175.00
	End	41 09.206N	072 52.914W	18625.00	175.00
7	Start	41 09.179N	072 52.914W	18625.00	125.00
	End	41 09.179N	072 52.592W	19075.00	125.00

Parameters for PARAM:CLIS-STS
Page 5

Survey parameters:

Survey name	CLIS-STNH-S
Start latitude	41 08.639N
Start longitude	072 52.914W
Start x	18625.00
Start y	-875.00
Center latitude	41 08.531N
Center longitude	072 52.735W
Center x	18875.00
Center y	-1075.00
Lane length	500.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	9

Survey lanes:

1	Start	41 08.639N	072 52.914W	18625.00	-875.00
	End	41 08.639N	072 52.557W	19125.00	-875.00
2	Start	41 08.612N	072 52.557W	19125.00	-925.00
	End	41 08.612N	072 52.914W	18625.00	-925.00
3	Start	41 08.585N	072 52.914W	18625.00	-975.00
	End	41 08.585N	072 52.557W	19125.00	-975.00
4	Start	41 08.558N	072 52.557W	19125.00	-1025.00
	End	41 08.558N	072 52.914W	18625.00	-1025.00
5	Start	41 08.531N	072 52.914W	18625.00	-1075.00
	End	41 08.531N	072 52.557W	19125.00	-1075.00
6	Start	41 08.504N	072 52.557W	19125.00	-1125.00
	End	41 08.504N	072 52.914W	18625.00	-1125.00
7	Start	41 08.477N	072 52.914W	18625.00	-1175.00
	End	41 08.477N	072 52.557W	19125.00	-1175.00
8	Start	41 08.450N	072 52.557W	19125.00	-1225.00
	End	41 08.450N	072 52.914W	18625.00	-1225.00
9	Start	41 08.423N	072 52.914W	18625.00	-1275.00
	End	41 08.423N	072 52.557W	19125.00	-1275.00

Parameters for PARAM:CLIS-NH83
Page 5

Survey parameters:

Survey name	CLIS-NHAV-83
Start latitude	41 08.639N
Start longitude	072 53.499W
Start x	17807.00
Start y	-875.00
Center latitude	41 08.504N
Center longitude	072 53.320W
Center x	18057.00
Center y	-1125.00
Lane length	500.00
Lane bearing	90.00
Lane spacing	50.00
Number of lanes	11

Survey lanes:

1	Start	41 08.639N	072 53.499W	17807.00	-875.00
	End	41 08.639N	072 53.141W	18307.00	-875.00
2	Start	41 08.612N	072 53.141W	18307.00	-925.00
	End	41 08.612N	072 53.499W	17807.00	-925.00
3	Start	41 08.585N	072 53.499W	17807.00	-975.00
	End	41 08.585N	072 53.141W	18307.00	-975.00
4	Start	41 08.558N	072 53.141W	18307.00	-1025.00
	End	41 08.558N	072 53.499W	17807.00	-1025.00
5	Start	41 08.531N	072 53.499W	17807.00	-1075.00
	End	41 08.531N	072 53.141W	18307.00	-1075.00
6	Start	41 08.504N	072 53.141W	18307.00	-1125.00
	End	41 08.504N	072 53.499W	17807.00	-1125.00
7	Start	41 08.477N	072 53.499W	17807.00	-1175.00
	End	41 08.477N	072 53.141W	18307.00	-1175.00
8	Start	41 08.450N	072 53.141W	18307.00	-1225.00
	End	41 08.450N	072 53.499W	17807.00	-1225.00
9	Start	41 08.423N	072 53.499W	17807.00	-1275.00
	End	41 08.423N	072 53.141W	18307.00	-1275.00
10	Start	41 08.396N	072 53.141W	18307.00	-1325.00
	End	41 08.396N	072 53.499W	17807.00	-1325.00
11	Start	41 08.369N	072 53.499W	17807.00	-1375.00
	End	41 08.369N	072 53.141W	18307.00	-1375.00

Table I-4-45

NORWALK HARBOR POWER PLANT

GENERAL

Station Name:	Norwalk Harbor Power Plant
Location:	Norwalk Harbor, Norwalk, CT
Purpose:	WLIS III Dumpsite RED STATION
Structure:	End of pier beyond coal hopper/conveyer
North Latitude:	41.0424833
West Longitude:	-73.2450166
Chart:	12363

LOGISTICAL

Contact:	Mr. Frank Parker, Director Connecticut Light & Power Co. P.O. Box 562 Norwalk Harbor Station S. Norwalk, CT 06856
Key:	N/A
Power:	No A.C. Bring batteries.
Street Directions:	From I-95 South take Exit 16 (Norwalk/Shore Pts). At light, take left. Go over 95 and under railways. Take right onto Van Zant Avenue (by green). Proceed to stop sign and take left onto Fort Point Avenue. Go across river to light. Take left onto Water Avenue. (Pass Talmage Bros. usual dockage). At 1st major intersection, take right onto Burritt Avenue. Proceed to stop sign. Take left on Rte 136 (also see signs for Norwalk Comm. College). Continue on this road straight approx. 5 miles. Power Plant will become visible ahead. At fork favor right thru gate. Proceed to electronic gate. At the gate, use phone to contact operator (7:30-4:00) or Security (4:00 -). Identify yourself, company & purpose. You will be admitted. Drive toward main building. Take 1st left (under pipes by north side of tank farm). Follow road to right toward coal hopper/conveyer. Park here (by hopper).

Table I-4-45 (Cont.)

PROCEDURES

Needed Materials:	1 Trisponder 1 87° Antenna 1 Power cable 2 12VDC batteries 1 Tripod Asst'd Rope (lashing material) Black tape
Set Up:	Set up tripod at south end of pier. Lash tripod firmly to rail (check levelness). Place batteries under/by tripod. Tape connectors.
Aiming:	Aim the Trisponder toward bearing 210 degrees magnetic.

NOTES

This station is very exposed. Make sure to tape connectors. There is security on the power plant grounds, however, it is not necessarily prudent to leave batteries or Trisponder over night.

Table I-4-46

EATON'S NECK LIGHT

GENERAL

Station Name:	Eaton's Neck Light
Location:	Eaton's Neck Point, Long Island, New York
Purpose:	Western Long Island Sound III GREEN STATION
Structure:	Cylindrical lighthouse with black coupla; two (2) catwalks
North Latitude:	40.5723334
West Longitude:	-73.2375592
Chart:	12363

LOGISTICAL

Contact:	Inform Coast Guard Station Eaton's Neck of your intentions. The contact there is Mr. Marini at (516) 261-6959. If at all possible, make phone contact first, then send letter of confirmation to them. We have worked with them in the past and they are quite helpful.
Key:	The key must be picked up and returned at the station.
Power:	AC Power is available on ground level (also in room below lightroom, but plug is turned off with lights).
Street Directions:	From Norwalk, take 95 South across Throggs Neck Bridge. Take Long Island Expressway (LIE) Route 495. Take Exit 51, Route 231 North. (Turn left at bottom of ramp) Follow signs to Northport. At fork, bear right onto Deep Park Road. You will merge onto multi-lane highway. Take first left at lights, onto Route 10 (sign for Suffix County). Follow Elwood Road past John H. Glenn High School. Continue on Elwood (which turns into Reservoir Road. You will pass Northport High School.

Table I-4-46 (Cont.)

Continue Straight. At stop sign, bear left onto Church Street. At traffic light (with church on right) proceed straight onto Ocean Avenue. follow this thru village of Ashroken, onto Ashroken Avenue (yet another transformation). Look for Lighthouse Avenue on the right, immediately after a right turn. This goes out into the woods. There is a sign for Eaton's Neck USCG station at the head of the road. Follow this road to the station, which is at the base of a hill.

PROCEDURES

Needed Materials:	1 Del Norte Trisponder 1 sector antenna 1 5' pipe with coupler 2 hose clamps 1 power supply or 2 batteries carpenter's electrical tape 100' extension cord
Set Up:	Mount the Trisponder on the northern rail stanchion on the second tier. Feed cable back down ladder and in thru doors. Close doors as tightly as possible without severing cable.
Aiming:	Aim the Trisponder towards bearing 320° magnetic

Table I-4-47

Parameters for PARAM:WLIS-A
Page 1

Trisponder parameters:

Antenna height	0.00
Number of stations	2

Station name	CLP NORWALK POWER PLANT
Station code	72
Latitude	41 04.248N
Longitude	073 24.502W
x	0.00
y	-0.00
Elevation	0.00
Calibration	0.00
Measurement error	3.00

Station name	EATON'S NECK LIGHT
Station code	82
Latitude	40 57.233N
Longitude	073 23.756W
x	1044.62
y	-12972.38
Elevation	0.00
Calibration	0.00
Measurement error	3.00

Table I-4-47 (Cont.)

Parameters for PARAM:WLIS-A
Page 4

Chart parameters:

Center latitude	40 59.338N
Center longitude	073 29.204W
Center x	-6586.83
Center y	-9081.99
Scale	1 / 4000
Skew	0.00
Central parallel	41 04.248N
Central meridian	073 24.502W
x offset	0.00
y offset	-3770823.19
Scale at the origin	0.75500194
Mercator projection	
Scaling latitude	41 04.248N

Parameters for PARAM:WLIS-A
Page 5

Survey parameters:

Survey name	WLIS-A
Start latitude	40 59.548N
Start longitude	073 28.919W
Start x	-6187.65
Start y	-8694.63
Center latitude	40 59.338N
Center longitude	073 29.204W
Center x	-6587.65
Center y	-9082.13
Lane length	800.00
Lane bearing	270.00
Lane spacing	-25.00
Number of lanes	32

Survey lanes:

1	Start	40 59.548N	073 28.919W	-6187.65	-8694.63
	End	40 59.548N	073 29.490W	-6987.65	-8694.63
2	Start	40 59.534N	073 29.490W	-6987.65	-8719.63
	End	40 59.534N	073 28.919W	-6187.65	-8719.63
3	Start	40 59.521N	073 28.919W	-6187.65	-8744.63
	End	40 59.521N	073 29.490W	-6987.65	-8744.63
4	Start	40 59.507N	073 29.490W	-6987.65	-8769.63
	End	40 59.507N	073 28.919W	-6187.65	-8769.63
5	Start	40 59.494N	073 28.919W	-6187.65	-8794.63
	End	40 59.494N	073 29.490W	-6987.65	-8794.63
6	Start	40 59.480N	073 29.490W	-6987.65	-8819.63
	End	40 59.480N	073 28.919W	-6187.65	-8819.63
7	Start	40 59.467N	073 28.919W	-6187.65	-8844.63
	End	40 59.467N	073 29.490W	-6987.65	-8844.63
8	Start	40 59.453N	073 29.490W	-6987.65	-8869.63
	End	40 59.453N	073 28.919W	-6187.65	-8869.63
9	Start	40 59.440N	073 28.919W	-6187.65	-8894.63
	End	40 59.440N	073 29.490W	-6987.65	-8894.63
10	Start	40 59.426N	073 29.490W	-6987.65	-8919.63
	End	40 59.426N	073 28.919W	-6187.65	-8919.63
11	Start	40 59.413N	073 28.919W	-6187.65	-8944.63
	End	40 59.413N	073 29.490W	-6987.65	-8944.63
12	Start	40 59.399N	073 29.490W	-6987.65	-8969.63
	End	40 59.399N	073 28.919W	-6187.65	-8969.63
13	Start	40 59.386N	073 28.919W	-6187.65	-8994.63
	End	40 59.386N	073 29.490W	-6987.65	-8994.63
14	Start	40 59.372N	073 29.490W	-6987.65	-9019.63
	End	40 59.372N	073 28.919W	-6187.65	-9019.63
15	Start	40 59.359N	073 28.919W	-6187.65	-9044.63
	End	40 59.359N	073 29.490W	-6987.65	-9044.63
16	Start	40 59.345N	073 29.490W	-6987.65	-9069.63
	End	40 59.345N	073 28.919W	-6187.65	-9069.63

Table I-4-47 (Cont.)

Parameters for PARAM:WLIS-A
Page 6

17	Start	40 59.332N	073 28.919W	-6187.65	-9094.63
	End	40 59.332N	073 29.490W	-6987.65	-9094.63
18	Start	40 59.318N	073 29.490W	-6987.65	-9119.63
	End	40 59.318N	073 28.919W	-6187.65	-9119.63
19	Start	40 59.305N	073 28.919W	-6187.65	-9144.63
	End	40 59.305N	073 29.490W	-6987.65	-9144.63
20	Start	40 59.291N	073 29.490W	-6987.65	-9169.63
	End	40 59.291N	073 28.919W	-6187.65	-9169.63
21	Start	40 59.278N	073 28.919W	-6187.65	-9194.63
	End	40 59.278N	073 29.490W	-6987.65	-9194.63
22	Start	40 59.264N	073 29.490W	-6987.65	-9219.63
	End	40 59.264N	073 28.919W	-6187.65	-9219.63
23	Start	40 59.250N	073 28.919W	-6187.65	-9244.63
	End	40 59.250N	073 29.490W	-6987.65	-9244.63
24	Start	40 59.237N	073 29.490W	-6987.65	-9269.63
	End	40 59.237N	073 28.919W	-6187.65	-9269.63
25	Start	40 59.223N	073 28.919W	-6187.65	-9294.63
	End	40 59.223N	073 29.490W	-6987.65	-9294.63
26	Start	40 59.210N	073 29.490W	-6987.65	-9319.63
	End	40 59.210N	073 28.919W	-6187.65	-9319.63
27	Start	40 59.196N	073 28.919W	-6187.65	-9344.63
	End	40 59.196N	073 29.490W	-6987.65	-9344.63
28	Start	40 59.183N	073 29.490W	-6987.65	-9369.63
	End	40 59.183N	073 28.919W	-6187.65	-9369.63
29	Start	40 59.169N	073 28.919W	-6187.65	-9394.63
	End	40 59.169N	073 29.490W	-6987.65	-9394.63
30	Start	40 59.156N	073 29.490W	-6987.65	-9419.63
	End	40 59.156N	073 28.919W	-6187.65	-9419.63
31	Start	40 59.142N	073 28.919W	-6187.65	-9444.63
	End	40 59.142N	073 29.490W	-6987.65	-9444.63
32	Start	40 59.129N	073 29.490W	-6987.65	-9469.63
	End	40 59.129N	073 28.919W	-6187.65	-9469.63

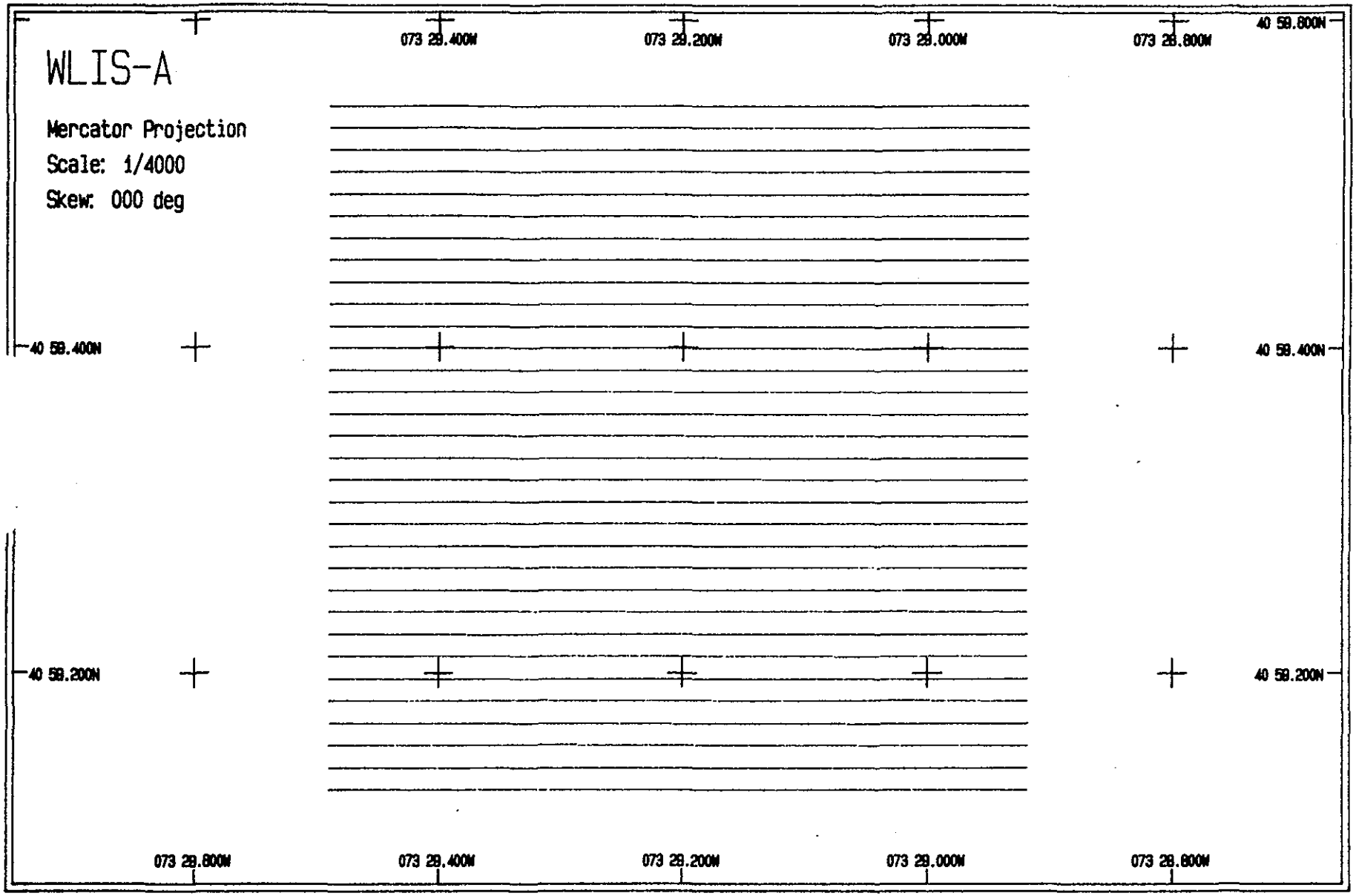
WLIS-A
Mercator Projection
Scale: 1/4000
Skew: 000 deg
073 29.400W
073 29.200W
073 29.000W
073 28.800W
40 59.800N
40 59.400N
40 59.200N

Figure I-4-26

Table I-4-48

Parameters for PARAM:WLIS-B
Page 4

Chart parameters:

Center latitude	40 59.338N
Center longitude	073 29.489W
Center x	-6986.53
Center y	-9082.00
Scale	1 / 4000
Skew	0.00
Central parallel	41 04.248N
Central meridian	073 24.502W
x offset	0.00
y offset	-3770823.19
Scale at the origin	0.75500194
Mercator projection	
Scaling latitude	41 04.248N

Parameters for PARAM:WLIS-B
Page 5

Survey parameters:

Survey name	WLIS-B
Start latitude	40 59.548N
Start longitude	073 29.204W
Start x	-6587.38
Start y	-8694.63
Center latitude	40 59.338N
Center longitude	073 29.490W
Center x	-6987.38
Center y	-9082.13
Lane length	800.00
Lane bearing	270.00
Lane spacing	-25.00
Number of lanes	32

Survey lanes:

1	Start	40 59.548N	073 29.204W	-6587.38	-8694.63
	End	40 59.548N	073 29.775W	-7387.38	-8694.63
2	Start	40 59.534N	073 29.775W	-7387.38	-8719.63
	End	40 59.534N	073 29.204W	-6587.38	-8719.63
3	Start	40 59.521N	073 29.204W	-6587.38	-8744.63
	End	40 59.521N	073 29.775W	-7387.38	-8744.63
4	Start	40 59.507N	073 29.775W	-7387.38	-8769.63
	End	40 59.507N	073 29.204W	-6587.38	-8769.63
5	Start	40 59.494N	073 29.204W	-6587.38	-8794.63
	End	40 59.494N	073 29.775W	-7387.38	-8794.63
6	Start	40 59.480N	073 29.775W	-7387.38	-8819.63
	End	40 59.480N	073 29.204W	-6587.38	-8819.63
7	Start	40 59.467N	073 29.204W	-6587.38	-8844.63
	End	40 59.467N	073 29.775W	-7387.38	-8844.63
8	Start	40 59.453N	073 29.775W	-7387.38	-8869.63
	End	40 59.453N	073 29.204W	-6587.38	-8869.63
9	Start	40 59.440N	073 29.204W	-6587.38	-8894.63
	End	40 59.440N	073 29.775W	-7387.38	-8894.63
10	Start	40 59.426N	073 29.775W	-7387.38	-8919.63
	End	40 59.426N	073 29.204W	-6587.38	-8919.63
11	Start	40 59.413N	073 29.204W	-6587.38	-8944.63
	End	40 59.413N	073 29.775W	-7387.38	-8944.63
12	Start	40 59.399N	073 29.775W	-7387.38	-8969.63
	End	40 59.399N	073 29.204W	-6587.38	-8969.63
13	Start	40 59.386N	073 29.204W	-6587.38	-8994.63
	End	40 59.386N	073 29.775W	-7387.38	-8994.63
14	Start	40 59.372N	073 29.775W	-7387.38	-9019.63
	End	40 59.372N	073 29.204W	-6587.38	-9019.63
15	Start	40 59.359N	073 29.204W	-6587.38	-9044.63
	End	40 59.359N	073 29.775W	-7387.38	-9044.63
16	Start	40 59.345N	073 29.775W	-7387.38	-9069.63
	End	40 59.345N	073 29.204W	-6587.38	-9069.63

Parameters for PARAM:WL18-B
Page 6

17	Start	40 59.332N	073 29.204W	-6587.38	-9094.63
	End	40 59.332N	073 29.775W	-7387.38	-9094.63
18	Start	40 59.318N	073 29.775W	-7387.38	-9119.63
	End	40 59.318N	073 29.204W	-6587.38	-9119.63
19	Start	40 59.305N	073 29.204W	-6587.38	-9144.63
	End	40 59.305N	073 29.775W	-7387.38	-9144.63
20	Start	40 59.291N	073 29.775W	-7387.38	-9169.63
	End	40 59.291N	073 29.204W	-6587.38	-9169.63
21	Start	40 59.278N	073 29.204W	-6587.38	-9194.63
	End	40 59.278N	073 29.775W	-7387.38	-9194.63
22	Start	40 59.264N	073 29.775W	-7387.38	-9219.63
	End	40 59.264N	073 29.204W	-6587.38	-9219.63
23	Start	40 59.250N	073 29.204W	-6587.38	-9244.63
	End	40 59.250N	073 29.775W	-7387.38	-9244.63
24	Start	40 59.237N	073 29.775W	-7387.38	-9269.63
	End	40 59.237N	073 29.204W	-6587.38	-9269.63
25	Start	40 59.223N	073 29.204W	-6587.38	-9294.63
	End	40 59.223N	073 29.775W	-7387.38	-9294.63
26	Start	40 59.210N	073 29.775W	-7387.38	-9319.63
	End	40 59.210N	073 29.204W	-6587.38	-9319.63
27	Start	40 59.196N	073 29.204W	-6587.38	-9344.63
	End	40 59.196N	073 29.775W	-7387.38	-9344.63
28	Start	40 59.183N	073 29.775W	-7387.38	-9369.63
	End	40 59.183N	073 29.204W	-6587.38	-9369.63
29	Start	40 59.169N	073 29.204W	-6587.38	-9394.63
	End	40 59.169N	073 29.775W	-7387.38	-9394.63
30	Start	40 59.156N	073 29.775W	-7387.38	-9419.63
	End	40 59.156N	073 29.204W	-6587.38	-9419.63
31	Start	40 59.142N	073 29.204W	-6587.38	-9444.63
	End	40 59.142N	073 29.775W	-7387.38	-9444.63
32	Start	40 59.129N	073 29.775W	-7387.38	-9469.63
	End	40 59.129N	073 29.204W	-6587.38	-9469.63

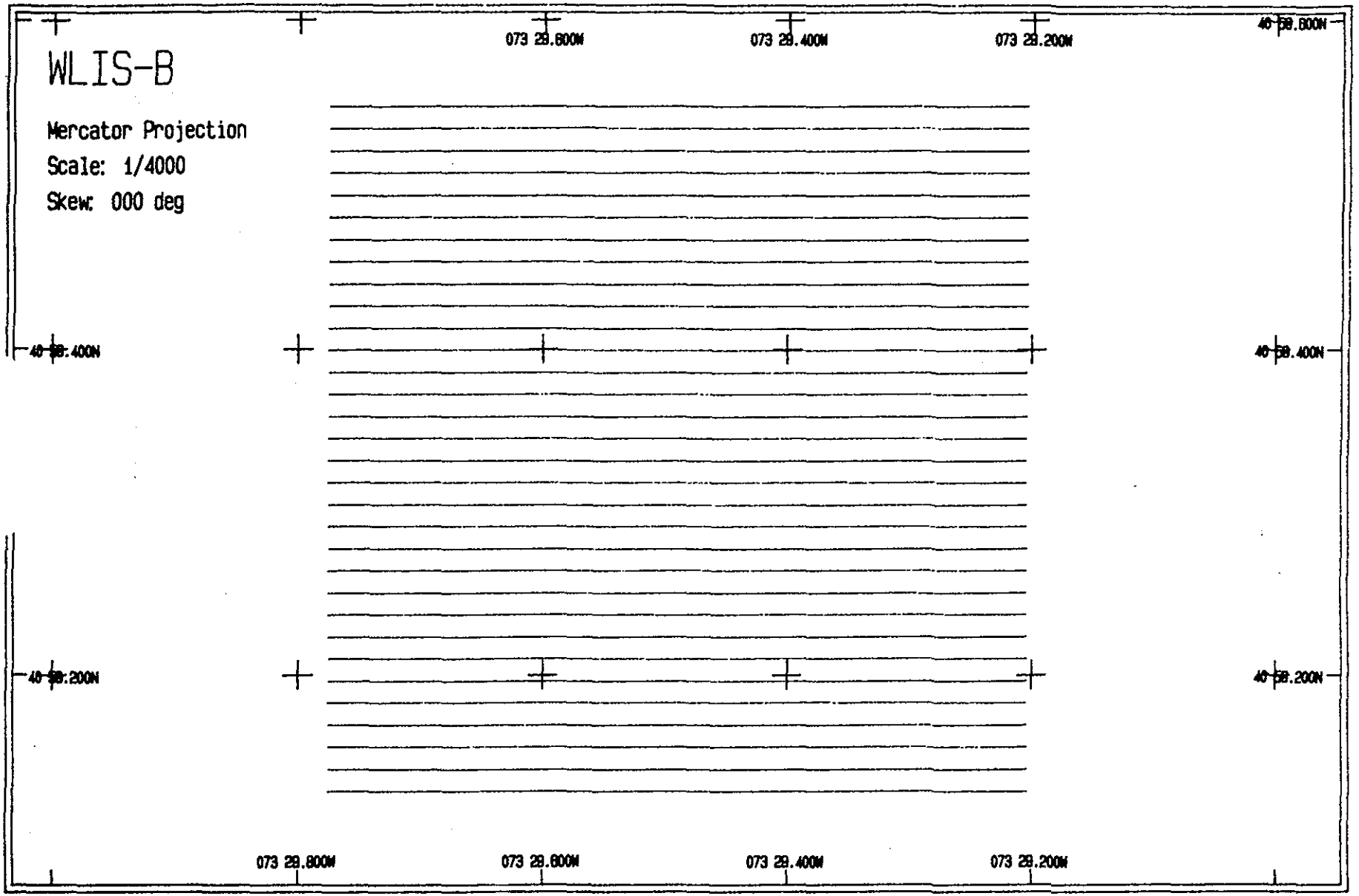
WLIS-B
Mercator Projection
Scale: 1/4000
Skew: 000 deg
073 29.800W
073 29.600W
073 29.400W
073 29.200W
40 58.600N
40 58.400N
40 58.200N

Figure I-4-27

Table I-4-49

Parameters for PARAM:WLISSON
Page 4

Chart parameters:

Center latitude	40 59.458N
Center longitude	073 28.565W
Center x	-5692.32
Center y	-8860.84
Scale	1 / 12000
Skew	0.00
Central parallel	41 04.248N
Central meridian	073 24.502W
x offset	0.00
y offset	-3770823.19
Scale at the origin	0.75500194
Mercator projection	
Scaling latitude	41 04.248N

Parameters for PARAM:WLISSCN
Page 5

Survey parameters:

Survey name	WLIS SIDESCAN
Start latitude	40 59.999N
Start longitude	073 27.496W
Start x	-4194.66
Start y	-7860.99
Center latitude	40 59.458N
Center longitude	073 28.567W
Center x	-5694.66
Center y	-8860.99
Lane length	3000.00
Lane bearing	270.00
Lane spacing	-200.00
Number of lanes	11

Survey lanes:

1	Start	40 59.999N	073 27.496W	-4194.66	-7860.99
	End	40 59.999N	073 29.638W	-7194.66	-7860.99
2	Start	40 59.891N	073 29.638W	-7194.66	-8060.99
	End	40 59.891N	073 27.496W	-4194.66	-8060.99
3	Start	40 59.783N	073 27.496W	-4194.66	-8260.99
	End	40 59.783N	073 29.638W	-7194.66	-8260.99
4	Start	40 59.674N	073 29.638W	-7194.66	-8460.99
	End	40 59.674N	073 27.496W	-4194.66	-8460.99
5	Start	40 59.566N	073 27.496W	-4194.66	-8660.99
	End	40 59.566N	073 29.638W	-7194.66	-8660.99
6	Start	40 59.458N	073 29.638W	-7194.66	-8860.99
	End	40 59.458N	073 27.496W	-4194.66	-8860.99
7	Start	40 59.350N	073 27.496W	-4194.66	-9060.99
	End	40 59.350N	073 29.638W	-7194.66	-9060.99
8	Start	40 59.242N	073 29.638W	-7194.66	-9260.99
	End	40 59.242N	073 27.496W	-4194.66	-9260.99
9	Start	40 59.133N	073 27.496W	-4194.66	-9460.99
	End	40 59.133N	073 29.638W	-7194.66	-9460.99
10	Start	40 59.025N	073 29.638W	-7194.66	-9660.99
	End	40 59.025N	073 27.496W	-4194.66	-9660.99
11	Start	40 58.917N	073 27.496W	-4194.66	-9860.99
	End	40 58.917N	073 29.638W	-7194.66	-9860.99

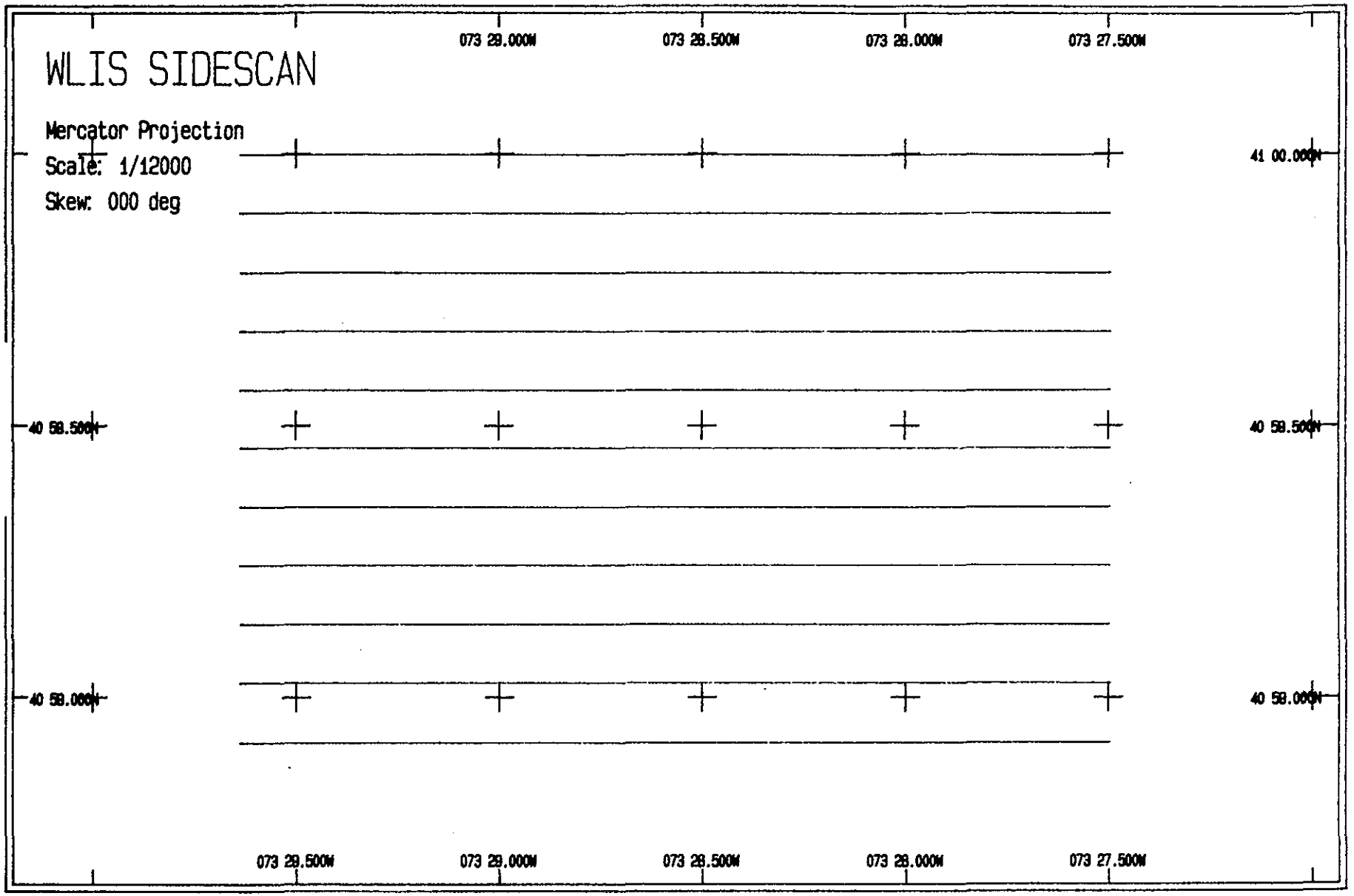
WLIS SIDESCAN
Mercator Projection
Scale: 1/12000
Skew: 000 deg
073 29.000W
073 28.500W
073 28.000W
073 27.500W
41 00.000N
40 59.500N
40 59.000N
073 29.500W
073 29.000W
073 28.500W
073 28.000W
073 27.500W

Figure I-4-28