CHAPTER 4

ICEBERG MESSAGES

- ❑ Iceberg Coding and Message Preparation
- ❑ Iceberg Coding Tables
- ❑ Notes on Iceberg Coding Procedures
- ❑ Examples of Iceberg Coded Reports

This chapter describes the iceberg information depicted on the observed ice chart as generated from either a ship or an aircraft in a message format.

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Photo 4.1: Coast Guard icebreaker Henry Larsen sailing past a tall tabular iceberg.

Since Canada is in the northwesternquadrant of the globe, please note that all latitudes and longitudes are degrees N and W respectively. Also note that all times are UTC.

4.1 Iceberg Coding and Message Preparation

An iceberg reporting code has been developed by the Meteorological Service of Canada and International Ice Patrol, to allow for exchange of digital iceberg information and to enable computer-assisted manipulation of volumes of iceberg observations into one complete iceberg analysis. The iceberg code follows standard coding practices and iceberg nomenclature of the WMO and supplements codes that exist in WMO. It provides for the reporting of all iceberg parameters, the area of surveillance and the factors that influence both visual and radar iceberg detection.

Listed below is the basic format for the iceberg message, with the following sections describing each component of the message. Notes referred to in the code descriptions appear in Section 4.3 (following the Iceberg Coding Tables section).

Iceberg Message

IBXXN CCCC YYGGgg
PPPP $P_tN_rN_rN_rN_r$ YYMMJ

00000
$Q_cL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ ZGGgg $1C_sAAA$ $2V_IV_IV_rV_r$ $3R_IR_IR_IR_rR_rR_r$ $4D_sD_sH_sH_s$

11111
(SSSS) ($I_dI_dI_dI_dI$) C_IGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ $01C_iS_iS_h$
($1C_ILEN$ $2C_IWID$ $3C_IHEI$ $4C_IDRA$ $5C_IDIR$ $6C_ISPE$)

22222
(SSSS) C_IGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ N_tN_tDrr $nnC_iS_iS_h$ ($nnC_iS_iS_h$ etc.)

33333
C_IGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ nnnnD (nnnnD)

44444
C_IGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ ($Im_am_am_om_o$) $2N_tN_tN_tD$ $nnC_iS_iS_h$
($nnC_iS_iS_h$ etc.)

55555
(SSSS) C_IGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ ($1D_vD_vV_vV_v$) ($2N_vN_vrr$)

REMARKS

END

Note:

Groups **00000** to **55555** can be repeated as often as necessary.

4.1.1 Iceberg Message Header

IBXXN CCCC YYGGgg

PPPP $P_tN_rN_rN_rN_r$ YYMMJ

This section is mandatory for all iceberg messages.

Table 4.1: Iceberg Message Header

SYMBOL	DESCRIPTION	CODE TABLE	PAGE
IB	Indicator for an iceberg message		
XX	Nationality of iceberg message	(Note 1)	4-13
N	Figure to indicate source of iceberg message	4.16 (Note 2)	4-12 4-13
CCCC	International call sign for the location from which the iceberg message was transmitted	(Note 3)	4-13
YY	Day of month that the message was transmitted		
GG	Hour that the message was transmitted		
gg	Minute that the message was transmitted		
PPPP	4 figure or 4 letter platform identifier	(Note 4) (Note 13)	4-13 4-14
P_t	Platform type	4.14	4-12
$N_rN_rN_rN_r$	Consecutive iceberg message number from this platform	(Note 5)	4-13
YY	Day of the month that the message begins	(Note 6)	4-13
MM	Month of the year that the message begins	(Note 6)	4-13
J	Last digit of the year that the message begins	(Note 6)	4-13

4.1.2 Track Information

00000

$Q_cL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ ZGGgg $1C_sAAA$ $2V_lV_lV_rV_r$ $3R_lR_lR_lR_rR_rR_r$ $4D_sD_sH_sH_s$

This section is mandatory for icebreakers and aircraft. (Note 7, p. 4-13).

Table 4.2: Track Information

SYMBOL	DESCRIPTION	CODE TABLE	PAGE
00000	Indicator that track information follows		
Q_c	Quadrant of the Globe (usually 7)	4.11	4-11
$L_aL_aL_aL_a$	Latitude in degrees and minutes at the start of each leg	(Note 8) (Note 9)	4-13 4-13
$L_oL_oL_oL_oL_o$	Longitude in degrees and minutes at the start of each leg	(Note 8) (Note 9)	4-13 4-13
Z	Time indicator		
GG	Time in hours at the start of each leg		
gg	Time in minutes at the start of each leg		
1	Indicator for general sea ice and altitude group		
C_s	Code for general sea ice distribution	4.12	4-11
AAA	Altitude of platform in hundreds of feet		
2	Indicator for visibility group		
V_lV_l	Visibility left of track in nautical miles	(Note 10)	4-14
V_rV_r	Visibility right of track in nautical miles	(Note 10)	4-14
3	Indicator for radar group		
$R_lR_lR_l$	Radar range to left of track in nautical miles	(Note 10)	4-14
$R_rR_rR_r$	Radar range to right of track in nautical miles	(Note 10)	4-14
4	Indicator for wave or swell group	(Note 11)	4-14
D_sD_s	Direction (to nearest 10 degrees) from which is generated the predominant wave or swell		
H_sH_s	Height of predominant wave or swell in half metres		

4.1.3 Individual Observations

11111
(SSSS) ($I_dI_dI_dI_dI_d$) C_lGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ $01C_iS_iS_h$
(1C_lLEN 2C_lWID 3C_lHEI 4C_lDRA 5C_lDIR 6C_lSPE)

Table 4.3: Individual Observations

SYMBOL	DESCRIPTION	CODE TABLE	PAGE
11111	Indicator that iceberg observations by individual position follows	(Note 12)	4-14
SSSS	Optional group used by Ice Operations Centres and by the offshore industry	(Note 13)	4-14
$I_dI_dI_dI_d$	Optional groups used by offshore industry to report consecutive iceberg number	(Note 14)	4-14
I	Optional groups used by offshore industry to indicate iceberg mobility	(Note 14)	4-14
C_l	Confidence level/Method of observation	4.13 (Note 15)	4-12 4-15
GG	Time in hours that observation was made	(Note 16)	4-15
gg	Time in minutes that observation was		
$L_aL_aL_aL_aL_a$	Latitude of the individual observation in degrees, minutes and tenths of a minute.		
$L_oL_oL_oL_oL_o$	Longitude of the individual observation in degrees, minutes and tenths of a minute.		
01	Indicator for single iceberg report		
C_i	Concentration of sea ice immediately at the iceberg position	4.10 (Note 17)	4-11 4-15
S_i	Size of iceberg	4.8 (Note 18)	4-10 4-15
S_h	Shape of iceberg	4.9 (Note 18)	4-10 4-15
1C_lLEN **2C_lWID** **3C_lHEI** **4C_lDRA** **5C_lDIR** **6C_lSPE**	Optional groups to report iceberg length (**LEN**), width (**WID**), height (**HEI**) and draft (**DRA**), in whole metres, direction (**DIR**) of iceberg drift (toward) in whole degrees and speed (SPE) of iceberg drift in knots and tenths. The confidence level (**C_l**), indicates whether these parameters are measured or estimated.	(Note 19)	4-15

4.1.4 Cluster Observations

22222

(SSSS) C_lGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ N_tN_tDrr $nnC_iS_iS_h$ ($nnC_iS_iS_h$ etc.)

Table 4.4: Cluster Observations

SYMBOL	DESCRIPTION	CODE TABLE	PAGE
22222	Indicator that iceberg observations by cluster follow	(Note 12) (Note 20)	4-14 4-15
SSSS	Optional group used by Ice Operations Centres and by the offshore industry	(Note 13)	4-14
C_l	Confidence level/Method of observation	4.13 (Note 15)	4-12 4-15
GG	Time in hours that observation was made	(Note 16)	4-15
gg	Time in minutes that observation was		
$L_aL_aL_aL_aL_a$	Latitude of the centre of the cluster in degrees, minutes and tenths of a minute		
$L_oL_oL_oL_oL_o$	Longitude of the centre of the cluster in degrees, minutes and tenths of a minute		
N_tN_t	Total number of icebergs within the cluster, disregarding bergy bits and growlers	(Note 21)	4-16
D	Distribution of icebergs within the cluster	4.15	4-12
rr	Radius of cluster in nautical miles		
nn	Number of icebergs of each size and shape in the cluster	(Note 21)	4-16
C_i	Average concentration of sea ice in the cluster	4.10	4-11
S_i	Size of icebergs reported in the cluster	4.8 (Note 21)	4-10 4-16
S_h	Shape of icebergs reported in the cluster	4.9 (Note 21)	4-10 4-16
$nnC_iS_iS_h$	Sufficient 5 figure groups to describe the numbers of each size and shape within the cluster	(Note 21)	4-16

4.1.5 Grid Observations

33333

C_IGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ nnnnD (nnnnD)

Table 4.5: Grid Observations

SYMBOL	DESCRIPTION	CODE TABLE	PAGE
33333	Indicator that iceberg observations by grid follow	(Note 22)	4-16
C_I	Confidence level/Method of observation	4.13 (Note 12)	4-12 4-14
GG	Time in hours that observation was made	(Note 16)	4-15
gg	Time in minutes that observation was		
$L_aL_aL_aL_aL_a$	Latitude at the start point of the grid in degrees, minutes and tenths of a minute		
$L_oL_oL_oL_oL_o$	Longitude at the start point of the grid in degrees, minutes and tenths of a minute		
$L_aL_aL_aL_aL_a$	Latitude at the end point of the grid in degrees, minutes and tenths of a minute		
$L_oL_oL_oL_oL_o$	Longitude at the end point of the grid in degrees, minutes and tenths of a minute		
nnnn	Number of icebergs within the grid	(Note 23)	4-16
D	Location of the grid	4.15 (Note 22)	4-12 4-16
nnnnD	Group required if both left and right of track grids reported		

4.1.6 Zone Observations

44444

C_lGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ $(1m_am_am_om_o)$ $2N_tN_tN_tD$ $nnC_iS_iS_h$ $(nnC_iS_iS_h$ etc.)

Table 4.6: Zone Observations

SYMBOL	DESCRIPTION	CODE TABLE	PAGE
44444	Indicator that iceberg observations by zone follow	(Note 24)	4-16
C_l	Confidence level/Method of observation	4.13 (Note 15)	4-12 4-15
GG	Time in hours that observation was made	(Note 16)	4-15
gg	Time in minutes that observation was		
$L_aL_aL_aL_aL_a$	Latitude at the southwest corner of the zone in degrees, minutes and tenths of a minute		
$L_oL_oL_oL_oL_o$	Longitude at the southwest corner of the zone in degrees, minutes and tenths of a minute		
1	Indicator for optional group to specify non-standard zone		
m_am_a	Whole minutes of latitude		
m_om_o	Whole minutes of longitude		
2	Indicator for total number of icebergs group		
$N_tN_tN_t$	Total number of icebergs disregarding bergy bits and growlers	(Note 21)	4-16
D	Distribution of icebergs within the zone	4.15	4-12
nn	Number of icebergs of each size and shape in the zone	(Note 21)	4-16
C_i	Average concentration of sea ice in the zone	4.10	4-11
S_i	Size of icebergs reported in the zone	4.8 (Note 21)	4-10 4-16
S_h	Shape of icebergs reported in the zone	4.9 (Note 21)	4-10 4-16
$nnC_iS_iS_h$	Sufficient 5 figure groups to describe the numbers of each size and shape within the zone	(Note 21)	4-16

4.1.7 Ship Locations

55555
(SSSS) C_lGGgg $L_aL_aL_aL_aL_a$ $L_oL_oL_oL_oL_o$ (1$D_vD_vV_vV_v$) (2$N_vN_v$rr)

Table 4.7: Ship Locations

SYMBOL	DESCRIPTION
55555	Indicator that ship positions follow
SSSS	Optional ship identifier
C_l	Confidence level/Method of observation (Code Table 4.13)
GG	Time in hours of reported ship location
gg	Time in minutes of reported ship location
$L_aL_aL_aL_aL_a$	Latitude of reported ship/cluster centre location in degrees, minutes and tenths of a minute
$L_oL_oL_oL_oL_o$	Longitude of reported ship/cluster centre location in degrees, minutes and tenths of a minute
1	Indicator for first optional group to specify ship speed and direction
D_vD_v	Optional ship direction (01-36) in tens of degrees
V_vV_v	Optional ship speed in knots
2	Indicator for second optional group to specify a cluster of ships
N_vN_v	Total number of ships within the cluster
rr	Radius of cluster in nautical miles

4.1.8 Plain Language Remarks

REMARKS (Note 15, p. 4-15)

END (*Mandatory end of message)

4.2 Iceberg Coding Tables

Table 4.8: Size of Iceberg (S_i)

DESCRIPTION	HEIGHT	LENGTH	CODE
Growler	<1m	<5m	1
Bergy Bit	1-<5m	5-<15m	2
Small Iceberg	5-15m	15-60m	3
Medium Iceberg	16-45m	61-120m	4
Large Iceberg	46-75m	121-200	5
Very Large Iceberg	>75m	>200m	6
Not Specified	-	-	7
Radar Target	-	-	X

Table 4.9: Shape of Iceberg (S_h)

	CODE
Tabular	1
Non-Tabular	2
Domed	3
Pinnacled	4
Wedged	5
Drydocked	6
Blocky	7
Ice Island	8
Not Specified	0
Undetermined (Radar)	X

CIS Archives

Photo 4.2: Bergy bits and ridge remnants embedded in rotten first-year ice

Table 4.10: Concentration of Sea Ice (C_i)

DESCRIPTION	CODE
No Sea Ice	0
Trace of Sea Ice	/
1/10	1
2/10	2
3/10	3
4/10	4
5/10	5
6/10	6
7/10	7
8/10	8
9/10, 9+/10 or 10/10	9
Undetermined	X

Table 4.11: Quadrant of the Globe (Q_c)

LATITUDE	LONGITUDE	CODE
North	East	1
South	East	3
South	West	5
North	West	7

Table 4.12: Distribution of Sea Ice (C_s)

DESCRIPTION	CODE
No sea ice	0
Trace of sea ice	/
Very Open Drift	1
Very Open Drift in strips and patches	2
Open Drift	3
Open Drift in strips and patches	4
Close Drift/Pack	5
Very Close Drift/Pack	6

Table 4.13: Confidence Level/ Method of Observation (C_l)

DESCRIPTION	CODE
Radar position with visual confirmation	1
Radar (SLAR/FLAR) only	2
Visual only	3
Measured	4
Estimated	5
Satellite – High Confidence	6
Satellite – Medium Confidence	7
Satellite – Low Confidence	8

Table 4.14: Platform Type (P_t)

DESCRIPTION	CODE
Fixed wing aircraft	1
Helicopter	2
Icebreaker including helicopter	3
Other ship	4
Oil rig	5
Shore station	6
	7

Table 4.15: Iceberg Distribution (D)

DESCRIPTION	CODE
Evenly (both sides of track)	1
Left of track	2
	3

Table 4.16: Source of Iceberg Message (N)

DESCRIPTION	CODE
MSC/IIP	1
Icebreaker	2
Ice Operation Centre	3
Offshore Industry	4
Canadian Ice Service	5

4.3 Notes on Iceberg Coding Procedures

1. Nationality of originator of iceberg message is indicated by **CN** for Canadian and **US** for American.

2. To facilitate turn-around of iceberg data, messages are designated by source:
   - ❑ Aerial reconnaissance by MSC and IIP
   - ❑ CCG icebreakers
   - ❑ Commercial ships, land stations and miscellaneous reports input by Ice Operations Centres
   - ❑ Offshore industry
   - ❑ Miscellaneous iceberg reports input by the Canadian Ice Service

3. When transmitted from or through a land station, **CCCC** is the four-letter identifier, but when transmitted directly from an icebreaker or an aircraft, **CCCC** becomes the four-letter or four-figure identifier of the ship or aircraft.

4. Normally a reconnaissance is conducted from one platform and the **PPPP** code for the identifier is in brackets e.g., icebreaker Sir John Franklin (**CGDT**), MSC Dash-7 (**CGCFR**) and US Coast Guard C130 (**1504**). Messages from Ice Operations Centres may be comprised of reports from several commercial ships and **PPPP** becomes (**SHIP**) or if the message is an assortment of reports from shore stations **PPPP** becomes (**LAND**). Messages from the offshore industry will usually include reports from rigs and supply vessels and **PPPP** is coded as (**RIGG**).

5. Consecutive iceberg message numbers shall commence January 1st each year.

6. Since reconnaissance missions may extend through two days, **YYMMJ** refers to the date on which the mission began or in the case of a message from industry or Ice Operations Centres the date of the first sighting.

7. A track is made up of one or more legs defined by position, time and parameters. There are as many legs (lines of code) as required to describe all turning points or any change of parameters, e.g., general sea-ice description, aircraft altitude, visibility, radar range and sea state. Although complete detail is required to reproduce a plot as if it was drawn by the observer, complicated tracks should be redrawn to give a simpler track with appropriate visibility and radar ranges to outline the area of coverage. Variable parameters could be averaged to keep the message to a reasonable length.

8. If a mission starts or ends at a shorebase, the first and last position becomes the international call sign of the shorebase. An aerial mission may start or end at any position. For example, a mission from Iqaluit to observe icebergs in Hudson Strait and then sea ice in Hudson Bay, would end iceberg reporting in western Hudson Strait. In this same example, if the mission re-entered Hudson Strait to continue iceberg reporting, the endpoint of the first iceberg reconnaissance would be joined to this restart point by a straight line with all parameters coded as **X**'s. Track legs over stretches of land may have all parameters coded as **X**.

9. Each leg start position is, by default, the end position of any previous leg; consequently, the last line of the track is always position and time. For stationary icebreakers, these two positions are the same.

10. For icebergs, visibility or radar limits are defined by the distance from the ship or aircraft that the observer feels confident that he/she can see or get a radar return for all small icebergs. This does not preclude the observation and reporting of icebergs beyond these limits.

11. Experienced ISS may estimate the wave or swell group visually or by radar from an aircraft or report **XXXX** for "undetermined". Icebreakers should report the group.

12. The individual-position method of iceberg and target reporting should be used in areas near the iceberg limit, areas of offshore drilling activity, the approaches to the Strait of Belle Isle and in all other areas where icebergs are evenly distributed and their numbers permit. When numbers increase or when icebergs are concentrated in small areas, a combination of cluster and individual methods can be used. When numbers become unmanageable, zones and grids should be incorporated.

13. Messages from the offshore industry and from Ice Operations Centres consist of iceberg reports from individual sources such as commercial ships, rig supply vessels, land stations, etc. If the iceberg message contains only one individual source, the message is coded with **PPPP** in the second line of the header information and is coded as the first four letters (or figures) of the call sign of the single source. However, if the iceberg message contains iceberg reports from more than one source, the optional group **SSSS** is used to indicate the call signs of the individual sources.

14. The offshore industry usually tracks icebergs through their area of interest. Icebergs entering the area are assigned a consecutive number which is maintained until the iceberg exits from the area. The optional group $\mathbf{I_dI_dI_dI_dI}$ is used by the offshore industry to code the assigned number of the iceberg and to indicate if the iceberg is freely drifting (**D**), grounded (**G**) or is under tow (**T**).

15. The degree of confidence in an iceberg's observed position and related parameters is expressed by **C$_I$**. The highest confidence (Code 1) is a radar position with visual confirmation. There should be an attempt to consolidate visual and radar data to produce high confidence levels. Radar-only targets (Code 2) will not appear in areas visually searched, unless there is some doubt about the visual capability which should be expressed in the **REMARKS** section.

16. The time of observation is the time at which an individual iceberg, the centre of a cluster, the southwest corner of a zone or the start point of a grid becomes abeam of the track. Times may be rounded off to the nearest 15 minutes but they must be within the time frame of the track leg from which the observations were made.

17. The concentration of sea ice is a factor which affects iceberg drift and which provides the user with some degree of confidence in iceberg detection, especially if the detection is made by radar. There shall be an attempt to describe the ice cover to the nearest tenth immediately adjacent to the iceberg. However, when the concentration varies from side to side, the recorded concentration will be an average of the conditions around the iceberg. Open water areas or trails caused by the iceberg will be disregarded.

18. Sizes refer to the portion of the iceberg above water. If height and length of a berg in metres (m) fall into a different size classification, use the larger size. Dimensions (in kilometres) of a tabular berg or ice island may be indicated beneath the symbol. Iceberg size and shape parameters are important in the process of re-identification of icebergs and as inputs to iceberg deterioration and drift models. These parameters shall be reported along the limit of icebergs, in areas of offshore drilling activity, in the approaches to the Strait of Belle Isle and in all areas where the work load permits. When icebergs are more numerous, shape parameters should be simply tabular or non-tabular. When icebergs become too numerous, use code **7** for unspecified size and code **0** for unspecified shape. **X**'s will only be used for radar information.

19. The optional groups (**1C$_I$LEN 2C$_I$WID 3C$_I$HEI 4C$_I$DRA 5C$_I$DIR 6C$_I$SPE**) shall be used when any of the length, width, height, draft, direction and speed iceberg parameters are available.

20. Accurate determination of the positions and radii of clusters is essential so that the circles do not overlap other clusters, zones or grids, overlap land or extend beyond the applicable radar or visual limit. Normally observations by individual position will not be included inside a cluster. However a visually confirmed iceberg through a hole in the clouds could be included in a radar cluster and in this case the total number of icebergs reported in the cluster would not include the individual iceberg.

21. If there are no bergy bits or growlers present, nn equals **N_tN_t** for clusters or **$N_tN_tN_t$** for zones. **S_i** is coded as **7** for not specified and **S_h** is coded as **0** for not specified. However, when the workload permits, the code allows specifying the numbers of different sizes and shapes within the grid or zone. For example, in a cluster free of sea ice which has 1 very large tabular iceberg, 3 medium icebergs, 5 small icebergs and 2 bergy bits which are all evenly distributed within a radius of 5 nautical miles, **N_tN_tDrr $nnC_iS_iS_h$ $nnC_iS_iS_h$ $nnC_iS_iS_h$ $nnC_iS_iS_h$** would be coded as: **09110 01061 03040 05030 02020**.

22. Grids are defined by the confidence level (whether radar and visual, radar only or visual only), by two positions along the track, by the visibility or radar limits as coded in the track part of the message and by the iceberg distribution (left of track, right of track or both sides of track). A visual and radar or a visual-only grid extends from the track line to the visibility limit. A radar-only grid extends from the track to the radar limit or if there is a visible limit, the grid extends from the visibility limit to the radar limit. Two lines of code are required to encode both visual and radar grids with the same endpoints. Clusters will not be reported inside grids and normally individual icebergs should be excluded. However, individual icebergs which are considered significant because of size, shape or other parameters which can assist in reidentification may be positioned inside of the grid. The time assigned to the grid associates it with the correct visibility and/or radar limits coded in the track leg, so it is essential that the time refers to the right leg. Grids will not extend beyond one track leg.

23. An accurate count of iceberg numbers in grids, clusters and zones is desired. However, when numbers are too large, report an estimate and explain in the **REMARKS** section.

24. Zones are areas usually one degree latitude by one degree longitude defined by the latitude and longitude of the southwest corner. The optional group **$1m_am_am_om_o$** permits the use of nonstandard zones. Zones should not overlap other zones, grids or clusters, or extend beyond the appropriate visibility or radar limit. As with clusters and grids, individual icebergs should not normally appear in zones.

25. Factors, such as turbulence, drift angle, precipitation and sea state, that can effect radar; and variable visibilities or breaks in the undercast that effect visual capabilities shall be included.

4.4 Examples of Coded Iceberg Reports

```
IBCN1 CYQX 082000
GCFR 10004 08032
00000
CYQX        Z1200  1XXXX 2XXXX 3XXXX 4XXXX
74800 05340 Z1220  10030  21515  35050  4XXXX
74800 04900 Z1320  10030  21515  35050  4XXXX
74855 04900 Z1340  10030  21515  35050  4XXXX
74855 05140 Z1420  16030  21515  35050  4XXXX
74855 05300 Z1440  16030  21515  35050  4XXXX
74950 05300 Z1500  10030  21515  35050  4XXXX
74950 04800 Z1600  10025  21515  35050  4XXXX
75045 04800 Z1620  10025  21515  35050  4XXXX
75045 05215 Z1655  16025  21515  35050  4XXXX
75045 05400 Z1710  16025  21515  35050  4XXXX
74925 05400 Z1730  1XXXX 2XXXX 3XXXX 4XXXX
CYQX Z1745
11111
21240 48200 51220 010XX
11400 48450 50210 01044
11415 49050 51050 01051
21425 48350 51530 010XX
31435 49010 52310 01970
31435 48590 52320 01970
21455 49380 53280 019XX
21508 50100 52180 010XX
11515 49500 51300 01041
11542 49450 49250 01054
21544 49280 49220 010XX
11623 50500 48160 01070
21630 51030 49130 010XX
11633 50570 49400 01070
11638 50530 50230 01070
21639 51040 50300 010XX
11642 50330 50480 01070
11649 50330 51260 01070
11649 50530 51260 01070
21649 51040 51260 010XX
21652 51030 51590 019XX
11656 50580 52170 01970
11700 50480 52580 01970
11718 50080 54060 01970
11722 49470 54040 01961
22222
21526 50120 50400 03103 030XX
11705 50360 53330 03105 01931 01947 01961
33333
21659 50450 52460 50450 53120 00123
11703 50450 53120 50450 54000 00123
21703 50450 53120 50450 54000 00183
44444
11633 50350 49400 11015 20081 08070
31710 50450 54230 11523 20081 08970
55555
CGDT Z1512 49510 50030 2409
REMARKS
END
```

```
IBCN2 CGDX 181530

CGDX 30001 17079

00000

75132 05621 Z1800 10000 22020 35050 42504

75156 05540 Z2200 10000 22020 35050 42504

11111

11800 51360 56220 01044

11800 51430 56080 01056

11800 51410 56040 01046

12200 51540 55570 01042

12200 51550 55550 01042

12200 51550 55540 01042

12200 51580 55500 01042

12200 51580 55450 01042

12200 51540 55280 01042

12200 51570 55270 01042

12200 52000 55270 01042

12200 52000 55310 01042

12200 52010 55360 01042

12200 52010 55420 01042

12200 52020 55390 01042

12200 52040 55360 01042

12200 52030 55440 01042

REMARKS

END
```

Figure 4.1: Chart Produced from an Iceberg Flight

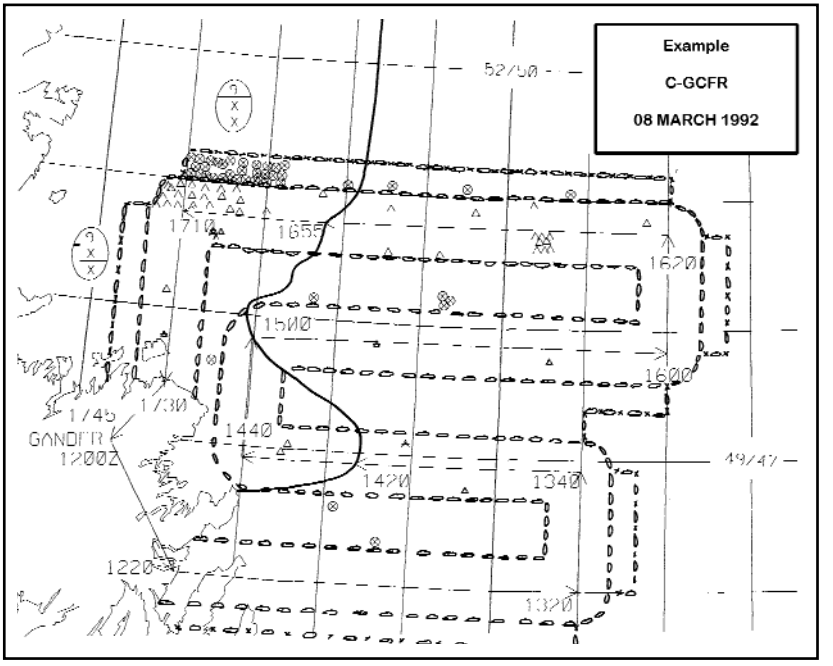

Figure 4.2: Computer Generated Chart Produced From an Iceberg Flight