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ICEBREAKING OPERATIONS

ARCTIC REPORT

SUMMER 1996



Icebreaking Program

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ICEBREAKING OPERATIONS

ARCTIC REPORT

Summer 1996

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Icebreaking Program
Ottawa
October 1997**

TABLE OF CONTENTS

| | |
|--|----|
| Introduction | 1 |
| Table 1 - Dates of Arctic Icebreaking Operations | 2 |
| Table 2 - Workload indicators | 2 |
| Arctic Average Response Time | 4 |
| Table 3 -Arctic Peak Month | 4 |
| Table 4 - Arctic Peak Area of Service | 4 |
| Chart 1 - Arctic Workload | 5 |
| Chart 2 - Workload by Mission Statement | 6 |
| Chart 3 - Hours of Icebreaking Services Provided | 7 |
| Table 5 - Operational Output by Vessel | 8 |
| Chart 4 - Workload by Icebreaker | 9 |
| Chart 5 - Comparison of Vessel Escorts | 10 |
| Chart 6 - Client Countries | 11 |
| Table 6 - Vessels Assisted - Summer 1996 | 11 |
| Chart 7 - Other Programs/Activities | 13 |
| ANNEX | |
| Annex A - Description and Maps of Areas of Service | |
| Annex B - Icebreaking Services Provided | |
| Annex C - Icebreaking Operations Timeline | |

INTRODUCTION

This report is complementary to the Winter report of 1995/96. It provides an overview of the icebreaking services provided in the Arctic Region between June 24 and November 6, 1996. Statistics presented in this report were compiled from the Icebreaking Operations Data Information System (IODIS) version 5.2, and the Fleet Activity Information System (FAIS) with the cooperation of the Ships' Officers aboard CCG icebreakers and Ice Officers in Iqaluit Ice Centre. The report demonstrates the workload in the Arctic Region by icebreakers and the services provided to clients.

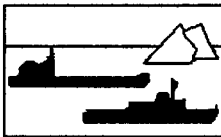
From mid-June to November each year since 1930, Canadian Coast Guard icebreakers have conducted annual operations in the high Arctic and Hudson Bay. Icebreakers are positioned throughout the Arctic to provide services, such as route assistance to commercial vessels. Other services provided include the transportation and landing of fuel and general cargo at northern settlements, marine navigation aids maintenance, search and rescue, hydrographic and oceanographic work, Canadian presence in the Arctic (sovereignty) and maritime environmental emergency response. Our Officers are frequently complimented by the clients on their excellent effort and well organized operations. A description of services is provided in Annex B.

Your comments and/or suggestions are appreciated and can be addressed to the Director of Icebreaking Program by FAX (613) 990-5541.

Table 1 - Dates of Icebreaking Operations

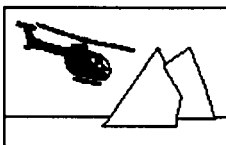
| Icebreaker | Type | Start Date | End Date |
|----------------------|------|------------|-----------|
| LOUIS S. ST. LAURENT | 1300 | 21-Aug-96 | 29-Oct-96 |
| DES GROSEILLIERS | 1200 | 07-Jul-96 | 03-Oct-96 |
| PIERRE RADISSON | 1200 | 12-Jul-96 | 06-Nov-96 |
| HENRY LARSEN | 1200 | 09-Jul-96 | 16-Oct-96 |
| TERRY FOX | 1200 | 24-Jun-96 | 19-Oct-96 |
| SIR WILFRID LAURIER | 1100 | 12-Jul-96 | 19-Oct-96 |

Table 2 - Workload Indicators per Mission Statement



ROUTE ASSISTANCE

| | | |
|---|-----------|------------------|
| Total Number of requests | received | 79 |
| | cancelled | *9 |
| | delivered | 77 |
| Single escort | number | 75 |
| | miles | 27,832.00 |
| | hours | 4,859.57 |
| Vessels beset in ice | number | 3 |
| | cancelled | 1 |
| | miles | 1239 |
| | hours | 160.53 |
| Total hours | | 5,020.10 |
| Hours of standby (pro rated hours-source FAIS) | | 2,421.37 |
| Total miles of Route Assistance services | | 29,071.00 |
| Total hours of Route Assistance services | | 7,441.47 |



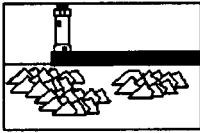
ICE RECONNAISSANCE

| | | |
|---------------------------------|-----------|--------------|
| Total Number of requests | received | 48 |
| | cancelled | 0 |
| | delivered | 48 |
| Total hours of services | | 85.56 |

Note: - Miles & Hours of services include transit miles & hours.

*** include services that had commenced prior to cancellation**

Table 2 - Workload Indicators per Mission Statement (Cont'd)



HARBOUR BREAKOUT

| | | |
|--|-----------|--------|
| Number of requests | received | 8 |
| | delivered | 8 |
| Standby for harbour breakout services | | 73.62 |
| Hours of harbour breakout | | 28.81 |
| Total miles of services | | 101.00 |
| Total hours of services | | 102.43 |



EASTERN ARCTIC SEALIFT

| | | |
|--------------------------------|-----------|----------|
| Number of requests | received | 31 |
| | delivered | 31 |
| Total miles of services | | 4,799.00 |
| Total hours of services | | 1,222.73 |



SUPPORT TO OTHER GOVERNMENT DEPARTMENTS & AGENCIES & R&D

| | | |
|--------------------------------|-----------|----------|
| Number of requests | received | 44 |
| | delivered | 44 |
| Total hours of services | | 1,140.25 |

OTHER PROGRAMS/ACTIVITIES

(Rescue & Environment Response (RER), M.N.S. and Other activities)

| | | |
|--------------------------------|-----------|----------|
| Number of requests | received | 148 |
| | delivered | 148 |
| Total hours of services | | 3,876.45 |

Note: All hours and miles of service include transit hours.

For details on other programs/activities see page 13.

Arctic Average Response Time

In the Arctic Region, the average response time for providing route assistance services during summer 1996 was 13.57 hrs. (according to IODIS data) which is a little higher than previous summers. Six services of 54 had a lengthy response time (>45 hrs.). The average response time for the month of August was 8.09 hrs. and 13.88 hrs. for the month of September. The longest response time was 118 hours and the lowest was nil response time. The longest escort was carried out by the LARSEN of the MV ARCTIC totalling 362 hrs. of escort and 49 hrs. of transit times. The shortest escort was carried out by the DES GROSEILLIERS the CECILIA DESGANGNÉS for 2.67 hrs.

Table 3 - Arctic Peak Month

According to IODIS data, based on the number/hours of services provided the peak month was September, during which 87 requests were carried out. Fifteen ice reconnaissance services, 6 R&D services, 26 escorts, 2 harbour breakouts, 11 eastern Arctic sealift services, and 18 other services (RSER, SAR, MNS and 16 other activities) were provided.

| Month | Number of services | Number of hours |
|-----------|--------------------|-----------------|
| June | 1 | 115.92 |
| July | 46 | 1976.50 |
| August | 74 | 1778.19 |
| September | 87 | 3488.30 |
| October | 26 | 992.23 |
| November | 1 | 2.08 |

Table 3 - Arctic Peak Area of Service

Based on IODIS data, the peak area (busiest area of service) was the block commitment area A05 (Parry Channel East) where 75 requests for assistance were handled. These requests included 26 single escorts, 5 ice reconnaissance services to support shipping, 22 R&D services, 2 harbour breakouts, 11 eastern Arctic sealift and 9 other services.

| Block Commitment Area | Number of service |
|---------------------------------|-------------------|
| A01 - Hudson Bay | 2 |
| A03 - Hudson Strait | 54 |
| A04 - East Baffin | 6 |
| A05 - Parry Channel East | 75 |
| A06 - Parry Channel West | 54 |
| A07 - Pelly | 28 |
| A08 - Ellesmere | 15 |
| A09 - Victoria | 9 |
| A10 - Beaufort | 11 |
| A12 - Sverdrup | 2 |
| A14 - West Greenland | 25 |
| Total | 281 |

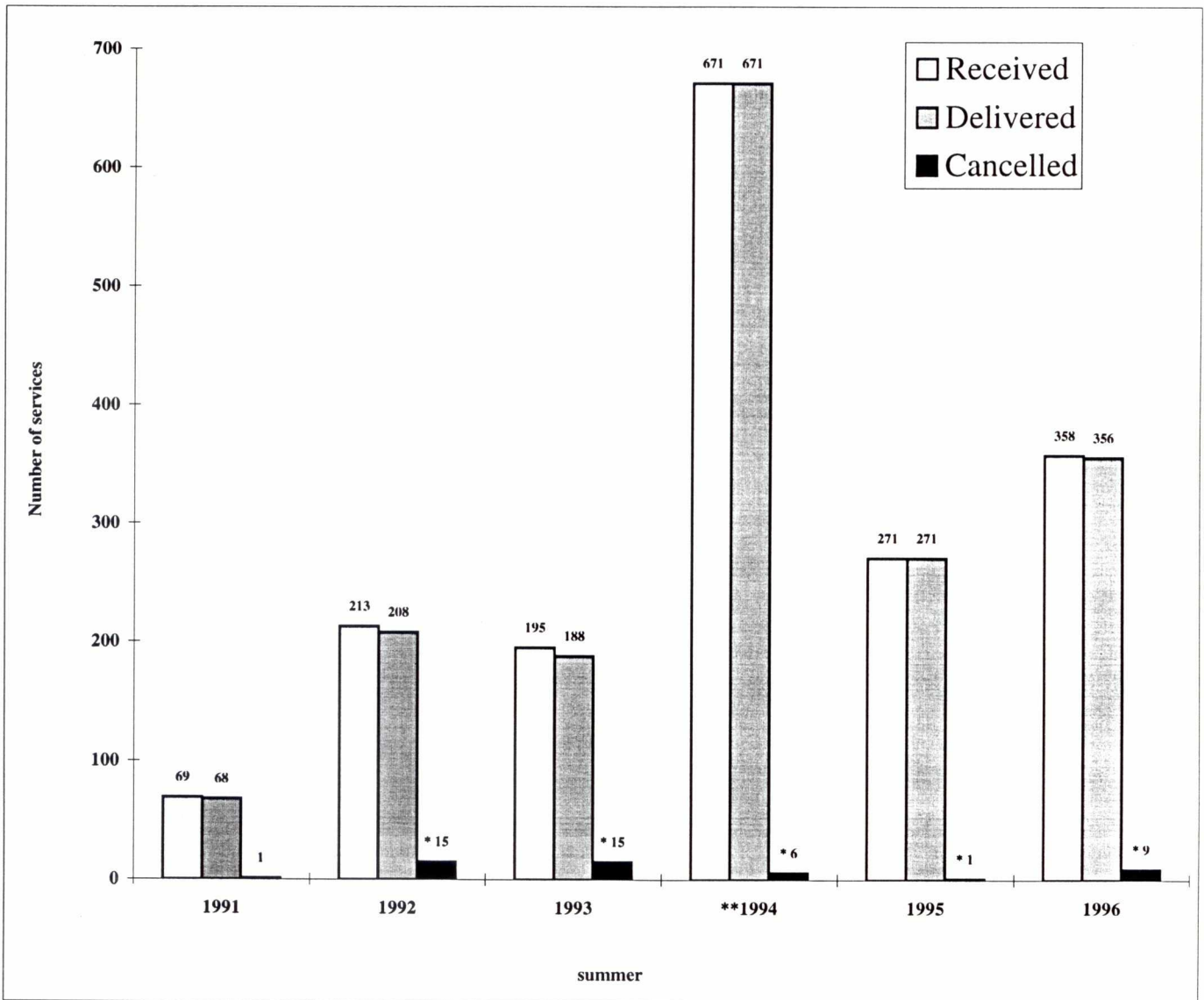
See Annex A for maps of service areas

Chart 1 -Arctic Workload

The number of services received during summer 1996 was 358, the number of services delivered was 356 and the number of services cancelled was 9.

Since IODIS captures only the icebreaking services, some of these numbers were obtained from the FAIS.

| | Number of requests | | |
|--------|--------------------|-----------|-----------|
| | Received | Delivered | Cancelled |
| 1991 | 69 | 68 | 1 |
| 1992 | 213 | 208 | * 15 |
| 1993 | 195 | 188 | * 15 |
| **1994 | 671 | 671 | * 6 |
| 1995 | 271 | 271 | * 1 |
| 1996 | 358 | 356 | * 9 |



* includes services that had commenced prior to cancellation

** includes all FAIS services that were not reported in IODIS

Chart 2 - Workload by mission statement

Among icebreaking services, the demand for vessel escort service was the highest with a total number of 77 services. The number of ice reconnaissance activities to support shipping was 48, eastern Arctic sealift services was 31, support to other government departments & agencies was 44 and the number of other programs/activities was 156 (include harbour breakouts, RER, SAR, MNS, direction & administration and marine regulatory).

| Services delivered | Number of requests |
|-------------------------------|--------------------|
| Route Assistance | 77 |
| Ice Reconnaissance | 48 |
| Eastern Arctic Sealift | 31 |
| Support to Other Gov't depts. | 44 |
| Other Programs/ activities | 156 |

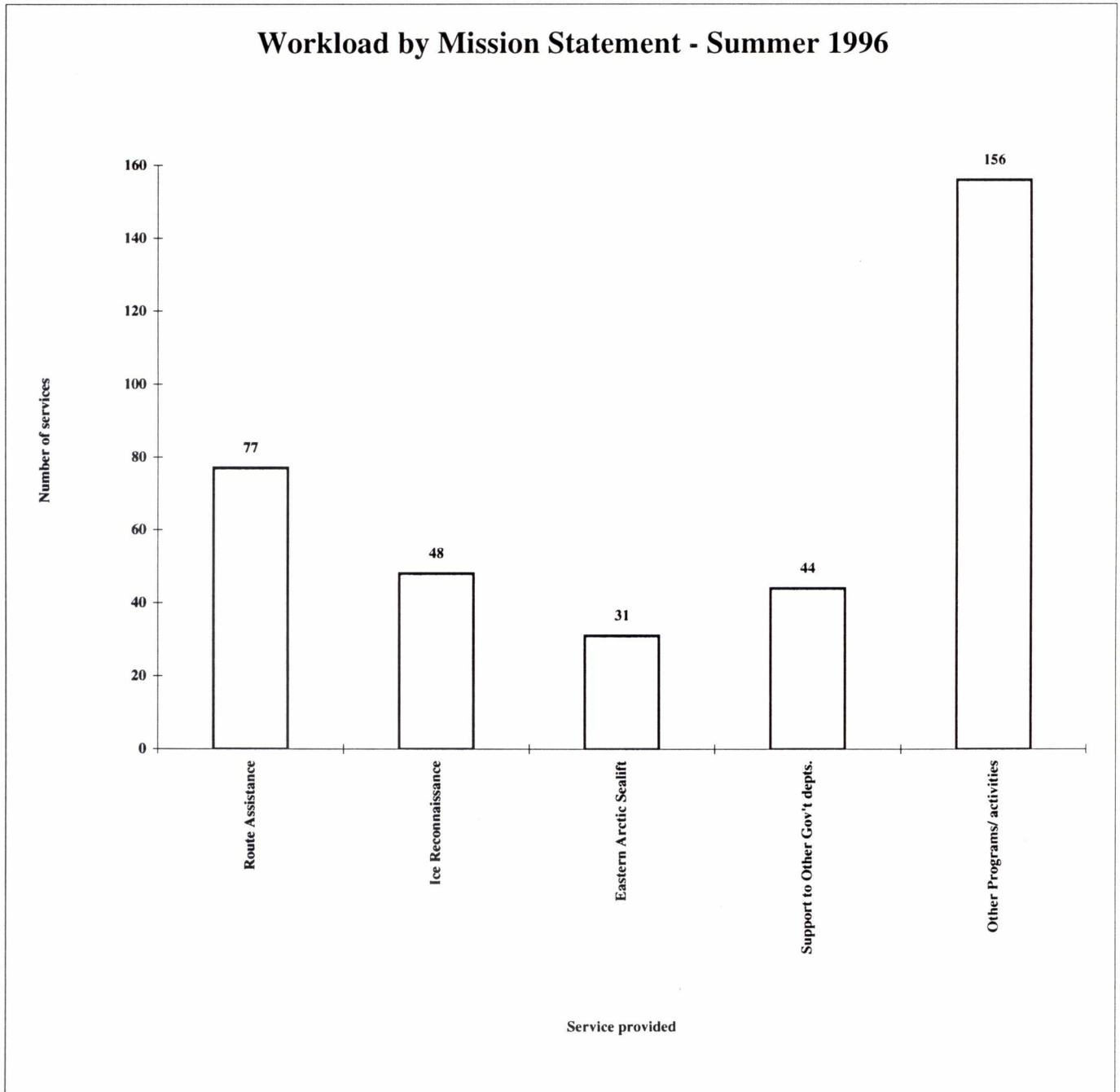


Chart 3 - Hours of Icebreaking Services Provided

| Services delivered | Number of Hours |
|---|------------------------|
| Route Assistance | 5,020.10 |
| Standby for Route Assistance | 2,421.37 |
| Eastern Arctic Sealift | 1,222.73 |
| Support to other government departments | 1,140.25 |
| Other Services/Programs | *3978.88 |
| Ice Reconnaissance | 85.56 |

*** includes 28.81 hours of harbour breakout services**

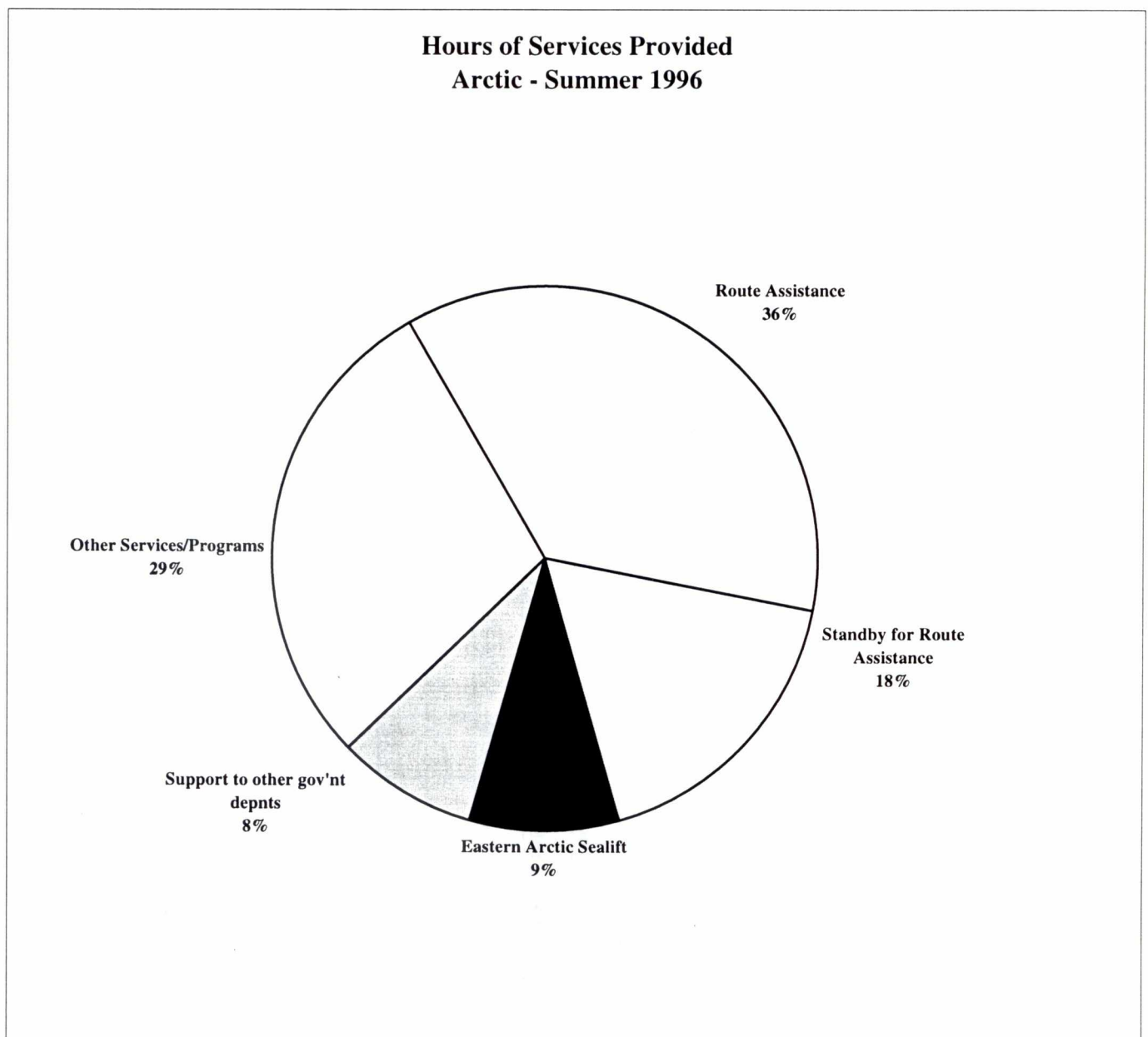


Table 5 - Operational Output by Vessel

Table 5 below indicates the workload by icebreaker during the 1996 Arctic icebreaking season.

OPERATIONAL OUTPUT BY VESSEL
Hours of Service by Mission Statement
Arctic Region, Summer 1996

| Icebreaker | Type | Deployment dates (FAIS) | | Route Assistance (RA) | Standby - RA (FAIS) | Ice Reccon. | Support to Other Govt Depts. | Eastern Arctic Sealift | Other Activities | Total Hours | Distance Run (NM) |
|---------------------|------|-------------------------|-----------|-----------------------|---------------------|--------------|------------------------------|------------------------|------------------|------------------|-------------------|
| | | | | | | | | | | | |
| LOUIS S. ST-LAURENT | 1300 | 21-Aug-96 | 29-Oct-96 | 597.22 | 219.00 | 0.00 | 560.11 | 0.00 | 167.70 | 1544.03 | 9,909 |
| DES GROSEILLIERS | 1200 | 07-Jul-96 | 03-Oct-96 | 270.28 | 0.00 | 38.07 | 0.00 | 394.43 | 1229.86 | 1932.64 | 12,225 |
| PIERRE RADISSON | 1200 | 12-Jul-96 | 06-Nov-96 | 171.16 | 1583.37 | 0.00 | 104.14 | 6.38 | 2049.66 | 3914.71 | 12,283 |
| HENRY LARSEN | 1200 | 09-Jul-96 | 16-Oct-96 | 2348.92 | 180.00 | 34.54 | 476.00 | 0.00 | 120.45* | 3159.91 | 10,714 |
| TERRY FOX | 1200 | 24-Jun-96 | 19-Oct-96 | 1138.37 | 439.00 | 0.00 | 0.00 | 821.92 | 101.48* | 2500.77 | 15,719 |
| SIR WILFRID LAURIER | 1100 | 12-Jul-96 | 19-Oct-96 | 494.15 | 0.00 | 12.95 | 0.00 | 0.00 | 2.42 | 509.52 | 2,929 |
| TOTAL: | | | | 5,020.10 | 2,421.37 | 85.56 | 1,140.25 | 1,222.73 | 3,671.57 | 13,561.58 | 63,779 |

* Includes 28.81 hours of commercial harbour breakout (6.95 for the HENRY LARSEN and 21.86 for the TERRY FOX and also includes 73.62 hours of standby time to provide commercial harbour. services).

Chart 4 - Workload by Icebreaker

Hours of Service by Icebreaker

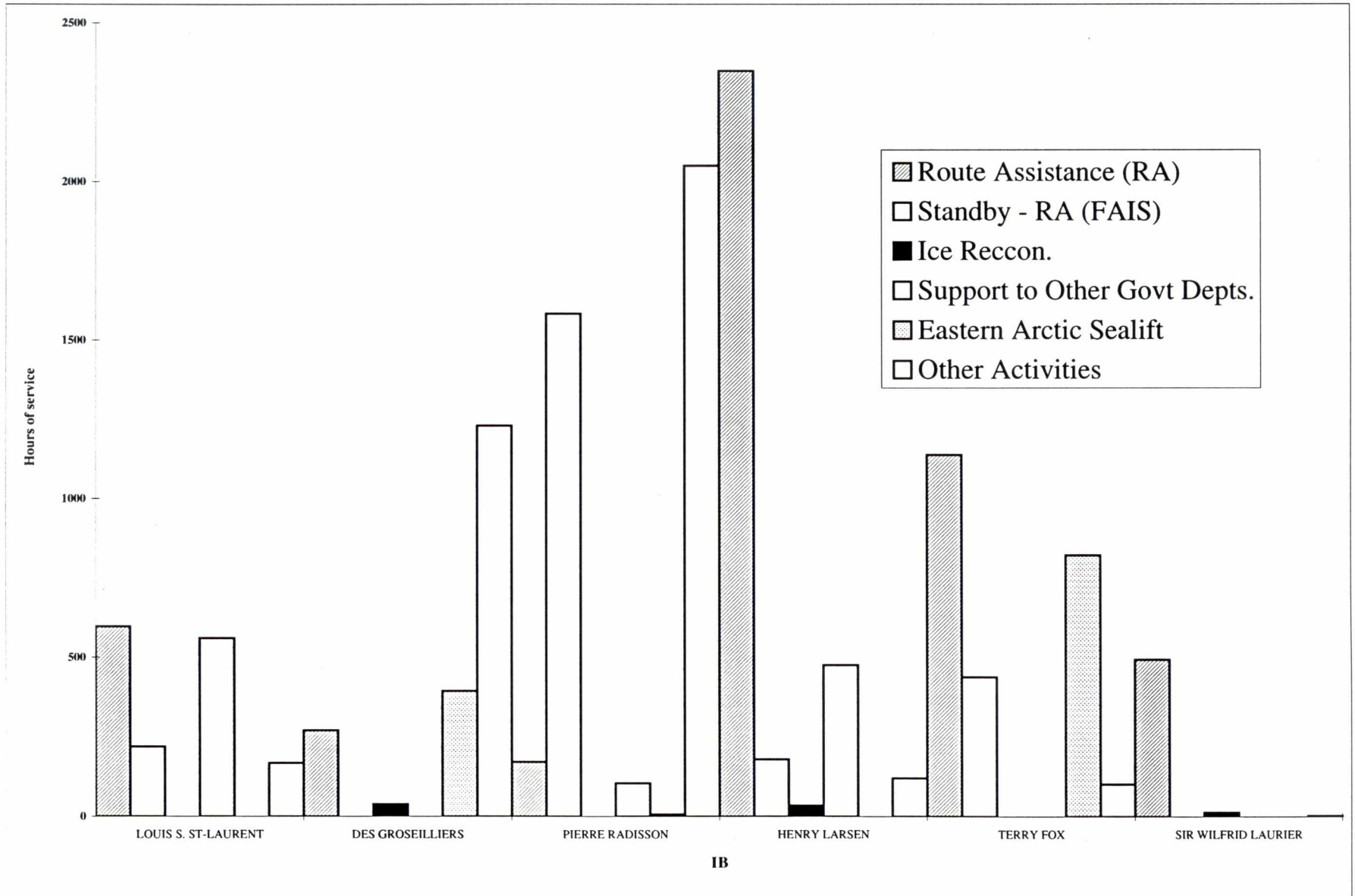


Chart 5 - Comparison of Vessel Escorts

During the summer 1996 Arctic season, 76 vessels were actually escorted. Compared to other years, the 1992 summer season marked the highest number of vessel escorts with a total of 90 escorts, and 1988 marked the lowest number with a total of 21 escorts.

| Year | Number of escorts |
|------|-------------------|
| 1996 | 76 |
| 1995 | 36 |
| 1994 | 56 |
| 1993 | 43 |
| 1992 | 90 |
| 1991 | 68 |
| 1990 | 59 |
| 1989 | 66 |
| 1988 | 21 |
| 1987 | 74 |
| 1986 | 50 |
| 1985 | 32 |

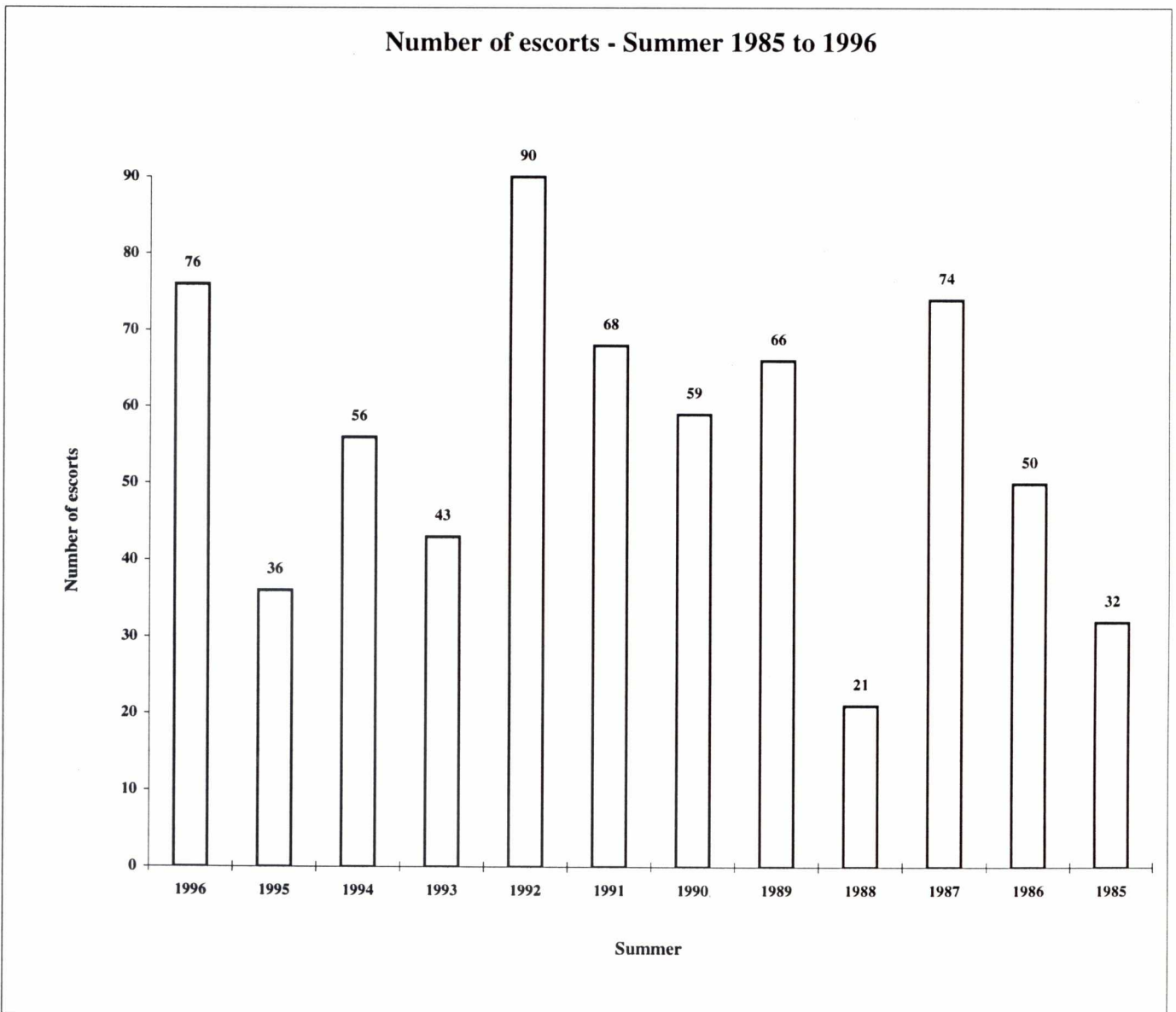
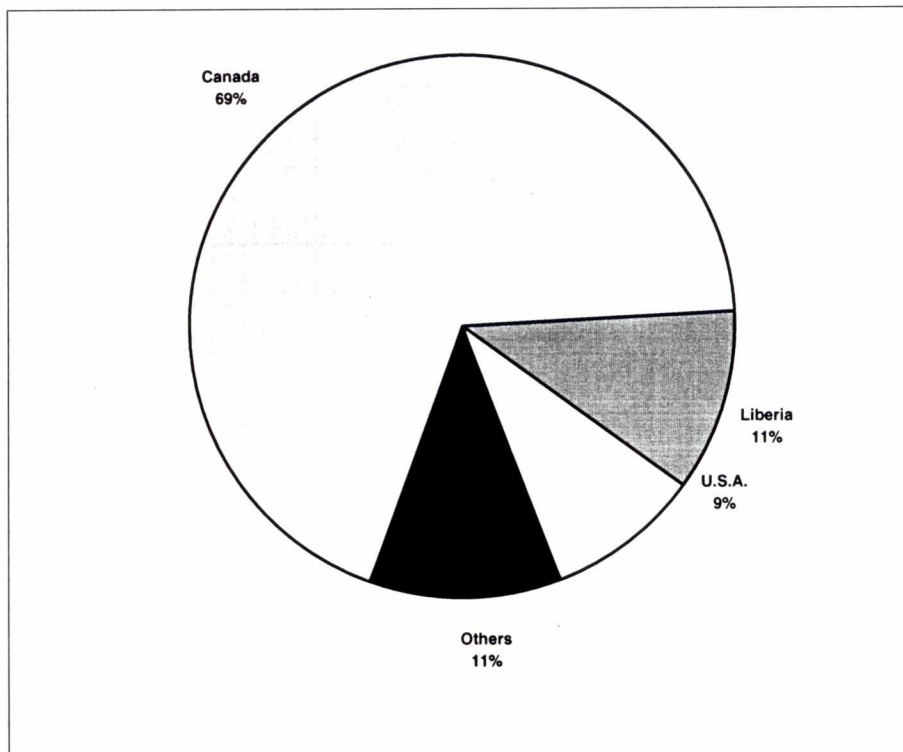


Chart 6 - Clients by Country of Registry



Based on the number of hours of vessel escorts, Canadian companies as usual comprise most of our clients.

| Country of Registry | Times Assisted | Hours of Escorts |
|---------------------|----------------|------------------|
| Canada | 53 | 3850.15 |
| Liberia | 13 | 608.81 |
| U.S.A. | 5 | 512.48 |
| Others | 6 | 640.12 |
| Others: | | |
| Denmark | 1 | 205.92 |
| Panama | 1 | 3.22 |
| Poland | 1 | 66.20 |
| United Kingdom | 1 | 2.03 |
| Bahamas | 2 | 362.75 |

Table 6 - VESSELS ASSISTED - SUMMER 1996

| Name (type) | Owner | Flag | Times Assisted | Hours |
|-------------------------------------|---|---------|----------------|--------|
| CANMAR SUPPLIER 2 (tug/supply ship) | Amoco Canada Petroleum Company Ltd. | Canada | 2 | 267.54 |
| HANSEATIC (passenger ship) | Bunnys Adventure & Cruise Shipping Co. Ltd. | Bahamas | 2 | 362.75 |
| ARCTIC VIKING (general cargo) | C.A. Crosbie Shipping Ltd. | Canada | 5 | 369.37 |
| LADY FRANKLIN (general cargo) | | | 3 | 183.96 |
| ARCTIC (ore/bulk/oil) | Canarctic Shipping Company Ltd. | Canada | 6 | 837.12 |
| FEDERAL BAFFIN (bulk carrier) | Fednav S.A. | Liberia | 5 | 171.42 |
| FEDERAL FRANKLIN (bulk carrier) | | | 4 | 178.86 |
| A.G. FARQUHARSON (tanker) | Imperial Oil Limited | Canada | 1 | 6.25 |
| RHONJALEE (fishing vessel) | Kabva Marine Services & Contracting Ltd. | Canada | 1 | 8.08 |
| FEDERAL FUJI (bulk carrier) | Laker Ship Holdings S.A. | Liberia | 4 | 258.53 |
| LUCIEN PAQUIN (general cargo) | Logistec Navigation Inc. | Canada | 2 | 155.67 |
| FONNES (general cargo) | Mersol Maritime Inc. | Panama | 1 | 3.22 |

Table 6 - VESSELS ASSISTED - SUMMER 1996 (Cont'd)

| Name (type) | Owner | Flag | Times Assisted | Hours |
|------------------------------------|---------------------------------|---------|----------------|----------------|
| ARCTIC CIRCLE (tug) | Northern Transportation | Canada | 2 | 267.54 |
| KITIKMEOT (tug) | Company Ltd. | | 3 | 167.32 |
| MATT BERRY | | | 1 | 93.48 |
| ROSEN (general cargo) | Partrederi Rosen | Denmark | 1 | 205.92 |
| EMERALD STAR (tanker) | Rigel Shipping Canada Inc. | Canada | 2 | 200.00 |
| IMPERIAL ACADIA (tanker) | The Imperial Pipe Line Co. Ltd. | Canada | 4 | 219.15 |
| SIR WILFRID LAURIER (CCG) | The Ministry of Transport | Canada | 1 | 82.50 |
| AIVIK (general cargo) | The North West Company Inc. | Canada | 1 | 13.25 |
| CATHERINE DESGAGNES (bulk carrier) | Transport Desgagnés Inc. | Canada | 1 | 47.00 |
| MATHILDA DESGAGNES (general cargo) | | | 2 | 70.42 |
| CECILIA DESGAGNES (general cargo) | | | 13 | 161.72 |
| DUKE OF TOPSAIL (cargo) | Topsail Shipping Co. Ltd. | U.K. | 1 | 2.03 |
| GREEN WAVE (general cargo) | Central Gulf Lines Inc. | U.S.A. | 2 | 258.01 |
| REDUTA ORDONA (bulk carrier) | Polish Shipping Company | Poland | 1 | 66.20 |
| HAWK/ HSO | Government of Canada | Canada | 1 | 11.95 |
| RICHARD G. MATTHIESEN (tanker) | Wilmington Trust Co. | U.S.A. | 2 | 246.55 |
| UNCLE SAM (yacht) | Unknown | U.S.A. | 1 | 7.92 |
| ARCTIC CEDAR | Unknown | Canada | 2 | 95.17 |
| Total | | | 77 | 5018.90 |

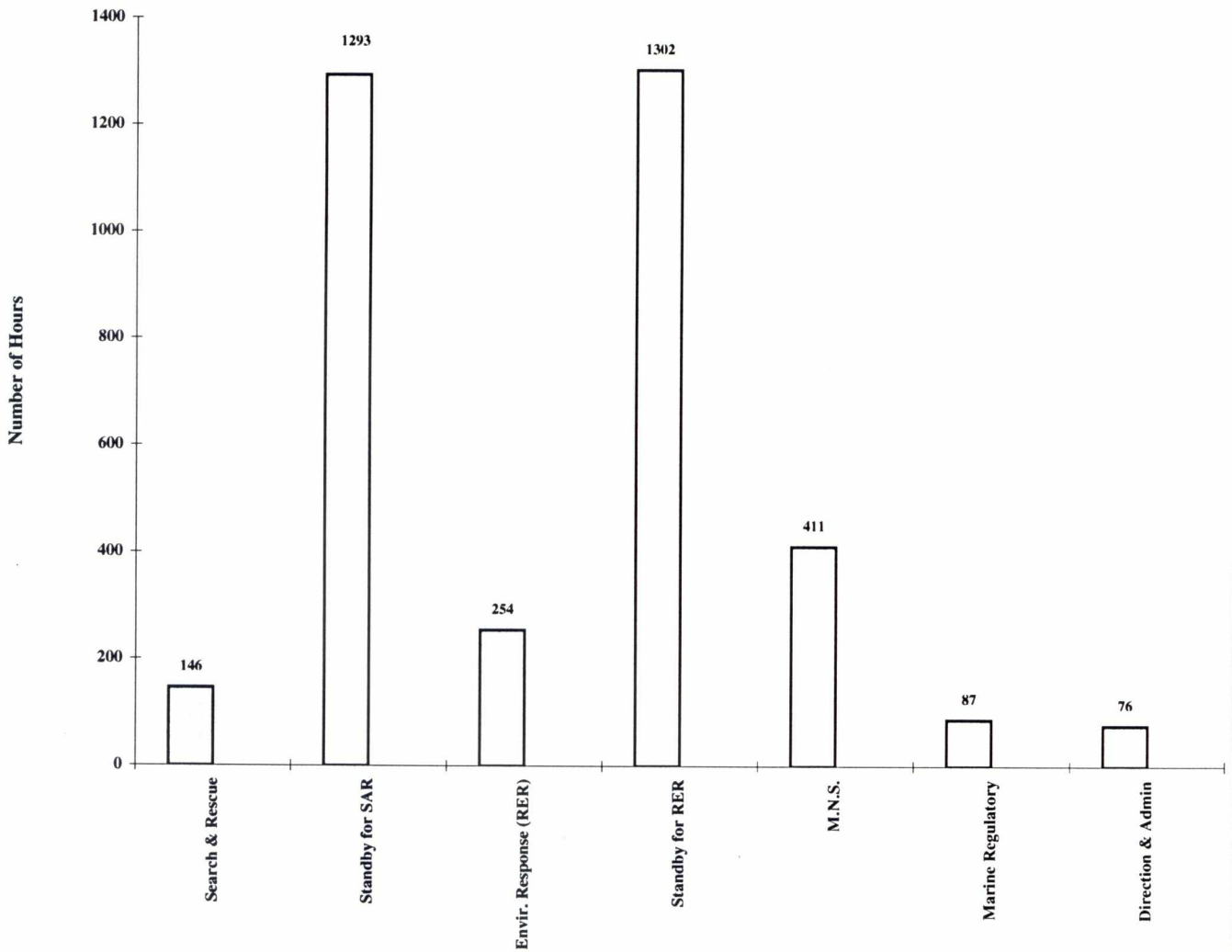
The client with the highest level of service was Canarctic Shipping Company Ltd. with a total hours of 837.12 followed by Northern Transportation Company Ltd. with a total hours of 528.34 hrs.

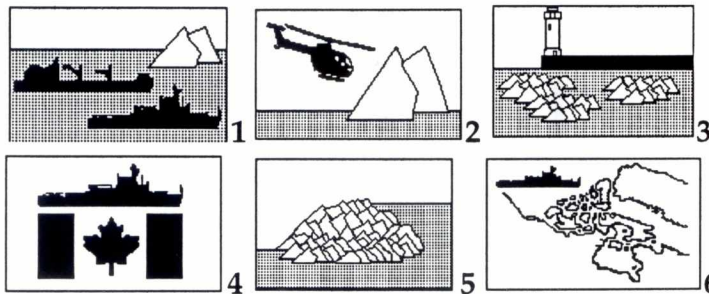
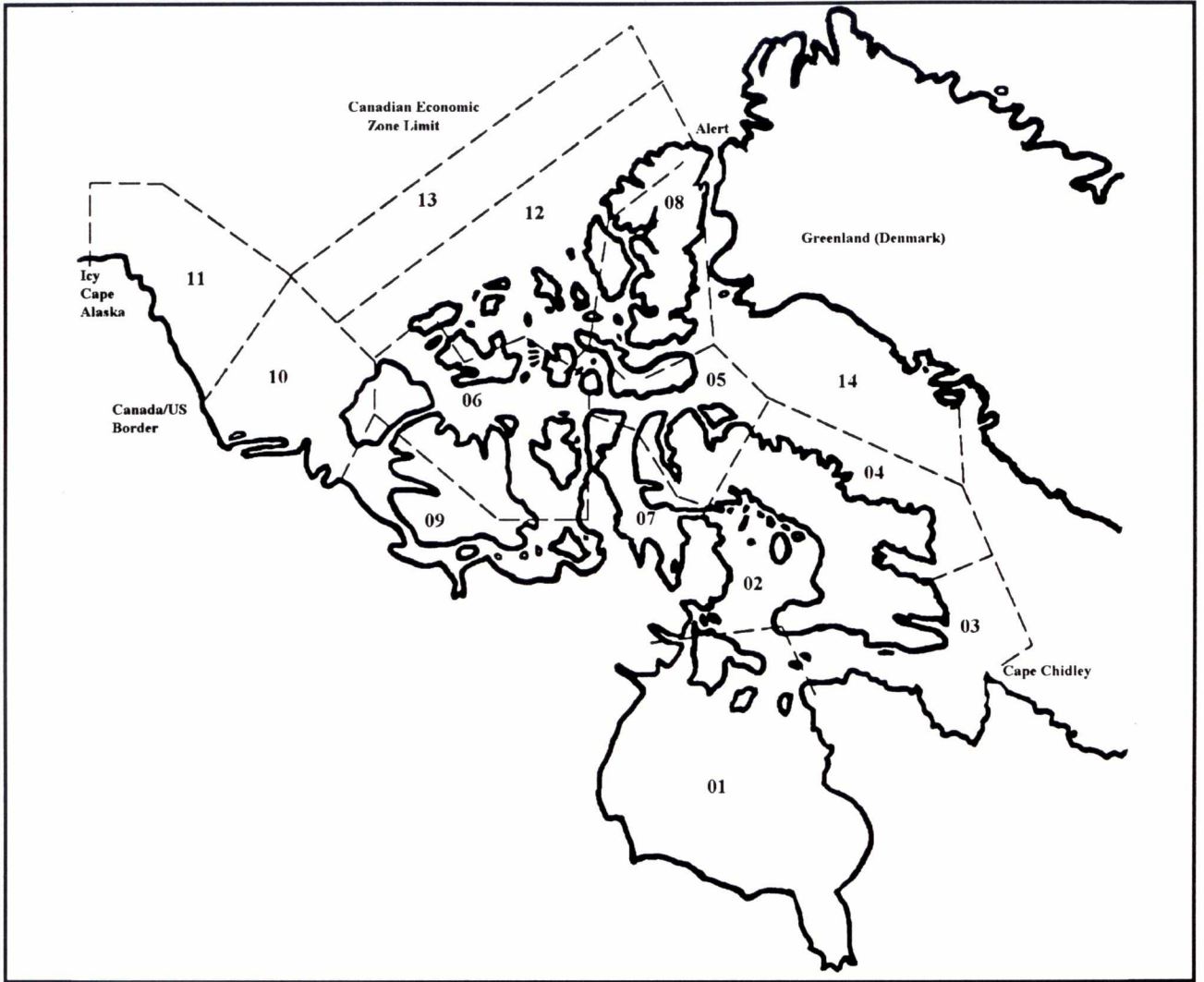
Chart 7 - Other Programs/Activities

During 1996 summer season, the hours of other services and other program activities included 4.17% Search and Rescue services, 37% standby to provide SAR, 7.27% Rescue & Environmental Response services, 37% standby to provide RER, 12% MNS services, 2.5% marine regulatory activities and 2.19% direction & administration activities.

| Services/Activities | Number of Hours |
|-----------------------|-----------------|
| Search & Rescue | 145.76 |
| Standby for SAR | 1293.27 |
| Envir. Response (RER) | 254.00 |
| Standby for RER | 1302.42 |
| M.N.S. | 411.00 |
| Marine Regulatory | 87.00 |
| Direction & Admin | 76.35 |
| Total | 3493.45 |

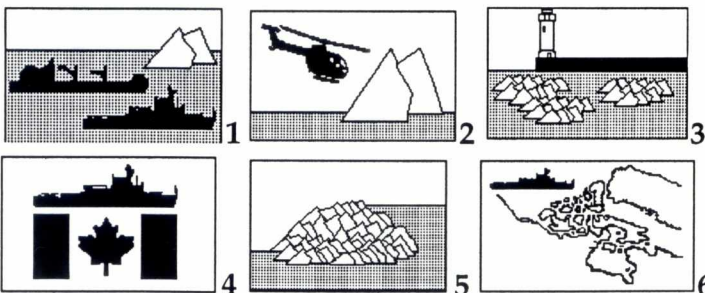
Hours of Other Programs/Activities - Summer 1996





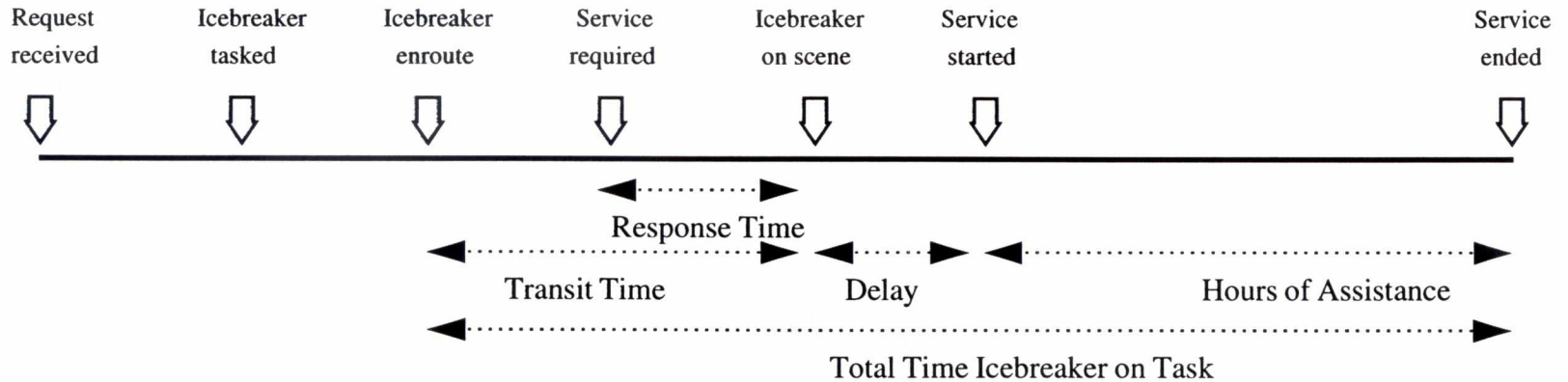
Canadian Arctic Block Commitments

| # | Area Name | Description of Area | Period dd/mm | Service | Icebreaker Type | Service Hours (Average) | Service Hours (Severe) |
|-----|--------------------|---|------------------|-----------|--------------------|-------------------------------|------------------------------|
| A01 | Hudson Bay | Hudson Bay and CASPR Zones 16 & 14 | 03/07 - 24/10 | 1,2,3,4,6 | 1200 | 216 | 576 |
| A02 | Foxe Basin | CASPR Zone 8 exc. Fury & Hecla Strait | 20/08 - 15/09 | 1,2,3,4,6 | 1200 | 768 | 912 |
| A03 | Hudson Strait | CASPR Zone 15 inc Ungava Bay | 03/07 - 21/10 | 1,2,3,4,6 | 1200 | 2,400 | 3,600 |
| A04 | East Baffin | CASPR Zones 10 & 9 | 14/08 - 18/09 | 1,2,3,4,6 | 1200 | 864 | 1,032 |
| A05 | Parry Channel East | CASPR Zone 13 & Wellington Channel to Penny Strait | 10/05 - 10/11 | 1,2,3,4,6 | 1200 | 2,616 | 3,864 |
| A06 | Parry Channel West | CASPR Zone 2, Peel Sound, Franklin Strait, Byam Martin Channel north to Cameron Is. and all of M'Clure Strait | 10/08 - 15/10 | 1,2,3,4,6 | 1300 | 912 | 1,032 |
| A07 | Pelly | CASPR Zone 5, Gulf of Boothia, Prince Regent Inlet, inc. Fury & Hecla Strait & Bellot Strait | 12/08 - 13/10 | 1,2,3,4,6 | 1300 | 336 | 0 |
| A08 | Ellesmere | CASPR Zone 3, Jones Sound, the Lincoln Sea & approaches to Alert | 24/08 - 05/09 | 1,2,3,4,6 | 1300 | 336 | 480 |
| A09 | Victoria | CASPR Zones 7 & 11 | 12/08 - 13/10 | 1,2,3,4,6 | 1200 | 1,584 | 1,824 |
| A10 | Beaufort | CASPR Zones 12 & 4 west to Canada/U.S. border | 10/07 - 06/10 | 1,2,3,4,6 | 1200 | 1,464 | 1,896 |
| A11 | Barrow | Canada/U.S. border west to Icy Cape, Alaska | 10/07 - 06/10 | 1,2,3,4,6 | 1300 | 288 | 1,344 |
| A12 | Sverdrup | CASPR Zone 1 N of M'Clure Strait, excluding Alert | 10/08 - 20/09 | 1,2,3,4,6 | 1300+ | 0 | 0 |
| A13 | Arctic | The Cdn. Economic Zone N & W of the Queen Elizabeth Is.'s | 15/08 - 15/09 | 1,2,3,4,6 | 1300+ | 0 | 0 |
| A14 | West Greenland | East Baffin Bay, Disko Is. to Arctic Circle at CASPR Zone 10 limits | 05/07 - 15/08 | 1,2,3,4,6 | 1200 | 200 | 250 |



ICEBREAKING SERVICE TIMELINE

SCENARIO - CLIENT REQUESTS SERVICE AT A SPECIFIC DATE & TIME



SCENARIO - CLIENT REQUESTS SERVICE IMMEDIATELY i.e. vessel beset

