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Summative Evaluation
of the
Contribution to the
Civil Air Search and Rescue Association
(CASARA)

April 2009

1258-144-2 (CRS)



Canada 

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Acronyms and Abbreviations

1 Cdn Air Div	1 Canadian Air Division
A3 APT Rdns	A3 Aviation, Patrol and Transportation Readiness
A3 SAR	A3 Search and Rescue
ADM(Fin CS)	Assistant Deputy Minister (Finance and Corporate Services)
APT Rdns	Aviation, Patrol and Transportation Readiness
Avg	Average
Canada COM	Canada Command
CANR HQ	Canadian NORAD Region Headquarters
CAP	Civil Air Patrol
CAS	Chief of the Air Staff
CASARA	Civil Air Search and Rescue Association
CCGA	Canadian Coast Guard Auxiliary
CF	Canadian Forces
CFM	Cost Factors Manual
CLO	CASARA Liaison Officer
CRS	Chief Review Services
D Air FR	Director Air Force Readiness
DG Air FD	Director General Air Force Development
DND	Department of National Defence
ELT	Emergency Locator Transmitter
FY	Fiscal Year
Hr	Hour
JRCC	Joint Rescue Coordination Centre
MOU	Memorandum of Understanding
NIF	New Initiatives Fund
NSS	National Search and Rescue Secretariat
Op	Operating
POL	Petroleum, Oils and Lubricants
RBAF	Risk-Based Audit Framework
RMAF	Results-based Management Accountability Framework
SAR	Search and Rescue
SPARK	Small Pack Aerial Response Kit
SRR	Search and Rescue Region
TB	Treasury Board
TC	Transport Canada
USAF	United States Air Force
YOB	Year of Birth



Results in Brief

The Contribution Agreement between the Civil Air Search and Rescue Association (CASARA) and the Department of National Defence (DND) began on 1 April 2005 and expires on 31 March 2010. In accordance with the Treasury Board (TB) Policy on Transfer Payments, an evaluation is required to support the renewal of the terms and conditions of the program. In addition, a related Memorandum of Understanding (MOU) among DND, Transport Canada (TC) and CASARA began on 1 April 2005 and expires on 31 March 2010.

Overall Assessment
CASARA is relevant, successful and cost-effective in its support to the CF in SAR activities.

CASARA's approved funding for five years was a total of \$13,044,895, comprised of DND's Contribution Agreement of \$11,044,895 plus Transport Canada's Memorandum of Understanding of \$2,000,000.

In addition, between fiscal year (FY) 2004/05 and FY 2007/08, DND reimbursed \$1,112,118 in CASARA expenses incurred for actual CF SAR missions.

In FY 2007/08 CASARA comprised 2,469 volunteers operating 243 privately owned, fixed-wing aircraft. In that time frame, CASARA responded to 25 percent of all aeronautical search and rescue (SAR) incidents in Canada.

The evaluation objectives were to assess the relevance, success (achievement of results), and cost effectiveness of the Agreement and the MOU and the extent to which the terms and conditions of the agreement were met.

This evaluation found that CASARA continues to link directly to federal government priorities and to DND missions. The program has been described as "fully successful to indispensable" by CF SAR first responders and is administered in a cost-effective manner.

Key Findings

Relevance. CASARA is aligned with federal government priorities, programs and objectives, particularly those of DND and the CF.

Success. CASARA is considered "highly relevant" to "indispensable" by the CF stakeholders. The closer the CF members work with CASARA the more likely they are to consider CASARA indispensable. CASARA was involved in an increased number of air and ground beacon searches since the last TB submission was approved in 2005. As such, it increased the chances of survival for individuals involved in civil aviation accidents.

Cost Effectiveness and Value for Money. It was estimated by the CF that SAR taskings undertaken by CASARA between FY 2004/05 and FY 2007/08 represented an equivalent value of \$30,769,172 (based on standard operating costs and had the CF completed the same taskings). Therefore, at an actual cost of \$1,112,118 for SAR taskings, CASARA is considered to provide value for money, as well as a highly cost-effective service to the CF.

Recommendations

It is recommended that:

1. CASARA continue to support the CF in SAR operations. As such, the Contribution Agreement between the CF and CASARA should be renewed for a five-year period. The performance measurement framework designed for this contribution agreement must be more indicative of results in relevance, success and cost effectiveness.
2. The CF lead a review, with input from TC, CASARA, and other organizations as appropriate, to ensure that CASARA remains relevant, successful, cost-effective and sustainable in the future.

Note: For a more detailed list of CRS recommendations and management response, please refer to [Annex A](#)—Management Action Plan.



Introduction

Background

A summative evaluation of the contribution program with CASARA was included in the CRS Evaluation Work Plan for FYs 2008/09-2009/10.

The Contribution Agreement between CASARA and DND came into effect on 1 April 2005 and expires on 31 March 2010. In accordance with TB's *Policy on Transfer Payments*, an evaluation of this Contribution Agreement is required to support the renewal of the terms and conditions of the program.

A Results-based Management Accountability Framework (RMAF) was approved in 2005, and the Logic Model is attached at [Annex B](#).

In addition, a related MOU among DND, TC and CASARA expires on 31 March 2010.

Objectives

The evaluation objectives, based on those in the 2005 RMAF, were to assess the following:

- **Relevance.** The relevance of CASARA's activities to the mandate and strategic objectives of the CF in terms of SAR and aeronautical safety as well as to the overarching priorities of the federal government.
- **Success.** The extent to which the terms and conditions of the Contribution Agreement were successful in achieving the expected outcomes for the program in the following areas:
 - SAR aeronautical operations,
 - aeronautical safety and accident prevention, and
 - training.
- **Cost Effectiveness.** The cost effectiveness of CASARA:
 - overall costs and benefits,
 - ratio of administration to operations costs, and
 - governance.

Scope

The scope of the evaluation was based on four years: FY 2004/05 to FY 2007/08.

Methodology

The following methods were used during the evaluation:

- Interviews:
 - DND, CASARA Program Manager, Director Air Force Readiness, (D Air FR) and staff at National Defence Headquarters;



- DND, 1 Canadian Air Division (1 Cdn Air Div) HQ staff, A3 Aviation, Patrol and Transportation Readiness (A3 APT Rdns), specifically, A3 Search and Rescue (A3 SAR);
- TC, Chief Technical and National Programs;
- TC, Director General Civil Aviation;
- National Search and Rescue Secretariat (NSS), Director of Policy and Review;
- CASARA National President, three members of the National Board Executive and the CASARA National Administrator; and
- Canadian Coast Guard Auxiliary (CCGA) (National Inc.) Manager;
- Visit with the United States Air Force Civil Air Patrol (USAF/CAP) staff and with Civil Air Patrol National Headquarters staff;
- Development and analysis of a self-administered questionnaire concerning Board governance completed by the CASARA National Board of Directors and some Deputy Directors of all Member Organizations;
- Development and analysis of a self-administered e-mail questionnaire completed by CF members at the three Canadian Joint Rescue Coordination Centres (JRCC) and by the CF CASARA Liaison Officers (CLO);
- Review of file documentation, such as CASARA annual reports, cost information, demographic information websites, and operational research reports related to SAR;
- Review of similar programs in Canada and in other countries;
- Review of previous evaluation reports;
- Review of the RMAF, the Risk-based Audit Framework (RBAF) and the Contribution Agreement between DND and CASARA, and the MOU among DND, TC and CASARA; and
- Analysis of information obtained during the evaluation.

Limitations

Both DND and TC have undergone major transformations over the past number of years. The extensive reorganizations, and the accompanying churn in responsibilities and personnel, resulted in some information not being readily available for the summative evaluation.

The RMAF, approved in 2005, was CASARA's first RMAF and, although a good first document, aspects of it were not applicable to a summative evaluation. The Logic Model, the Ongoing Performance Measurement Strategy and the Evaluation Strategy were not linked. However, deficiencies in the RMAF did not raise questions about the significance of the program, since CRS developed appropriate measures and approaches to assess the program. The Logic Model is attached at [Annex B](#).



Description of Program

In 1981, an interdepartmental study conducted by DND and TC proposed the implementation of a program supporting a national SAR volunteer organization. As a result of this study, in 1986, CASARA was formed as a federally incorporated, not-for-profit volunteer association. It was created to coordinate the training of volunteers to augment the CF primary SAR resources in conducting searches and to assist TC in aviation safety and related accident prevention activities. The concept was, and still is, that volunteers could provide efficient and cost-effective support to these federal programs.

CASARA consists of 13 Member Organizations that represent Canada's provinces and territories. The CASARA National Board of Directors is responsible for the overall management of CASARA. In FY 2007/08 CASARA comprised over 2,469 volunteer members and operated 243 privately owned, fixed-wing aircraft. As well, CASARA responded to approximately 25 percent of all aeronautical SAR incidents in Canada.

The Program Manager is D Air FR, who is responsible to the Chief of the Air Staff (CAS) for all aspects of this program. The A3 APT Rdns staff is responsible to the Commander, 1 Cdn Air Div, for CASARA liaison and co-ordination. CASARA contracts its administration and support with a company located in Winnipeg.

DND and TC have been providing funding to CASARA since 1986 through Contribution Agreements and MOUs which are typically renewed every five years. Both the Agreement and the MOU were renewed on 1 April 2005 with expiry on 31 March 2010.

The Contribution Agreement funds CASARA for training, administration and insurance whilst engaged in aeronautical SAR training and accident prevention activities. In addition to this funding, when CASARA assists the CF in SAR missions, direct expenses incurred are reimbursed at cost. During the period FY 2004/05 to FY 2007/08, in addition to the \$13,044,895 given under the Contribution Agreement, DND reimbursed \$1,112,118 to CASARA Member Organizations when they participated in actual CF SAR missions.

In 1986, when the program began, CASARA received \$800,000 for the year, with DND contributing \$400,000 and TC contributing \$400,000 through the MOU. Over the succeeding years, TC's contribution through the MOU has remained at an annual amount of \$400,000 and DND's contribution has increased by 591 percent to a projected amount of \$2,365,447 for FY 2009/2010.

A summary of the Contribution Agreement and MOU funding since 1986 is at Table 1.

Federal Departments	Funding FY 1986/87	Projected Funding FY 2009/10	% increase over 23 years
TC (through the MOU)	\$400,000	\$400,000	0%
DND	\$400,000	\$2,365,447	591% increase

Table 1. Contribution Agreement Funding Summary 1986-2010.

Findings and Recommendations

Relevance

CASARA is relevant to federal government priorities, programs and objectives, particularly those of DND and the CF.

SAR is a Government of Canada priority under the Canada First Defence Strategy, the DND Program Activity Architecture and Report on Plans and Priorities, and the Terms of Accountability to the Commander 1 Cdn Air Div. CASARA contributes to public safety by augmenting CF capability in the SAR mission.

Both the CF and CASARA use the same international standard SAR manual.

CASARA is in alignment with the following strategic direction:

- **Canada First Defence Strategy:** “maintain search and rescue response capabilities that are able to reach those in distress anywhere in Canada on a 24/7 basis.”
- **DND Program Activity Architecture:** “Conduct Ongoing Operations and Services to Canadians.”
- **DND 2008-2009 Report on Plans and Priorities:** “generating and maintaining the CF’s capability to meet Canada's domestic commitment to ..., national Search and Rescue (SAR).”
- **Terms of Accountability – Commander 1 Cdn Air Div/CANR HQ/Canada:** “responsible and accountable to the Commander Canada Command (Canada COM) to provide search and rescue services.”
- **TC website:** “develop and administer policies and regulations for the safest civil aviation system” and “System Safety supports CASARA activities and encourages aviation enthusiasts to consider participating in this essential and worthwhile program.”

Officials involved with CASARA were asked to assess its relevance. This was accomplished through interview questions or through the self-administration of an e-mail questionnaire. The results are presented at Tables 2 and 3.

Table 2 examines the responses when the CASARA immediate outcome is to promote air safety (increased awareness of aviation safety and increased compliance with SAR aviation regulations).

1-Not at all relevant 2-Somewhat relevant 3-Relevant 4-Very Relevant 5-Indispensable

Respondents	Responses
CASARA National President and several Board Executives (interview)	Unable to fully assess without strategic direction in place.
CAS and D Air FR (interview)	Unable to fully assess without strategic direction in place.
1 Cdn Air Div staff (interview)	Unable to fully assess without strategic direction in place.
Joint Rescue Coordination (JRCC) teams (self-administered questionnaire)	5 – Indispensable.
CLOs (self-administered questionnaire)	4-5 – Very relevant to indispensable.

Table 2. An Assessment of the Continued Relevance of CASARA to Promote Air Safety.

Table 3 examines the responses when the CASARA immediate outcome is to support the CF in SAR operations, including the contribution to aeronautical SAR.

1-Not at all relevant 2-Somewhat relevant 3-Relevant 4-Very Relevant 5-Indispensable

Respondents	Responses
CASARA National President and several Board Executives (interview)	4 – Very relevant.
CAS and D Air FR (interview)	4 – Very relevant.
1 Cdn Air Div staff (interview)	4 – Very relevant.
Joint Rescue Coordination (JRCC) teams (self-administered questionnaire)	5 – Indispensable.
CLOs (self-administered questionnaire)	4-5 – Very relevant to indispensable.

Table 3. An Assessment of the Continued Relevance of CASARA to Support the CF in SAR Operations.

The results of the “Relevance” question varied greatly, depending on the question asked, and who was responding.

From the point of view of support to the CF in SAR operations, the respondents believe CASARA to be “very relevant” or even “indispensable.”

From the point of view of promoting air safety, CASARA’s records show a marked reduction in activities attributed to Aviation Safety. Through interviews, the governing bodies stated that assessing the continued relevance of conducting aviation safety and prevention activities to be difficult due to a lack of strategic direction. Nevertheless, the same interviewees expressed the opinion that CASARA was both effective and cost-effective in conducting these activities.

Success

CASARA was successful in achieving its outcomes for the contribution program.

The Logic Model ([Annex B](#)) developed as part of the 2005 RMAF identified three immediate outcomes, three intermediate outcomes and one final outcome (as shown in Table 4).

A number of the measures and indicators, however, were not useful in determining the success of CASARA. It will be important in the next Logic Model to develop measures that are more related to the outcomes and that are more measurable. A CRS assessment of the indicators is provided in Table 4.

Measures	Indicators	CRS Assessment of Indicator
Immediate Outcomes		
Increased awareness of aviation safety.	Decreased number of SAR incidents.	A decreased number of incidents may not be fully attributable to increased awareness of aviation safety. A decreased number of incidents could be due to fewer flights or better equipment.
Increased compliance with aviation regulations relating to search and rescue.	Decreased number of non-compliance incidents in relation to SAR.	This does not appear to be easily measurable.
Contribution to aeronautical SAR.	Number of SAR missions.	This would have to be measured in a percentage rather than a number.
Intermediate Outcomes		
Reduced loss of life.	Lives in relation to lives at risk.	This is not readily measurable.
Reduced loss and/or damage to property related to the saving of life.	Measure not identified in RMAF.	This is not readily measurable.
Public confidence in the National SAR Program.	Number of SAR missions in Canada.	This performance indicator would not measure public confidence; it would measure the number of missions.
Final Outcome		
Safe aviators.	Number of incidents or the severity of search and rescue incidents in the regions that CASARA is operating will determine this outcome.	This performance indicator would not necessarily measure “safety.”

Table 4. Indicators included in the 2005 RMAF Logic Model.

Proxy Measures of Success

In addition to the measures developed in the Logic Model, CASARA also developed a number of proxy measures.

- **Volunteer Contribution.** Number of volunteers; volunteer hours spent in training; privately owned, leased and rented aircraft available for taskings; SAR air missions conducted by CASARA units; and SAR ground missions (homing of false beacon signals) conducted by CASARA units.
- **Prevention.** Number of safety events conducted and volunteer hours associated with this.
- **Training Level.** Number of volunteers trained to national standards.

The focus in CASARA’s annual fiscal reports was on the CASARA volunteers’ contribution to SAR.

In order to determine the success of the program, the evaluation compared the performance of CASARA over the period FY 2004/05 to FY 2007/08. The most important indicators are the number of volunteer hours in training, SAR air missions conducted by CASARA units and SAR ground missions conducted by CASARA units (see Table 5). A summary of the annual fiscal reports for these years is at [Annex J](#).

Performance Indicators	FY 2004/05	FY 2005/06	FY 2006/07	FY 2007/08	% Change between FY 2004/05 and FY 2007/08
Volunteer Contribution					
No. of volunteers	2,950	2,683	2,817	2,469	- 16%
(most important indicator) No. of volunteer hrs in training	104,816.8	129,350.7	100,907.4	120,434.0	+ 15%
A/C available	433	375	346	353	- 19%
(most important indicator) SAR air missions conducted by CASARA units (a mission is one flight)	197	199	148	212	+ 8%
No. of volunteer hrs flown on SAR air missions	1,353.9	1,381.3	297.8	1,240.6	- 8%
(most important indicator) SAR ground missions (beacon homing) conducted by CASARA units (a mission is one excursion)	129	123	149	177	+ 37%
No. of volunteer hrs in vehicles on SAR ground missions	704.4	548.7	445.5	329.5	- 53%

Performance Indicators	FY 2004/05	FY 2005/06	FY 2006/07	FY 2007/08	% Change between FY 2004/05 and FY 2007/08
Prevention					
No. of safety events conducted	215	109	67	33	- 85%
No. of volunteer hrs spent on safety events	9,859.1	7,097.0	6,221.5	1,515.3	- 85%
Training					
No. of volunteers trained to national standards	2,672	2,596	2,139	2,238	- 16%

Table 5. Comparison of CASARA’s Key Proxy Performance Indicators—FY 2004/05 to FY 2007/08.

Both of the key measures (SAR air and SAR ground “beacon homing” missions) showed an increase in the number of missions over the period between FY 2004/05 and FY 2007/08 while at the same time there was a reduction in the number of person-hours involved in these activities.

Success in Aviation Safety and Accident Prevention could not be assessed accurately. The measures chosen by CASARA were the number of events and the number of person-hours involved. However, as there is a lack of direction on what activities are to be conducted and what the expected results are the dramatic reduction in activity reported by CASARA contrasts significantly with the opinions that the overall effect was “very successful.”

As part of the evaluation, key officials involved with CASARA were asked to assess CASARA’s success through interview questions or through the self-administration of an e-mail questionnaire. The results are presented at Tables 6 and 7.

Table 6 examines the responses when the CASARA immediate outcome is to promote air safety (increased awareness of aviation safety and increased compliance with SAR aviation regulations).

1-Not at all successful 2-Somewhat successful 3-Successful 4-Very Successful 5-Indispensable

Respondents	Responses
CASARA National President and several Board Executives (interview)	4 – Successful – especially when dealing with TC regions.
CAS and D Air FR (interview)	4 – Very successful.
1 Cdn Air Division staff (interview)	4 –Very successful.
JRCC teams (self-administered questionnaire)	3-4 – Successful to very successful.
CLOs (self-administered questionnaire)	3-4 – Successful to very successful.

Table 6. An Assessment of the Success of CASARA to Promote Air Safety.

Table 7 examines the responses when the CASARA immediate outcome is to support the CF in SAR operations, including the contribution to aeronautical SAR.

1-Not at all successful 2-Somewhat successful 3-Successful 4-Very Successful 5-Indispensable

Respondents	Responses
CASARA National President and several Board Executives (interview)	4 – Very successful.
CAS and D Air FR (interview)	4 – Very successful.
1 Cdn Air Division staff (interview)	4 – Very successful.
JRCC teams (self-administered questionnaire)	5 – Indispensable.
CLOs (self-administered questionnaire)	4 – Successful to very successful except in one location – noted as somewhat successful.

Table 7. An Assessment of the Success of CASARA to Support the CF in SAR Operations.

In addition to these ratings, the CF confirmed that CASARA continued to respond to approximately 25 percent of all aeronautical search and rescue incidents across Canada.

Comments obtained through interviews and included in the comments section of the questionnaires also served to indicate the degree of CASARA’s success. The following comments are indicative of the comments received:

“The CASARA organization has been extremely helpful in getting the word out to the general aviation population of the upcoming transition to the 406 Beacon.”

“The support that CASARA provides to the CF in SAR operations is indispensable. They provide a depth of coverage which the CF simply lacks. That is, they are present in a great many locations and are often able to respond more quickly than our CF standby aircraft by getting eyes on the scene fast. We at the JRCC know and understand the capabilities and training that they have and can rely on them...”

Cost Effectiveness

CASARA continues to be an effective means to achieve the prescribed outcomes.

CASARA is cost-effective in its role of support to SAR. As one person said:

“Because CASARA personnel are available in so many communities, they can often save a huge amount of effort by CF resources with simple cases such as ELTs going off on airfields. ... Rather than send the CF standby aircraft to investigate this, CASARA is able to send a ground homing team and sort out the incident quickly and easily.”

The cost of training is low compared to the benefits and value for money received by the CF.

Program Funding and Accounting

CASARA’s actual and projected funding is shown at Table 8.

FYs	DND	TC	Total
2005/06	\$2,057,068	\$400,000	\$2,457,068
2006/07	\$2,130,780	\$400,000	\$2,530,780
2007/08	\$2,206,700	\$400,000	\$2,606,700
2008/09	\$2,284,900	\$400,000	\$2,684,900
2009/10 (projected)	\$2,365,447	\$400,000	\$2,765,447

Table 8. CASARA’s Actual and Projected Funding.

CASARA has had its financial statements reviewed annually by an independent certified management accounting firm which stated: “Based on our review nothing has come to our attention that causes us to believe that these financial statements are not, in all material respects, in accordance with Canadian generally accepted accounting principles.”

In addition, the financial statements, along with all other financial records were provided immediately upon request and were presented in a clear and professional manner.

Allocation of Funds to Member Organizations

CASARA has a transparent formula for the allocation of funds to each Member Organization (province or territory). The formula is performance-based with clear incentives for Member Organizations to maintain their certifications. The funding formula is accepted by Member Organizations.

Cost Effectiveness in Support of JRCC Taskings

Between FY 2004/05 and FY 2007/08 the JRCCs tasked CASARA to perform air and ground SAR activities 842 times for a total time of 4,018.9 hours.

The CF reimburses CASARA members for costs related to actual SAR operations; since 2005 the JRCCs reimbursed CASARA members \$1,112,118 to cover these costs.

The cost per hour for CASARA in support of SAR since 2005 was \$85.20 in the Halifax Search and Rescue Region (SRR), \$65.82 in the Trenton SRR and \$447.51 in the Victoria SRR. This is an average cost to the CF of \$276.72 per hour for SAR operational taskings. The costs in the Victoria SRR are substantially larger than those incurred by Trenton and Halifax due to larger number of taskings requiring the deployment of volunteers to remote locations thus adding the costs of hotels, meals, transportation, and other expenses that are not normally accrued for flights based from a home airfield (CASARA flights from a home airfield are the norm in the Halifax and Trenton SRRs).

If the CF had performed all SAR operations without the benefit of CASARA volunteers and their aircraft the cost to the CF would have been \$30,769,172 for operating costs (fuel, personnel, spares).

The SAR taskings undertaken by CASARA cost the CF \$1,112,118 in expenses outside of the Agreement, and represent a significant value for money and potential cost avoidance to the CF of \$29,657,054.

Cost Effectiveness in Training of Volunteers

Over the four-year period of FY 2004/05 to FY 2007/08 volunteers were in training for a total of 617,241 hours. The total training costs over that four-year period were \$9,980,050, for an average training cost of \$16.67 per hour. Despite the fact that the cost of training is going up and the number of trained personnel is going down, this was considered a reasonable cost for the benefits received by the CF. The actual data from the CASARA fiscal reports is provided at Table 9.

Member Organization	Hours of Training			
	FY 2004/05	FY 2005/06	FY 2006/07	FY 2007/08
British Columbia	50,444	57,639	24,492	37,716
Alberta	15,855	16,886	11,034	6,502
Saskatchewan	3,054	5,777	5,646	4,512
Manitoba	13,509	11,526	9,015	8,655
Ontario	29,231	33,101	35,927	30,222
Quebec	28,937	39,789	38,941	13,190
New Brunswick	4,380	4,309	5,578	4,818
Nova Scotia	2,697	3,390	3,071	4,655
Prince Edward Island	1,550	1,435	1,915	783
Newfoundland and Labrador	8,092	6,404	6,301	5,143
Northwest Territories	2,396	1,810	1,710	1,090
Yukon	1,783	3,258	2,002	1,979
Nunavut	303	2,811	810	1,170
Total	162,230	188,136	146,441	120,434
Cost per FY	\$2,385,502	\$2,457,068	\$2,530,780	\$2,606,700
Average Cost per Hour	\$14.70	\$13.06	\$17.28	\$21.64

Table 9. Hours of Training vs. Cost of Training—FYs 2004/05 to FY 2007/08.

Expenditures Summary

The CASARA expenditures on flying training in order to be prepared to support CF SAR operations increased from 59.3 percent of the total contribution in FY 2004/05 to 62.5 percent in FY 2007/08. As the cost of POL increases, flying training costs have also increased; however, CASARA has reduced expenses in other areas to compensate for the increase in POL costs. The expenditures for administration of the program dropped over the period of the review from 17.5 percent of the total budget to 15.8 percent.

The DND SAR-related program cost in FY 2007/08 was \$111,854,136.¹ In addition to that \$112 million, DND’s portion of the federal contribution to CASARA during this same period was \$2,206,700. This means that the CASARA contribution represents 1.9 percent of DND’s program costs for SAR. A summary of CASARA expenditures for the review period is given at [Annex J](#).

In addition to a review of CASARA expenditures, key officials involved with CASARA were asked to assess the organization’s cost effectiveness through interview questions or through the administration of a questionnaire. The results are presented at Tables 10 and 11.

Table 10 examines the responses when the CASARA immediate outcome is to promote air safety (increased awareness of aviation safety and increased compliance with SAR aviation regulations).

1-Not at all cost-effective 2-Somewhat cost-effective 3-Cost-effective 4-Very Cost-effective 5-Indispensable

Respondents	Responses
CASARA National President and several Board Executives (interview)	4 – Very cost-effective.
CAS and D Air FR (interview)	4 – Very cost-effective.
1 Cdn Air Division staff (interview)	4 – Very cost-effective.
JRCC teams (self-administered questionnaire)	4-5 – Very cost-effective to indispensable.
CLOs (self-administered questionnaire)	4-5 – Very cost-effective to indispensable.

Table 10. An Assessment of the Cost Effectiveness of CASARA to Promote Air Safety.

¹ DND Report on Plans and Priorities FY 2007/08.

Table 11 examines the responses when the CASARA immediate outcome is to support the CF in SAR operations, including the contribution to aeronautical SAR.

1-Not at all cost-effective 2-Somewhat cost-effective 3-Cost-effective 4-Very Cost-effective
5-Indispensable

Respondents	Responses
CASARA National President and several Board Executives (interview)	4 – Very cost-effective.
CAS and D Air FR (interview)	4 – Very cost-effective.
1 Cdn Air Division staff (interview)	4 – Very cost-effective.
JRCC teams (self-administered questionnaire)	5 – Indispensable.
CLOs (self-administered questionnaire)	5 – Indispensable.

Table 11. An Assessment of the Cost Effectiveness of CASARA to Support the CF in SAR Operations.

Comments obtained through interviews and included in the comments section of the questionnaires also served to indicate the degree of CASARA’s cost effectiveness. The following comment is indicative of the comments received:

“In terms of sheer horsepower, CASARA brings the ability to generate multiple SAR platforms for searches. ... This is very apparent during major search operations, such as occurred last fall in British Columbia. A protracted search resulted in over 700 total flying hours, more than 300 of which were flown by CASARA aircraft. Using only CF aircraft to do this job would have taken much longer. Also, the full search area would not have been searched before the expected time of survival model ran out. Further, having more search aircraft flying early in a search increases the chances of finding someone alive early. An estimate of the cost if the CF had to fly all of the hours that were covered by CASARA indicated that around \$5 million would have been expended during the search, assuming all of the flying hours had to be performed by CF aircraft.”

Funding for Petroleum, Oils and Lubricants

Concerns were raised about the increasing and fluctuating cost of POL, and the impact this has on training. Under the present reimbursement formula, as the cost of fuel increases a greater percentage of the annual funds go to aircraft owners, resulting in a corresponding decrease in funds for other non-flying activities.

Aviation Safety and Accident Prevention Activities

Based on CASARA’s reporting, the number of safety and prevention activities undertaken by CASARA declined significantly over the past four years (from 215 events in FY 2004/05 to 33 events in FY 2007/08—a decline of 85%). Interviewees from CASARA maintained that safety-related activities remained at the same level throughout the period of the Agreement, and explained the decline as a reporting issue, since aviation safety activities are now incorporated into SAR training. Without a better performance measurement framework, the evaluation could not determine the accuracy of this statement. Despite these challenges, CF stakeholders rated CASARA as “very cost-effective” to “indispensable.”

Challenges Related to Governance and Sustainability

While CASARA is considered relevant, successful and cost-effective by the interviewees, issues were noted that could affect this contribution program in the future.

Demographics

A demographic analysis indicated that while CASARA volunteers represent all adult age groups, the majority are over the age of 55.

Interviews indicated that volunteers were staying because of their passion for service and their love of flying. It was reported that some, however, were staying because they did not think others would join. This created a self-fulfilling effect: long-staying members used up the available training time to stay current, causing new members to leave due to their inability to access training.

As well, since CASARA has a demographic that is primarily over the age of 50 and male, some interviewees thought that there may be some unintentional barriers that may prevent younger members from a variety of backgrounds from joining. However, others interviewed made the point that it is only after about the age of 50 (when people have established their careers and their family has grown) that CASARA is noticed by them and they begin to volunteer.

A concern was presented by CASARA and the CF about the large number of members who are in the retirement and post-retirement cohorts. Table 12 is a summary of the age distribution of pilots.

Age Group	20-29	30-39	40-49	50-59	60-69	70-79	80+
Number of Pilots	4	14	38	84	91	26	7
Percent of Total	1.5%	5.3%	14.4%	31.8%	34.5%	9.8%	2.7%

Table 12. Pilot Age Distribution.

A detailed age summary of pilots by year of birth is at [Annex D](#). An analysis of the distribution of pilots by province/territory is at [Annex G](#).

Analysis indicated the following salient points:

- 279 pilots are registered with CASARA as of July 2008. The age of 15 of these pilots is unknown.
 - For the 264 pilots whose age is known (94.6 percent of the total), their age ranges from 23 to 83,
 - The mean age is 58 (50 percent of pilots are older, 50 percent are younger),
 - The modal age is 61 (the most frequent age),
 - Seven pilots, or 2.7 percent, are 80 years old or older,
 - 47 percent of the total pilots are 60 years old or older, and
 - 78.8 percent of the total pilots are 50 years old or older.

For navigators the information was very similar. The navigators' age summary is presented at Table 13.

Age Group	20-29	30-39	40-49	50-59	60-69	70-79	80+
Number of Navigators	12	36	71	158	109	38	6
Percent of Total	2.8%	8.4%	16.5%	36.7%	25.3%	8.8%	1.4%

Table 13. Navigator Age Distribution.

A detailed age summary of navigators by year of birth is at [Annex E](#). An analysis of the distribution of navigators by province/territory is at [Annex H](#).

Analysis indicated the following:

- 453 navigators are registered with CASARA as of July 2008. The age of 23 of these navigators is unknown.
 - For the 430 navigators whose age is known, their age ranges from 21 to 86,
 - The mean age is 56 (50 percent of navigators are older, 50 percent are younger),
 - The modal age is 54 (the most frequent age),
 - 6 navigators, or 1.4 percent, are 80 years old or older,
 - 35.6 percent of the total navigators are 60 years old or older, and
 - 72.3 percent of the total navigators are 50 years old or older.

Finally, the age distribution for spotters is provided at Table 14.

Age Group	19-29	30-39	40-49	50-59	60-69	70-79	80+
Number of Spotters	89	152	233	334	247	82	10
Percent of Total	7.8%	13.3%	20.3%	29.1%	21.5%	7.1%	0.9%

Table 14. Spotter Age Distribution.

A detailed age summary of spotters by year of birth is at [Annex F](#). An analysis of the distribution of spotters by province/territory is at [Annex I](#).

Analysis indicated the following:

- 1,234 spotters are registered with CASARA as of July 2008. The age of 88 of these is unknown.
 - For the 1,146 spotters whose age is known, their age ranges from 19 to 86,
 - The mean age is 51 (50 percent of spotters are older, 50 percent are younger),
 - The modal age is 54 (the most frequent age),
 - 10 spotters, or 0.9 percent, are 80 years old or older,
 - 29.6 percent of the total spotters are 60 years old or older, and
 - 58.7 percent of the total spotters are 50 years old or older.

The age distribution of CASARA members is a critical issue to be addressed if CASARA is to maintain its relevance in the future.

Regional Representation

Analysis also indicated that although CASARA is represented across Canada, there are some regional discrepancies. The regional representation is shown at Table 15. Detailed information is provided at Annexes [G](#), [H](#) and [I](#).

Regions	Pilots	Navigators	Spotters	Total
British Columbia	70	102	304	476
Alberta	30	47	112	189
Saskatchewan	21	45	97	163
Manitoba	14	33	67	114
Ontario	36	61	126	223
Quebec	47	78	192	317
New Brunswick	4	5	11	20
Nova Scotia	10	15	36	61
Prince Edward Island	2	5	15	22
Newfoundland and Labrador	10	18	56	84
Yukon	4	5	16	25
Northwest Territories	5	10	67	82
Nunavut	1	0	101	102
National	25	29	34	88
Total	279	453	1,234	1,966

Table 15. Distribution of CASARA Members by Region.

CASARA members are predominantly in British Columbia and Quebec, followed by Alberta and Ontario. Nunavut has one pilot, and no navigators, but 101 spotters. This data warrants further analysis by the CF and CASARA to determine if this is an optimal regional representation.

Regional representation, and the zones within them, was an issue raised by some interviewees. Questions were raised regarding the requirement to have the current number of regions and the current number of zones. For instance, Vancouver Island and Nova Scotia are relatively similar in land-mass size. Vancouver Island is a single zone within the Victoria SRR. In contrast, Nova Scotia is divided into five zones. This is an issue to be addressed by the CF and CASARA.

Public Affairs and Attracting Members

CASARA has focused on SAR operations and aviation safety and not as much on public affairs or attracting new members. The annual expenditure on advertising and other public relations is approximately \$42,000. Targeting of potential members from different cohort groups or regions has not been a priority. Now, however, CASARA's future viability and relevance may depend on succession planning becoming an issue of focus and urgency.

Governance

Proper governance is essential to the relevance of an organization. Based on an anonymous questionnaire administered by the evaluation team, the CASARA Board of Directors indicated that it believes it performs well in most areas. But some respondents, as well as other interviewees, suggested that there are issues to be addressed regarding governance.

For example, while CASARA is fortunate to have long-term, fully committed Board members, some respondents indicated a very strong requirement for increased training and orientation of new Board members. As well, the question of recruiting Board members who represent the diversity of Canada in terms of gender, ethnicity, culture, economic status, disabilities and skill/expertise was rated by a majority of Board members as “needs work.”

Also, it was noted that there are three search and rescue regions in Canada, yet there are 13 directors on the CASARA National Board of Directors. The question was put forward as to whether the operational capability of CASARA would be affected if there were limited or no provincial or territorial representation on the Board of Directors. These are issues to be examined further by the CF and CASARA.

As well, the Contribution Agreement requires a formal application for funding be submitted by CASARA annually (by implication, the application is to be submitted to D Air FR). Although CASARA has submitted annually appropriate documentation to A3 SAR, it has not submitted an application for funding to D Air FR during any year of the current Agreement.

Finally, the Contribution Agreement requires an annual report be submitted by CASARA to D Air FR. Although financial reports were submitted annually by CASARA to A3 SAR, no annual report was received by D Air FR for any year of the current Agreement.

Administration

CASARA has contracted with a professional services organization to provide administrative services. This contract allows for one full-time administrator and one part-time clerical support staff. The workload has increased substantially, in part due to increased accountability for expenditures of Canadian tax dollars. An increase in the number of paid administrators may ease the burden on CASARA of performing administrative duties in response to the requirements of the federal government.

DND/CF Focus on Operations

CASARA interviewees expressed the view that while the strategic focus of the CF is on operational issues CASARA has diminished in importance to the CF. Concerns were brought forward that perhaps the CF is getting out of the SAR business.

The decreased ability of the CF to provide resources for training SAR spotters on board CF aircraft was presented as an example of SAR being a lower priority. This is thought to have a detrimental impact on the attraction and retention of volunteers.

It is possible that the major CF transformation over the past four years has diminished the visibility of SAR, but not the importance. This is an area to be clarified by the CF in order to help maintain *esprit de corps* among CASARA members.

Planning, Reporting and Continuous Improvement

The evaluation determined that a planning, reporting and continuous improvement cycle had not been put in place by the CF. For example, CASARA reports to A3 SAR on its fiscal results each year, but targets, goals, or objectives have been neither reported nor identified to D Air FR. Certainly, the overall goal was to support as many SAR missions as called upon and to assist with aviation safety, but this information was not captured annually or analyzed at the strategic level to determine if improvements could be made or measures changed.

Availability of CF Aircraft for Training

Interviews and questionnaire comments indicated that due to the CF operational tempo the CF has provided CASARA volunteers with limited operational training as spotters on CF aircraft. It was also noted that if CF aircraft were limited in availability for spotter training in the future, a recruitment campaign by CASARA would have to account for this when looking for new members.

Availability of CASARA Aircraft for Training

CASARA reported that a number of members were of an age where they wanted to sell their aircraft and do other things. Also, over the last number of years, the view was that it was a sellers' market for aircraft and it was profitable for members to sell while they could. Moreover, the high cost of fuel has now become a concern in terms of the overall cost of aircraft ownership. The fewer number of aircraft that CASARA has, or has access to, will reduce its flexibility in the future.

Future Role

In consideration of the success relevant to each contributing department and the noted challenges, the CF must develop a comprehensive and collective future vision for CASARA. In addition to this, a CRS evaluation conducted in 2004 included the recommendation that "DND, TC and CASARA develop a collective and comprehensive vision of CASARA's future." The CF committed to complete such a vision statement by 2005 as part of the Management Action Plan. There is no indication that this recommendation was implemented. It is even more important now that such a vision be developed and implemented for the future success of CASARA.

As part of the evaluation, the Civil Air Patrol (CAP) was examined together with the roles it undertakes in the United States, and the relationship CAP has with both the USAF and Homeland Border Security. In a future vision of CASARA, the CF may wish to consider having CASARA take over some roles similar to those undertaken by the CAP in the United States.

Recommendations

It is recommended that:

1. CASARA continue to support the CF in SAR operations. As such, the Contribution Agreement between the CF and CASARA should be renewed for a five-year period. The performance measurement framework designed for this contribution agreement must be more indicative of results in relevance, success and cost effectiveness.
2. The CF lead a review, with input from TC, CASARA, and other organizations as appropriate, to ensure that CASARA remains relevant, successful, cost-effective and sustainable in the future. The review should:
 - result in a clear vision of CASARA, identifying present and future roles, governance and structure;
 - address strategic, operational, and tactical issues, as well as planning;
 - address sustainability, with particular attention to demographics, attrition, retention and public relations so as to ensure the association remains not only capable of meeting its roles, but is successful in performing them;
 - determine a suitable funding framework that includes sufficient funds for training, administrative support, potential future operations as well as a funding formula to address the cost of POL;
 - examine the issues of availability of CF aircraft for CASARA training;
 - develop options to increase the availability of private aircraft through other arrangements such as leasing, chartering or other options; and
 - develop a straightforward planning, reporting and continuous improvement cycle.



Annex A—Management Action Plan

CRS Recommendation

1. CASARA continue to support the CF in SAR operations. As such, the Contribution Agreement between the CF and CASARA should be renewed for a five-year period. The performance measurement framework designed for this contribution agreement must be more indicative of results in relevance, success and cost effectiveness.

Management Action

.....
.....

OPI: CAS/DG Air FD (liaise with TC) **Target Completion Date:**
.....
.....

CRS Recommendation

2. The CF lead a review, with input from TC, CASARA, and other organizations as appropriate, to ensure that CASARA remains relevant, successful, cost-effective and sustainable in the future. The review should:
 - result in a clear vision of CASARA, identifying present and future roles, governance, and structure;
 - address strategic, operational, and tactical issues, as well as planning;
 - address sustainability, with particular attention to demographics, attrition, retention and public relations so as to ensure the association remains not only capable of meeting its roles, but is successful in performing them;
 - determine a suitable funding framework that includes sufficient funds for training, administrative support, potential future operations as well as a funding formula to address the cost of POL;
 - examine the issues of availability of CF aircraft for CASARA training;
 - develop options to increase the availability of private aircraft through other arrangements such as leasing, chartering or other options; and
 - develop a straightforward planning, reporting and continuous improvement cycle.

Management Action

A review of CASARA resulting in a Business Plan will be completed. The Business Plan will include a strategic vision and specific actions to ensure the continued success and long term sustainability of CASARA.

OPI: CAS/DG Air FD (liaise with TC) **Target Completion Date:** 30 June 2009



Annex B—Logic Model (from the 2005 RMAF)

Civil Air Search and Rescue Association—Contribution Agreement

Activities	Outputs	Immediate Outcomes	Intermediate Outcomes	Final Outcome
Administration	CF <ul style="list-style-type: none"> • Program management • Contribution Agreement • Insurance coverage • Reimbursements • Treasury Board submissions CASARA <ul style="list-style-type: none"> • Annual report • SAR mission reports • Financial audit • Invoices • Personnel • Recruitment/retention • Policy manual • Statistic collection 	Increased awareness of aviation safety. Increased compliance with aviation regulations relating to search and rescue. Contribution to aeronautical SAR.	Reduced loss of life. Reduced loss and/or damage to property related to the saving of life. Public confidence in National SAR Program.	Safe aviators.
Search and Rescue Operations	CF <ul style="list-style-type: none"> • Mission authorization (Tasking of SAR missions) CASARA <ul style="list-style-type: none"> • SAR operations 			
Training	CF <ul style="list-style-type: none"> • Standards • Training • Courses CASARA <ul style="list-style-type: none"> • Trained personnel • Training standards • Training courses and material 			
SAR Prevention	CF <ul style="list-style-type: none"> • Agreement on activities • Training CASARA <ul style="list-style-type: none"> • Safety briefings • Dissemination of safety information • Training courses 			

Table 16. Logic Model (from the 2005 RMAF). The Logic Model is described in four Activities each with their own Outputs and all having the same Immediate, Intermediate and Final Outcomes.

Annex C—Federal Government Objectives Relevant to CASARA

Excerpt from the DND Canada First Defence Strategy

- “Delivering excellence at home requires the Forces to maintain search and rescue response capabilities that are able to reach those in distress anywhere in Canada on a 24/7 basis.”

Excerpt from the DND Program Activity Architecture

- “Conduct ongoing operations and services to Canadians.”

Excerpt from the DND 2008-2009 Report on Plans and Priorities

- Air force priorities include generating and maintaining the CF's capability to meet Canada's domestic commitment to North American Aerospace Defence Command (NORAD), national Search and Rescue (SAR), and other integrated CF operations at home and abroad.

<http://www.tbs-sct.gc.ca/rpp/2008-2009/inst/dnd/dnd02-eng.asp>

Excerpt from the Terms of Accountability – Commander 1 Cdn Air Div/CANR HQ/Canada

- “As the Canada COM Combined Force Air Component Commander (CFACC) be responsible and accountable to Comd Canada COM to provide search and rescue services as defined in the National SAR Manual, as Comd of the Trenton Search and Rescue Region (SRR)...”

Excerpts from TC website

- “The Civil Aviation headquarters directorate determines program contents, policy and standards, while the regions deliver the program. [Our mission statement](#) is to develop and administer policies and regulations for the safest civil aviation system for Canada and Canadians, using a systems approach to managing risks.”
- “Transport Canada Civil Aviation’s [definition of safety](#) translates into our mission: To develop and administer policies and regulations for the safest civil aviation system for Canada and Canadians using a systems approach to managing risks.” <http://www.tc.gc.ca/CivilAviation/menu.htm>

Annex D—Pilots by Year of Birth

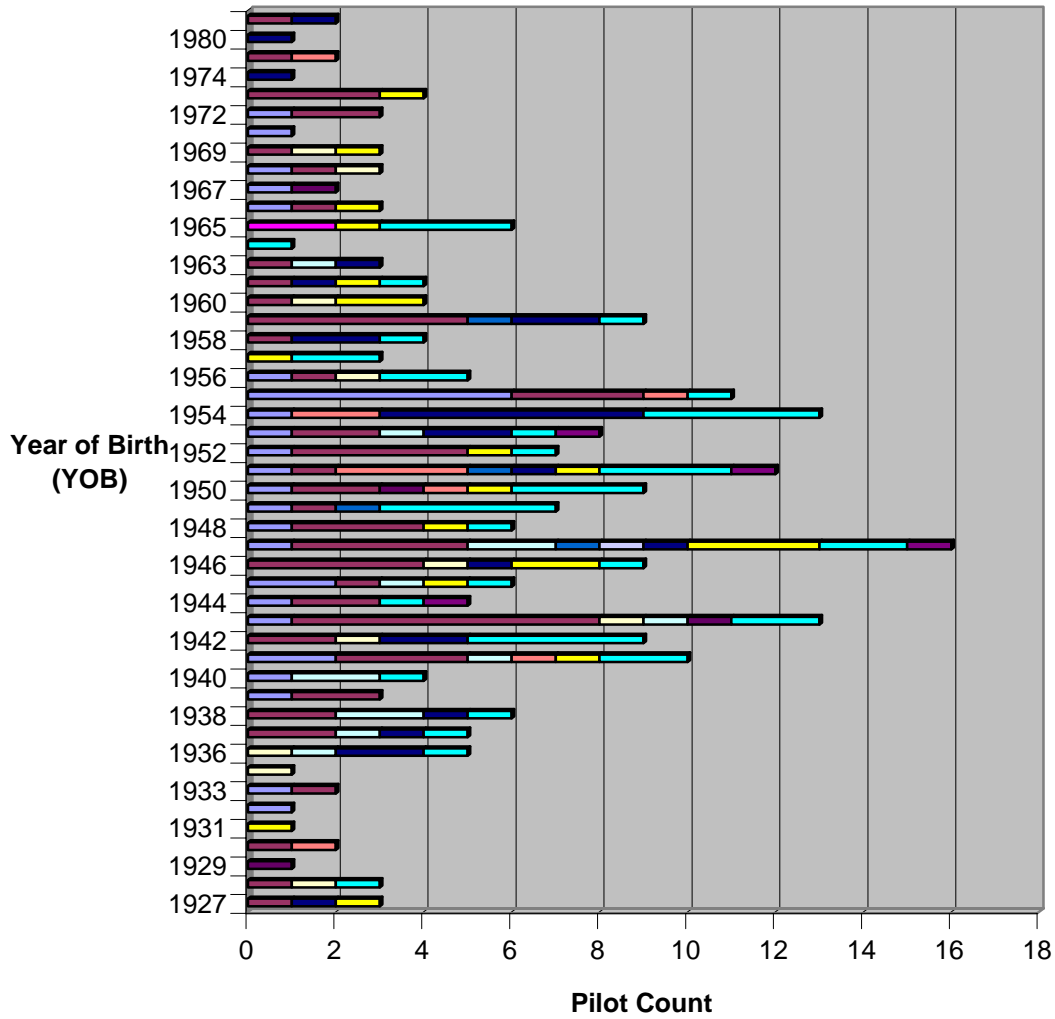


Figure 1. Number of pilots by year of birth is shown in each province.

Note: “SERABEC” is the Member Organization for the Province of Quebec.

Annex E—Navigators by Year of Birth

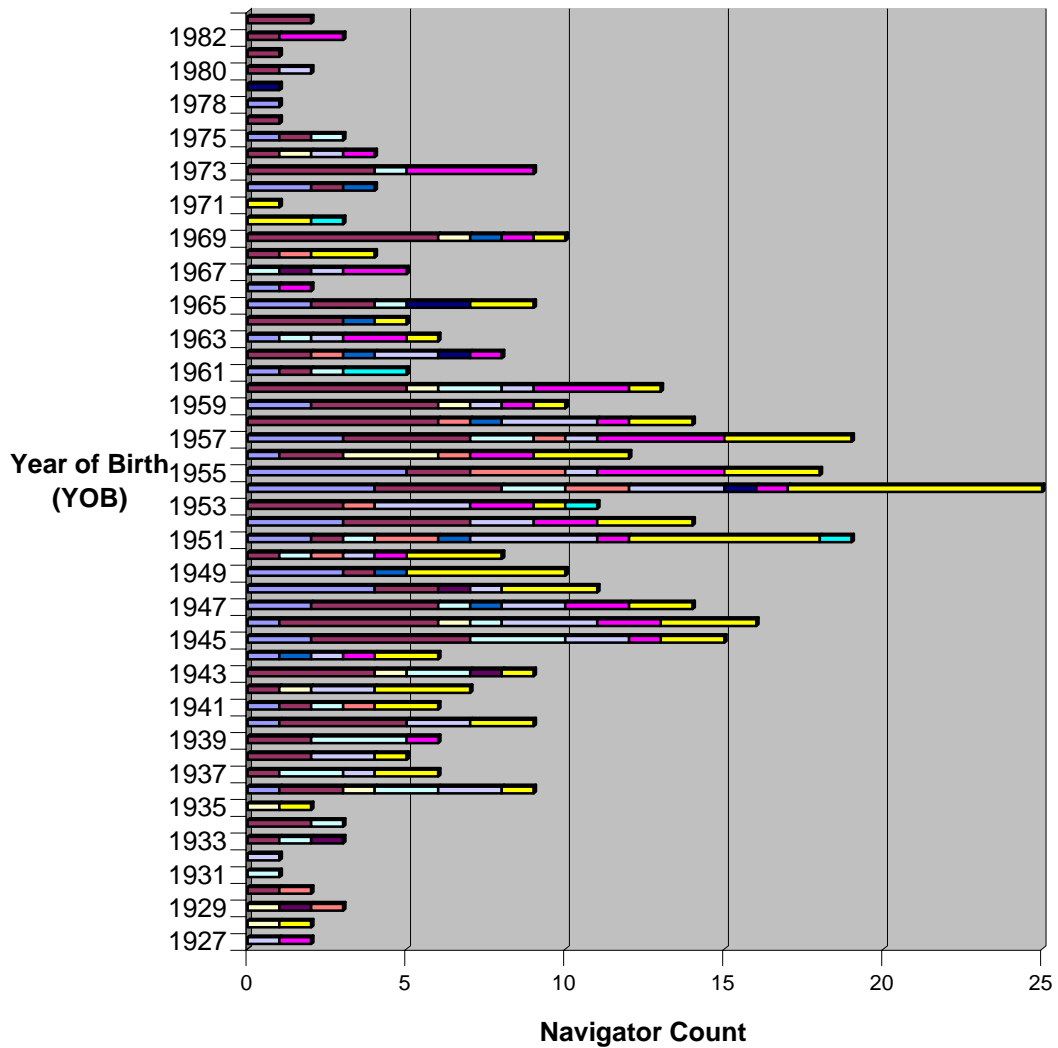


Figure 2. Number of navigators by year of birth is shown in each province.

Note: “SERABEC” is the Member Organization for the Province of Quebec.

Annex F—Spotters by Year of Birth

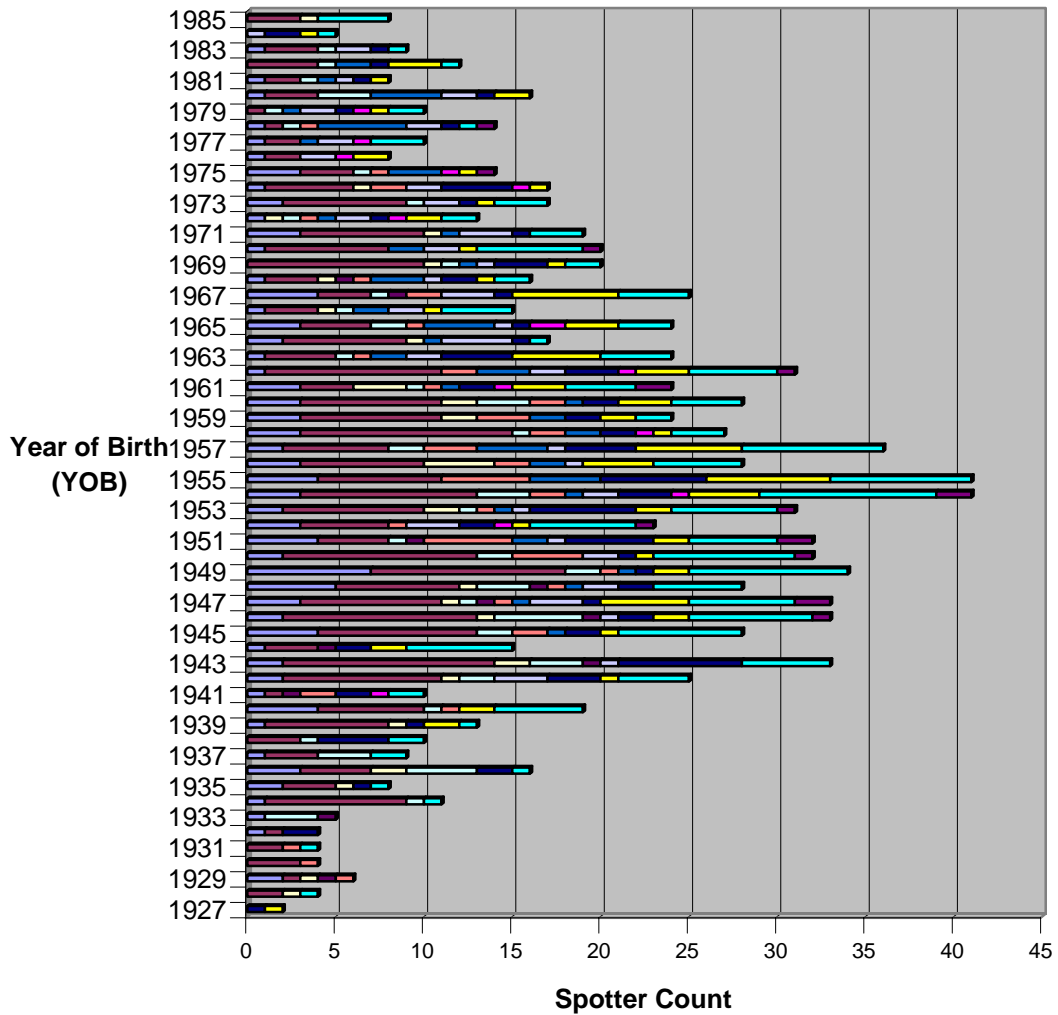


Figure 3. Number of spotters by year of birth is shown in each province.

Note: “SERABEC” is the Member Organization for the Province of Quebec.

Annex G—Pilots by Province/Territory

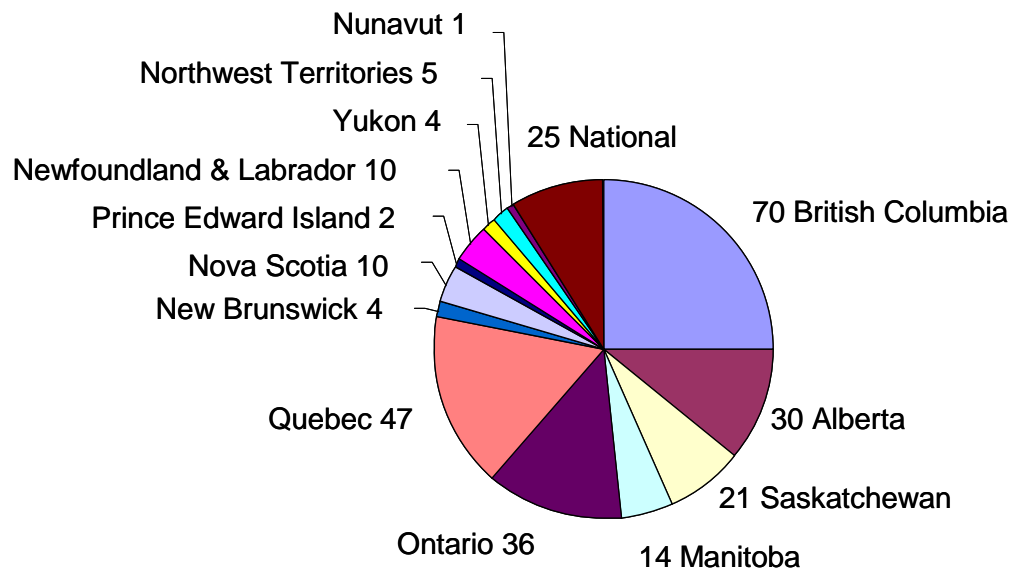


Figure 4. Pilots by Province/Territory.

Annex H—Navigators by Province/Territory

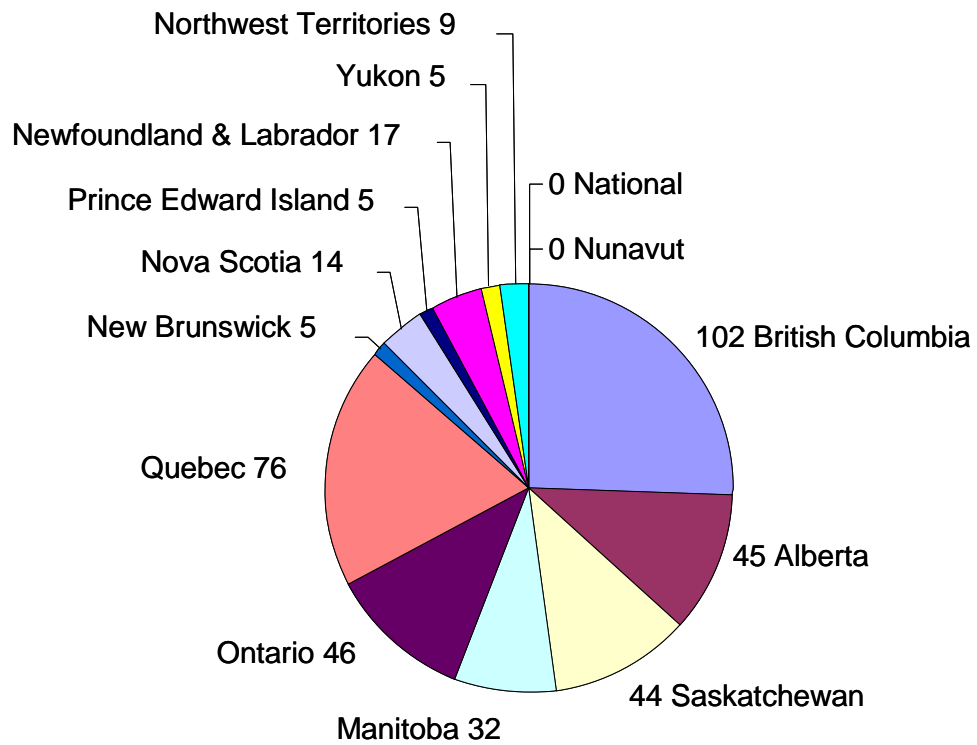


Figure 5. Navigators by Province/Territory.

Annex I—Spotters by Province/Territory

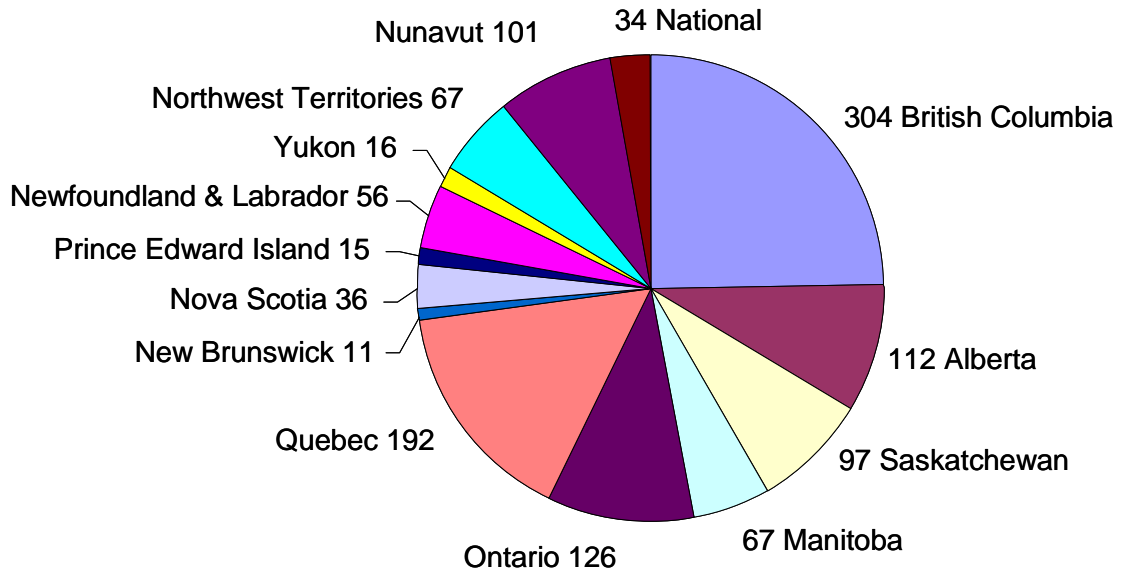


Figure 6. Spotters by Province/Territory.

Annex J—CASARA, Summary of Fiscal Annual Reports

Cost Centre	2004/05	2005/06	2006/07	2007/08
Flying Training	\$1,413,685	\$1,495,963	\$1,561,890	\$1,630,300
All Other Training	\$148,087	\$151,000	\$154,700	\$154,600
Meetings – Zone	\$34,974	\$34,360	\$33,900	\$33,300
Searchmaster Course	\$13,805	\$14,280	\$14,410	\$14,580
Training Officers' Meeting	\$23,000	\$22,300	\$21,200	\$20,300
Unscheduled Committee Meeting	\$6,452	\$6,250	\$5,970	\$5,700
Treasurer's Meeting	\$23,000	0	0	\$20,250
Unscheduled Travel	\$6,452	\$7,140	\$8,500	\$8,900
Meetings – Provincial	\$116,857	\$117,800	\$117,800	\$116,700
Annual General Meeting/Fall Directors' Meeting	\$55,222	\$53,540	\$55,100	\$52,600
Meetings – National Executive	\$18,407	\$18,740	\$18,650	\$18,600
Past President Association	0	0	0	0
Communications	\$69,980	\$72,380	\$73,100	\$73,980
Member Organizations' Office Costs	\$80,386	\$83,000	\$83,670	\$84,600
Public Relations	\$38,028	\$43,550	\$40,440	\$44,700
National Office Expenses	\$40,791	\$42,920	\$44,100	\$45,300
Equipment Repair & Replacement	\$138,000	\$137,485	\$135,600	\$132,890
Professional Fees/Services	\$158,376	\$156,360	\$161,750	\$149,400
Grand Total	\$2,385,502	\$2,457,068	\$2,530,780	\$2,606,700

Table 17. CASARA, Summary of Fiscal Annual Reports.

Annex K—Analysis of Cost Factors Manual

Aircraft	Destination	Hrs flown
Buffalo	Comox	1,926.6
Hercules	Greenwood	2,235.7
	Winnipeg	3,196.0
	Trenton	2,000.0
Comorant	Comox	1,989.0
	Greenwood	1,197.4
	Gander	1,271.8
	Trenton	1,389.0
		Total hrs 15,206

Table 18. CF – Actual hours used FY 2006/07.

Aircraft	% SAR	Hrs to SAR
Buffalo	55%	1,059.6
Hercules	73%	1,632.1
	36%	1,150.6
	68%	1,360.0
Comorant	55%	1,094.0
	73%	874.1
	83%	1,055.6
	68%	944.5
Avg usage 64%		Total hrs 9,170

Table 19. CF – SAR hours used FY 2006/07.

Aircraft	Operating Costs Cost/Flying Hrs (CFM)	Extension
Buffalo	8,098	8,580,884
Hercules	7,943	12,963,461
	8,028	9,236,696
	9,438	12,835,680
Comorant	6,576	7,193,815
	7,502	6,557,513
	5,769	6,089,722
	7,149	6,752,373
Avg cost 7,656.16		Total cost 70,210,144

Table 20. CFM 2008/09 Operating Costs.

ANNEX K

Aircraft	Full costs Cost/Flying Hrs (CFM)	Extension
Buffalo	21,108	22,366,670
Hercules	22,989	37,519,450
	23,502	27,040,461
	21,707	29,521,520
Comorant	14,948	16,352,365
	15,503	13,551,203
	13,702	14,463,749
	16,828	15,894,383
	Avg cost 19,269.55	Total cost 176,709,801

Table 21. CFM 2008/09 Full Costs.

JRCC Taskings to CASARA – FY 2004/05 to FY 2007/08

- Taskings: 862
- Hours: 4,018.9
- Cost: 1,112,117.66
- Cost per Task: 1,290.16
- Cost per Hour: 276.72

CF Costings – CFM 2008/09

- Op Cost: 30,769,172; Cost Avoidance: 29,657,055
- Full Cost: 77,442,006; Cost Avoidance: 76,329,888