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CANADA



OPERATIONAL RESEARCH AND ANALYSIS
DIRECTORATE OF MANPOWER ANALYSIS

PROJECT REPORT 690

A HISTORICAL ANALYSIS OF THE
FLOW DYNAMICS OF THE CIVILIAN POPULATION
IN THE DEPARTMENT OF NATIONAL DEFENCE

by

P. Bender
L. Tanner

July 1994

OTTAWA, CANADA

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DEPARTMENT OF NATIONAL DEFENCE
CANADA

OPERATIONAL RESEARCH AND ANALYSIS
DIRECTORATE OF MANPOWER ANALYSIS

PROJECT REPORT 690

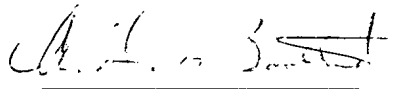
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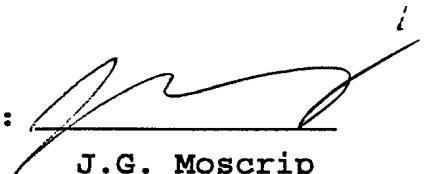
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ABSTRACT

⁵⁰¹ This historical trend study of flow dynamics is intended to provide an understanding of the career patterns of the civilian population in the Department of National Defence (DND) in terms of the types of flows involved and their significance. The analysis shows the effect of policies, such as government cutbacks, on:

- a. population trends;
- b. staffing related flows; and
- c. attrition related flows. /

RÉSUMÉ

Cette étude porte sur les tendances historiques des mouvements des effectifs civils au sein du ministère de la Défense nationale. L'étude décrit et quantifie les différents types de mouvements. L'analyse permet de voir l'impact des politiques en matière de personnel, telles les restrictions budgétaires, sur:

- a. les effectifs globaux;
- b. les mouvements impliquant une dotation de personnel; et
- c. les types d'attrition.

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EXECUTIVE SUMMARY

1. The Directorate of Manpower Analysis (D Man A) has been tasked by the Director General Civilian Human Resource Management (DGCHRM) to conduct historical trend analyses and modelling to gain an appreciation of the career patterns of civilian employees within the Department of National Defence (DND). To establish a methodology that could map out the flow dynamics of the civilian workforce, D Man A first studied a specific group in DND - the Administrative Services (AS) Group. Using the same basic methodology, D Man A has subsequently studied the flow dynamics of the civilian DND population as a whole and has begun to analyze the flow dynamics of the various categories within DND.

2. The aim of this historical trend analysis is to provide an understanding of the career patterns of the civilian DND population as a whole in terms of the types of flows involved and their relative importance.

3. The analysis was broken down into three phases:

- a. Phase One - Population Trends;
- b. Phase Two - Staffing Related Flows; and
- c. Phase Three - Attrition Related Flows.

4. Phase One of the study examined strength data as of the first of January from 1984 to 1993 for the civilian DND population broken down by:

- a. employee status;
- b. occupational category;

c. geographic region; and

d. Command/Group Principal.

5. The ten year trend analysis of the civilian DND population revealed a gradual decrease of 9% in the total number of civilian personnel, from over 38,000 in 1984 to under 35,000 by 1993. When the strength data were broken down by employee status, the analysis showed that while the number of indeterminate employees and term employees contracted for less than six months decreased during this period, the number of term employees contracted for at least six months increased. The distribution of civilian employees by Command/Group Principal has also shifted. On the other hand, the distribution of civilian employees by occupational category has been relatively stable with only minor changes, as has the distribution of employees by region.

6. Phase Two of the study examined two types of staffing actions which occurred between 1983 and 1992:

a. the recruitment of new indeterminate employees into DND either from other federal government departments or from outside the government; and

b. the internal movement of indeterminate civilian DND employees from one position to another, which included:

(1) promotions from one level to another within the same occupational group;

(2) lateral transfers between the same occupational group and level;

- (3) occupational transfers from one group to another within the same category; and
- (4) category transfers from one group to another in different categories.

7. The number of new indeterminate employees taken on strength fell over the period of study, which was reflected mainly in a reduction in hiring people from outside the federal government. On the other hand, the number of internal movements increased substantially, which was the result of a dramatic increase in the number of lateral transfers. Internal movements made up the majority of all staffing related flows.

8. Phase Three of the study examined the flows out of the indeterminate civilian DND population from 1983 to 1992 inclusively. In particular, the analysis focused on the following five release reasons:

- a. transfers to other federal government departments (interdepartmental transfers);
- b. retirement (all types combined);
- c. employment outside the federal government;
- d. lay-offs; and
- e. all other reasons combined (incl. resignation, death, etc.).

9. The total number of indeterminate civilian DND releases increased from 1983 to 1988 but subsequently fell 17% below 1983 levels by 1992. Lay-offs and interdepartmental

transfers increased whereas retirements, which make up the majority of releases, decreased.

10. This study provides a macro view of the career patterns and flow dynamics of the civilian DND population as a whole. Using the same methodology, subsequent papers will focus on the individual occupational categories in DND. While these studies will provide insights into the overall career patterns of individuals in each of the categories, a similar methodology could be used to study the characteristics of each type of flow.

11. Historical trend analyses, such as these, are useful in a variety of areas. They identify possible problem areas in the career patterns of civilian employees. They also provide background for formulating personnel policies. As well, this type of information is essential in identifying the important factors to be considered in a model for forecasting.

A HISTORICAL ANALYSIS OF THE FLOW DYNAMICS
OF THE CIVILIAN POPULATION
IN THE DEPARTMENT OF NATIONAL DEFENCE

PART I - INTRODUCTION

BACKGROUND

1. The Directorate of Manpower Analysis (D Man A) has been tasked by the Director General Civilian Human Resource Management (DGCHRM) to conduct historical trend analyses and modelling to gain a better appreciation of the career patterns of civilian employees within the Department of National Defence (DND)¹. To establish a methodology that could map out the flow dynamics of the civilian workforce, D Man A first studied a specific group in DND - the Administrative Services (AS) group². The AS group was chosen for that preliminary study for several reasons: it is one of the largest groups of civilian employees in DND; it is one of the groups scheduled to come under the proposed General Services (GE) conversion; and it is one of the more complicated groups in terms of flow dynamics and interactions with other occupational groups.

2. Using the same basic approach, D Man A has subsequently studied the flow dynamics of the civilian DND population as a whole and has also begun to analyze the flow dynamics of the various categories within DND.

¹ 3550-2 (DCHRP 2-4) Sep 91

² D Man A Research Note 1/93, "An Examination of the General Flow Dynamics of the Administrative Services Group Within the Department of National Defence"

AIM

3. The aim of this historical trend analysis is to provide an understanding of the career patterns of the civilian DND population as a whole in terms of the types of flows involved and their importance.

SCOPE

4. This study of the civilian DND population was based on yearly historical data from 1983 to 1993. The results are presented in three phases:

- a. population trends;
- b. staffing related flows; and
- c. attrition related flows.

5. This study is limited to a historical analysis of personnel flows involving indeterminate status employees only. Results pertaining to term renewals and transfers of term employees is beyond the scope of this study. Details of the methodology covering the data extraction, the quantitative measures used in the analysis and the presentation format are presented in Annex A.

PART II - RESULTS

PHASE ONE - POPULATION TREND ANALYSIS

Introduction

6. A ten year trend analysis of the civilian DND population revealed a gradual decrease of 9% in the total number of civilian personnel, from over 38,000 in 1984 to under 35,000 by 1993 (Figure 1). When the strength data were broken down by employee status, the analysis showed that while the number of indeterminate employees and term employees contracted for less than six months (TERMS<6MOS) decreased during this period, the number of term employees contracted for at least six months (TERMS≥6MOS) increased. The distribution of civilian employees by Command/Group Principal has also shifted. On the other hand, the distribution of civilian employees by occupational category has been relatively stable with only minor changes, as has the distribution of employees by region.

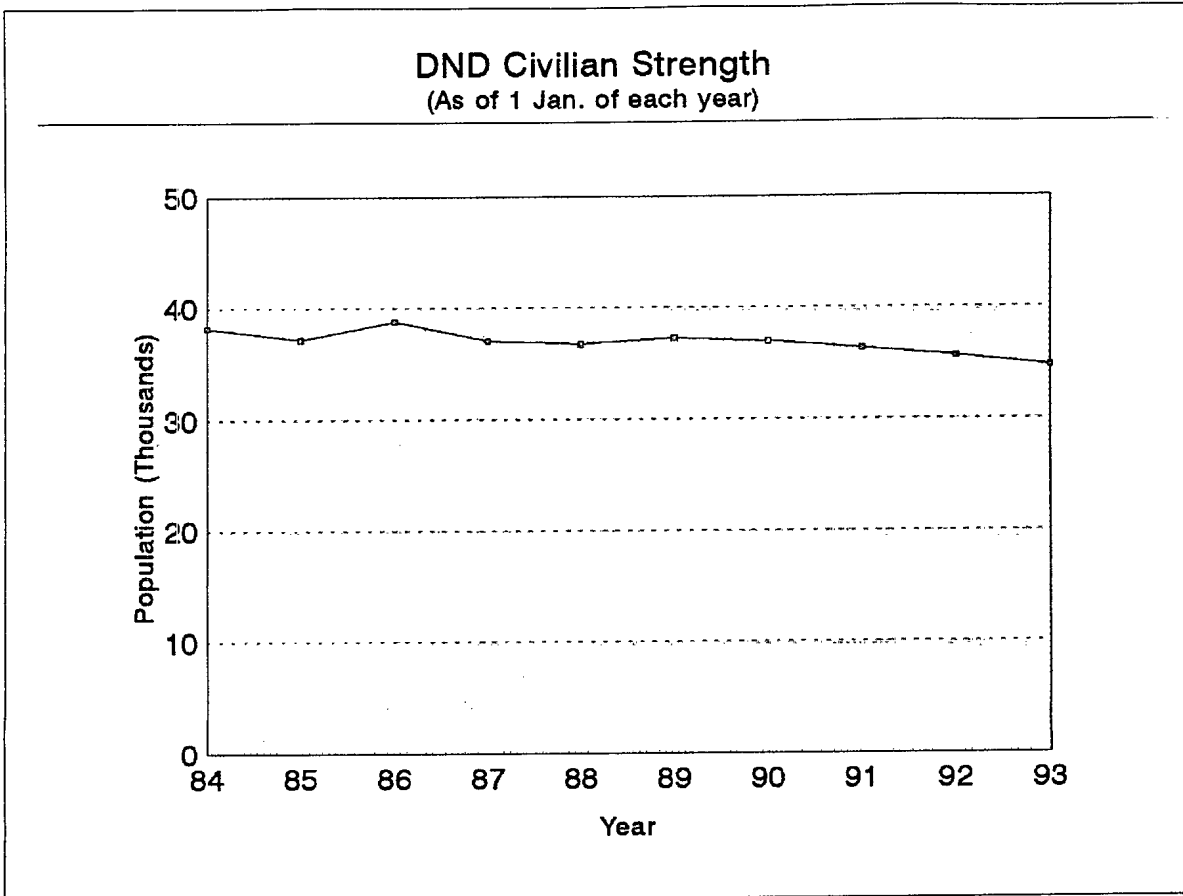


Figure 1 - Civilian DND Strength
(As of 1 Jan. of each year)

Employee Status Distribution

7. As seen in Figure 1, the total number of civilian employees in DND gradually decreased between 1984 and 1993. This decrease is reflected in a 12% reduction in the number of indeterminate personnel, as summarized in Table I. The number of TERMS<6MOS also fell over the ten year period, while the number of TERMS≥6MOS increased by almost 50%. The changes in strength resulted in a decreased proportion of indeterminate personnel and TERMS<6MOS, with a similar increase in the proportion of TERMS≥6MOS (Figure 2). Despite the changes in the civilian DND population, indeterminate employees still accounted for more than 80% of the population.

**Table I: Employee Status Breakdown
of Civilian DND Population**

	STRENGTH 1984	STRENGTH 1993	PERCENT CHANGE
INDETERMINATE	32744 (85.8%)	28793 (83.2%)	-12.1%
TERMS>=6MOS	2420 (6.3%)	3520 (10.2%)	+45.5%
TERMS<6MOS	2999 (7.9%)	2300 (6.6%)	-23.3%
TOTAL	38163 (100.0%)	34613 (100.0%)	-9.3%

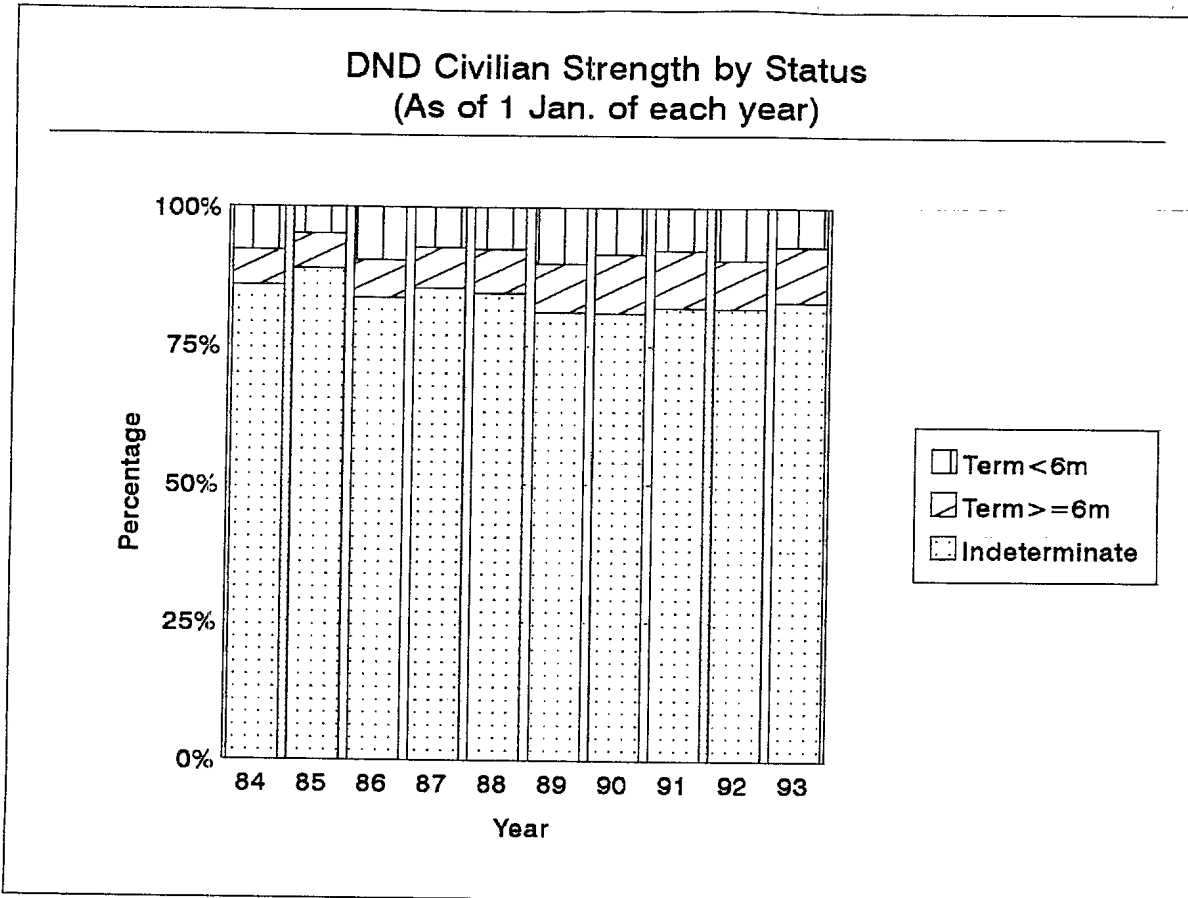


Figure 2 - Civilian DND Strength by Employee Status
(As of 1 Jan. of each year)

Occupational Category Distribution

8. Between 1984 and 1993, all but two of the categories experienced decreases in their strength - the exceptions being the Administrative and Foreign Service (Admin & FS) category, which increased almost 50%, and the Scientific and Professional (Sci & Prof) category. With the changes in strength summarized in Table II, there were also changes in the proportion of each category over time. The Operational category remained the largest category although it saw the most substantial decrease in strength (20%), resulting in a drop of its share of the total civilian DND workforce. The Management category, remained at 0.3% despite its large percentage change over the period. The proportions of the other categories all increased slightly during the period (Figure 3).

Table II: Breakdown by Category of Civilian DND Population

	STRENGTH 1984	STRENGTH 1993	PERCENT CHANGE
ADMIN & FS	1918 (5.0%)	2796 (8.1%)	+45.8%
ADMIN SUP	9743 (25.5%)	9301 (26.9%)	-4.5%
MANAGEMENT	125 (0.3%)	93 (0.3%)	-25.6%
OPERATIONAL	21579 (56.5%)	17467 (50.5%)	-19.1%
SCI & PROF	1872 (4.9%)	2061 (6.0%)	+10.1%
TECHNICAL	2926 (7.7%)	2895 (8.4%)	-1.1%
TOTAL	38163 (100.0%)	34613 (100.0%)	-9.3%

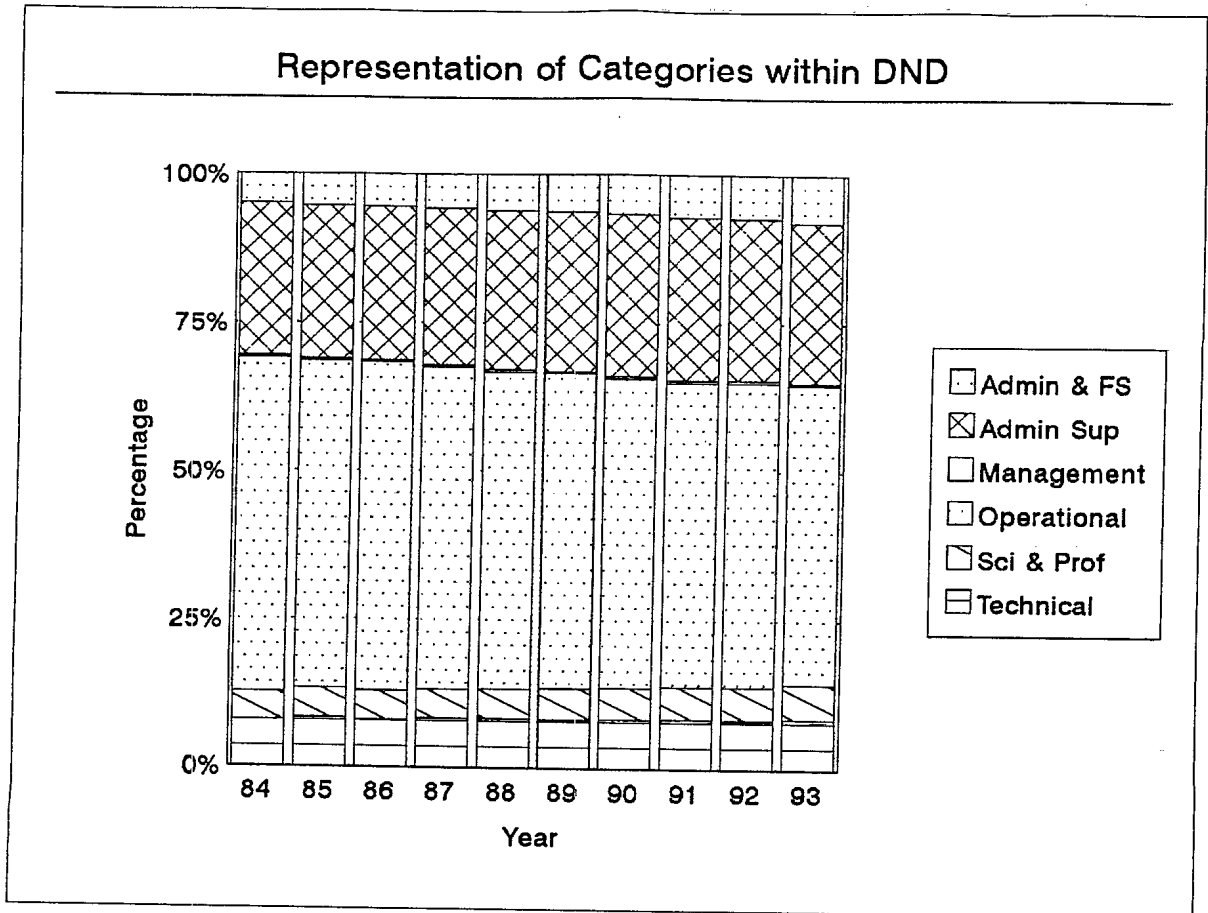


Figure 3 - Civilian DND Strength by Category
(As of 1 Jan. of each year)

Regional Distribution

9. The regional breakdown of civilian personnel in DND indicates a relatively uniform distribution across all regions from 1984 to 1993, as summarized in Table III and shown in Figure 4. The largest region, the Atlantic Region, accounted for almost 25% throughout the period. Only the National Capital Region (NCR) experienced a growth in strength, but only by 4%. Two regions increased proportionally, the NCR and the Atlantic Region, however all proportional changes have been relatively small.

Table III: Regional Breakdown of Civilian DND Population

	STRENGTH 1984	STRENGTH 1993	PERCENT CHANGE
ATLANTIC	8749 (22.9%)	8342 (24.1%)	-4.7%
EASTERN	5712 (15.0%)	4480 (12.9%)	-21.6%
CENTRAL	6954 (18.2%)	5924 (17.1%)	-14.8%
NCR	7004 (18.4%)	7264 (21.0%)	+3.7%
PRAIRIE	5356 (14.0%)	4639 (13.4%)	-13.4%
PACIFIC	4388 (11.5%)	3964 (11.5%)	-9.7%
TOTAL	38163 (100.0%)	34613 (100.0%)	-9.3%

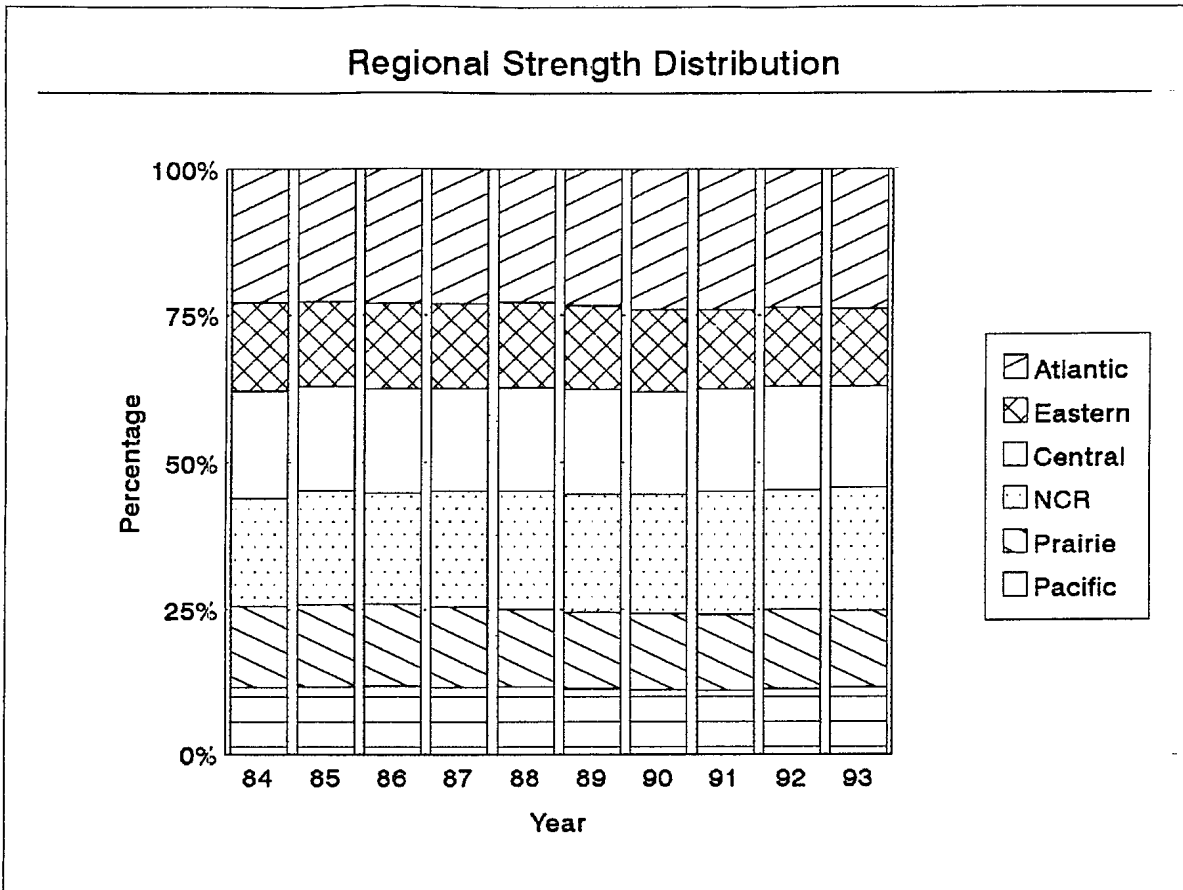


Figure 4 - Civilian DND Strength by Region
(As of 1 Jan. of each year)

Command/Group Principal Distribution

10. Table IV summarizes the strength of the civilian population in DND by Command and Group Principal as of the first of January 1984 and 1993. Whereas the three environmental Commands had varying proportions of the civilian workforce in 1984, with Air Command holding almost 23%, changes in civilian strength resulted in similar proportions (19% to 20%) in all three Commands by 1993. Over the period, Land Forces Command (LFC) saw an increase of more than 11% in the number of civilians, while Air Command saw a substantial reduction of more than 23%. It should also be noted that Canadian Forces Training System (CFTS) saw the largest percentage decrease in civilian strength over the period, almost 40%, while National Defence Headquarters (NDHQ) increased by more than 19%. Interestingly, during the period of study, the proportion of civilians in Assistant Deputy Minister (Materiel) (ADM(Mat)) was comparable to that of individual Commands, while the proportion in Assistant Deputy Minister (Policy and Communications) (ADM(Pol & Comm)) was the smallest in all of DND (Figure 5).

Table IV: Command/Group Principal Breakdown
of Civilian DND Population

	STRENGTH 1984	STRENGTH 1993	PERCENT CHANGE
ADM (FIN)	827 (2.2%)	751 (2.2%)	-9.2%
ADM (MAT)	6859 (18.0%)	6778 (19.6%)	-1.2%
ADM (PER)	2246 (5.9%)	2194 (6.3%)	-2.3%
ADM (POL & COMM)	355 (0.9%)	391 (1.1%)	+10.1%
CFTS	4294 (11.2%)	2601 (7.5%)	-39.4%
CFCC	611 (1.6%)	550 (1.6%)	-10.0%
AIRCOM	8733 (22.9%)	6690 (19.3%)	-23.4%
LFC	5936 (15.5%)	6610 (19.1%)	+11.4%
MARCOM	7348 (19.3%)	6912 (20.0%)	-5.9%
NDHQ	954 (2.5%)	1136 (3.3%)	+19.1%
TOTAL	38163 (100.0%)	34613 (100.0%)	-9.3%

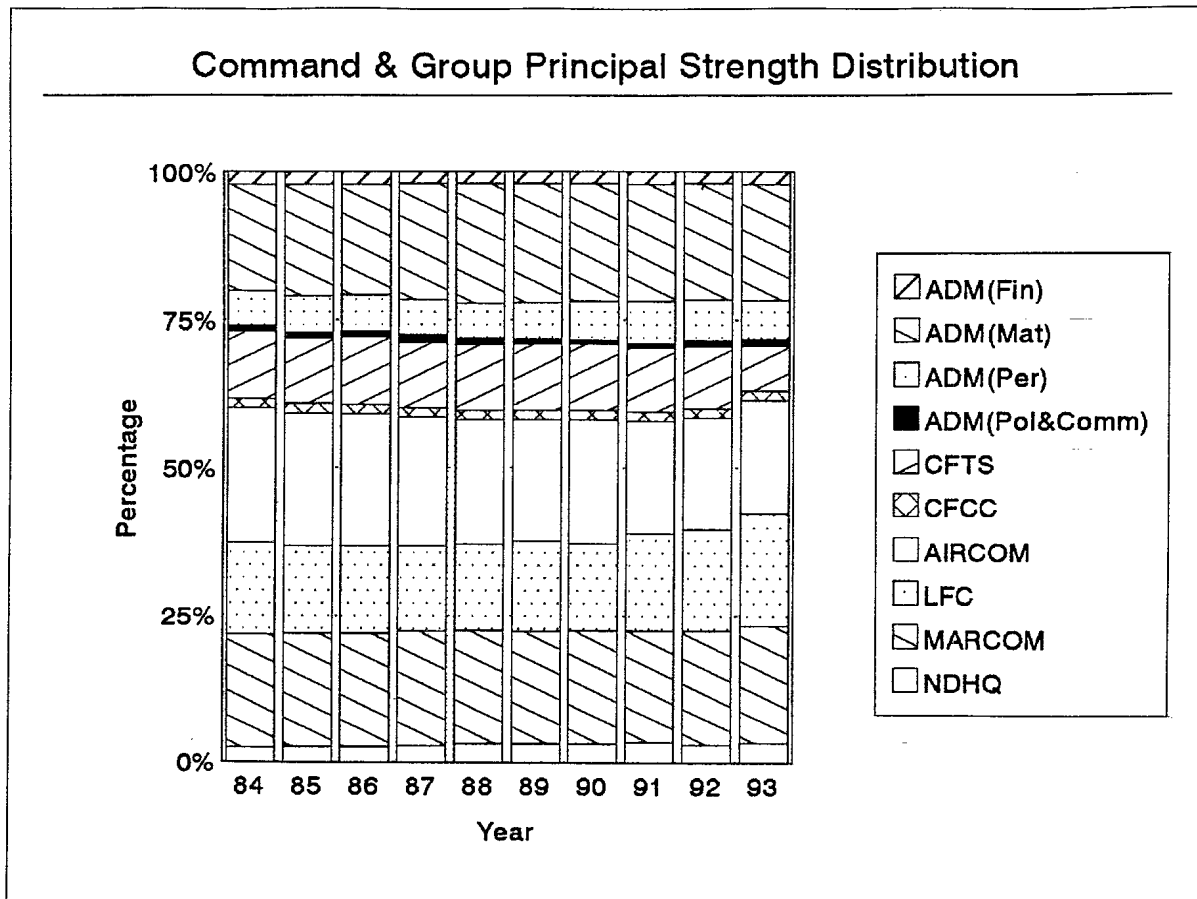


Figure 5 - Civilian DND Strength
by Command/Group Principal
(As of 1 Jan. of each year)

PHASE TWO - STAFFING RELATED FLOWS

Introduction

11. In this study, staffing related flows involved two types of actions:

- a. the recruitment of new employees; and
- b. the internal movement of employees from one position to another.

12. The number of new indeterminate employees taken on strength fell over the period of study, and was a direct result of the reduction in hiring from outside the federal government. On the other hand, the number of internal movements increased substantially, which was the result of a dramatic increase in the number of lateral transfers. Internal movements made up the majority of all staffing related flows.

Flows into the Civilian DND Population

13. For this study of the indeterminate civilian DND population, there were two sources of new employees:

- a. other federal government departments (interdepartmental transfers); and
- b. outside the federal government.

14. The overall reduction in indeterminate strength has been achieved primarily through a large decrease in recruiting. Consequently, the total number of new indeterminate employees taken on strength decreased over the period of study by 39% (Table V). Whereas the number of

interdepartmental transfers was relatively stable (with the exception of a large spike in 1988 and 1989), the number of new indeterminate employees hired from outside the federal government decreased by 50%. As a result, the proportions of new indeterminate employees hired from each source shifted (Figure 6). Although the majority of new indeterminate employees were still hired from outside the federal government, this share of new recruits into DND dropped from 76% in 1983 to 61% in 1992.

Table V: Summary of New Indeterminate Employees in DND

	RECRUITS 1983	RECRUITS 1992	PERCENT CHANGE
OUTSIDE	888 (76.2%)	437 (61.4%)	-50.8%
DEPT TRANSFERS	278 (23.8%)	275 (38.6%)	-1.1%
TOTAL	1166 (100.0%)	712 (100.0%)	-38.9%

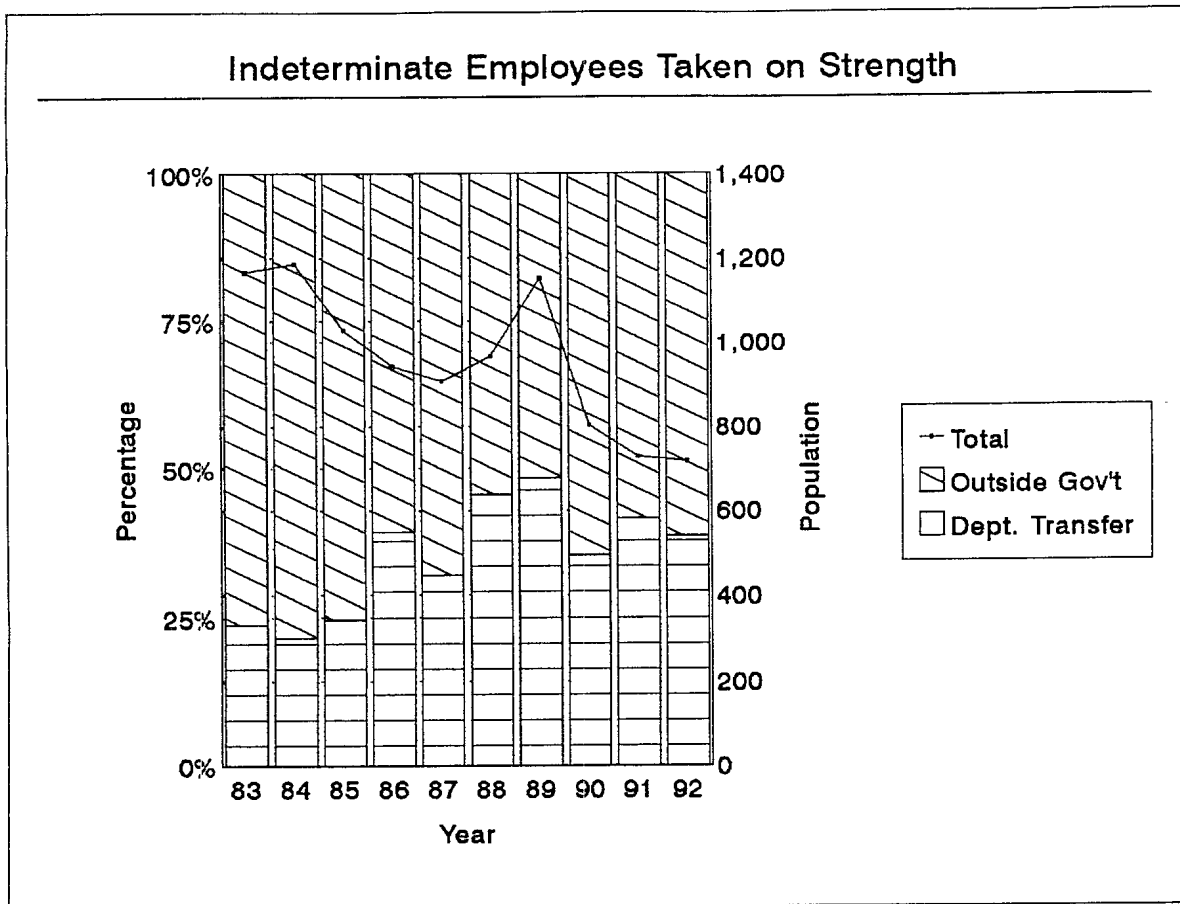
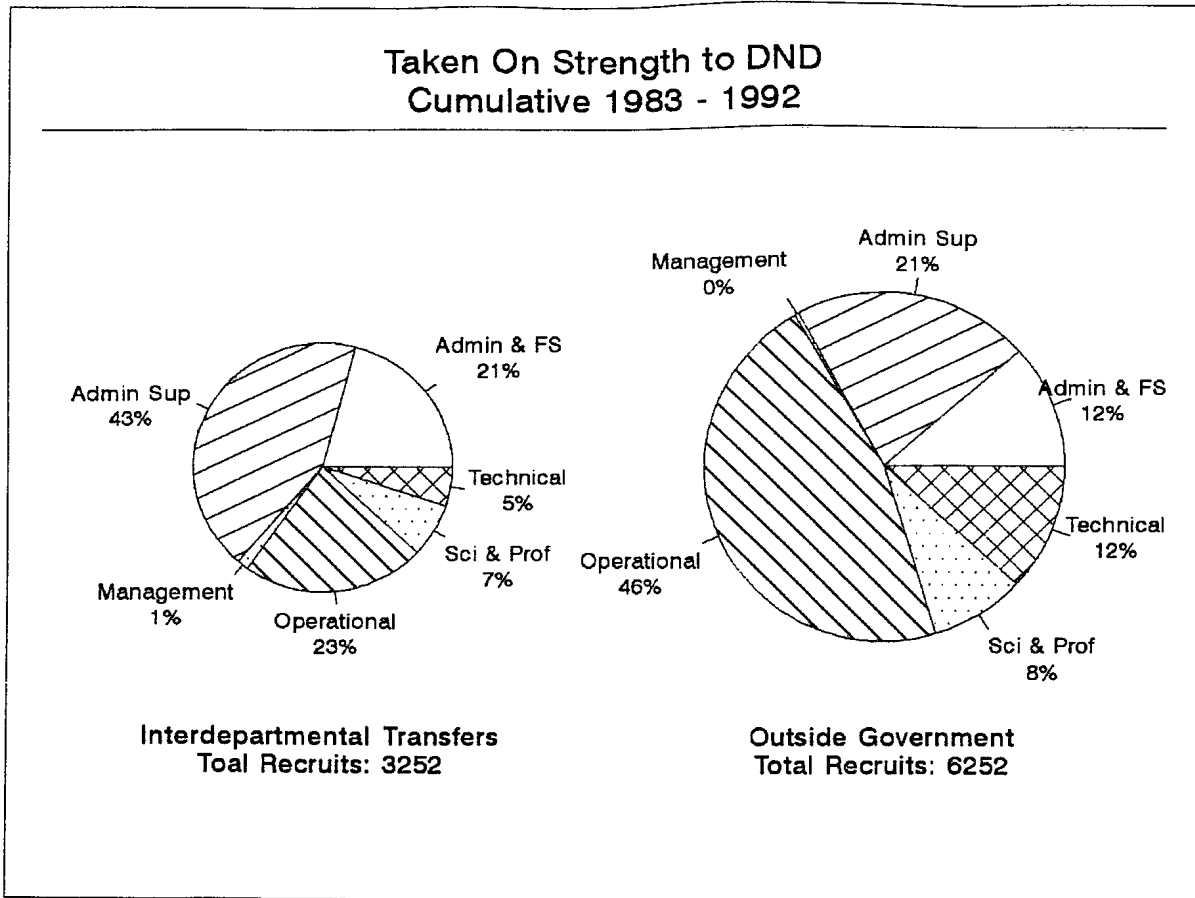


Figure 6 - Indeterminate Civilian DND Employees Taken on Strength

15. The breakdown by category of new indeterminate employees revealed some interesting points. Overall, the majority of new employees were hired into the Operational and Administrative Support (Admin Sup) categories which is not surprising since these are the two largest categories for the civilian DND population (Figure 7). However, the larger percentage entering the Admin & FS and Admin Sup categories through interdepartmental transfers reflects the commonality of these tasks with other government departments. Conversely, the larger percentage entering the Technical and Operational categories from outside the government reflects the opposite.



**Figure 7 - Breakdown of New Indeterminate DND Employees
by Category
(Cumulative 1983 - 1992)**

16. The recruiting rate is a relative measure of the staffing activity associated with recruitment, which compares the level of activity against the base population. With the decreasing trends in recruitment, it is not surprising that the recruiting rate dropped from 3.1% in 1984 to 2.0% in 1992 (Figure 8). The jump in 1988 and 1989 can be attributed to the sudden increase in the number of interdepartmental transfers during those years.

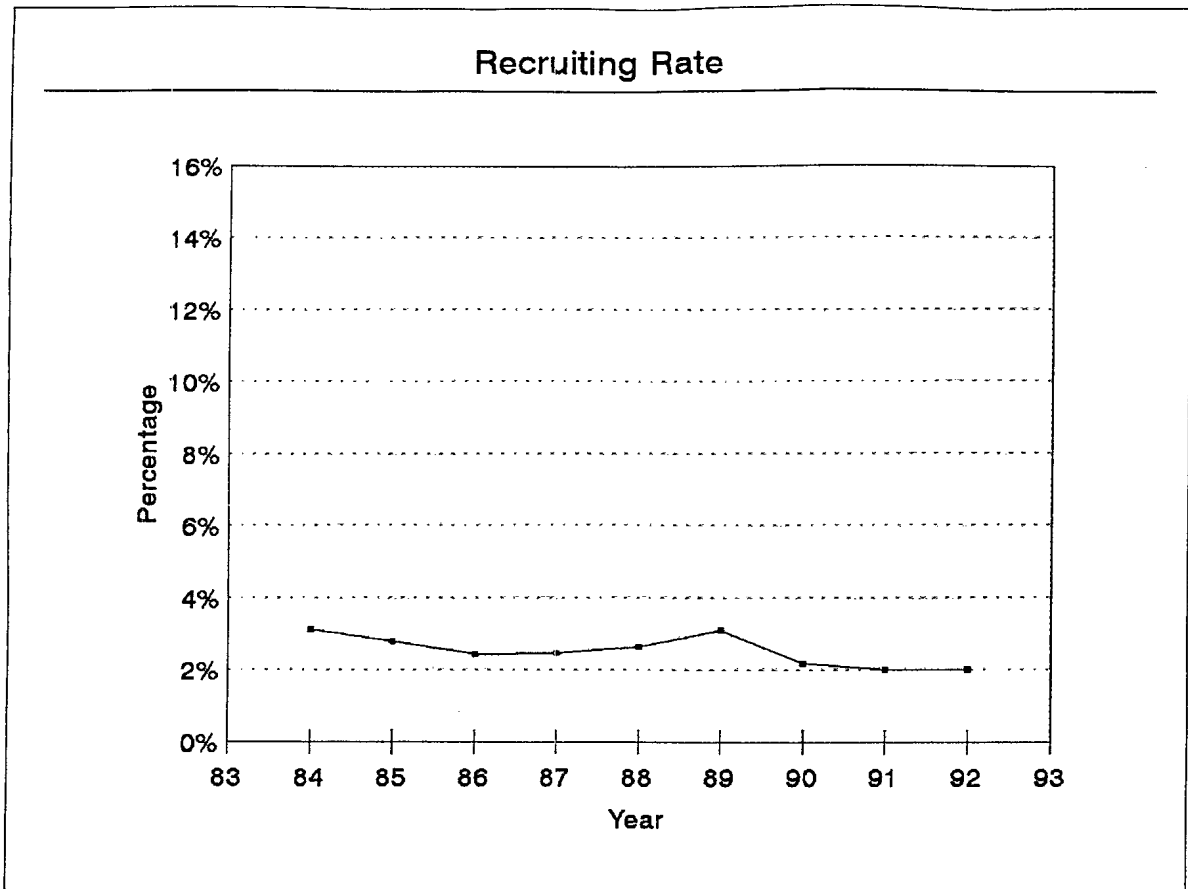


Figure 8 - Recruiting Rate for the Indeterminate Civilian DND Population

Flows within the Civilian DND Population

17. This study examined four types of internal transfers involving the indeterminate civilian DND population:

- a. promotions from one level to another within the same occupational group;
- b. lateral transfers between the same group and level;

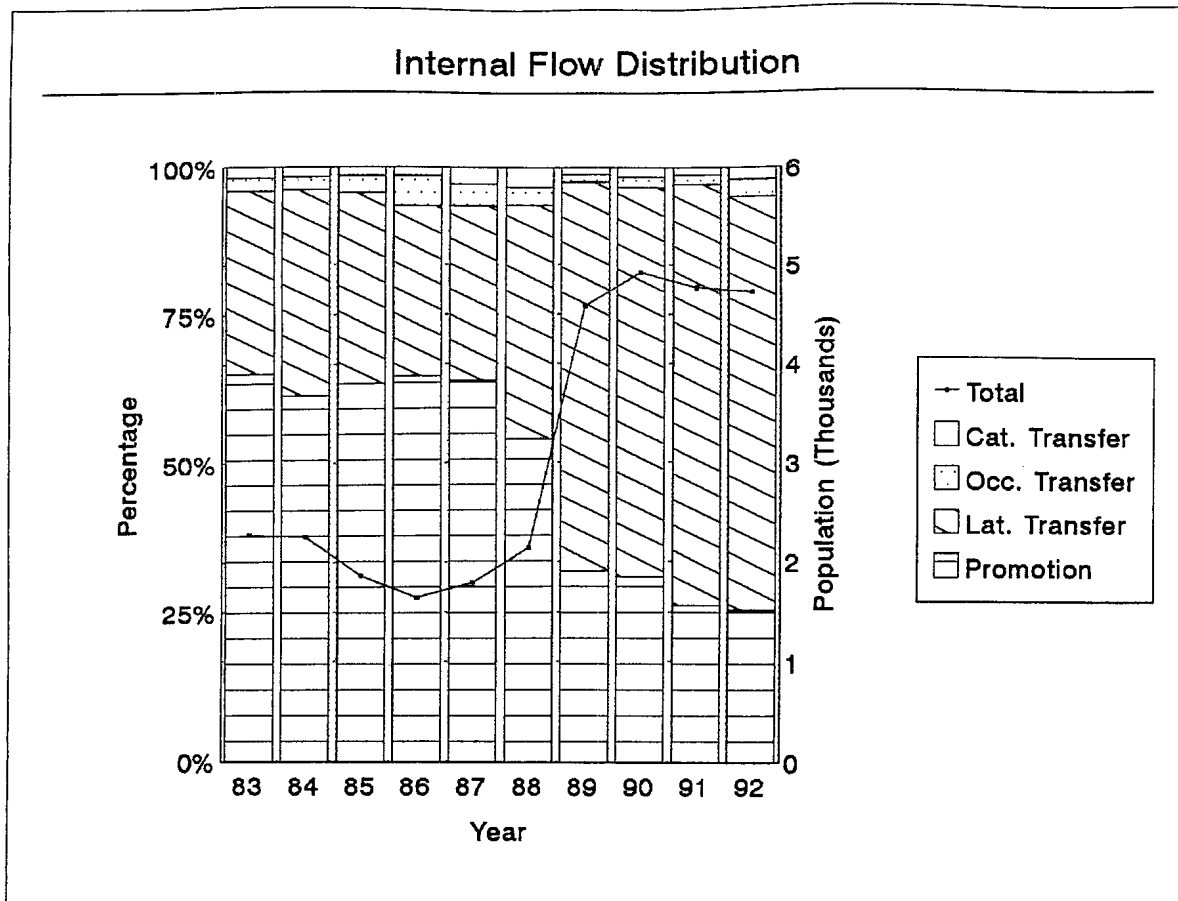
- c. occupational transfers from one group to another within the same category; and
- d. category transfers from one group to another in different categories.

18. For this analysis of internal movements, term employees were only included if they became indeterminate employees after they changed positions or if they were indeterminate employees beforehand.

19. Whereas recruiting decreased over the period of study, the number of internal movements within the civilian DND population increased by over 100%, as summarized in Table VI. Most of this increase was due to a dramatic rise of almost 400% in the number of lateral transfers. It should be noted however that this increase occurred almost entirely in one year, 1989, with the levels having since been maintained (Figure 9). The number of occupational transfers and category transfers also increased, although not as substantially. On the other hand, the number of promotions gradually decreased between 1983 and 1988 and then experienced an increase in numbers in 1989 as did lateral transfers. However, unlike lateral transfers, the number of promotions decreased once again after 1990, resulting in an overall decrease of 20%.

Table VI: Summary of Internal Movements within the Indeterminate Civilian DND Population

	MOVEMENT 1983	MOVEMENT 1992	PERCENT CHANGE
CAT TRANSFERS	44 (1.9%)	95 (2.0%)	+115.9%
OCC TRANSFERS	52 (2.3%)	144 (3.1%)	+176.9%
LAT TRANSFERS	700 (30.8%)	3291 (69.7%)	+370.1%
PROMOTIONS	1477 (65.0%)	1190 (25.2%)	-19.4%
TOTAL	2273 (100.0%)	4720 (100.0%)	+107.7%



**Figure 9 - Internal Flow Distribution
of the Indeterminate Civilian DND Population**

20. As a result of the changes in the number of internal movements, the proportional distribution has also changed. The proportion of promotions decreased from 65% to 25% over the period. Although the reduction in the number of promotions contributed to the decrease in its proportion, the change can be attributed primarily to the dramatic increase in the number of lateral transfers since 1989. Lateral transfers, which accounted for 31% of all internal movements in 1983, increased to 70% in 1992. The proportions of both category and occupational transfers have been consistently small, remaining at approximately 2% over the whole period.

21. A certain percentage of these types of internal movements involved employee status changes or regional movement. Lateral transfers had the highest percentage involving employee status changes from term to indeterminate between 1983 and 1992. More than 30% of all lateral transfers but less than 10% of promotions showed such an employee status change. Even fewer occupational and category transfers involved an employee status change from term to indeterminate - only 5% of occupational transfers and less than 4% of category transfers.

22. Lateral transfers also had the highest percentage involved in regional movement during the period of study - almost 9%. Less than 2.5% of the other types of internal movements were associated with a regional move between 1983 and 1992. The low percentage of regional moves, associated with promotions, occupational and category transfers, is likely a result of the regional restrictions that apply on many competitions. On the other hand, employees wanting a redeployment to a different region, for example to follow a spouse, may be accommodated more readily and could account for the higher percentage of lateral transfers with regional moves.

23. When the internal movements were broken down by the category within or into which they moved, some interesting points arose (Table VII and Figure 10). The largest percentage of promotions and lateral transfers occurred within the Operational category (32% and 50% respectively), while the smallest percentage of these types of internal movements occurred within the Management category (1%). This would be expected since these categories are respectively the largest and smallest in DND. On the other hand, the largest percentage of occupational transfers occurred within the Admin Sup category (47%) and the smallest occurred within the Sci & Prof category (2%). This too would be expected due to the

similarity of the occupations in the Admin Sup category and the specialization that is typical of Sci & Prof occupations. Category transfers into the Admin & FS category accounted for the largest number of all category transfers within the civilian DND population (45%). In general, occupations within the Admin & FS category do not require skills as specialized as occupations in such categories as Operational or Sci & Prof. Category transfers into the Admin & FS category also represent an upward career move for those in the Admin Sup occupations.

Table VII: Summary of Internal Movements within the Indeterminate Civilian DND Population by Category (Cumulative 1983 - 1992)

	PROMOTIONS	LATERAL TRANSFERS	OCCUPATIONAL TRANSFERS	CATEGORY TRANSFERS (INTO)
ADMIN & FS	12%	10%	16%	45%
ADMIN SUP	31%	31%	47%	8%
MANAGEMENT	1%	1%	10%	7%
OPERATIONAL	32%	50%	17%	5%
SCI & PROF	10%	4%	2%	12%
TECHNICAL	14%	4%	8%	23%
TOTAL	100%	100%	100%	100%

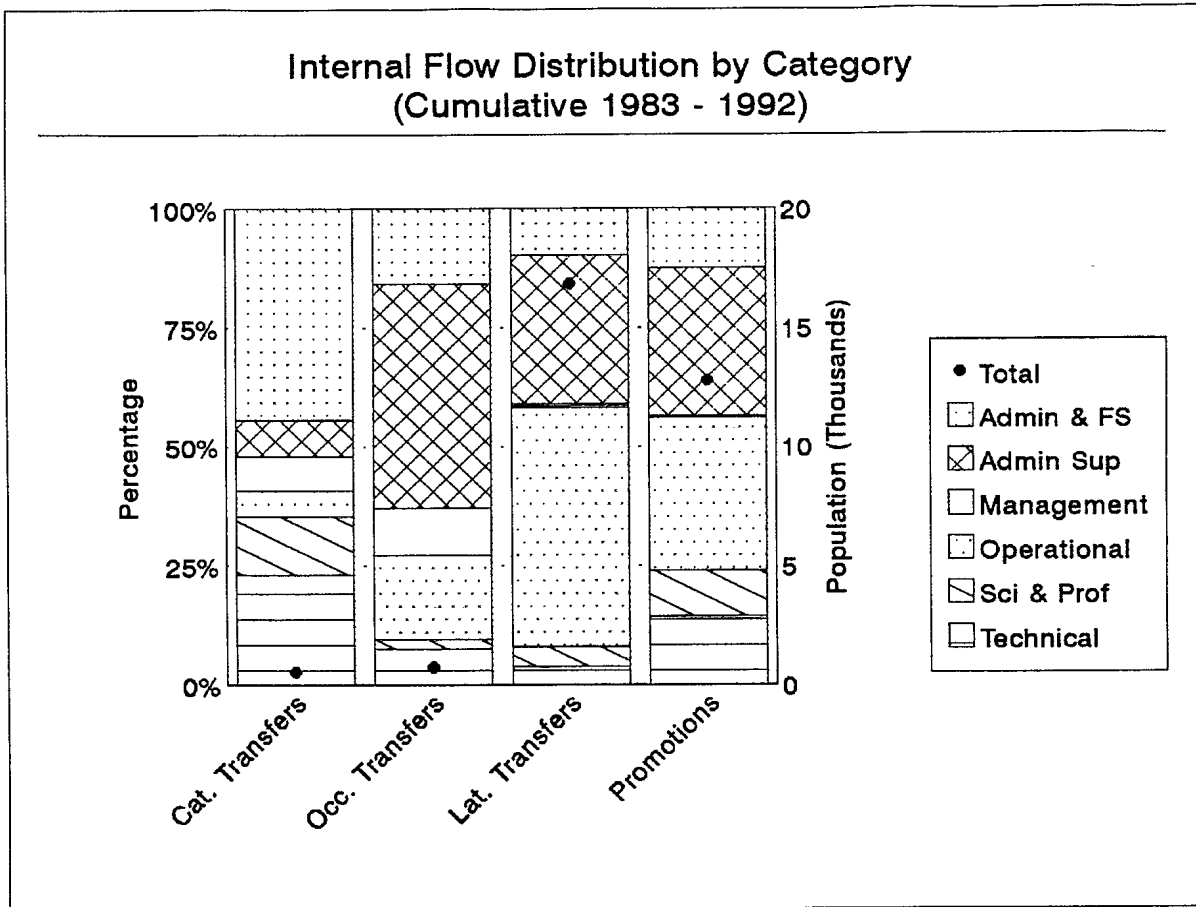
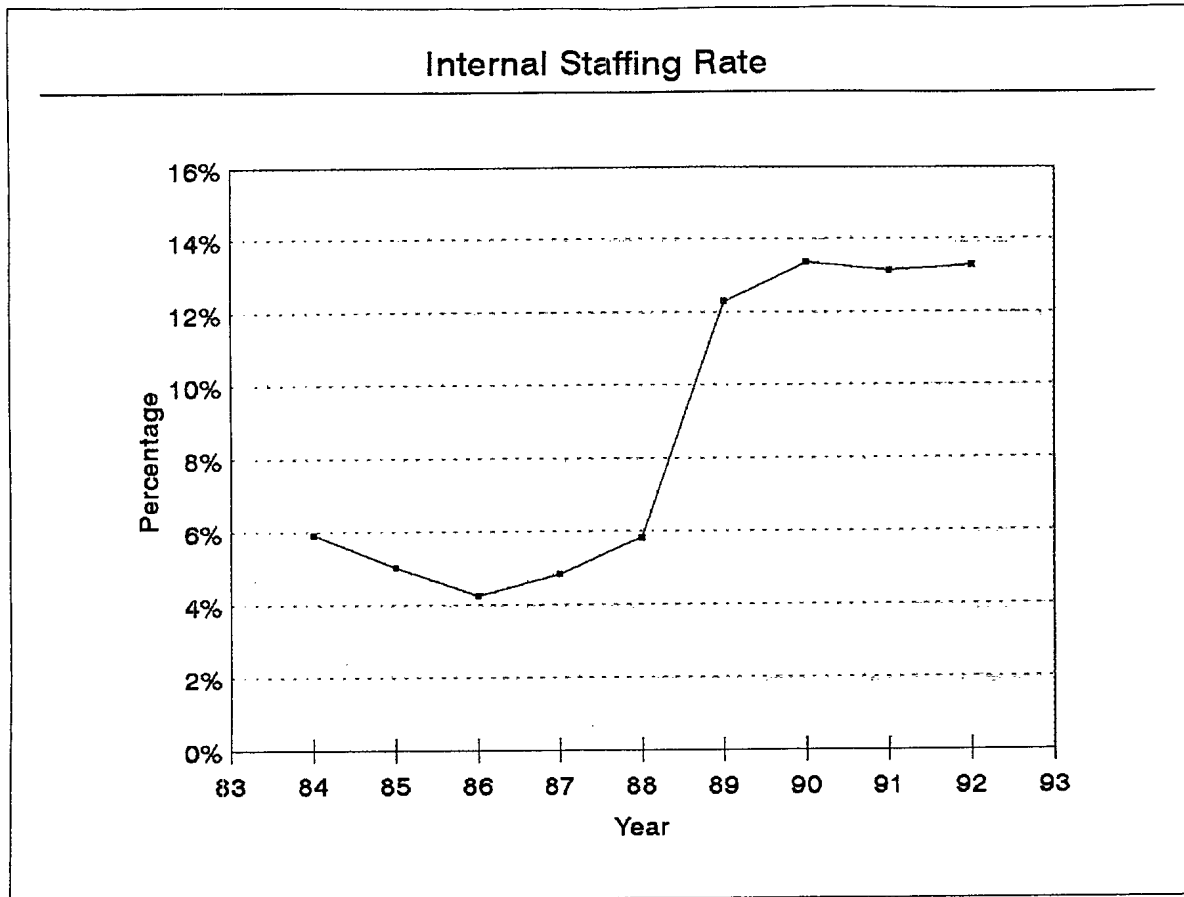


Figure 10 - Breakdown of Internal Movements within the Indeterminate Civilian DND Population by Category (Cumulative 1983 - 1992)

24. The internal staffing rate is a representative measure of the staffing activity associated with internal movement, which compares the level of activity against the base population. As a result of the large increase in the number of internal movements within DND, the internal staffing rate increased substantially from 5.9% in 1984 to 13.3% in 1992 (Figure 11). The dramatic jump since 1989 reflects the substantial increase in the number of lateral transfers.



**Figure 11 - Internal Staffing Rate
for the Indeterminate Civilian DND Population**

Total Staffing Related Flows

25. Comparing recruiting flows with internal staffing flows, it can be seen that internal staffing accounted for the majority of all staffing actions for the indeterminate population in DND over the period of study (Table VIII & Figure 12). With the decrease in the number of new employees and the increase in the number of internal transfers, the proportion of internal movements increased, from 66% of all staffing actions in 1983 to 87% in 1992.

Table VIII: Summary of Total Staffing Flows in the Indeterminate Civilian DND Population

	STAFFING 1983	STAFFING 1992	PERCENT CHANGE
INTERNAL MOVEMENT	2273 (66.1%)	4720 (86.9%)	+107.7%
RECRUITMENT	1166 (33.9%)	712 (13.1%)	-38.9%
TOTAL	3439 (100.0%)	5432 (100.0%)	+58.0%

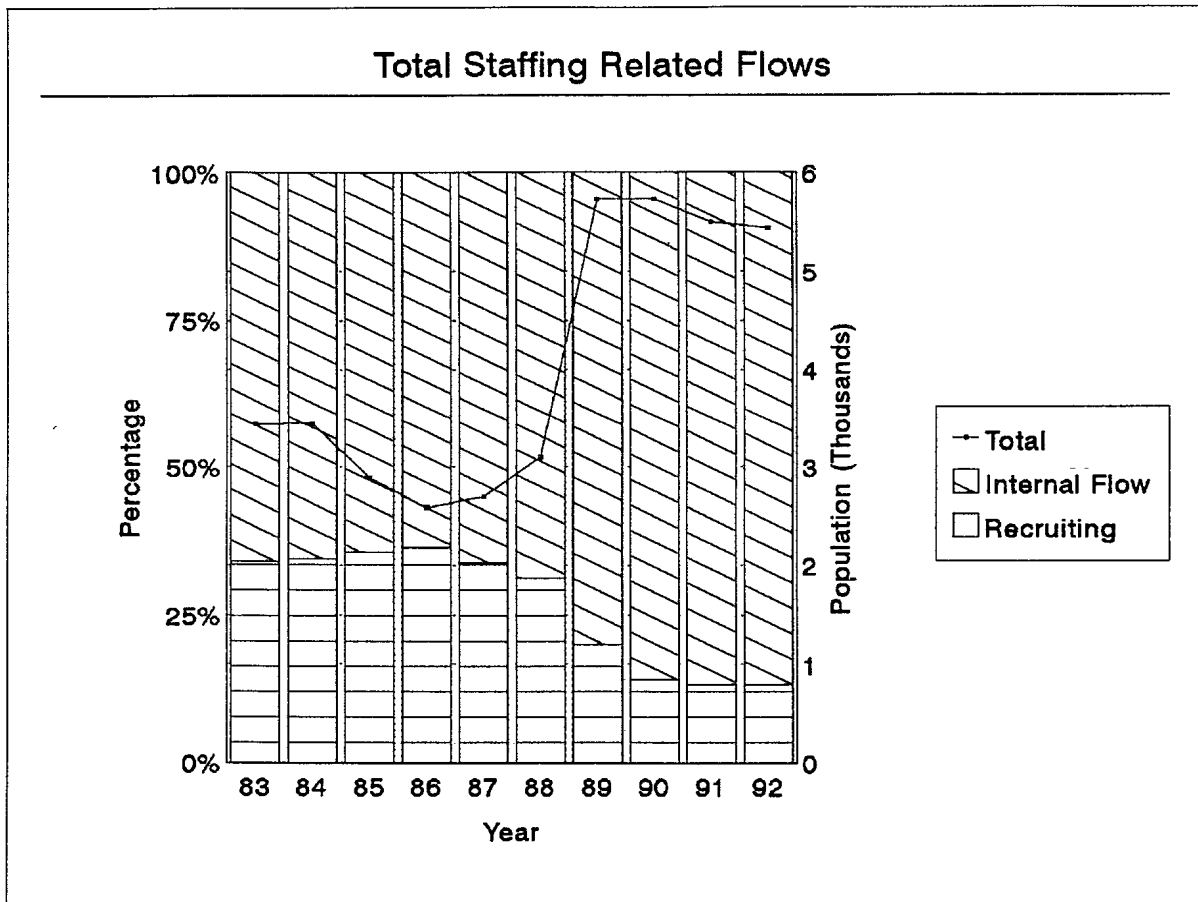


Figure 12 - Total Staffing Related Flow Distribution for the Indeterminate Civilian DND Population

26. The total staffing rate is a representative measure of the staffing activity as a whole (recruitment and internal movement). The overall staffing rate, influenced mostly by the internal staffing rate, increased from 9% in 1983 to more than 15% in 1992 (Figure 13).

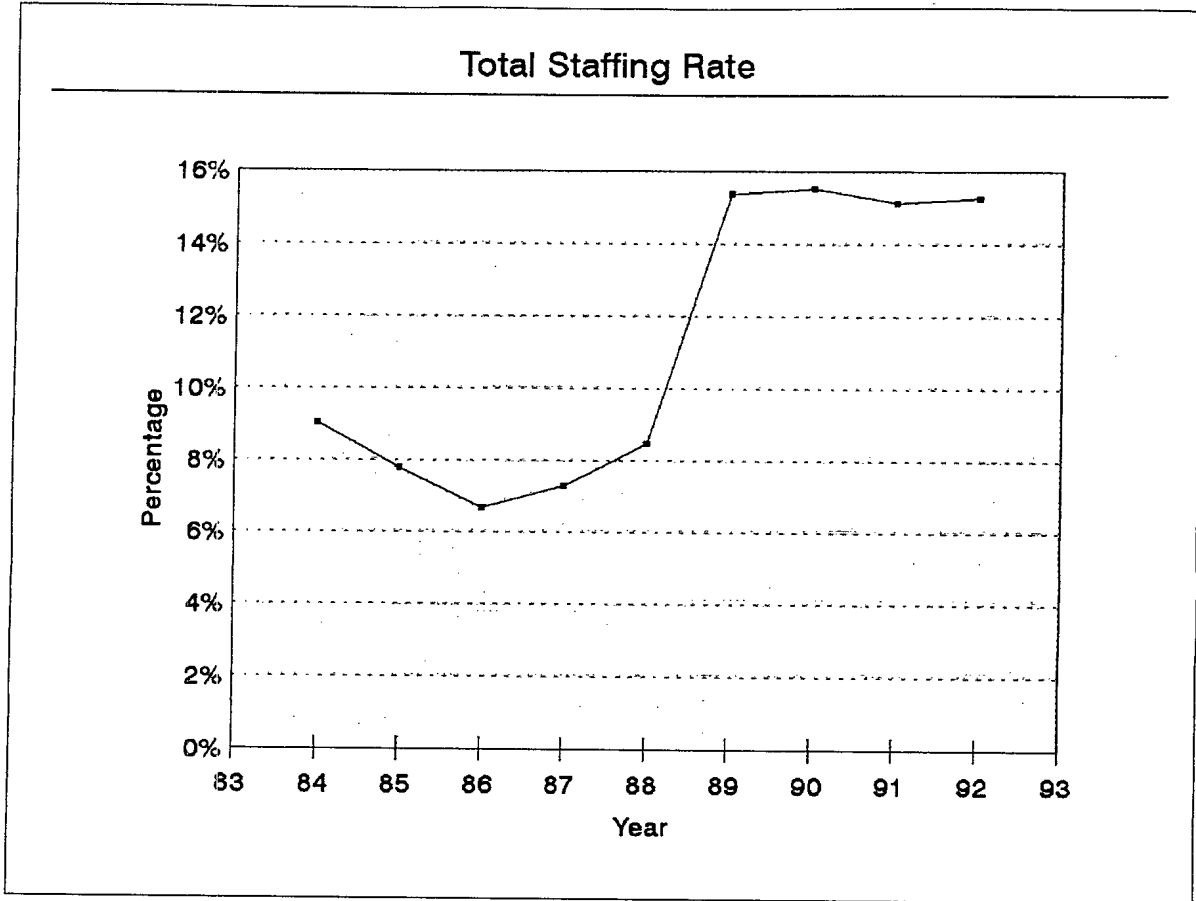


Figure 13 - Total Staffing Rate for the Indeterminate Civilian DND Population

PHASE THREE - ATTRITION RELATED FLOWS

Introduction

27. Indeterminate civilian DND employees leave the department for a variety of reasons. This phase of the analysis grouped all struck off strength (SOS) reasons for indeterminate civilian DND employees into five categories:

- a. transfers to other federal government departments (interdepartmental transfers);
- b. all types of retirement combined;
- c. employment outside the federal government;
- d. lay-offs; and
- e. all other reasons combined (incl. resignation, death, etc.)

28. The total number of indeterminate civilian DND releases increased from 1983 to 1988 but subsequently fell 17% below 1983 levels by 1992. Lay-offs and interdepartmental transfers increased, whereas retirements, which make up the majority of releases, decreased.

Flows Out of the Civilian DND Population

29. A breakdown of the SOS reasons is presented at Table IX. Despite a decrease in the number of indeterminate employees retiring from DND over the period under study, retirements still accounted for more than half of all releases. Although initially small in number, lay-offs have dramatically increased, by almost twenty-fold. From Figure

14, it can be seen that the proportion of lay-offs was relatively small from 1983 to 1989 but increased substantially in 1991. Interestingly, interdepartmental transfers increased more than 50% to the point where they accounted for 12% of all releases from DND in 1992. It is anticipated that this trend will not continue as other government departments experience further budgetary constraints. Leaving for outside employment accounted for less than 5% of indeterminate civilian releases from DND.

Table IX - Summary of Indeterminate Releases from DND

	RELEASES 1983	RELEASES 1992	PERCENT CHANGE
DEPT TRANSFERS	149 (6.6%)	228 (12.1%)	+53.0%
RETIREMENT	1311 (57.8%)	1005 (53.4%)	-23.3%
OUTSIDE EMPL.	82 (3.6%)	88 (4.7%)	+7.3%
LAY-OFFS	13 (0.6%)	224 (11.9%)	+1623.1%
OTHER	715 (31.5%)	338 (18.0%)	-52.7%
TOTAL	2270 (100.0%)	1883 (100.0%)	-17.0%

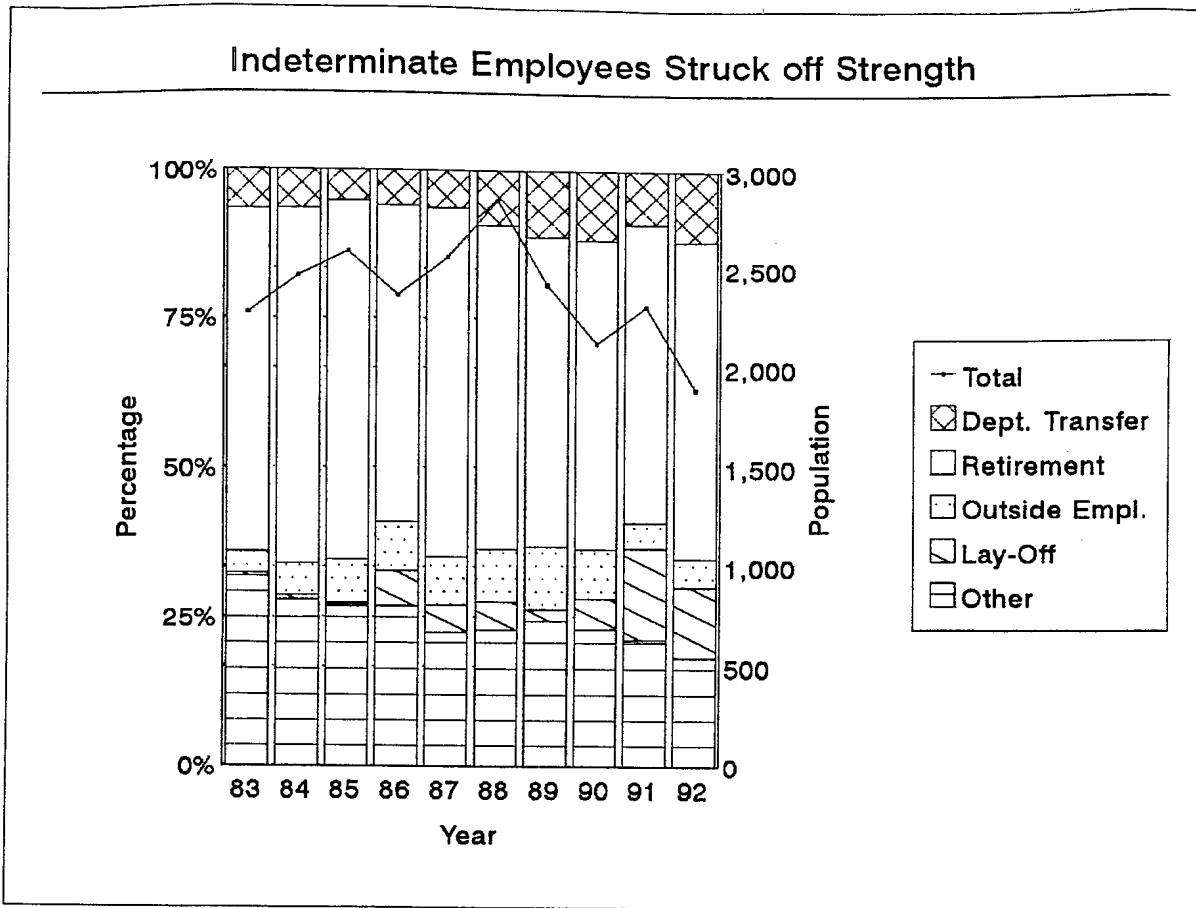


Figure 14 - Indeterminate Civilian DND Employees Struck Off Strength

30. The breakdown by category of indeterminate civilian releases from DND revealed some interesting points (Table X and Figure 15). The largest percentage leaving due to retirement, employment outside the federal government, lay-offs, and all other reasons combined were from the Operational category, which is not surprising since the Operational category is the largest category in DND. On the other hand, the largest percentage of transfers to other federal government departments was from the Admin Sup category, reflecting the transferability of job skills in that category. Indeterminate employees leaving DND from the Management

category accounted for the smallest proportion of all SOS reasons.

**Table X: Summary of Indeterminate Releases by Category
(Cumulative 1983 - 1992)**

	DEPT TRANSFERS	RETIREMENT	OUTSIDE	LAY-OFF	OTHER
ADMIN & FS	24%	6%	8%	9%	5%
ADMIN SUP	52%	18%	25%	22%	33%
MNGMT	1%	1%	0%	1%	0%
OPER	12%	63%	51%	56%	54%
SCI & PROF	6%	3%	9%	4%	3%
TECHNICAL	5%	9%	7%	8%	5%
TOTAL	100%	100%	100%	100%	100%

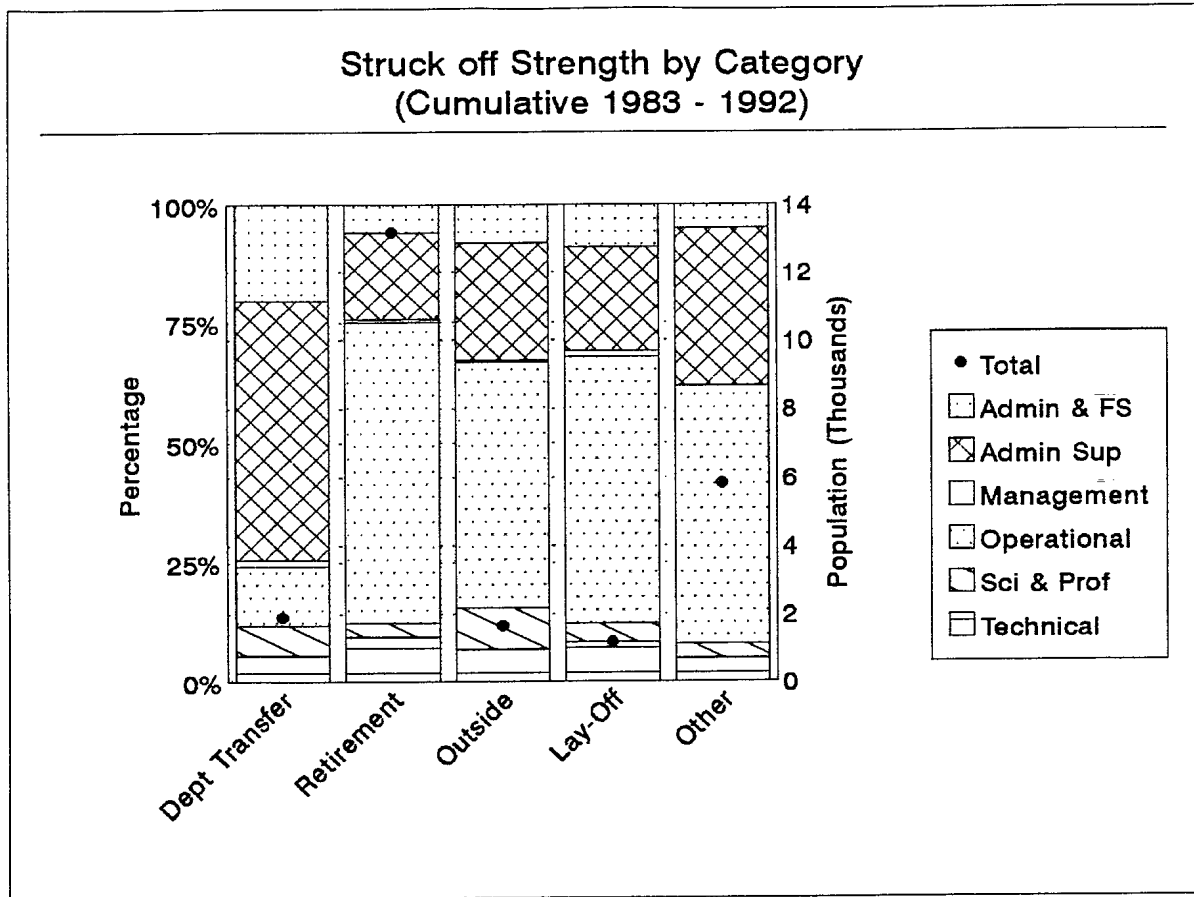


Figure 15 - Breakdown of Release Reasons by Category
(Cumulative 1983 - 1992)

31. The attrition rate is a representative measure of releases, which compares the level of activity against the base population. With the decrease in the number of people leaving DND, there has been a corresponding drop in the attrition rate (Figure 16). The attrition rate dropped from 6.4% in 1984 to 5.3% in 1992. Over this period, the attrition rate was relatively stable without the large fluctuations seen in the staffing flows. With the anticipated reductions in civilian DND personnel, it is expected that the attrition rate will increase substantially in the next few years.

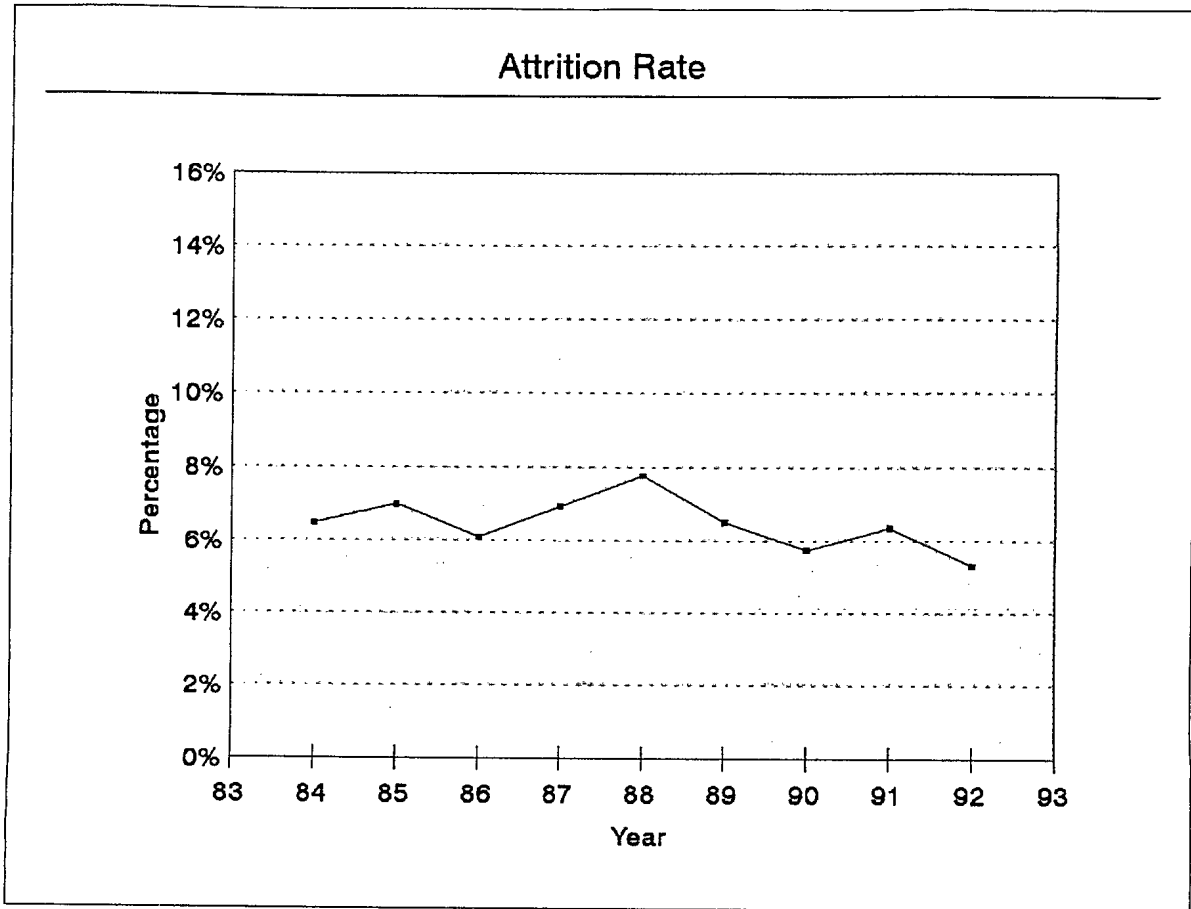


Figure 16 - Attrition Rate for the Indeterminate Civilian DND Population

PART III - SUMMARY AND CONCLUSION

32. From this historical trend analysis it was seen that the civilian DND population as a whole decreased over the period of study. Whereas the number of indeterminate employees dropped, the number of TERMS≥6MOS increased substantially. The overall reduction in indeterminate strength was achieved primarily through a large decrease in recruiting. Internal movement of indeterminate employees within the department increased dramatically as a result of a massive increase in the number of lateral transfers since 1988. Over the period of study, the attrition rate for indeterminate employees decreased slightly. However it is expected that, with the anticipated reductions in civilian DND personnel, the attrition rate will increase in the next few years.

33. This study provides a macro view of the career patterns and flow dynamics of the civilian DND population as a whole. Using the same approach, there will be subsequent papers which will focus on the individual occupational categories within DND. While these studies will provide insights into the overall behaviour of individuals in each of the categories, a similar methodology could also be used to study the characteristics of each type of flow.

34. Historical trend analyses such as these are useful in a variety of areas. They identify possible problem areas in the career patterns of civilian employees. They also provide background for formulating personnel policies. This type of information is also essential in identifying the important factors to be considered in developing a model for forecasting.

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METHODOLOGY

DATA EXTRACTION

1. This study of the civilian DND population was based on yearly historical data from 1983 to 1993, obtained from the Civilian Personnel Information System (CPIS) in the form of summary reports. Data for 1994 was not available at the time of publication due to the conversion to the Civilian Personnel Management Information System (CPMIS).

2. For analysis which involved first of January "snapshots" of the civilian DND population for each year, the years 1983 and 1994 were excluded because civilian strength data were not available for these dates. The first of January was used in the analysis to avoid the inflated numbers during the summer months due to the increase in the number of casual workers.

3. For analysis which involved flows occurring during each year, the year 1993 was excluded because information on all of 1993 was not available at the time of this study. The data were based on the calendar year for commonality with other studies and for ease of analysis.

4. Due to the restriction on data availability, analysis that used rates, defined as a level of activity over a calendar year divided by the base population at the beginning of that year, excluded both 1983 and 1993.

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PHASES OF ANALYSIS

5. The analysis was broken down into three phases:
- a. Phase One - Population Trends;
 - b. Phase Two - Staffing Related Flows; and
 - c. Phase Three - Attrition Related Flows.

Phase One: Population Trends

6. Phase One of the study initially examined the strength data as of the first of January from 1984 to 1993 for the civilian DND population broken down by employee status which included:

- a. indeterminate employees;
- b. term employees contracted for at least six months (TERMS≥6MOS); and
- c. term employees contracted for less than six months (TERMS<6MOS).

7. The strength data were also broken down by occupational category, geographic region and Command/Group Principal. The occupational categories included:

- a. Administrative and Foreign Service (Admin & FS);
- b. Administrative Support (Admin Sup);

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- c. Management;
 - d. Operational;
 - e. Scientific and Professional (Sci & Prof); and
 - f. Technical.
8. The geographic regions used in this study included:
- a. Atlantic, covering the Atlantic provinces;
 - b. Eastern, covering Quebec;
 - c. Central, covering Ontario but not the National Capital Region (NCR);
 - d. NCR, covering only the National Capital Region;
 - e. Prairie, covering the Prairie provinces; and
 - f. Pacific, covering British Columbia.
9. The Command/Group Principals included:
- a. Assistant Deputy Minister (Finance) (ADM(Fin));
 - b. Assistant Deputy Minister (Materiel) (ADM(Mat));
 - c. Assistant Deputy Minister (Personnel) (ADM(Per));

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- d. Assistant Deputy Minister (Policy and Communications) (ADM(Pol & Comm));
- e. Air Command (AIRCOM);
- f. Canadian Forces Communication Command (CFCC);
- g. Canadian Forces Training System (CFTS);
- h. Land Forces Command (LFC);
- j. Maritime Command (MARCOM); and
- k. all other National Defence Headquarters (NDHQ) units combined (NDHQ).

Phase Two: Staffing Related Flows

10. Phase Two of the study examined two types of staffing actions:

- a. the recruitment of new employees into DND; and
- b. the internal movement of civilian DND employees from one position to another.

11. There is another type of staffing action - that involving an employee who changes employment status while remaining in the same position. However, consistent historical data were not available for this type of staffing action so it was excluded from the study.

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12. Flows into the Civilian DND Population This part of Phase Two examined the recruitment of new employees into the indeterminate civilian DND workforce from 1983 to 1992 inclusively. The analysis was restricted to flows into the indeterminate population to avoid the cyclical patterns of term employment.

13. The analysis provides historical trends on the composition of recruits coming into DND and the corresponding recruiting rate. For this study there were two sources of new employees:

- a. other federal government departments (interdepartmental transfers); and
- b. outside the federal government.

14. Recruiting rates provide a relative measure of the importance of recruiting over time. Understandably, one would expect the volume of recruits to be related to the size of the Department, i.e. as the Department reduces in size so will the number of recruits. Recruiting rates attenuate the impact of strength fluctuations. They were calculated by dividing the number of new indeterminate employees hired during a given year by the strength of the total civilian DND population at the beginning of that year.

15. Flows within the Civilian DND Population This part of Phase Two analyzed the internal movements of the indeterminate civilian DND population from 1983 to 1992 inclusively. Term employees were included in this part of the analysis if they became indeterminate employees after they

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changed positions or if they were indeterminate employees before they changed positions. Term employees changing only positions but not their employment status were excluded.

16. The analysis focused on the composition of the internal flows as well as the internal staffing rate. The following internal flows were examined:

- a. promotions from one level to another within the same occupational group;
- b. lateral transfers between the same occupational group and level;
- c. occupational transfers from one group to another within the same category; and
- d. category transfers from one group to another in different categories.

17. Internal staffing rates were calculated to provide a relative measure of the flows within the civilian DND population over time. They are defined as the number of internal movements involving the indeterminate civilian DND population over a given year divided by the total strength at the beginning of that year.

18. Total Staffing Related Flows This last part of Phase Two compared the proportion of recruitment with internal movement for the civilian DND population. Total staffing rates were also calculated by dividing the total number of staffing actions involving indeterminate employees

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(recruitment and internal flows) during a given year by the total civilian DND strength at the beginning of that year.

Phase Three: Attrition Related Flows

19. This phase of the study examined the flows out of the indeterminate civilian DND population from 1983 to 1992 inclusively. The analysis was restricted to flows out of the indeterminate population once again to avoid the cyclical nature of term employees.

20. In particular, Phase Three focused on the composition of releases and the overall attrition rate. The analysis separated the attrition related flows in the following way:

- a. transfers to other federal government departments (interdepartmental transfers);
- b. retirement (all types combined);
- c. employment outside the federal government;
- d. lay-offs; and
- e. all other reasons combined (including resignations, personal reasons, dismissal, etc.).

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21. Attrition rates, defined as the number of indeterminate civilian employees leaving DND over a given year divided by the total strength at the beginning of that year, were calculated to provide a relative measure of the importance of releases from the civilian DND population.

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This historical trend study of flow dynamics is intended to provide an understanding of the career patterns of the civilian population in the Department of National Defence (DND) in terms of the types of flows involved and their significance. The analysis shows the effect of policies, such as government cutbacks, on:

- a. population trends;
- b. staffing related flows; and
- c. attrition related flows.

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