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AN EXAMINATION OF OFFICER RETENTION AND CAREER PROGRESSION ACCORDING TO
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DEPARTMENT OF NATIONAL DEFENCE
CANADA



OPERATIONAL RESEARCH AND ANALYSIS
DIRECTORATE OF MANPOWER ANALYSIS

PROJECT REPORT 649

**AN EXAMINATION OF
OFFICER RETENTION AND CAREER PROGRESSION
ACCORDING TO DIFFERENT COMMISSIONING PLANS
WITHIN THE CANADIAN FORCES
VOLUME II: ANALYSIS OF OCCUPATIONAL GROUPS**

by

P. Bender
A. Chouinard
Capt A.D. Lee
L. Tanner
S. Tseng

December 1993

OTTAWA, CANADA



Operational Research and Analysis

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OPERATIONAL RESEARCH AND ANALYSIS
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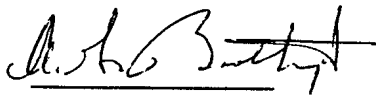
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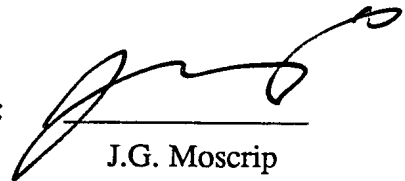
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OTTAWA, CANADA

DECEMBER 1993

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Mrs. Rosemary Bender, MSc (Math), Senior Population Analyst in Statistics Canada, was consulted during the analysis of career progression and retention. Her comments were much appreciated by the authors.

ABSTRACT

The Minister of National Defence created the "Committee on the Canadian Military Colleges" to examine the return on investment for the Canadian Forces (CF) of the Canadian Military College (CMC) system. The Directorate of Manpower Analysis was to analyze officer career progression and retention in specific military occupations with particular attention to whether the officer attended a CMC.

The promotion characteristics and retention profiles for CF officers are examined in this project report according to the commissioning plan by which the serving officer joined the regular force component. In addition, graduates under the regular officer training plan from the CMC system are compared against those that have attended civilian universities.

This project report is broken into three volumes. Volume I contains the detailed analysis of CF officers as a whole followed by a discussion on the overall study results. Volume II contains the detailed analysis of each of the MOC groups examined, and Volume III contains the detailed analysis of each of the individual MOCs studied.

RÉSUMÉ

Le ministre de la défense nationale a mis sur pied "le comité ministériel sur les Collèges militaires du Canada" afin d'examiner l'apport aux Forces canadiennes (FC) du système des collèges militaires. La Direction d'Analyse des Effectifs dut analyser la progression de carrière des officiers et leur rétention dans certaines occupations en prenant soin de distinguer les officiers gradués des collèges militaires.

Dans ce rapport de projet les tendances dans les taux de promotion et les caractéristiques de rétention dans les FC sont examinées selon les programmes de formation pour officiers de la force régulière. De plus, une comparaison est faite entre les officiers gradués des universités civiles et ceux des collèges militaires.

Ce rapport de projet est divisé en trois volumes. Volume I contient l'analyse détaillée sur les officiers des FC suivi d'une discussion sur les résultats globaux de l'étude. Volume II contient l'analyse détaillée de chaque regroupement de GPM, et Volume III porte sur l'analyse détaillée des GPM individuels.

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TERMINOLOGY

For the purposes of this report, the following definitions apply:

Attrition Rate: A ratio, the numerator consisting of all releases from the trained strength of a group of officers in the Canadian Forces (CF) within a period; the denominator consisting of the trained effective strength of that group at the beginning of the period.

Canadian Military Colleges: The system of military colleges in Canada that consists of: the Royal Military College (RMC) in Kingston, Ontario; Royal Roads Military College (RRMC) in Victoria, British Columbia; and le Collège Militaire Royal (CMR) de Saint-Jean, Québec.

Eligibility Rate: A ratio, the numerator consisting of all individuals eligible for promotion out of a given rank; the denominator consisting of the total for that rank. It is calculated at a specific point in time.

Experience Profile: The distribution of the trained effective strength of a group of officers in the CF by years of commissioned service or by years of service.

Promotion Rate: A ratio, the numerator consisting of the number of officers promoted out of a given rank within a period; the denominator consisting of the eligible strength at the beginning of the period.

Retention Profile: A graph that depicts the survival probability of a group of officers as a function of experience measured by years of commissioned service or by years of service.

Time in Previous Rank Profile: Within the specific officer group being examined, it is the distribution of the strength of that group by the time spent in the previous rank.

Time in Rank Profile: Within the specific officer group being examined, it is the distribution of the strength of that group by the time spent in the current rank.

ABBREVIATIONS

AERE	Aerospace Engineering - MOC 41
ADM(Per)	Assistant Deputy Minister (Personnel)
air ops	Air Operations
ANAV	Air Navigator - MOC 31
ARMD	Armoured - MOC 21
ARTY	Artillery - MOC 22
ATC	Air Traffic Control - MOC 63
AWC	Air Weapons Control - MOC 64
Capt	Captain
Capt(N)	Captain (Navy)
CELE	Communications and Electronic Engineering - MOC 42
Cdr	Commander
CF	Canadian Forces
CFR	Commissioned From the Ranks
CMC	Canadian Military Colleges
CMR	Collège Militaire Royal
Col	Colonel
CPRM	Chief Personnel Policy Planning and Resource Management
CRA	Compulsory Retirement Age
DEO	Direct Entry Officer
DEOD	Direct Entry Officer with a Degree
DEOP	Direct Entry Officer with a Diploma
DGPP	Director General Personnel Policy
D Man A	Directorate of Manpower Analysis
DND	Department of National Defence
FRP	Forces Reduction Plan
Gen	General
HG	Harvard Graphics (Registered Trade Mark)
IE	Intermediate Engagement
INF	Infantry - MOC 23
INT	Intelligence - MOC 82

IPS	Indefinite Period of Service
LCdr	Lieutenant-Commander
LCol	Lieutenant-Colonel
LDO	Limited Duty CFR Officer
LEME	Land Electrical and Mechanical Engineering - MOC 43
LOG	Logistics - MOC 69
Lt	Lieutenant
Lt(N)	Lieutenant (Navy)
Maj	Major
MARE	Maritime Engineering - MOC 44
MARS	Maritime Surface and Sub-Surface - MOC 71
MCMC	Ministerial Committee on the Canadian Military Colleges
MILE	Military Engineering - MOC 45
MND	Minister of National Defence
MOC	Military Occupation
MPIS	Military Personnel Information System
NCM	Non-Commissioned Member
NDHQ	National Defence Headquarters
OCDP	Officer Career Development Plan
OCTP	Officer Cadet Training Plan
OCTPC	Officer Cadet Training Plan from Civilian Status
OCTPM	Officer Cadet Training Plan from Military Status
OPI	Office of Prime Interest
PADM	Personnel Administration - MOC 68
PLT	Pilot - MOC 32
RETP	Reserve Entry Training Plan
RMC	Royal Military College
ROTP	Regular Officer Training Plan
RRMC	Royal Roads Military College
SE	Short Engagement
SEC	Security - MOC 81
TIR	Time in Rank

TIPR	Time in Previous Rank
UTPM	University Training Plan for Non-Commissioned Members
YCS	Years of Commissioned Service
YOS	Years of Service

LIST OF REFERENCES

- 1 NDHQ Action Directive D1/93 dated 5 Jan 93.
- 2 Exec Dir Memorandum 1150-110/M88 to the Chief Personnel Policy Planning and Resource Management (CPRM) dated 19 Jan 93, with a minute to the Director General Personnel Policy (DGPP) on 21 Jan 93, and to D Man A on 22 Jan 93.

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BACKGROUND

1. In 1876 the Royal Military College (RMC) in Kingston Ontario, opened as the first of the Canadian Military Colleges (CMC). In 1948 Royal Roads Military College (RRMC), a Royal Canadian Navy institution in Victoria British Columbia, joined the CMC system when it accepted cadets from the other two services. Le Collège Militaire Royal (CMR) de Saint-Jean Québec became the third jewel in the CMC crown in 1952 when it joined the CMC system under the auspices of the Royal Canadian Air Force. A degree-granting charter was bestowed on the RMC by Ontario in 1959, RRMC obtained its charter from British Columbia in 1975 and Québec conferred degree-granting status to CMR in 1986.

2. The role of the CMC within the Department of National Defence (DND) is to educate and train officer cadets and commissioned officers for a career in the Canadian Forces (CF). The majority of officer cadets attending the CMC do so under the regular officer training plan (ROTP). The remainder are enrolled under the reserve entry training plan (RETP) and the university training plan [non-commissioned members (NCM)] (UTPM).

3. On 17 December 1992 the Minister of National Defence (MND) created the "Committee on the Canadian Military Colleges" (MCMC) to examine the return on investment of the CMC system. A subsequent directive (Reference 1) appointed the Assistant Deputy Minister (Personnel) (ADM(Per)) as the Departmental office of prime interest (OPI). Following a

meeting with the Executive Director for the MCMC on 18 January 1993, the Directorate of Manpower Analysis (D Man A) was tasked (Reference 2) with providing an analysis of both officer retention and career progression rates in specific military occupations (MOC) according to the various CF commissioning plans; with specific attention to whether the officer attended CMC.

4. The MCMC requested that an initial analysis of retention be completed by 12 February 1993, with final analysis of promotion rates and of retention to be completed by mid-March. Following an extension to the MCMC mandate, D Man A also received an extended deadline.

AIM

5. The aim of this study was to provide the MCMC with an analysis of officer career progression and retention by commissioning plan. This report documents the results of this analysis.

SCOPE

6. While the MCMC wished to examine the status of graduates of the CMC system, these individuals had to be examined in the context of all officers within the CF. Volume I of this project report encompasses the overall results of the study. Tabulated strength data for all officers, and data for just those officers that entered the CF through ROTP, are presented first. A more detailed examination is then made of all CF officers. The strength of the group, and the distribution within the group by commissioning plans were first inspected, followed by an examination of the ROTP -

CMC/civilian university composition, before analyzing the critical aspects of:

- a. eligibility rates;
- b. promotion rates; and
- c. retention.

7. This approach is repeated in Volume III for individual MOCs which were large enough to provide sufficient data for analysis.

8. In this volume the following MOC groups were analyzed:

- a. Annex A - All Operational MOCs (MOCs 21, 22, 23, 31, 32 and 71);
- b. Annex B - Naval MOCs (MOCs 44 and 71);
- c. Annex C - Combat Arms MOCs (MOCs 21, 22 and 23);
- d. Annex D - Air Operations MOCs (MOCs 31 and 32);
- e. Annex E - Engineering MOCs (MOCs 41, 42, 43, 44 and 45);
- f. Annex F - Engineering MOCs Less MARE (MOCs 41, 42, 43 and 45);
- g. Annex G - Support MOCs (MOCs 68 and 69); and
- h. Annex H - Minor MOCs (MOCs 63, 64, 81 and 82).

SUMMARY

9. The ultimate purpose of the MCMC study was to determine the career progression of officers from the CMC relative to other officers in the CF. Because of the complexities of CF service, this examination has been expanded to look at the progression and retention of all officers by their commissioning plan--whatever it may have been. Officers from the CMC are a sub-set of those officers that joined

through ROTP, so ROTP officers as a whole have been compared against others that entered some other way. The other sub-set of ROTP officers are those that took their education through civilian universities. This sub-set was compared, not only against their CMC counterparts, but also against the other group that received a civilian university education--the DEOD officers.

10. Growth in trained effective officer strength within the CF has been achieved mostly through ROTP and DEO commissioning plans. ROTP growth has been mainly due to the increased number of officers from the CMC. The representation of officers from the CMC increased with the capacity and the attraction of the CMC following an expansion in degree-granting authority. Officers now can graduate from any of the three colleges with a degree recognized by academia.

11. Generally, the analysis indicates that there have been significant differences between commissioning plans with respect to promotion rates. Promotion rates have been generally higher for ROTP officers as compared to those commissioned from either OCTP or DEO. There is no significant difference in promotion rates for ROTP graduates from CMCs and civilian universities.

12. Retention patterns are influenced by such factors as obligatory service, generally low attrition during IE and increased attrition as officers approach CRA. Notwithstanding, the analysis shows that officers commissioned through OCTP generally have had better retention. In a comparison of CMC and civilian university graduates, retention for CMC officers has been generally better.

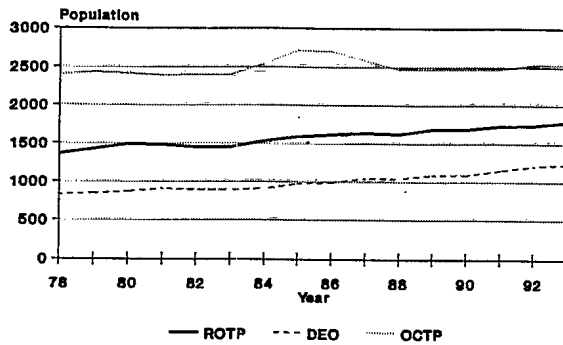
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ALL OPERATIONAL OCCUPATIONS

Strength

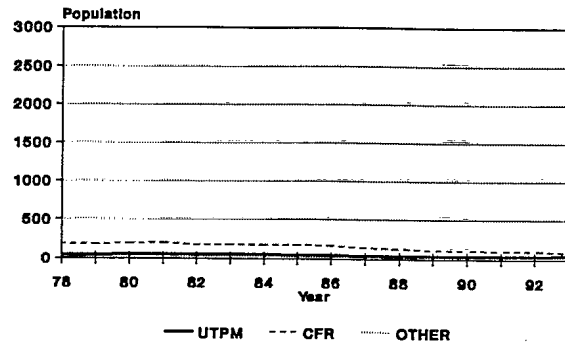
1. The operational MOCs as a whole grew by 18 percent in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure A - 1, were:

Trained Effective Strength - Major Plans
 All Ranks



OPERATIONAL MOCs - 21,22,23,31,32,71

Trained Effective Strength - Minor Plans
 All Ranks



OPERATIONAL MOCs - 21,22,23,31,32,71

Figure A - 1: Trained Effective Strength
 All Commissioning Plans - All Operations MOCs
 Ranks - Lt to Col

- a. ROTP - a continuous increase of 31 percent between 1978 and 1993;
- b. DEO - a steady increase of 49 percent;
- c. OCTP - an overall increase of five percent over the period, with a minor growth from 1983 to 1985, followed by a decrease between 1986 and 1988;
- d. UTPM - relatively stable, with little change over the period;
- e. CFR - an overall decrease of 52 percent, resulting from reductions between 1981 and 1982 and from 1985 to 1993; and

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- f. other plans - a dramatic increase due to small numbers (i.e. from one to 20).

Commissioning Plan Distribution

2. Because there were changes in the composition of the operational MOCs as a whole, commissioning plan distributions in the period from 1978 to 1993 were also examined and showed:

a. for all officers:

- (1) ROTP - a proportion of 28 percent in 1978 increased smoothly to 31 percent by 1993,
- (2) DEO - a proportion of 17 percent in 1978 increased to 22 percent by 1993,
- (3) OCTP - a proportion of 50 percent in 1978 decreased to a proportion of 44 percent by 1993, and
- (4) minor plans combined - a proportion of five percent in 1978 decreased to three percent by 1993 (despite the increased numbers);

b. for junior officers:

- (1) ROTP - a proportion of 29 percent in 1978 decreased to 27 percent by 1993, having been 31 percent and 24 percent in the interim,
- (2) DEO - a proportion of 15 percent in 1978 increased to 23 percent by 1993,
- (3) OCTP - a proportion of 50 percent in 1978 decreased to 47 percent by 1993, having been 47 percent and 53 percent in the interim, and
- (4) minor plans combined - a proportion of six percent in 1978 decreased to three percent by 1993; and

c. for senior officers:

- (1) ROTP - a proportion of 26 percent in 1978 increased to 39 percent by 1987, and stayed level until 1993,

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- (2) DEO - a proportion of 21 percent in 1978 decreased to 17 percent and then returned to 19 percent by 1993,
- (3) OCTP - a proportion of 49 percent in 1978 decreased to 39 percent by 1993, and
- (4) minor plans combined - remained level at three percent.

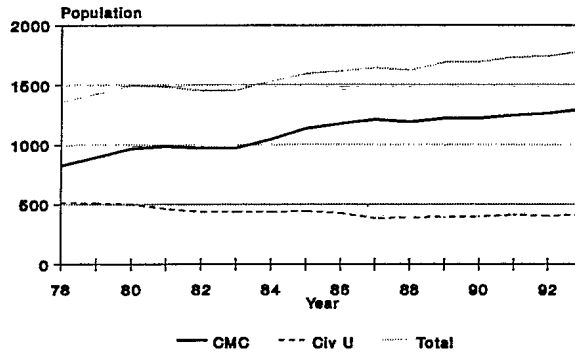
ROTP - CMC/Civilian University

3. ROTP numbers in general increased by 31 percent in the operational MOCs as a whole. The CMC component increased by 58 percent, while civilian university ROTP graduates decreased by 20 percent (Figure A - 2). Between 1978 and 1993, CMC graduates went from representing 61 to 73 percent of ROTP officers in the operational MOCs; civilian university ROTP graduates decreased their representation from 38¹ to 23¹ percent of ROTP officers.

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

ANNEX A
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Trained Effective Strength
ROTP Commissioning Plan



OPERATIONAL MOCs - 21,22,23,31,32,71

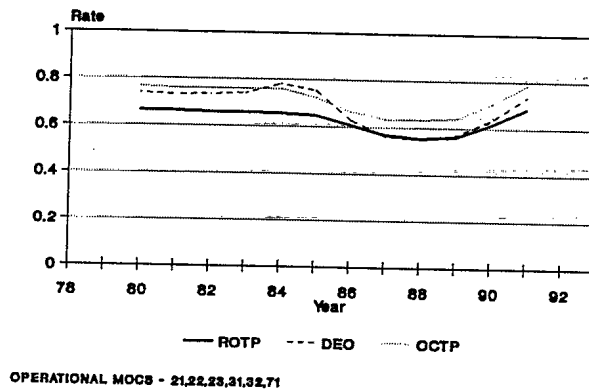
Figure A - 2: Trained Effective Strength
ROTP - All Operations MOCs
Ranks - Lt to Col

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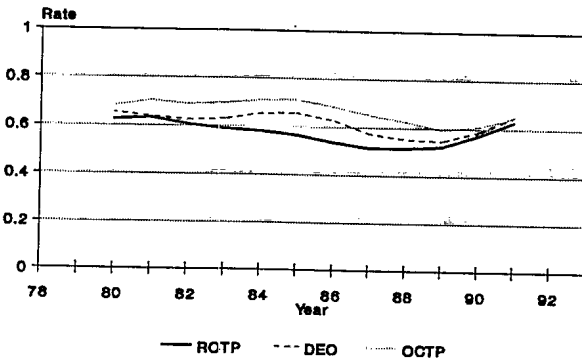
Eligibility Rates

4. Major Plans Eligibility rates for OCTP officers have been generally higher than those for either DEO or ROTP officers, while the ROTP eligibility rates have generally been the lowest (Figure A - 3). At the LCol rank, the DEO eligibility varied considerably. Eligibility rates in all plans have increased since the 1990 FRP was introduced.

Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Colonel Rank



Elig. Rates - Major Plans (5 yr avg)
 Major Rank



Elig. Rates - Major Plans (5 yr avg)
 Captain Rank

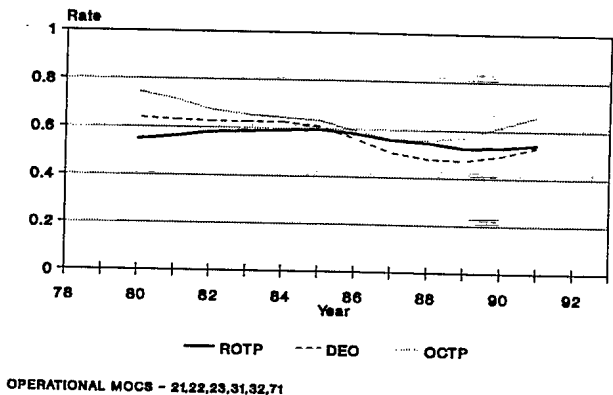
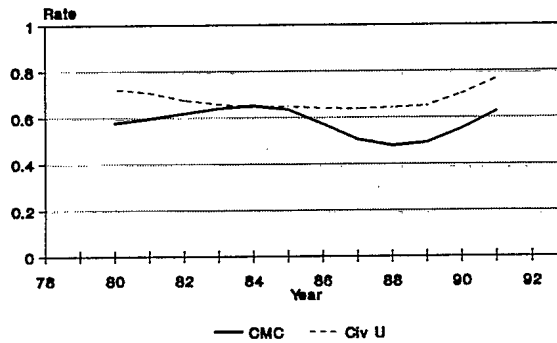


Figure A - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 All Operations MOCs

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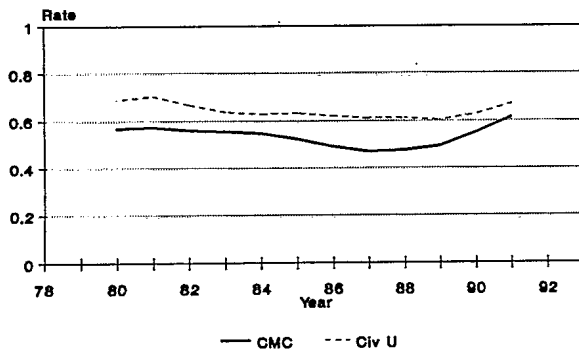
5. ROTP - CMC/Civilian University Eligibility rates for CMC graduates in the operational MOCs have been lower at all three ranks (Figure A - 4). Eligibility rates for ROTP officers from both sources increased since 1990 when the introduction of the FRP produced a drop in the number of promotions.

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Colonel Rank



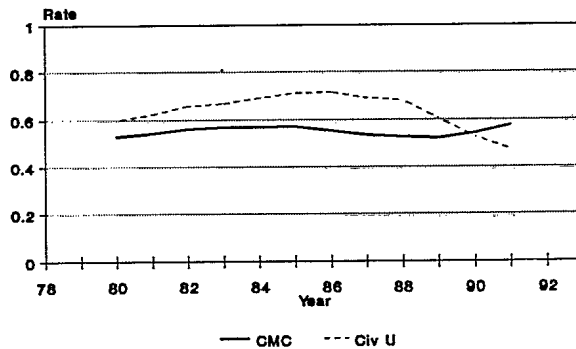
OPERATIONAL MOCs - 21,22,23,31,32,71

Eligibility Rates for ROTP (5 yr avg)
 Major Rank



OPERATIONAL MOCs - 21,22,23,31,32,71

Eligibility Rates for ROTP (5 yr avg)
 Captain Rank



OPERATIONAL MOCs - 21,22,23,31,32,71

Figure A - 4: ROTP Eligibility Rates
 5-year Moving Averages
 All Operations MOCs

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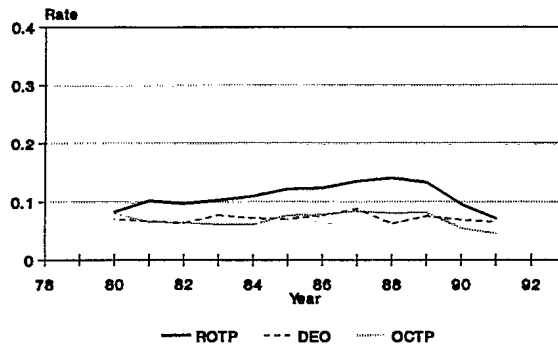
Promotion Rates

6. Major Plans In the operational MOCs ROTP promotion rates have consistently been higher at all rank levels (Figure A - 5). ROTP/DEO rates of promotion to the Maj and LCol ranks, and ROTP/OCTP rates of promotion to the three senior ranks were significantly² different. DEO/OCTP rates of promotion to the rank of Maj have also been significantly different, but for the other two ranks DEO rates were close to those of OCTP. The drop in rates at all rank levels over the last few years is probably related to the 1990 FRP.

² All statements on statistical significance are tested at the 95 percent confidence level.

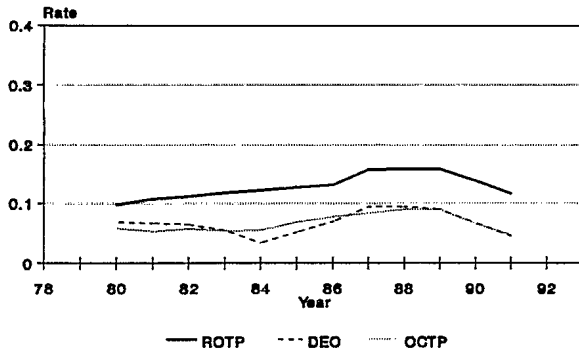
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Promotion Rates - Major Plans (5 yr avg)
 To Colonel Rank



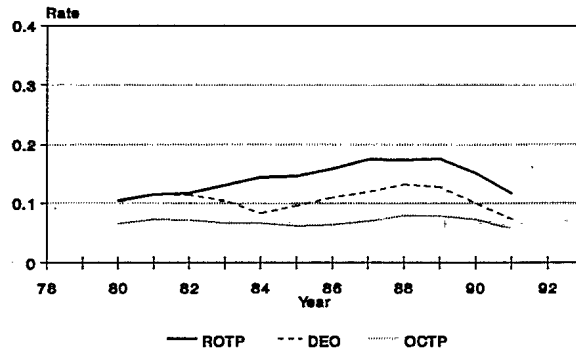
OPERATIONAL MOCs - 21,22,23,31,32,71

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Colonel Rank



OPERATIONAL MOCs - 21,22,23,31,32,71

Promotion Rates - Major Plans (5 yr avg)
 To Major Rank



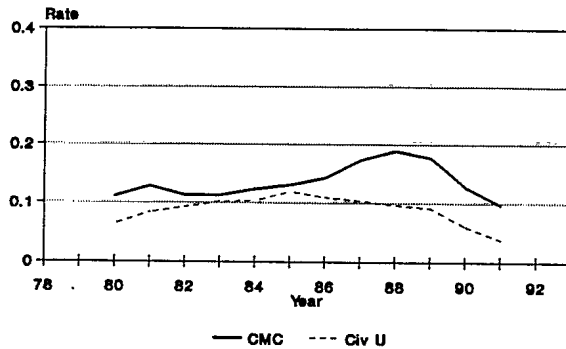
OPERATIONAL MOCs - 21,22,23,31,32,71

Figure A - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 All Operations MOCs

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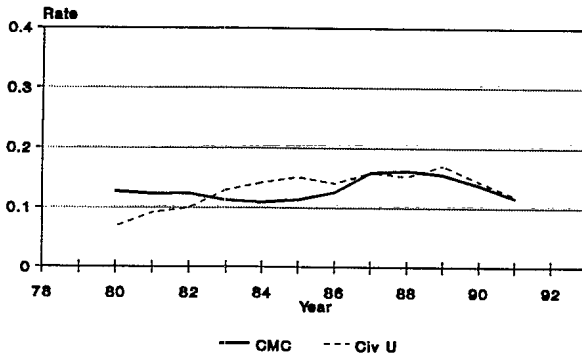
7. ROTP - CMC/Civilian University CMC promotion rates in the operational MOCs were consistently higher only at the Col rank, however the statistical tests on differences were inconclusive. A recent decline in rates apparent at all ranks is probably related to the FRP (Figure A - 6).

Promotion Rates for ROTP (5 yr avg)
 To Colonel Rank



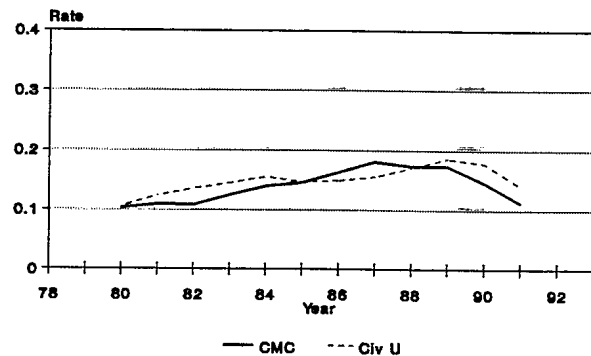
OPERATIONAL MOCs - 21,22,23,31,32,71

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Colonel Rank



OPERATIONAL MOCs - 21,22,23,31,32,71

Promotion Rates for ROTP (5 yr avg)
 To Major Rank



OPERATIONAL MOCs - 21,22,23,31,32,71

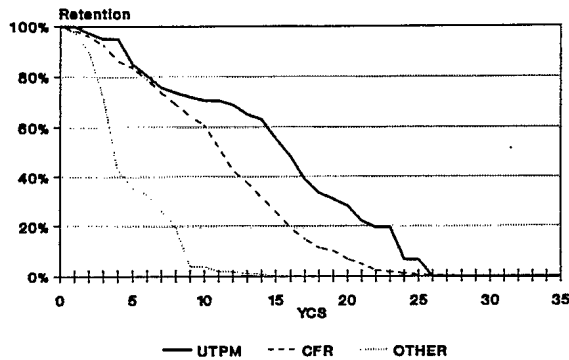
Figure A - 6: ROTP Promotion Rates
 5-year Moving Averages
 All Operations MOCs

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Retention

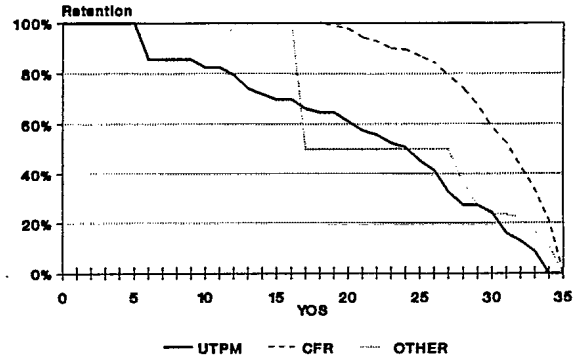
8. Minor Plans The minor plan retention curves reveal that the average length of service for officers in the operational MOCs was 14.2 YCS (20.8 YOS) for UTPM officers, 10.7 YCS (29.6 YOS) for CFR officers, and 4.3 YCS (23.1 YOS) for those commissioned under the 'other' plans (Figure A - 7).

Retention Curves for Minor Plans



OPERATIONAL MOCs - 21,22,23,31,32,71

Retention Curves for Minor Plans



OPERATIONAL MOCs - 21,22,23,31,32,71

Figure A - 7: Minor Plan Retention Curves
 All Operations MOCs

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9. Major Plans For the operational MOCs, the ROTP obligatory service of three years was apparent in the YCS plot, at which point ROTP attrition increased (Figure A - 8). Both ROTP/DEO and ROTP/OCTP retention were significantly different until six YCS. Early DEO and OCTP attrition rates were lower and were similar, and retention for all three plans levelled at the start of the IE. On the YOS curves about 60 percent of DEO and OCTP and 65 percent of ROTP officers were still serving at 20 YOS. All three plans showed an increase in attrition and significantly different retention from the start of the IPS. The average length of service was 17.9 YCS (21.3 YOS) for ROTP officers, 16.2 YCS (17.6 YOS) for DEO officers and 17.9 YCS (19.3 YOS) for OCTP officers.

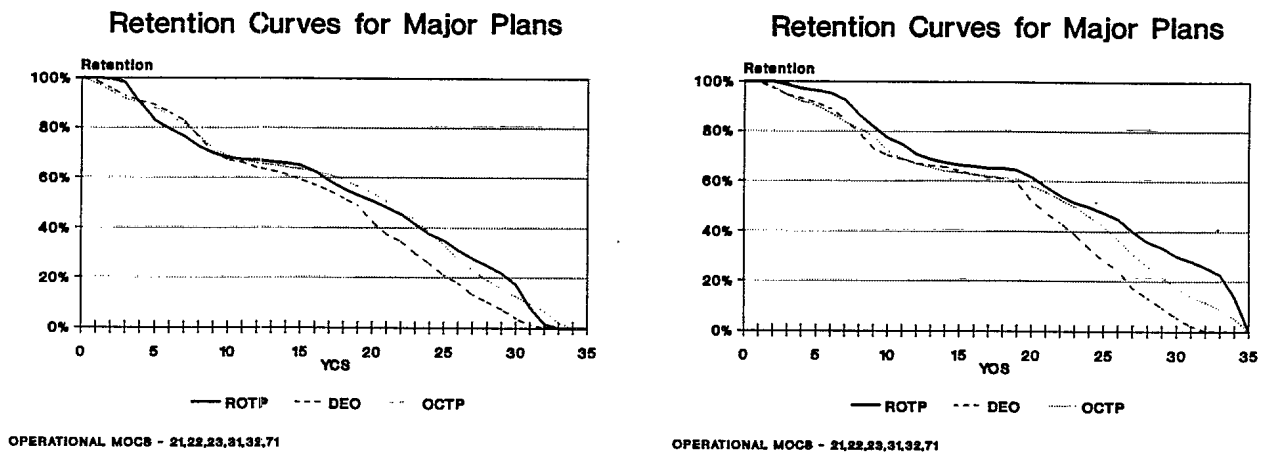


Figure A - 8: Major Plan Retention Curves
 All Operations MOCs

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10. ROTP - CMC/Civilian University In operational MOCs the YCS retention curves for ROTP officers were similar for the first four YCS, but attrition for civilian university officers continued to be high (Figure A - 9). Retention for all ROTP officers levelled slightly at ten YCS, with few taking advantage of the gratuity offered at nine YCS. Retention was significantly different until 20 YOS, at which point about 69 percent of CMC and 62 percent of civilian university officers remained. From the start of the IPS until 26 YOS both plans had similar retention characteristics, but officers from civilian universities had a significantly greater propensity to leave thereafter. For ROTP officers from CMC the average length of service was 18.3 YCS (22.6 YOS); for ROTP officers from civilian universities it was 17.2 YCS (20.1 YOS).

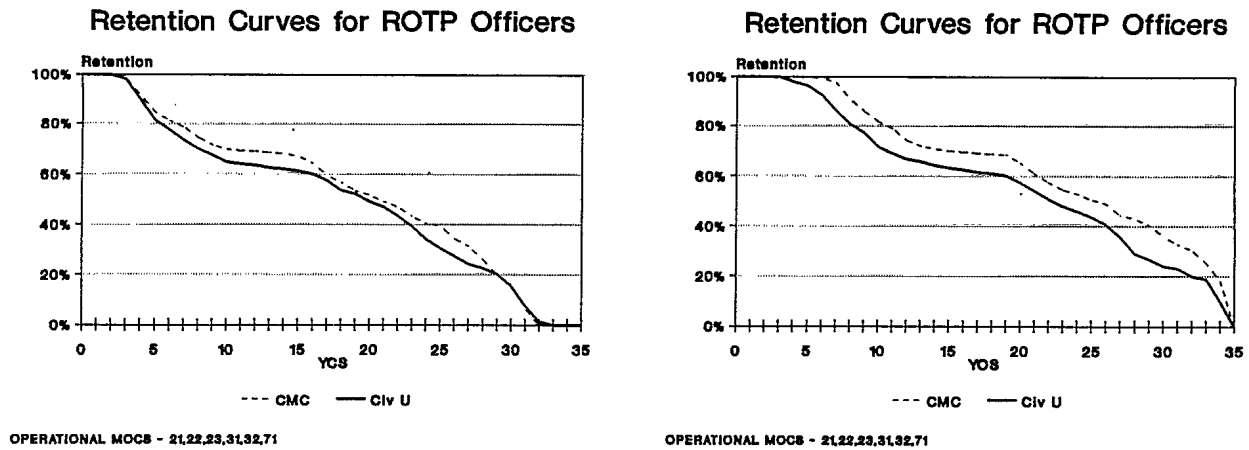


Figure A - 9: ROTP Retention Curves
 All Operations MOCs

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11. Civilian University - ROTP/DEOD Of those in operational MOCs that attended civilian universities, DEOD officers experienced fairly consistent attrition until 20 YCS (YOS), whereas attrition for ROTP officers started following three years of obligatory service and was high until five YCS (Figure A - 10). On the YCS plot, DEOD attrition only slowed after the IE. YOS retention was significantly different, with about 65 percent of DEOD and 62 percent of ROTP officers remaining to 20 YOS. DEOD attrition was far higher during the IPS, retention remaining statistically different from that point. The average length of service for officers in the operational MOCs was 17.2 YCS (20.1 YOS) for ROTP officers and 17.6 YCS (18.2 YOS) for DEOD officers.

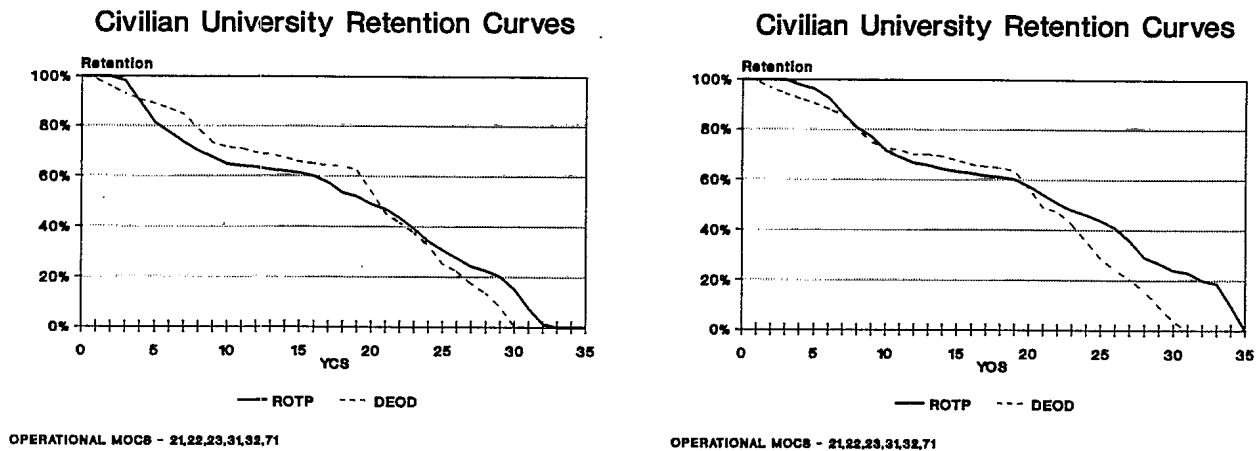


Figure A - 10: Civilian University Retention Curves
 All Operations MOCs

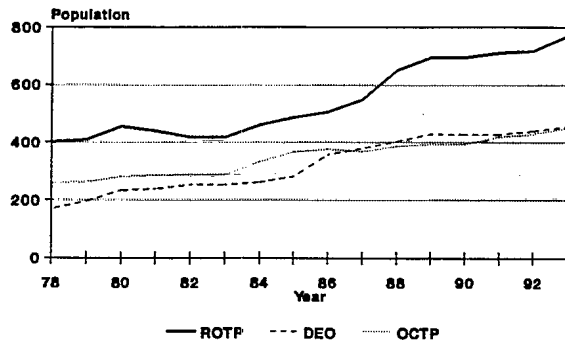
ANNEX B
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NAVAL OCCUPATIONS

Strength

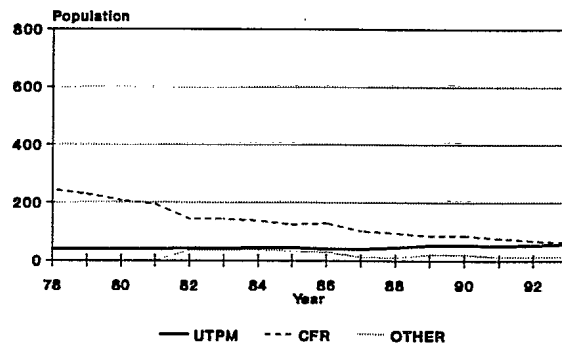
1. The naval officer population grew by 62 percent in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure B - 1, were:

**Trained Effective Strength - Major Plans
All Ranks**



NAVY MOCs - 44,71

**Trained Effective Strength - Minor Plans
All Ranks**



NAVY MOCs - 44,71

**Figure B - 1: Trained Effective Strength
All Commissioning Plans - Naval MOCs
Ranks - SLt to Capt(N)**

- a. ROTP - an increase of 92 percent starting in 1983;
- b. DEO - a continuous increase of 168 percent over the period;
- c. OCTP - a gradual increase of 74 percent over the period;
- d. UTPM - an increase of 44 percent over the period, with most of it since 1987;
- e. CFR - a continuous decrease of 75 percent over the period; and

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- f. other plans - an infinite increase from none until 1982 to 13 by 1993.

Commissioning Plan Distribution

2. Because there were changes in the composition of the naval MOCs, commissioning plan distributions in the period from 1978 to 1993 were also examined and showed:

a. for all officers:

- (1) ROTP - a proportion of 36 percent in 1978 increased to 43 percent by 1993,
- (2) DEO - a proportion of 15 percent in 1978 increased gradually to 25 percent by 1993;
- (3) OCTP - a proportion of 23 percent in 1978 increased gradually to 27 percent by 1985, decreased to 23 percent in 1989 before returning to 25 percent by 1993, and
- (4) minor plans combined - a proportion of 26 percent in 1978 decreased to seven percent by 1993;

b. for junior officers, where more variation is apparent because recruitment patterns are reflected at these ranks:

- (1) ROTP - a proportion of 38 percent in 1978 increased to 42 percent by 1993, but dropped to as low as 32 percent in the interim,
- (2) DEO - a proportion of 13 percent in 1978 increased to 25 percent by 1993, having been as high as 28 percent in 1987,
- (3) OCTP - a proportion of 23 percent in 1978 increased to 27 percent by 1993, having been as high as 32 percent in 1985, and
- (4) minor plans combined - a proportion of 26 percent in 1978 decreased to seven percent by 1993; and

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- c. changes in distributions for senior officers in naval MOCs occurred smoothly between 1978 and 1993:
- (1) ROTP - a proportion of 34 percent increased to 44 percent,
 - (2) DEO - a proportion of 18 percent increased to 26 percent,
 - (3) OCTP - a proportion of 23 percent in 1978 decreased to 20 percent from 1982 to 1987, then increased to 22 percent by 1993, and
 - (4) minor plans combined - a proportion of 25 percent decreased to nine percent.

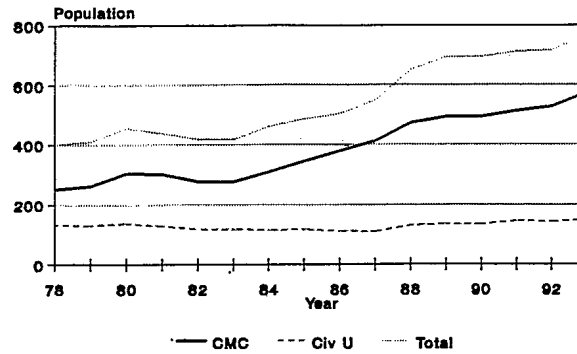
ROTP - CMC/Civilian University

3. ROTP numbers in the naval MOCs increased by 92 percent. The CMC component increased by 128 percent, mainly since 1983; while civilian university ROTP graduates increased by only 11 percent starting in 1987 (Figure B - 2). Between 1978 and 1993, CMC graduates went from representing 63 to 75 percent of ROTP naval officers; civilian university ROTP graduates decreased their representation from 34¹ to 19¹ percent.

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

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Trained Effective Strength
ROTP Commissioning Plan



NAVY MOCs - 44,71

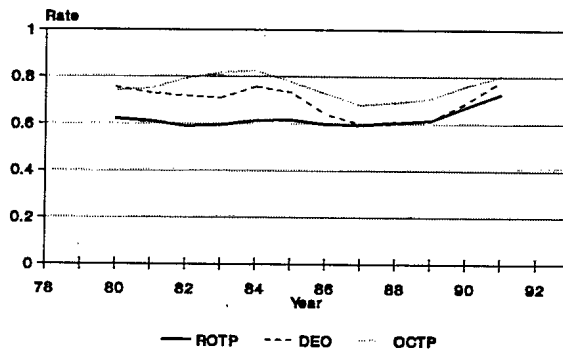
Figure B - 2: Trained Effective Strength
ROTP - Naval MOCs
Ranks - SLt to Capt(N)

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Eligibility Rates

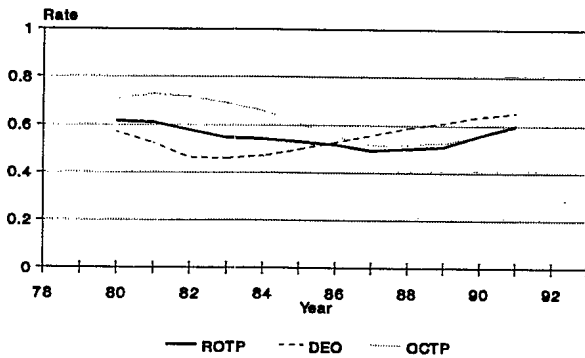
4. Major Plans Naval MOC OCTP eligibility rates have generally been highest, while the ROTP eligibility rates have generally been the lowest (Figure B - 3). Eligibility rates for all plans have increased at all ranks since the FRP was introduced.

Elig. Rates - Major Plans (5 yr avg)
 Commander Rank



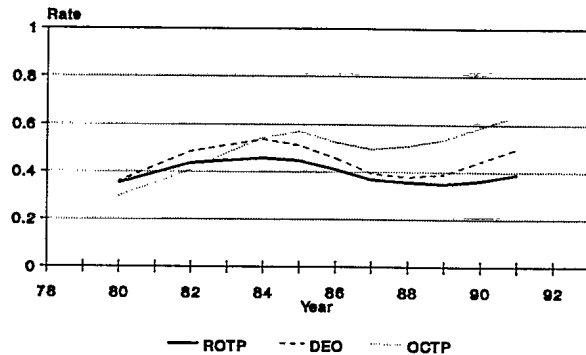
NAVY MOCs - 44,71

Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Commander Rank



NAVY MOCs - 44,71

Elig. Rates - Major Plans (5 yr avg)
 Lieutenant (N) Rank



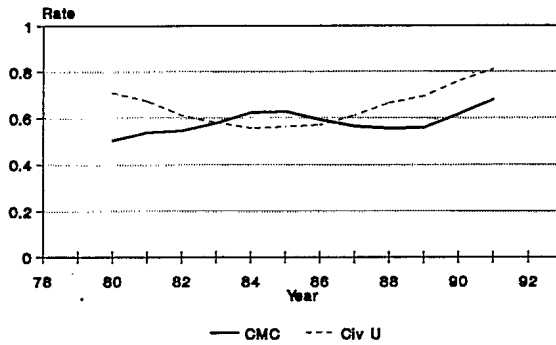
NAVY MOCs - 44,71

Figure B - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 Naval MOCs

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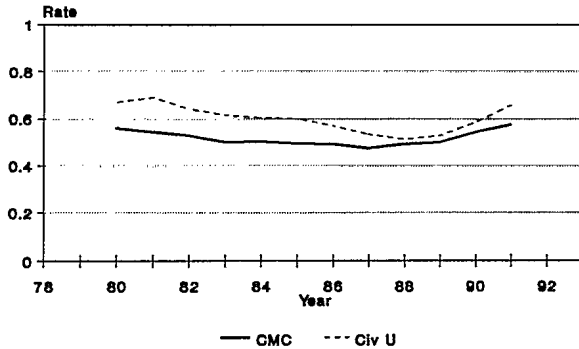
5. ROTP - CMC/Civilian University Eligibility rates for CMC graduates in the naval MOCs have been generally lower at all three ranks (Figure B - 4). Eligibility rates for ROTP officers from both sources have increased since the FRP was introduced.

Eligibility Rates for ROTP (5 yr avg)
 Commander Rank



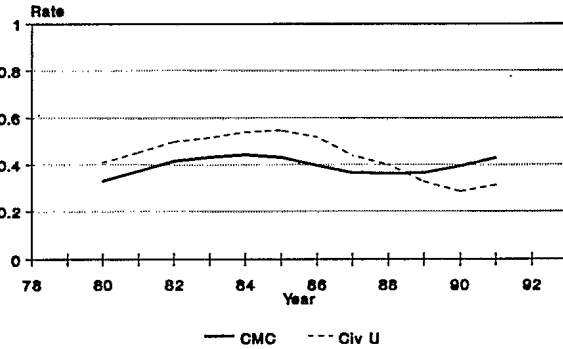
NAVY MOCs - 44,71

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Commander Rank



NAVY MOCs - 44,71

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant (N) Rank



NAVY MOCs - 44,71

Figure B - 4: ROTP Eligibility Rates
 5-year Moving Averages
 Naval MOCs

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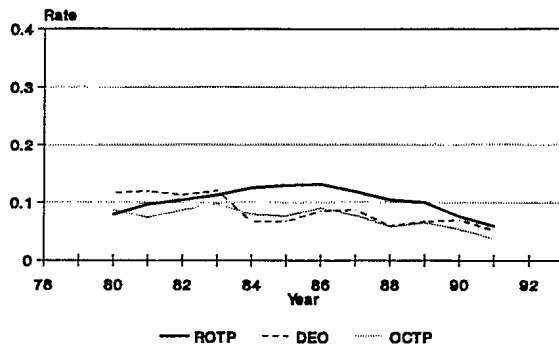
Promotion Rates

6. Major Plans Promotion rates to Lieutenant-Commander(LCdr) for ROTP officers have been generally the highest, while OCTP promotion rates have been significantly² the lowest (Figure B - 5). For DEO officers, rates of promotion to LCdr were similar to those for ROTP officers until 1984, then declined to near OCTP levels. Rates of promotion to Commander (Cdr) for DEO and OCTP officers were similar, and both were significantly different from the higher ROTP rates of promotion. Promotion rates to the rank of Navy Captain (Capt (N)) were similar for all three plans. The drop in rates for all rank levels over the last few years is conceivably related to the FRP.

² All statements on statistical significance are tested at the 95 percent confidence level.

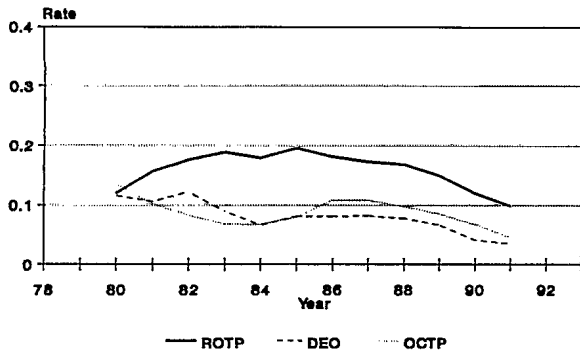
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Promotion Rates - Major Plans (5 yr avg)
 To Captain (N) Rank



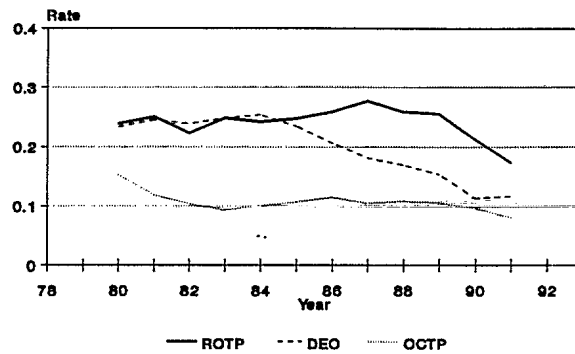
NAVY MOCs - 44,71

Promotion Rates - Major Plans (5 yr avg)
 To Commander Rank



NAVY MOCs - 44,71

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Commander Rank



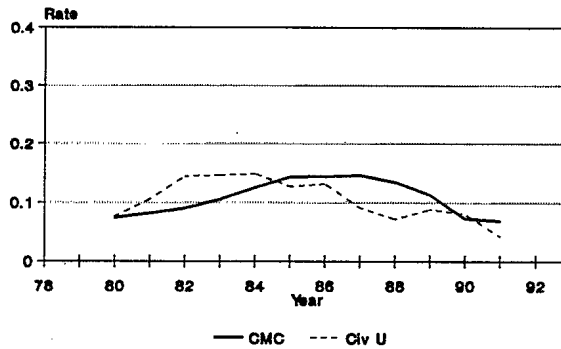
NAVY MOCs - 44,71

Figure B - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 Naval MOCs

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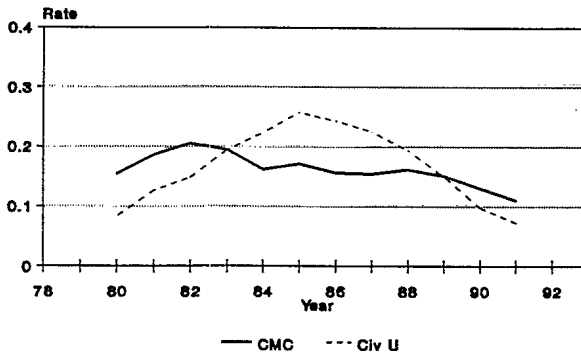
7. ROTP - CMC/Civilian University The statistical tests on differences in ROTP promotion rates for naval officers from CMC or from civilian universities were inconclusive (Figure B - 6). The recent decline in rates apparent at all ranks is possibly related to the FRP.

Promotion Rates for ROTP (5 yr avg)
 To Captain (N) Rank



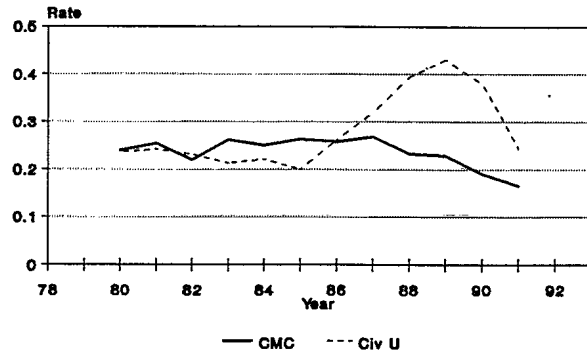
NAVY MOCS - 44,71

Promotion Rates for ROTP (5 yr avg)
 To Commander Rank



NAVY MOCS - 44,71

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Commander Rank



NAVY MOCS - 44,71

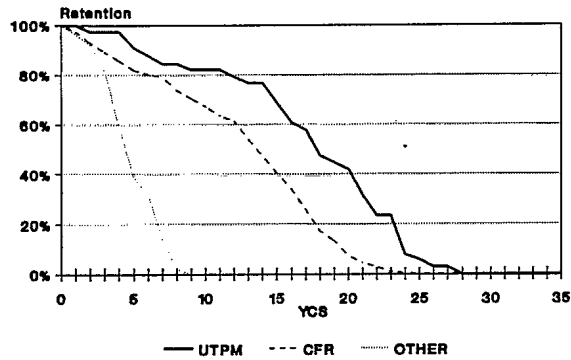
Figure B - 6: ROTP Promotion Rates
 5-year Moving Averages
 Naval MOCs

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Retention

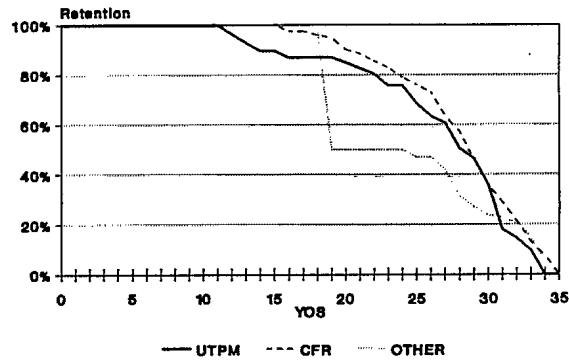
8. Minor Plans The minor plan retention curves reveal that the average length of service was 16.4 YCS (25.9 YOS) for naval officers commissioned under UTPM, 11.9 YCS (27.4 YOS) for CFR officers, and 4.2 YCS (23.8 YOS) for 'other' plans (Figure B - 7).

Retention Curves for Minor Plans



NAVY MOCs - 44,71

Retention Curves for Minor Plans

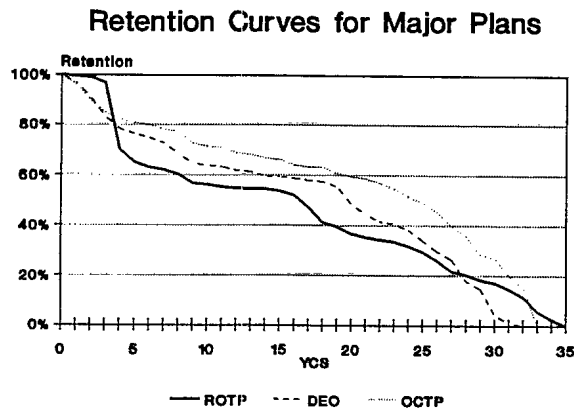


NAVY MOCs - 44,71

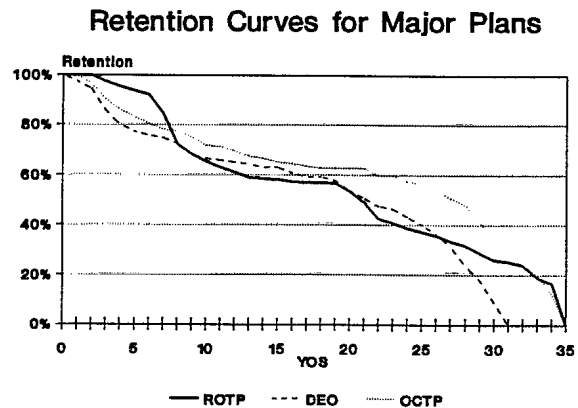
Figure B - 7: Minor Plan Retention Curves
 Naval MOCs

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9. Major Plans ROTP obligatory service of three years is apparent in the YCS plot, but ROTP officer attrition slowed at five YCS to level near 57 percent at the start of the IE (Figure B - 8). YCS differences were significant throughout for ROTP/OCTP, and for the first seven years for ROTP/DEO. Officer retention at the start of the IE was about 71 percent for OCTP and about 64 percent for DEO. In the YOS plot naval officers from all three plans experienced increased attrition near the start of the IPS, and the ROTP/OCTP curves were significantly different thereafter. ROTP attrition was the greatest until it began to level at 22 YOS; DEO attrition continued to increase. The average length of service was 15.2 YCS (19.0 YOS) for ROTP officers, 16.5 YCS (17.5 YOS) for DEO officers, and 19.5 YCS (21.0 YOS) for OCTP officers.



NAVY MOCs - 44,71

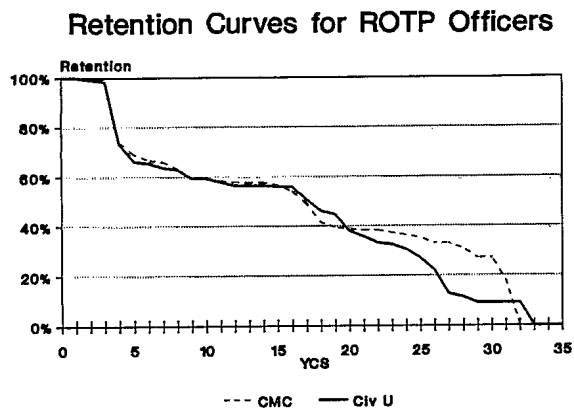


NAVY MOCs - 44,71

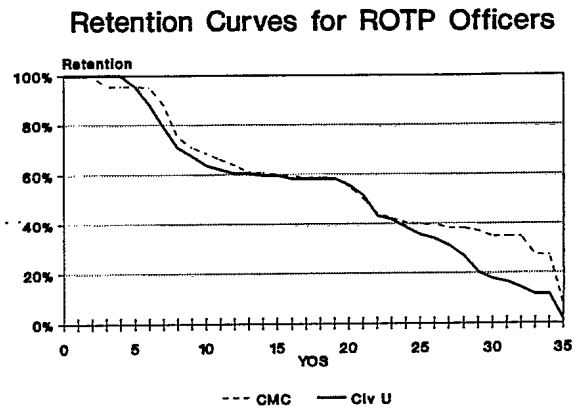
Figure B - 8: Major Plan Retention Curves
 Naval MOCs

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10. ROTP - CMC/Civilian University The YCS retention curves for naval ROTP officers were similar for the first 15 YCS, and the CMC curve was smoother since larger numbers were involved (Figure B - 9). Few naval officers took advantage of the gratuity offered at nine YCS, and about 60 percent of CMC and civilian university naval officers remained at 20 YOS. The average length of service was 16.2 YCS (20.2 YOS) for naval ROTP officers from CMC and 15.1 YCS (18.5 YOS) for ROTP officers from civilian universities.



NAVY MOCs - 44.71

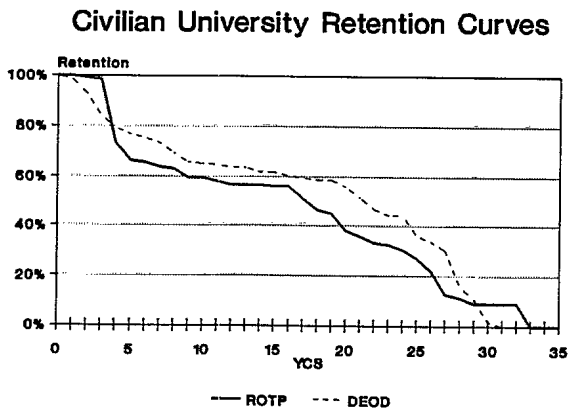


NAVY MOCs - 44.71

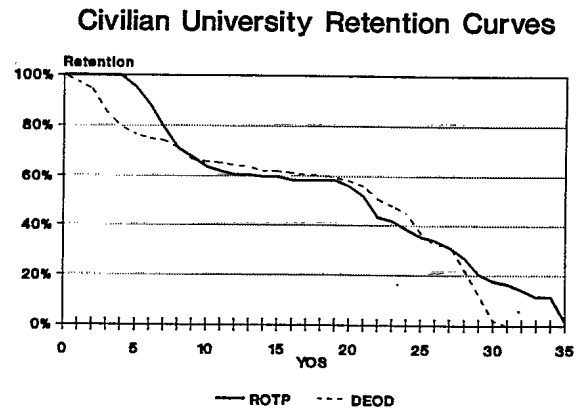
Figure B - 9: ROTP Retention Curves
 Naval MOCs

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11. Civilian University - ROTP/DEOD Of naval officers that attended civilian universities, DEOD attrition started earlier than that for ROTP, but ROTP officer retention levelled at five YCS in response to the gratuity offered at the end of the SE (Figure B - 10). Nearly 62 percent of DEOD and 60 percent of ROTP officers remained to 20 YOS. DEOD naval officer attrition was higher during the IPS, but numbers were too small to conduct statistical tests. The average length of service was 15.1 YCS (18.5 YOS) for civilian university ROTP officers; for DEOD officers it was 17.0 YCS (17.4 YOS).



NAVY MOCs - 44,71



NAVY MOCs - 44,71

Figure B - 10: Civilian University Retention Curves
 Naval MOCs

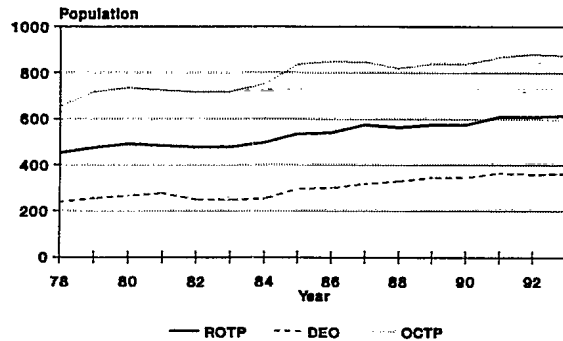
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COMBAT ARMS OCCUPATIONS

Strength

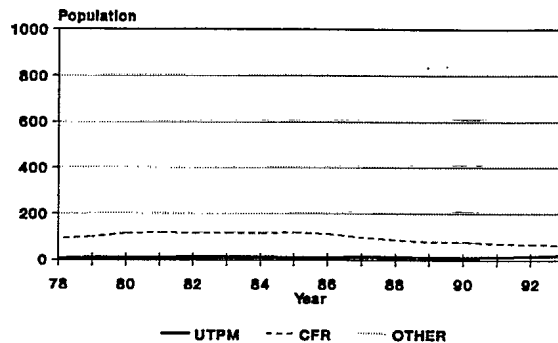
1. The combat arms grew by 36 percent in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure C - 1, were:

Trained Effective Strength - Major Plans
All Ranks



COMBAT ARMS - 21,22,23

Trained Effective Strength - Minor Plans
All Ranks



COMBAT ARMS - 21,22,23

Figure C - 1: Trained Effective Strength
All Commissioning Plans - Combat Arms
Ranks Lt to Col

- a. ROTP - a gradual increase of 36 percent over the period;
- b. DEO - an increase of 51 percent, most of it since 1984;
- c. OCTP - an increase of 34 percent over the period;
- d. UTPM - a significant percentage increase due to small numbers;
- e. CFR - a decrease of 30 percent in the period since 1986; and

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- f. other plans - commissioning through these plans was only introduced to combat arms in 1979.

Commissioning Plan Distribution

2. Despite changes in the composition of the combat arms, commissioning plan distributions in the period from 1978 to 1993 were quite stable, as described below:

a. for all officers:

- (1) ROTP - a proportion of 31 percent in 1978 increased to 32 percent by 1993,
- (2) DEO - a proportion of 17 percent in 1978 increased to 19 percent by 1993,
- (3) OCTP - a proportion of 45 percent in both 1978 and 1993, and
- (4) minor plans combined - a proportion of seven percent in 1978 decreased to five percent by 1993;

b. for junior officers:

- (1) ROTP - a proportion of 30 percent in 1978 decreased to 29 percent by 1993,
- (2) DEO - a proportion of 13 percent in 1978 increased to 19 percent by 1993,
- (3) OCTP - a proportion of 47 percent in both 1978 and 1993, and
- (4) minor plans combined - a proportion of ten percent in 1978 decreased to six percent by 1993; and

c. for senior officers there were more variations in the distributions over time:

- (1) ROTP - a proportion of 31 percent in 1978 increased to 36 percent by 1993, having been as high as 40 percent in 1986,

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- (2) DEO - a proportion of 25 percent in 1978 increased to 18 percent by 1993, although in 1986 it had been as low as 13 percent,
- (3) OCTP - a proportion of 42 percent from 1978 to 1993, and
- (4) minor plans combined - one percent proportion in 1978 increased to four percent by 1993.

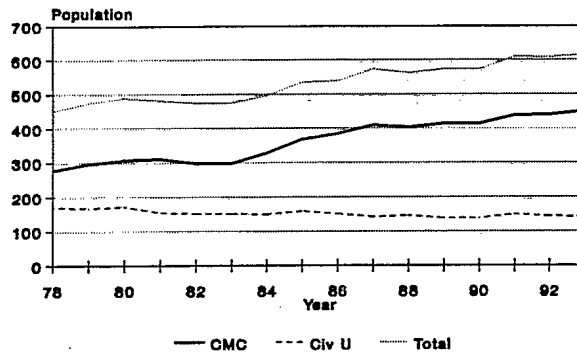
ROTP - CMC/Civilian University

3. ROTP numbers in combat arms increased by 36 percent. The CMC component increased by 62 percent, while civilian university ROTP graduates decreased by 15 percent (Figure C - 2). Between 1978 and 1993 CMC graduates went from representing 62 to 73 percent of ROTP combat arms officers; civilian university ROTP graduates decreased their representation from 37¹ to 23¹ percent of ROTP officers.

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

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Trained Effective Strength
ROTP Commissioning Plan



COMBAT ARMS - 21,22,23

Figure C - 2: Trained Effective Strength
ROTP - Combat Arms
Ranks - Lt to Col

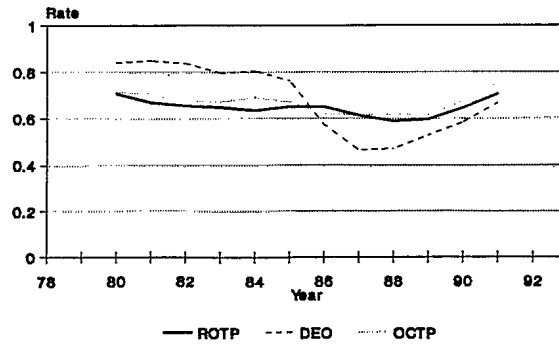
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Eligibility Rates

4. Major Plans The eligibility rates for OCTP combat arms officers at the Capt and Maj ranks have generally been the highest (Figure C - 3). Most recently the ROTP eligibility rate at the Capt rank has been the lowest, while at the Maj rank DEO eligibility has been lowest. The ROTP and OCTP eligibility rates for LCol's have been very close while the DEO numbers were too small to interpret. Eligibility rates for all plans have increased since the 1990 FRP was introduced.

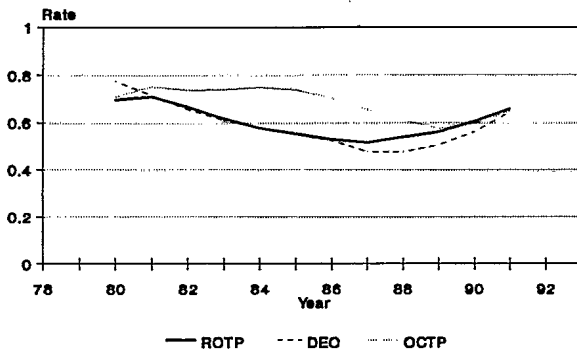
ANNEX C
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Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Colonel Rank



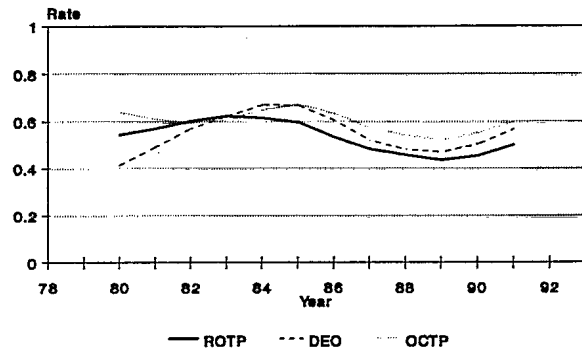
COMBAT ARMS - 21,22,23

Elig. Rates - Major Plans (5 yr avg)
 Major Rank



COMBAT ARMS - 21,22,23

Elig. Rates - Major Plans (5 yr avg)
 Captain Rank



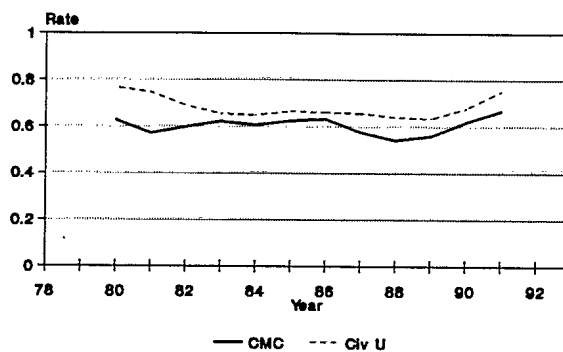
COMBAT ARMS - 21,22,23

Figure C - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 Combat Arms

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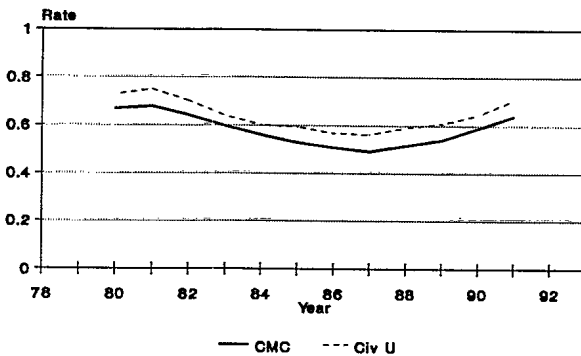
5. ROTP - CMC/Civilian University Eligibility rates for CMC graduates have been consistently lower at all three ranks (Figure C - 4). Except for combat arms Capts from civilian universities, eligibility rates for ROTP officers from both sources have increased since the FRP introduction produced a drop in the number of promotions.

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Colonel Rank



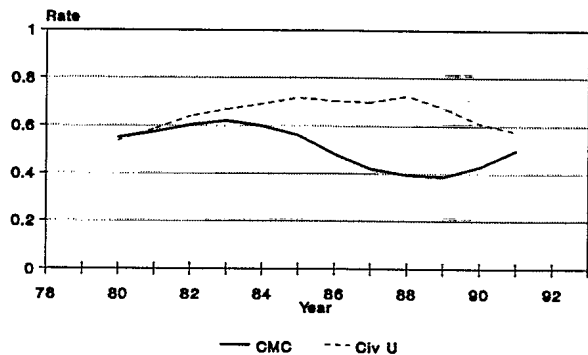
COMBAT ARMS - 21,22,23

Eligibility Rates for ROTP (5 yr avg)
 Major Rank



COMBAT ARMS - 21,22,23

Eligibility Rates for ROTP (5 yr avg)
 Captain Rank



COMBAT ARMS - 21,22,23

Figure C - 4: ROTP Eligibility Rates
 5-year Moving Averages
 Combat Arms

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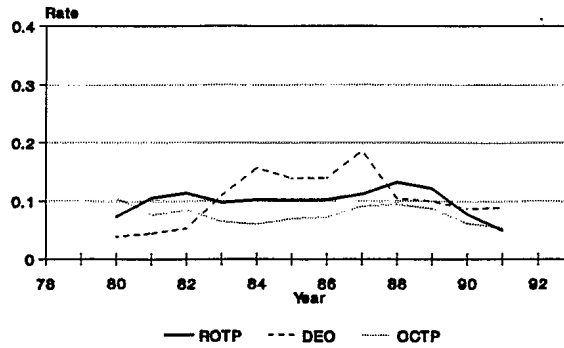
Promotion Rates

6. Major Plans ROTP rates of promotion to the Maj rank have been significantly² higher than those for OCTP and DEO officers. ROTP rates of promotion to the LCol rank have been significantly higher than those for OCTP officers (Figure C - 5). Over the last few years a drop in rates at all rank levels is conceivably related to the FRP.

² All statements on statistical significance are tested at the 95 percent confidence level.

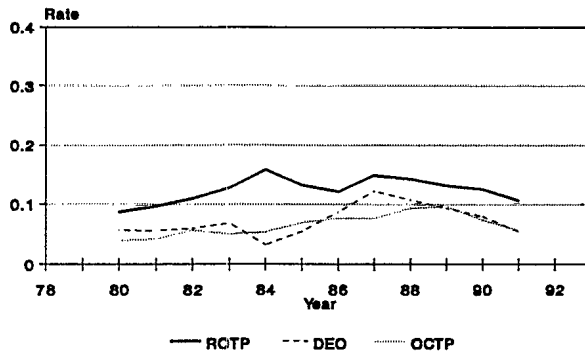
ANNEX C
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Promotion Rates - Major Plans (5 yr avg)
 To Colonel Rank



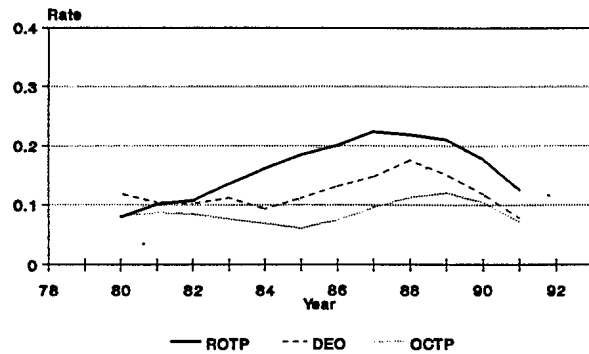
COMBAT ARMS - 21,22,23

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Colonel Rank



COMBAT ARMS - 21,22,23

Promotion Rates - Major Plans (5 yr avg)
 To Major Rank



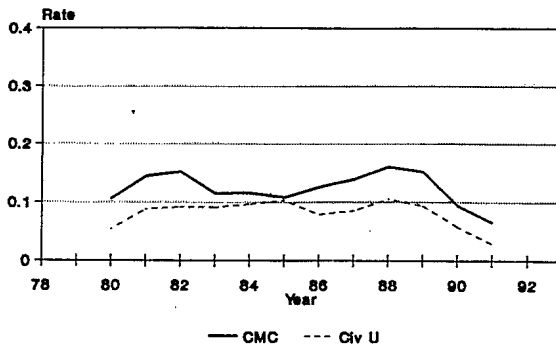
COMBAT ARMS - 21,22,23

Figure C - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 Combat Arms

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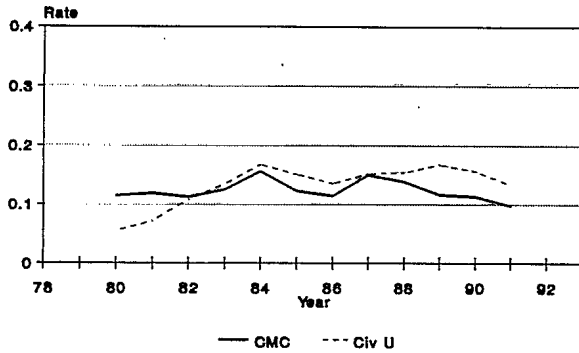
7. ROTP - CMC/Civilian University Combat arms promotion rates to the Maj and Col ranks have been higher for CMC officers (Figure C - 6). On the other hand the rate of promotion to the LCol rank was higher for officers from civilian universities. A recent decline in rates apparent at all ranks is presumably related to the FRP.

Promotion Rates for ROTP (5 yr avg)
 To Colonel Rank



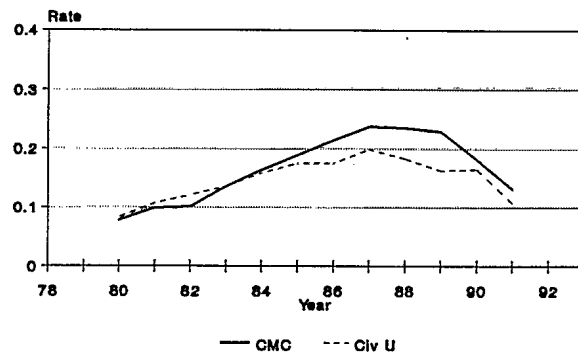
COMBAT ARMS - 21,22,23

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Colonel Rank



COMBAT ARMS - 21,22,23

Promotion Rates for ROTP (5 yr avg)
 To Major Rank



COMBAT ARMS - 21,22,23

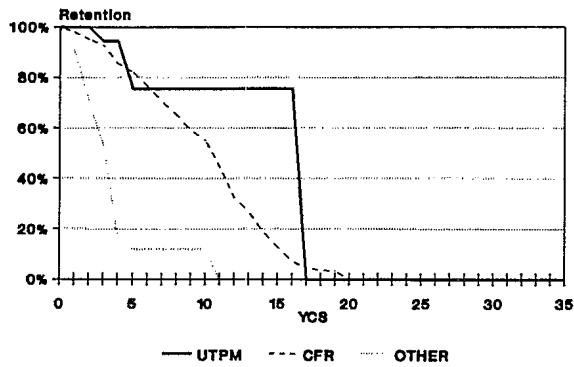
Figure C - 6: ROTP Promotion Rates
 5-year Moving Averages
 Combat Arms

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Retention

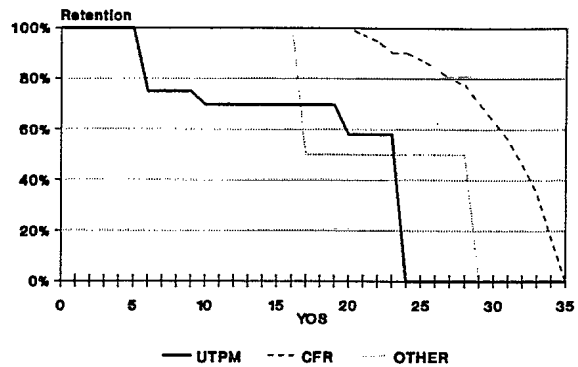
8. Minor Plans The combat arms retention curves reveal little since so few officers were involved. The average length of service was 9.3 YCS (29.9 YOS) for CFR officers (Figure C - 7).

Retention Curves for Minor Plans



COMBAT ARMS - 21,22,23

Retention Curves for Minor Plans



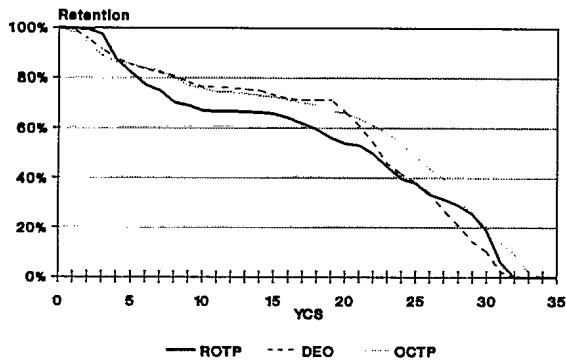
COMBAT ARMS - 21,22,23

Figure C - 7: Minor Plan Retention Curves
 Combat Arms

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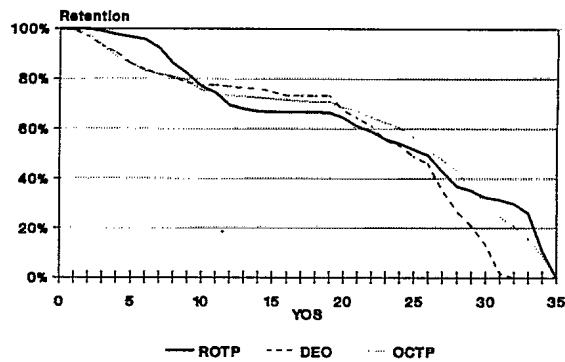
9. Major Plans The ROTP obligatory service of three years is apparent in the YCS plot in Figure C - 8. ROTP officer retention levelled off near 67 percent at the start of the IE, being significantly different than that for DEO or OCTP up to that point. Similar DEO and OCTP attrition rates were lower initially--DEO retention levelled at about 73 percent at the start of the IE and OCTP at about 71 percent. The statistical tests on differences in the YOS curves were inconclusive, however all three plans show an increase in attrition at the start of the IPS. The average length of service was 18.2 YCS (21.8 YOS) for ROTP officers, 19.4 YCS (20.4 YOS) for DEO officers, and 20.4 YCS (21.7 YOS) for OCTP officers.

Retention Curves for Major Plans



COMBAT ARMS - 21,22,23

Retention Curves for Major Plans



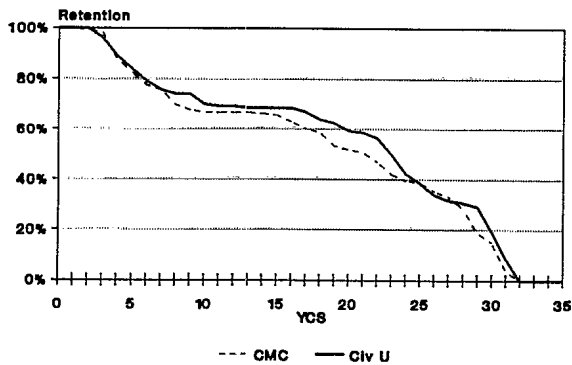
COMBAT ARMS - 21,22,23

Figure C - 8: Major Plan Retention Curves
 Combat Arms

ANNEX C
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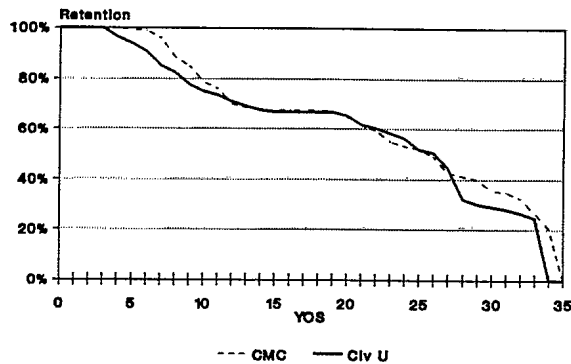
10. ROTP - CMC/Civilian University The combat arms retention curves for ROTP officers are similar (Figure C - 9). CMC attrition continued to nine YCS, whereas attrition of officers from a civilian university background levelled off between seven and nine YCS, possibly to take advantage of the gratuity offered then. The YOS curves indicate that officers from civilian universities left earlier than did CMC officers, and about 67 percent remained until the end of the IE. The average length of service was 17.9 YCS (22.4 YOS) for ROTP combat arms officers from CMC, and 19.1 YCS (21.4 YOS) for ROTP officers from civilian universities.

Retention Curves for ROTP Officers



COMBAT ARMS - 21,22,23

Retention Curves for ROTP Officers



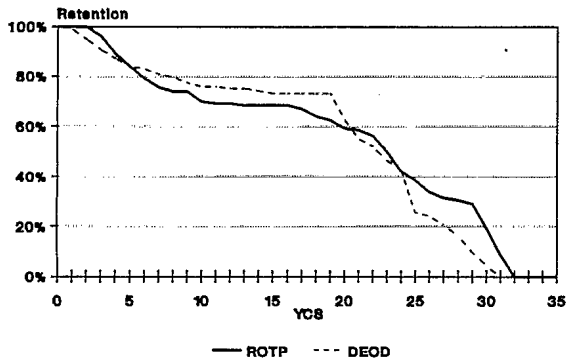
COMBAT ARMS - 21,22,23

Figure C - 9: ROTP Retention Curves
 Combat Arms

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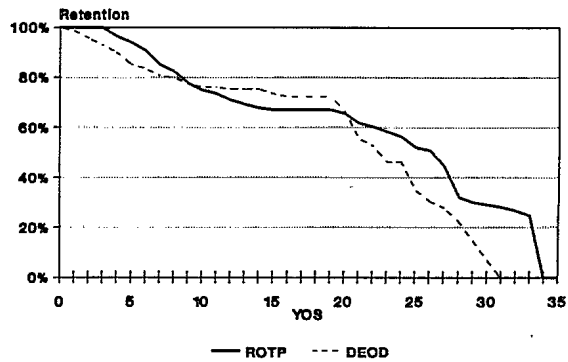
11. Civilian University - ROTP/DEOD Of those combat arms officers that attended civilian universities, DEOD show earlier attrition than did ROTP, and only ROTP officers showed a response to the nine YCS gratuity offered at the end of the SE (Figure C - 10). Statistical tests on retention were inconclusive. The average length of service was 18.8 YCS (19.3 YOS) for DEOD combat arms officers and 19.1 YCS (21.4 YOS) for ROTP officers from civilian universities.

Civilian University Retention Curves



COMBAT ARMS - 21,22,23

Civilian University Retention Curves



COMBAT ARMS - 21,22,23

Figure C - 10: Civilian University Retention Curves
 Combat Arms

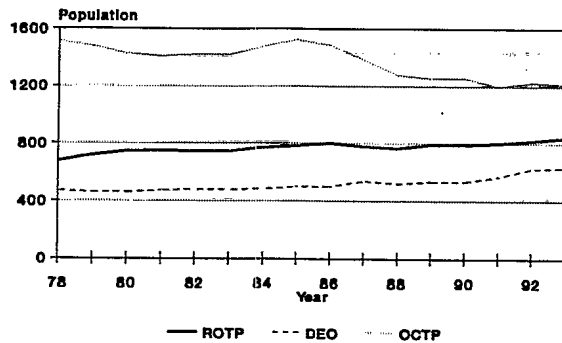
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AIR OPERATIONS OCCUPATIONS

Strength

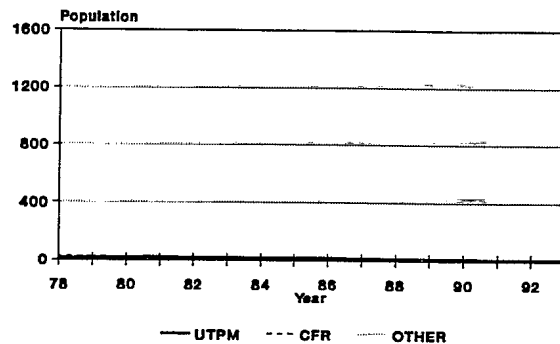
1. The population in air operations (air ops) MOCs remained unchanged in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure D - 1, were:

Trained Effective Strength - Major Plans
All Ranks



AIR OPERATIONAL MOCs - 31.32

Trained Effective Strength - Minor Plans
All Ranks



AIR OPERATIONAL MOCs - 31.32

Figure D - 1: Trained Effective Strength
All Commissioning Plans - Air Operations MOCs
Ranks - Lt to Col

- a. ROTP - a gradual increase of 25 percent over the period;
- b. DEO - an increase of 34 percent, also continuous over the period;
- c. OCTP - a decrease of 20 percent over the period, despite an increase between 1983 and 1985;
- d. UTPM - a decrease, mainly since 1986, of 31 percent over the period;
- e. CFR - a decrease of 88 percent from 1978 to 1993; and

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- f. other plans - an increase of 300 percent (from one to four officers).

Commissioning Plan Distribution

2. Because there were changes in the composition of the air ops MOCs as a whole, commissioning plan distributions in the period from 1978 to 1993 were also examined and showed:

a. for all officers:

- (1) ROTP - a proportion of 25 percent in 1978 increased smoothly to 31 percent by 1993,
- (2) DEO - a proportion of 17 percent in 1978 increased to 23 percent by 1993,
- (3) OCTP - a proportion of 56 percent in 1978 decreased to 45 percent by 1993, and
- (4) minor plans combined - a proportion of two percent in 1978 decreased to one percent by 1993;

b. for junior officers:

- (1) ROTP - a proportion of 27 percent in 1978 decreased to 26 percent by 1993, but varied from as low as 23 percent to as high as 30 percent over the period,
- (2) DEO - a proportion of 17 percent in 1978 increased steadily to 26 percent by 1993,
- (3) OCTP - a proportion of 55 percent in 1978 decreased to 47 percent by 1993, after having reached 56 percent in 1985, and
- (4) minor plans combined - a proportion of less than two percent in 1978 decreased to one percent by 1993; and

c. for senior officers:

- (1) ROTP - a proportion of 22 percent in 1978 almost doubled at the expense of OCTP to 42 percent by 1993,

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- (2) DEO - a proportion of 18 percent in 1978 and 1993, having fluctuated over the period,
- (3) OCTP - a proportion of 59 percent in 1978 decreased to 39 percent by 1993, and
- (4) minor plans combined - remained at a proportion of one percent.

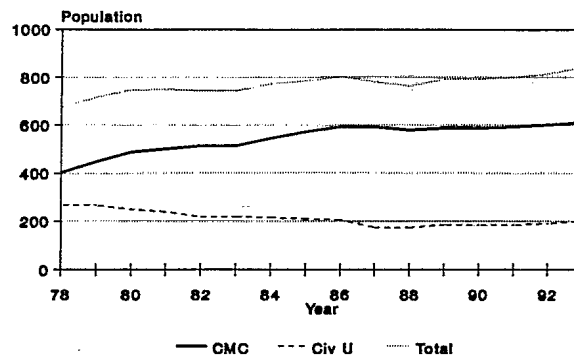
ROTP - CMC/Civilian University

3. ROTP numbers in air ops increased by 25 percent. Whereas the CMC component actually increased by 52 percent, civilian university ROTP graduates decreased by 26 percent (Figure D - 2). Between 1978 and 1993, CMC graduates went from representing 60 to 72 percent of ROTP air ops officers; civilian university ROTP graduates decreased their representation from 40 to 24¹ percent.

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

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Trained Effective Strength
ROTP Commissioning Plan



AIR OPERATIONAL MOCs - 3132

Figure D - 2: Trained Effective Strength
ROTP - Air Operations MOCs
Ranks - Lt to Col

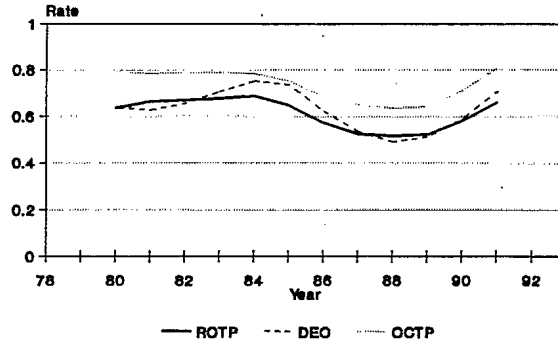
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Eligibility Rates

4. Major Plans In air ops eligibility rates for OCTP officers have been generally higher than for ROTP or DEO officers (Figure D - 3). Conversely, ROTP eligibility rates have often been the lowest. The ROTP eligibility rate at the Capt rank has been relatively constant while those for the other two have been decreasing. In general, eligibility rates at all ranks and for all plans have increased since the 1990 FRP was introduced.

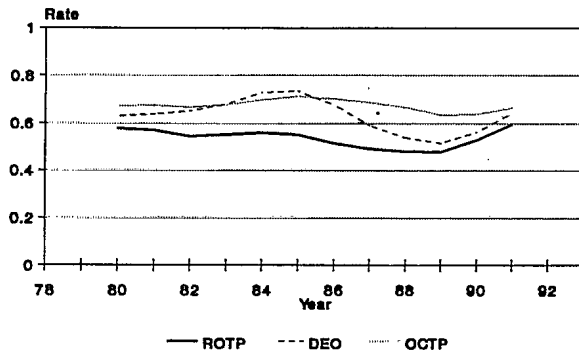
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Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Colonel Rank



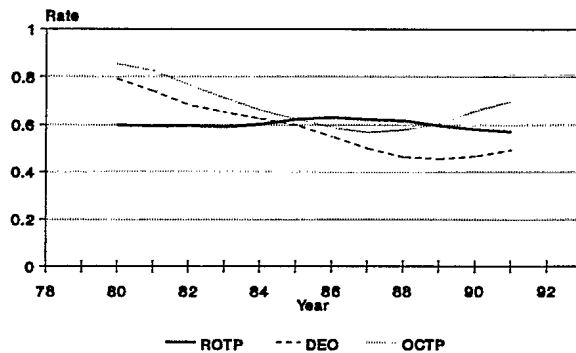
AIR OPERATIONAL MOCs - 31,32

Elig. Rates - Major Plans (5 yr avg)
 Major Rank



AIR OPERATIONAL MOCs - 31,32

Elig. Rates - Major Plans (5 yr avg)
 Captain Rank



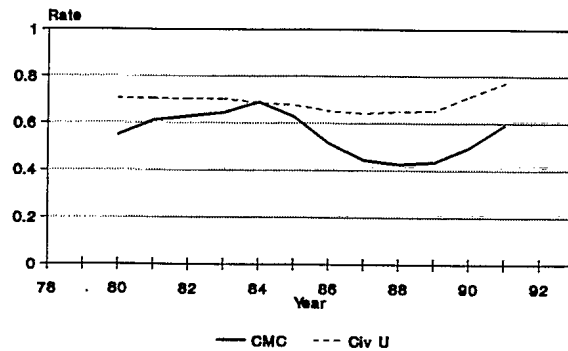
AIR OPERATIONAL MOCs - 31,32

Figure D - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 Air Operations MOCs

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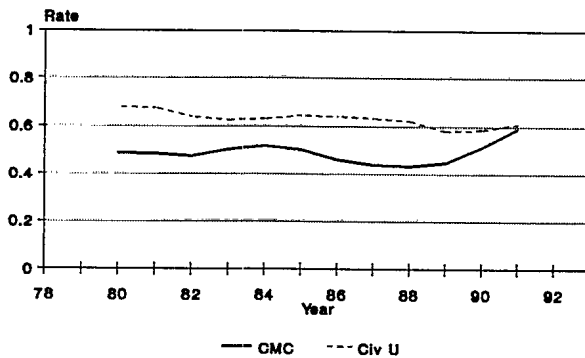
5. ROTP - CMC/Civilian University Eligibility rates for CMC graduates have generally been lower at all three ranks (Figure D - 4). The FRP introduction in 1990 has increased eligibility rates for all ROTP officers at the Maj and LCol ranks.

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Colonel Rank



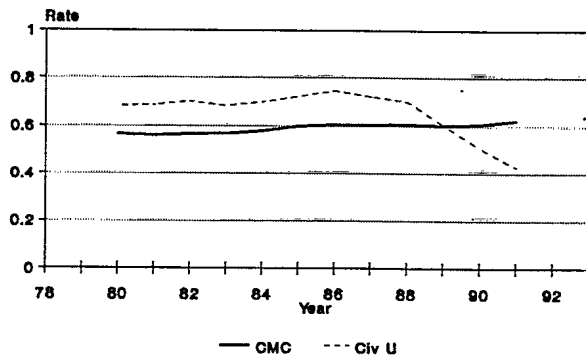
AIR OPERATIONAL MOCs - 31.32

Eligibility Rates for ROTP (5 yr avg)
 Major Rank



AIR OPERATIONAL MOCs - 31.32

Eligibility Rates for ROTP (5 yr avg)
 Captain Rank



AIR OPERATIONAL MOCs - 31.32

Figure D - 4: ROTP Eligibility Rates
 5-year Moving Averages
 Air Operations MOCs

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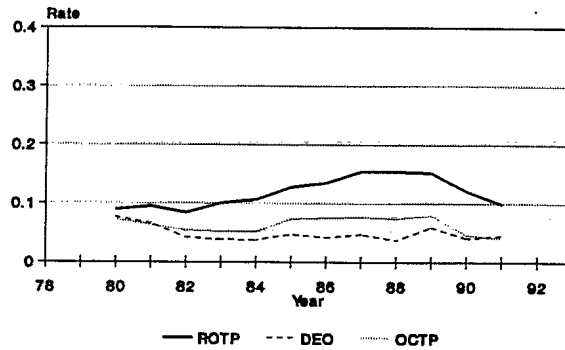
Promotion Rates

6. Major Plans ROTP promotion rates to all senior ranks in air ops have been significantly² higher than those for DEO and OCTP officers (Figure D - 5). The DEO promotion rates to the Maj rank were significantly higher than those for OCTP officers. A drop in rates at all rank levels over the last few years is probably related to the 1990 FRP.

² All statements on statistical significance are tested at the 95 percent confidence level.

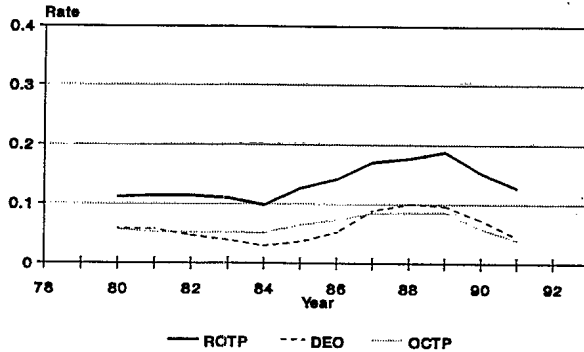
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Promotion Rates - Major Plans (5 yr avg)
 To Colonel Rank



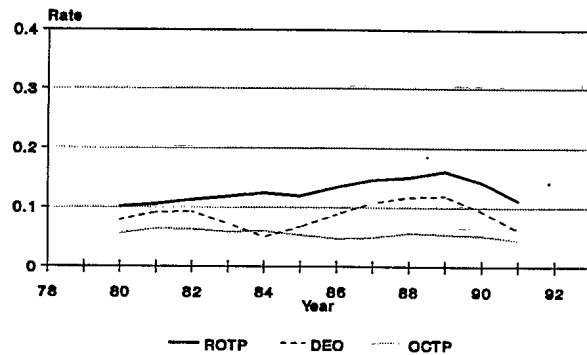
AIR OPERATIONAL MOCs - 31,32

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Colonel Rank



AIR OPERATIONAL MOCs - 31,32

Promotion Rates - Major Plans (5 yr avg)
 To Major Rank



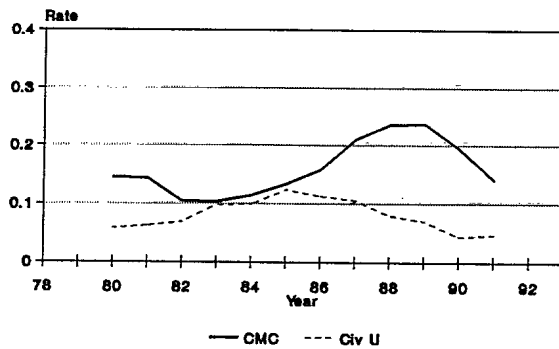
AIR OPERATIONAL MOCs - 31,32

Figure D - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 Air Operations MOCs

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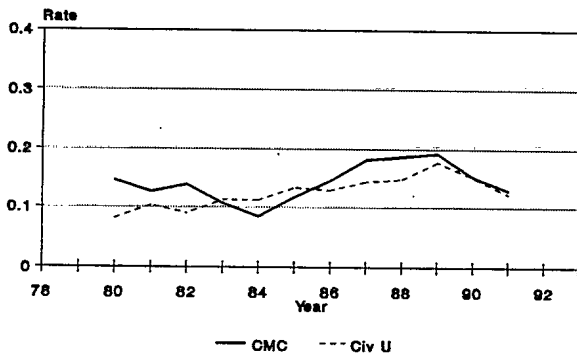
7. ROTP - CMC/Civilian University In comparing ROTP promotion rates, CMC rates were significantly higher only to the Col rank (Figure D - 6). The FRP influence is apparent in a recent decline in the rates for all ranks.

Promotion Rates for ROTP (5 yr avg)
 To Colonel Rank



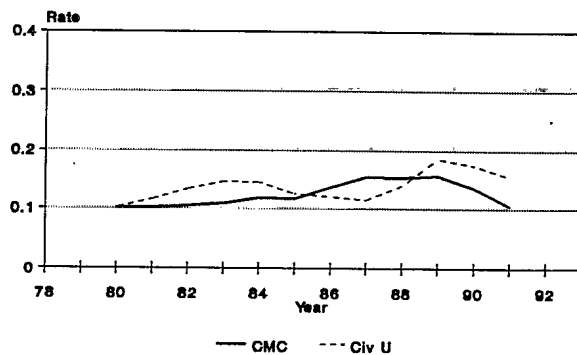
AIR OPERATIONAL MOCs - 31.32

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Colonel Rank



AIR OPERATIONAL MOCs - 31.32

Promotion Rates for ROTP (5 yr avg)
 To Major Rank



AIR OPERATIONAL MOCs - 31.32

Figure D - 6: ROTP Promotion Rates
 5-year Moving Averages
 Air Operations MOCs

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Retention

8. Minor Plans The retention curves reveal little about officers commissioned into air ops through the minor plans since so few officers were involved (Figure D - 7).

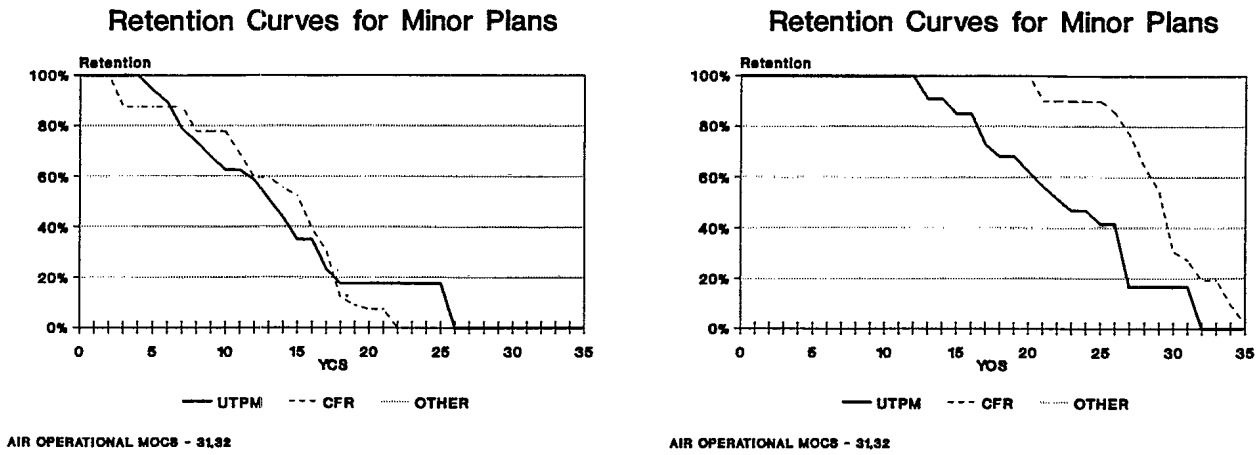
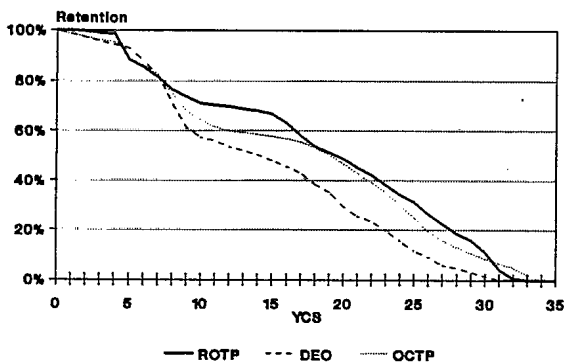


Figure D - 7: Minor Plan Retention Curves
 Air Operations MOCs

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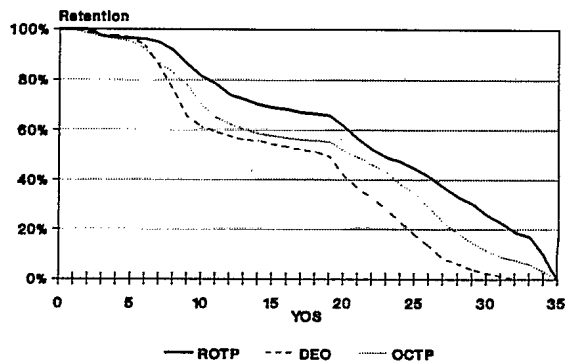
9. Major Plans ROTP officer retention was significantly higher since ROTP obligatory service delayed the start of attrition in the YCS plot (Figure D - 8). Significant YOS differences were also present at the end of the IE, where ROTP retention was 66 percent, OCTP 55 percent and DEO 50 percent. The average length of service was 17.8 YCS (21.2 YOS) for ROTP officers, 14.1 YCS (15.8 YOS) for DEO officers, and 16.7 YCS (18.1 YOS) for OCTP officers.

Retention Curves for Major Plans



AIR OPERATIONAL MOCs - 3132

Retention Curves for Major Plans



AIR OPERATIONAL MOCs - 3132

Figure D - 8: Major Plan Retention Curves
 Air Operations MOCs

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10. ROTP - CMC/Civilian University Following similar retention during ROTP obligatory service, attrition of CMC officers in air ops was gradual to nine YCS, while retention of officers from a civilian university background was significantly different (Figure D - 9). About 72 percent of CMC and 56 percent of civilian university officers served to the end of the IE. Within the air ops MOCs the average length of service of ROTP officers was 18.2 YCS (22.5 YOS) for those from CMC and 16.2 YCS (19.3 YOS) for those from civilian universities.

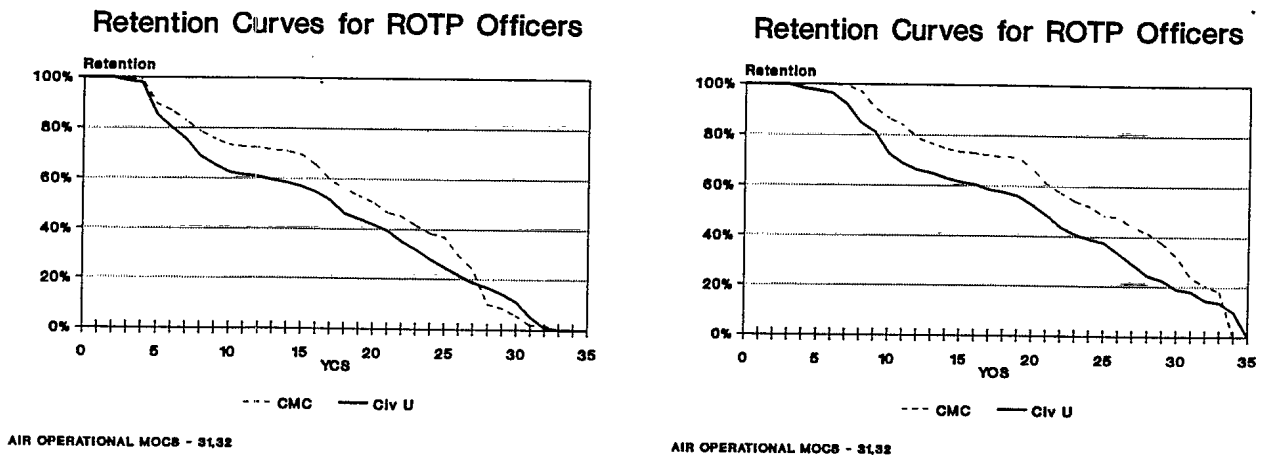
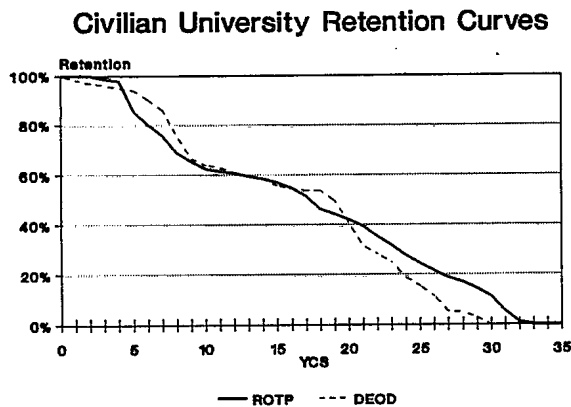


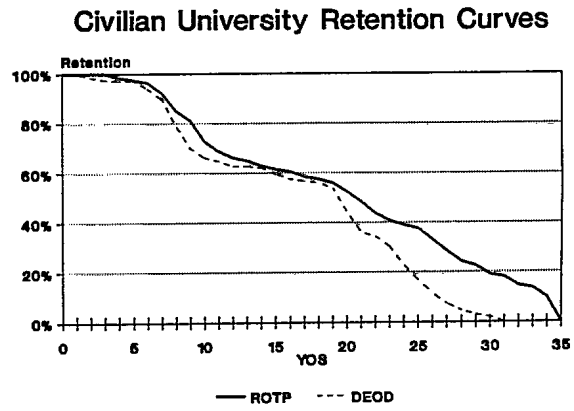
Figure D - 9: ROTP Retention Curves
 Air Operations MOCs

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11. Civilian University - ROTP/DEOD Of those air operations officers that attended civilian universities, DEOD showed earlier attrition than did ROTP, so retention was significantly different between seven and 14 YCS (Figure D - 10). YOS retention was also significantly different since DEOD attrition was highest during the IPS. Within air ops MOCs the average length of service of officers from civilian universities was 15.6 YCS (16.4 YOS) for those commissioned as DEOD and 16.2 YCS (19.3 YOS) for those commissioned as ROTP.



AIR OPERATIONAL MOCs - 3132



AIR OPERATIONAL MOCs - 3132

Figure D - 10: Civilian University Retention Curves
 Air Operations MOCs

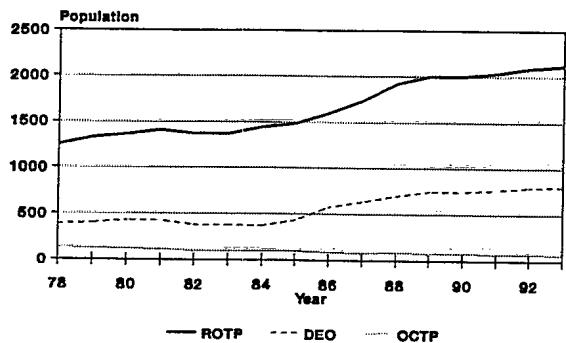
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ENGINEERING OCCUPATIONS

Strength

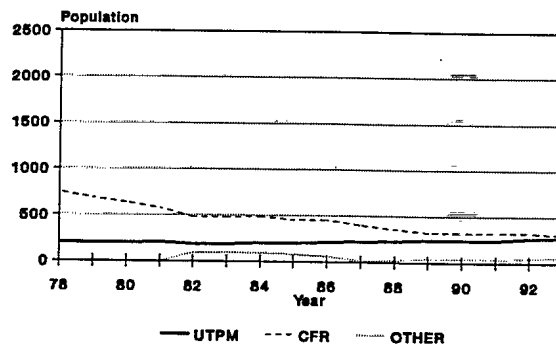
1. The engineering MOCs grew by 24 percent in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure E - 1, were:

Trained Effective Strength - Major Plans
All Ranks



ENGINEERING MOCs - 41,42,43,44,46

Trained Effective Strength - Minor Plans
All Ranks



ENGINEERING MOCs - 41,42,43,44,46

Figure E - 1: Trained Effective Strength
All Commissioning Plans - Engineering MOCs
Ranks - Lt to Col

- a. ROTP - an increase of 70 percent, mostly since 1983;
- b. DEO - an increase of 109 percent, mostly since 1984;
- c. OCTP - a slow steady decrease of 40 percent over the period;
- d. UTPM - an increase of 40 percent, mostly in the period from 1983 to 1993;
- e. CFR - a decrease of 59 percent, primarily in the periods from 1978 to 1982 and 1986 to 1989; and

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- f. other plans - an infinite percentage increase due to small numbers, most of it in 1982.

Commissioning Plan Distribution

2. Because there were changes in the composition of the engineering MOCs, commissioning plan distributions in the period from 1978 to 1993 were also examined and showed:

a. for all officers:

- (1) ROTP - a proportion of 46 percent in 1978 increased smoothly to 59 percent by 1993,
- (2) DEO - a proportion of 14 percent in 1978 increased to 22 percent by 1993,
- (3) OCTP - a proportion of five percent in 1978 decreased to two percent by 1993, and
- (4) minor plans combined - a proportion of 35 percent in 1978 decreased to 17 percent by 1993;

b. for junior officers:

- (1) ROTP - a proportion of 45 percent in 1978 increased to 57 percent by 1993,
- (2) DEO - a proportion of 12 percent in 1978 increased to 24 percent by 1993,
- (3) OCTP - a proportion of three percent in 1978 decreased to one percent by 1993, and
- (4) minor plans combined - a proportion of 40 percent in 1978 decreased to 18 percent by 1993; and

c. for senior officers all changes in distributions occurred smoothly between 1978 and 1993:

- (1) ROTP - a proportion of 48 percent increased to 62 percent,
- (2) DEO - a proportion of 20 percent decreased to 19 percent,

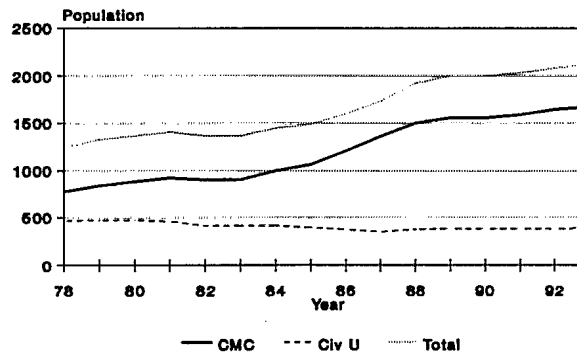
**ANNEX E
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- (3) OCTP - a proportion of four percent decreased to three percent, and
- (4) minor plans combined - a proportion of 27 percent decreased to 17 percent.

ROTP - CMC/Civilian University

3. ROTP numbers in the engineering MOCs increased by 70 percent, and most of the increase was through the CMC system. Whereas the CMC component increased by 116 percent, the civilian university ROTP component decreased by 17 percent (Figure E - 2). Between 1978 and 1993 CMC graduates went from representing 62 to 79 percent of ROTP engineering officers; civilian university ROTP graduates decreased their representation from 38 to 19¹ percent.

**Trained Effective Strength
ROTP Commissioning Plan**



ENGINEERING MOCs - 41,42,43,44,45

**Figure E - 2: Trained Effective Strength
ROTP - Engineering MOCs
Ranks - Lt to Col**

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

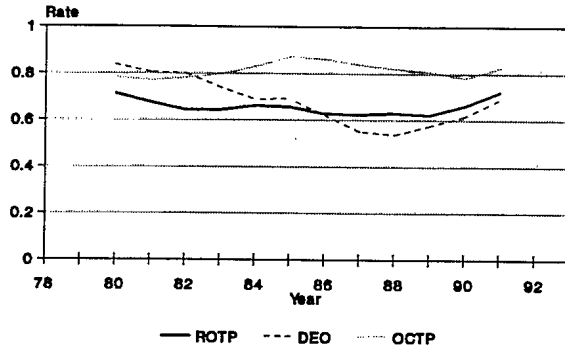
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Eligibility Rates

4. Major Plans Engineering MOC eligibility rates for OCTP officers have been consistently higher than those for either DEO or ROTP officers (Figure E - 3). The ROTP and DEO eligibility rates at the Capt rank have been decreasing, those for DEO more so than for ROTP. Since 1986 the ROTP rate has been the lowest at the Maj rank, and the DEO eligibility rate has been the lowest at the LCol rank. Eligibility rates at all ranks and for all plans in the engineering MOCs have increased since the 1990 FRP was introduced.

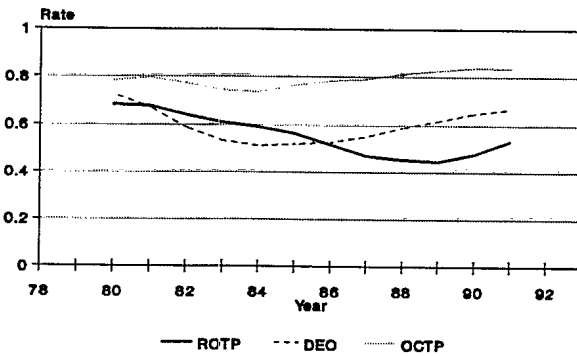
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Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Colonel Rank



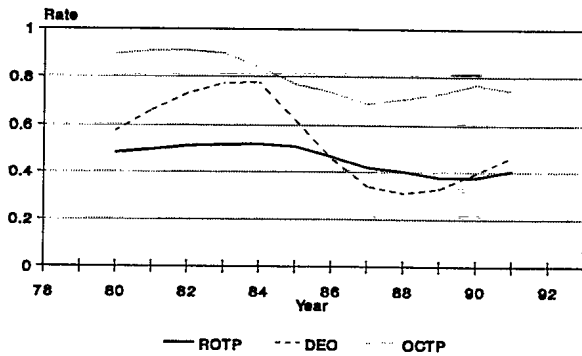
ENGINEERING MOCs - 41,42,43,44,46

Elig. Rates - Major Plans (5 yr avg)
 Major Rank



ENGINEERING MOCs - 41,42,43,44,46

Elig. Rates - Major Plans (5 yr avg)
 Captain Rank



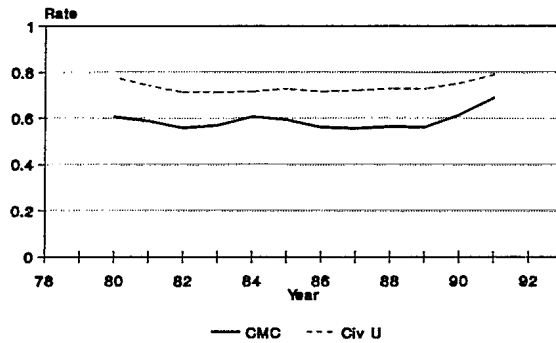
ENGINEERING MOCs - 41,42,43,44,46

Figure E - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 Engineering MOCs

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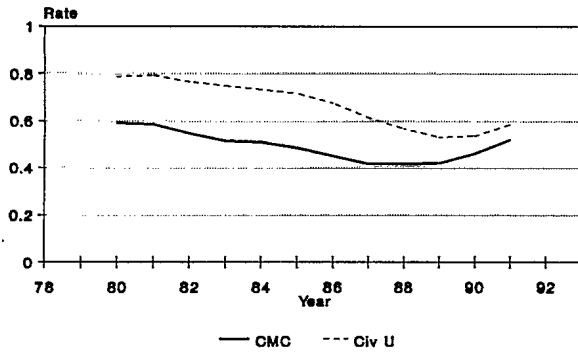
5. ROTP - CMC/Civilian University In comparing ROTP eligibility, the rates for CMC graduates in the engineering MOCs have been consistently lower at all three ranks, with a slight increase since 1989 (Figure E - 4).

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Colonel Rank



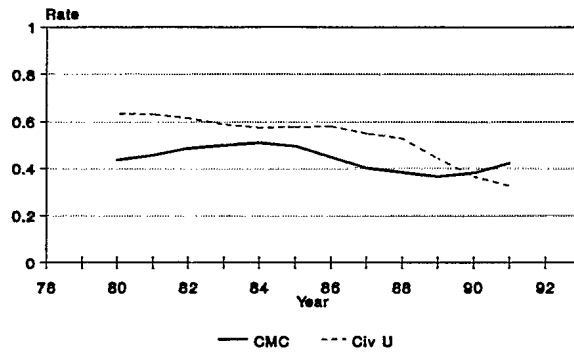
ENGINEERING MOCs - 41,42,43,44,45

Eligibility Rates for ROTP (5 yr avg)
 Major Rank



ENGINEERING MOCs - 41,42,43,44,45

Eligibility Rates for ROTP (5 yr avg)
 Captain Rank



ENGINEERING MOCs - 41,42,43,44,45

Figure E - 4: ROTP Eligibility Rates
 5-year Moving Averages
 Engineering MOCs

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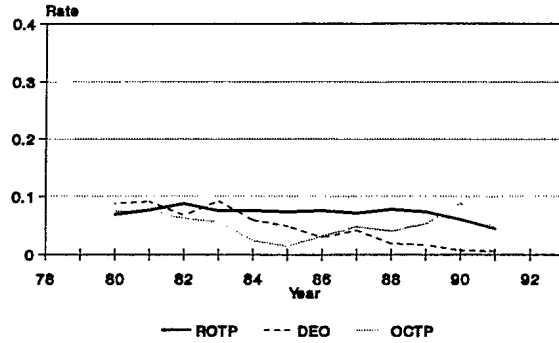
Promotion Rates

6. Major Plans ROTP promotion rates to the ranks of Maj and LCol were significantly² different from those for DEO and OCTP in the engineering MOCs (Figure E - 5). Despite apparent differences between DEO and OCTP promotion rates, especially promotion to the Maj rank, statistical tests on rates for these two plans were inconclusive at all ranks. The FRP influenced promotion rates to the Maj rank for both ROTP and DEO officers, but only influenced rates for ROTP officers to the LCol and Col ranks.

² All statements on statistical significance are tested at the 95 percent confidence level.

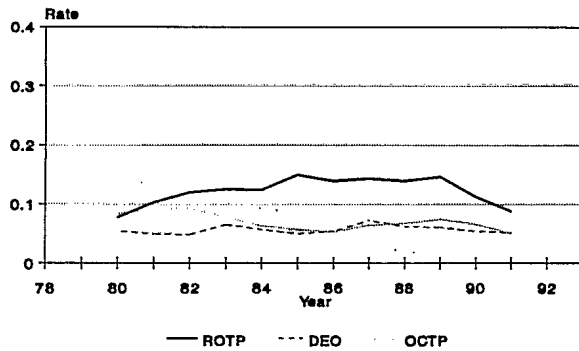
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Promotion Rates - Major Plans (5 yr avg)
 To Colonel Rank



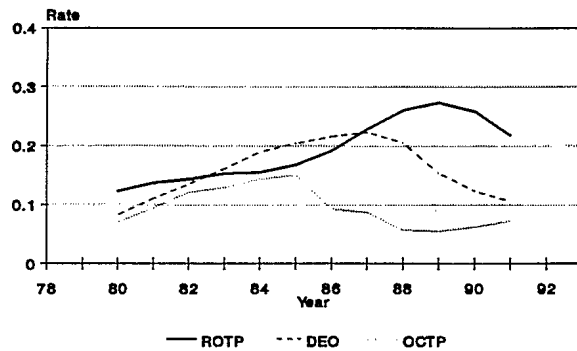
ENGINEERING MOCs - 41,42,43,44,45

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Colonel Rank



ENGINEERING MOCs - 41,42,43,44,45

Promotion Rates - Major Plans (5 yr avg)
 To Major Rank



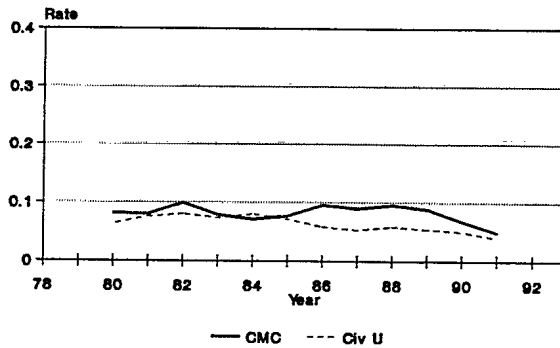
ENGINEERING MOCs - 41,42,43,44,45

Figure E - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 Engineering MOCs

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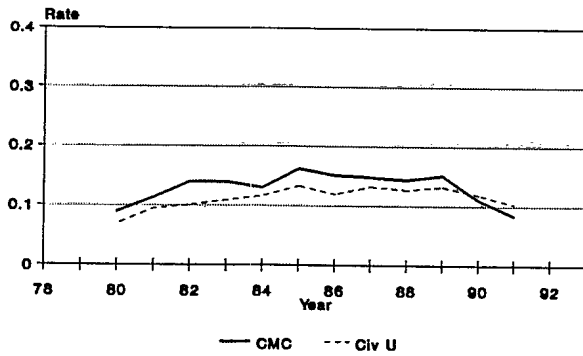
7. ROTP - CMC/Civilian University In comparing ROTP promotion rates, those for CMC were generally higher, except at the Maj rank since 1988 (Figure E - 6). FRP influences are apparent at all ranks.

Promotion Rates for ROTP (5 yr avg)
 To Colonel Rank



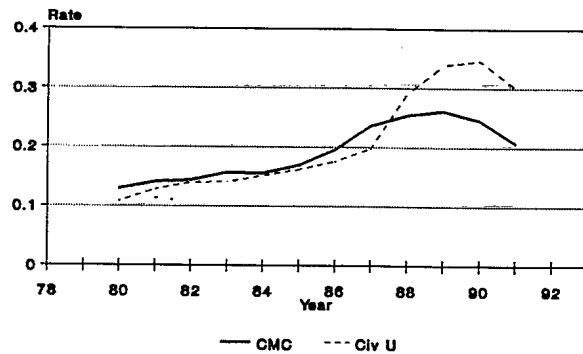
ENGINEERING MOCS - 41,42,43,44,45

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Colonel Rank



ENGINEERING MOCS - 41,42,43,44,45

Promotion Rates for ROTP (5 yr avg)
 To Major Rank



ENGINEERING MOCS - 41,42,43,44,45

Figure E - 6: ROTP Promotion Rates
 5-year Moving Averages
 Engineering MOCs

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Retention

8. Minor Plans The retention curves reveal that the average length of service for engineering officers was 13.2 YCS (24.2 YOS) for UTPM, 10.6 YCS (27.6 YOS) for CFR, and 2.8 YCS (27.0 YOS) for those commissioned under the 'other' plans (Figure E - 7).

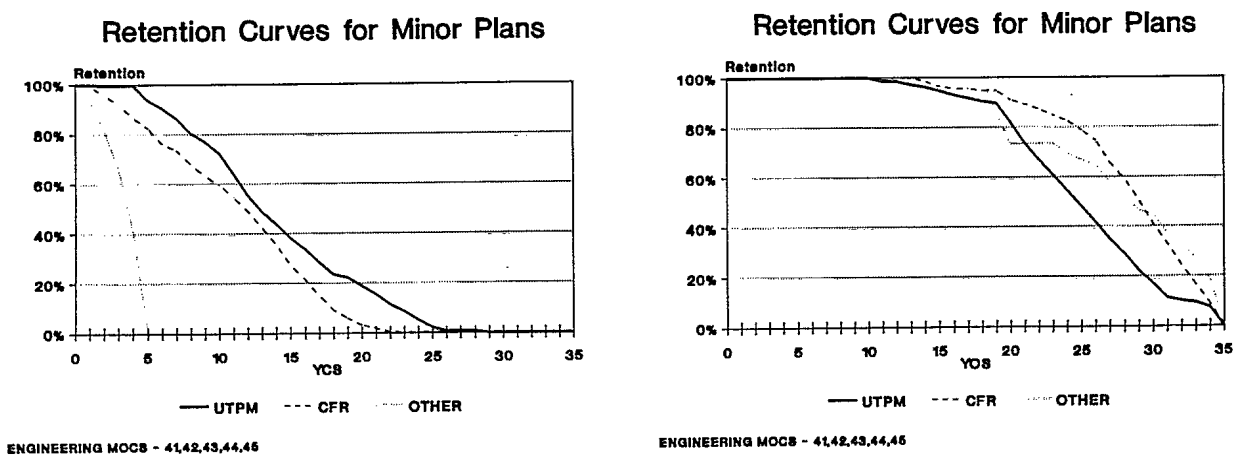


Figure E - 7: Minor Plan Retention Curves
 Engineering MOCs

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9. Major Plans Although ROTP attrition increased after three YCS, following obligatory service, neither DEO nor ROTP retention levelled off until the start of the IE (Figure E - 8). OCTP retention was significantly different, but the proportion of OCTP engineering officers has been negligible. On the YOS curves about 55 percent of ROTP and 60 percent of DEO engineers completed the IE. The average length of service was 14.5 YCS (18.6 YOS) for ROTP officers, 15.5 YCS (16.7 YOS) for DEO officers, and 20.8 YCS (24.3 YOS) for OCTP officers.

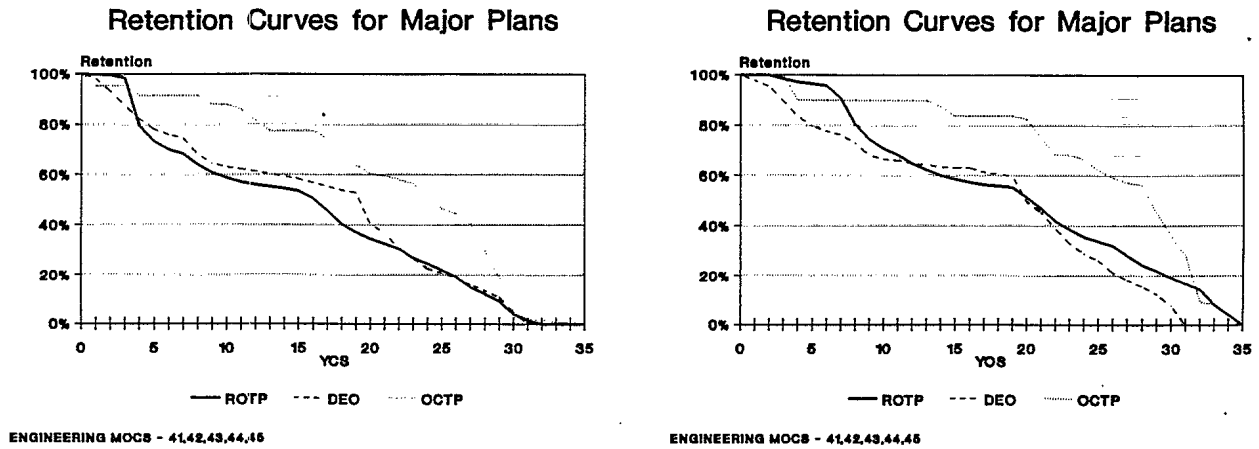
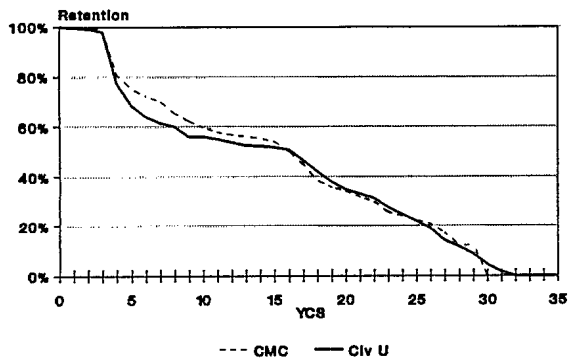


Figure E - 8: Major Plan Retention Curves
 Engineering MOCs

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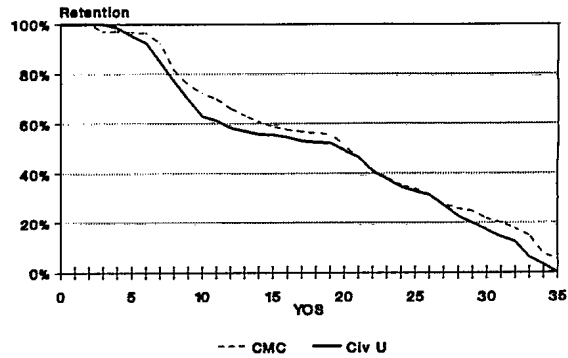
10. ROTP - CMC/Civilian University The YCS retention curves for engineering ROTP officers are identical through obligatory service (Figure E - 9). Attrition for officers from civilian universities continued to be high until the retention levelled slightly between six and nine YCS under the influence of the gratuity offer. About 57 percent of CMC and 52 percent of civilian university engineering officers served through the IE, although ROTP officers from both backgrounds had similar retention patterns while on IPS. The average length of service was 14.6 YCS (19.0 YOS) for ROTP officers from CMC; for officers from civilian universities it was 14.2 YCS (17.8 YOS).

Retention Curves for ROTP Officers



ENGINEERING MOCs - 41,42,43,44,46

Retention Curves for ROTP Officers



ENGINEERING MOCs - 41,42,43,44,46

Figure E - 9: ROTP Retention Curves
 Engineering MOCs

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11. Civilian University - ROTP/DEOD Of engineering officers that attended civilian universities retention differences were significant between three and nine YCS. DEOD officers showed earlier attrition and ROTP officers responded to the offer of the gratuity at nine YCS (Figure E - 10). DEOD and ROTP officers had similar retention through the IE, with retention for both near 52 percent at 20 YOS. The average length of service was 14.2 YCS (15.4 YOS) for DEOD officers; for ROTP civilian university officers it was 14.2 YCS (17.8 YOS).

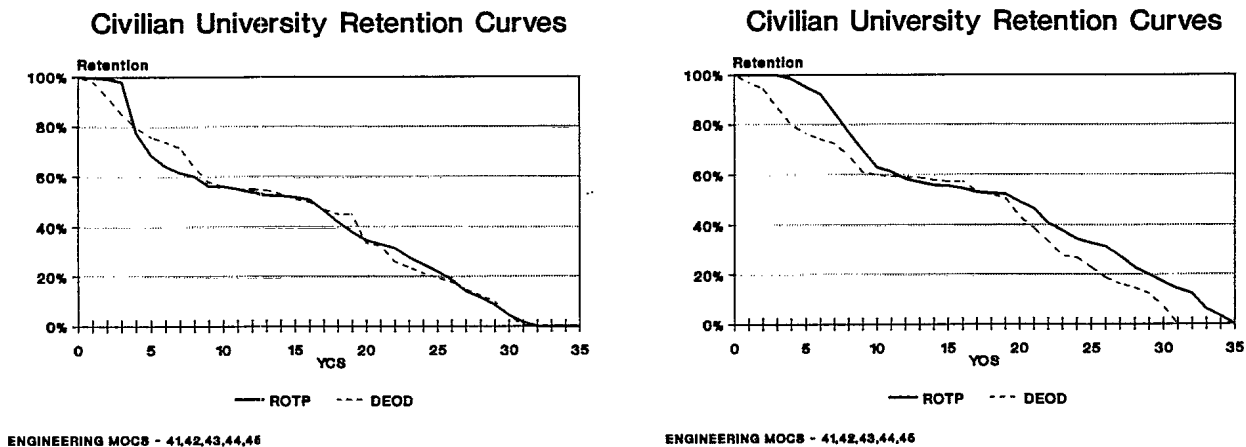


Figure E - 10: Civilian University Retention Curves
 Engineering MOCs

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ENGINEERING OCCUPATIONS LESS MARE

Strength

1. The non-maritime engineering officer population grew by 26 percent in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure F - 1, were:

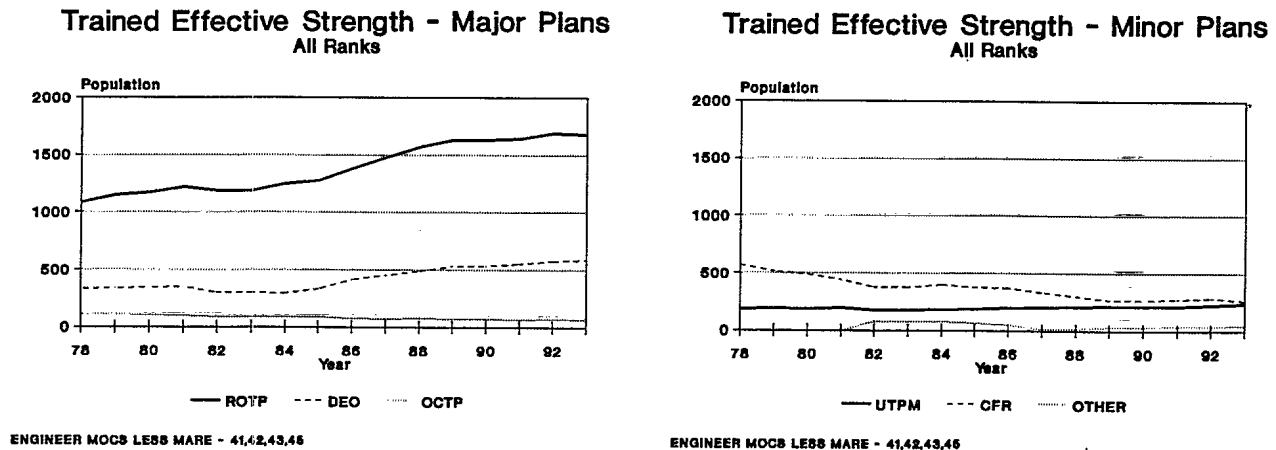


Figure F - 1: Trained Effective Strength
All Commissioning Plans - Engineering MOCs Less MARE
Ranks - Lt to Col

- a. ROTP - an increase of 55 percent, mostly since 1983;
- b. DEO - an increase of 76 percent, all the growth since 1984;
- c. OCTP - a continuous decrease of 43 percent, though the numbers are small;
- d. UTPM - an increase of 27 percent, all since 1983;
- e. CFR - a decrease of 54 percent, primarily in the periods from 1978 to 1982 and 1984 to 1989; and

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- f. other plans - an infinite percentage increase from none in 1978 to 36 officers by 1993.

Commissioning Plan Distribution

2. Because there were changes in the composition of the non-maritime engineering MOCs, distributions of commissioning plans over the period from 1978 to 1993 were also examined and showed:

a. for all officers:

- (1) ROTP - a proportion of 48 percent in 1978 increased smoothly to 59 percent by 1988, and levelled there,
- (2) DEO - a proportion of 15 percent in 1978 increased to 20 percent by 1993, after dropping to 13 percent in 1984,
- (3) OCTP - the small proportion of five percent in 1978 decreased to two percent by 1993, and
- (4) minor plans combined - a proportion of 33 percent in 1978 decreased to 19 percent by 1993;

b. for junior officers:

- (1) ROTP - a proportion of 46 percent in 1978 increased to 56 percent by 1993, having reached 58 percent in 1989 and 1990,
- (2) DEO - a proportion of 13 percent in 1978 increased to 23 percent by 1993, having been as low as ten percent in 1984,
- (3) OCTP - the small proportion of three percent in 1978 decreased to one percent by 1993, and
- (4) minor plans combined - a proportion of 39 percent in 1978 decreased to 20 percent by 1989, where it generally remained until 1993; and

c. for senior officers:

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- (1) ROTP - a proportion of 51 percent in 1978 increased to 63 percent by 1993,
- (2) DEO - a proportion of 18 percent in 1978 held until 1986, then it dropped to 16 percent by 1993,
- (3) OCTP - a proportion of eight percent in 1978 decreased to three percent by 1993, and
- (4) minor plans combined - a proportion of 24 percent in 1978 decreased to 17 percent by 1993.

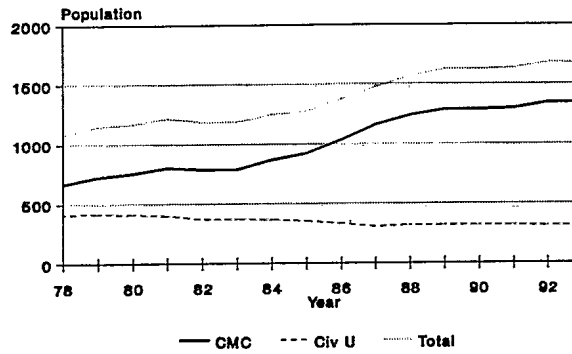
ROTP - CMC/Civilian University

3. ROTP numbers in non-maritime engineering MOCs increased by 55 percent. The change was a 101 percent increase for the CMC component whereas it was a 24 percent decrease for civilian university graduates (Figure F - 2). Between 1978 and 1993 CMC graduates went from representing 62 to 80 percent of ROTP non-maritime engineering officers; civilian university ROTP graduates decreased their representation from 38 to 19¹ percent.

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

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Trained Effective Strength
ROTP Commissioning Plan



ENGINEER MOCs LESS MARE - 41,42,43,45

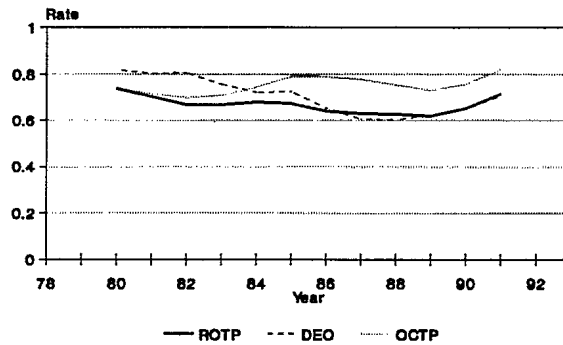
Figure F - 2: Trained Effective Strength
ROTP - Engineering MOCs Less MARE
Ranks - Lt to Col

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Eligibility Rates

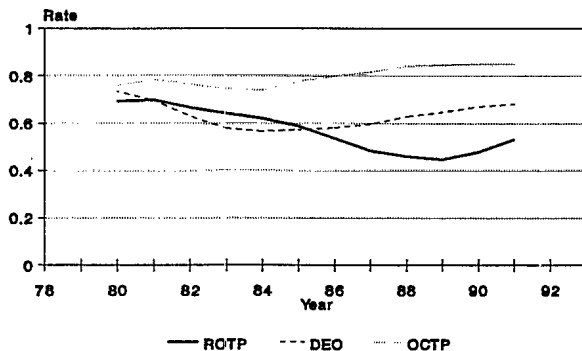
4. Major Plans OCTP does not produce many non-maritime engineers; nevertheless eligibility rates for OCTP officers have been higher than those for either DEO or ROTP (Figure F - 3). ROTP eligibility rates have been most consistent and have generally been the lowest. Eligibility rates for all plans have increased slightly since the 1990 FRP was introduced.

Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Colonel Rank



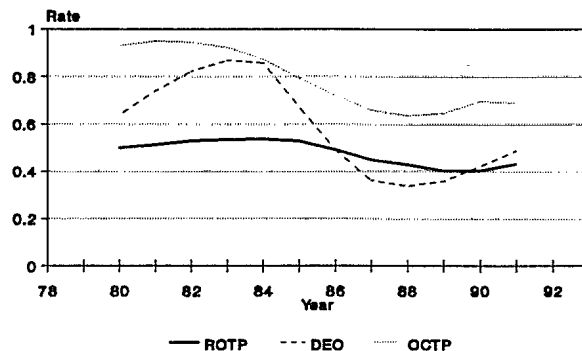
ENGINEER MOCs LESS MARE - 41,42,43,45

Elig. Rates - Major Plans (5 yr avg)
 Major Rank



ENGINEER MOCs LESS MARE - 41,42,43,45

Elig. Rates - Major Plans (5 yr avg)
 Captain Rank



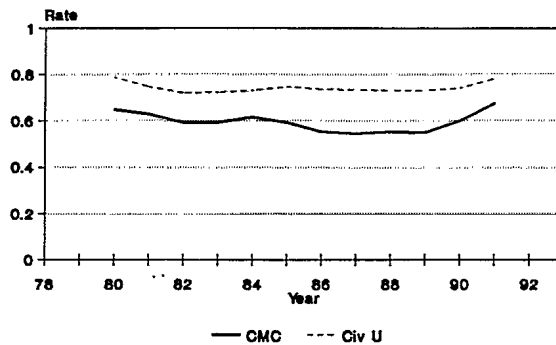
ENGINEER MOCs LESS MARE - 41,42,43,45

Figure F - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 Engineering MOCs Less MARE

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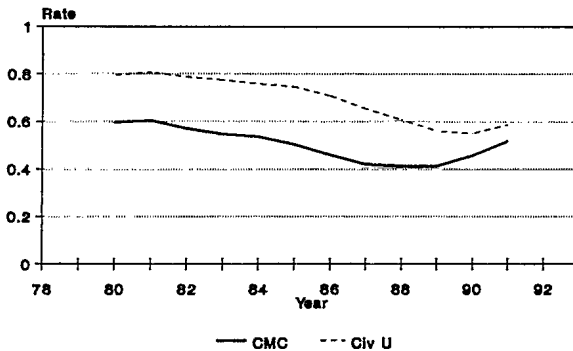
5. ROTP - CMC/Civilian University In comparing ROTP eligibility rates, rates for CMC graduates have been consistently lower at all three ranks (Figure F - 4). The eligibility rates for ROTP Majs and LCol's from both sources increased since the 1990 FRP introduction.

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Colonel Rank



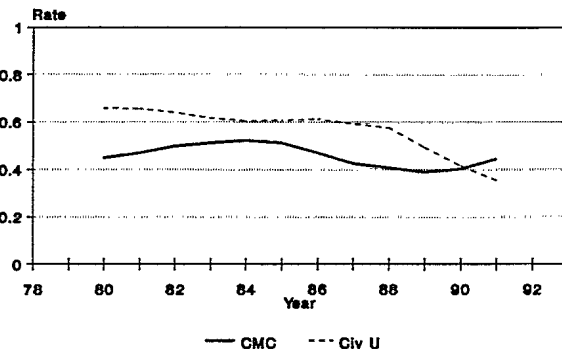
ENGINEER MOCs LESS MARE - 41,42,43,45

Eligibility Rates for ROTP (5 yr avg)
 Major Rank



ENGINEER MOCs LESS MARE - 41,42,43,45

Eligibility Rates for ROTP (5 yr avg)
 Captain Rank



ENGINEER MOCs LESS MARE - 41,42,43,45

Figure F - 4: ROTP Eligibility Rates
 5-year Moving Averages
 Engineering MOCs Less MARE

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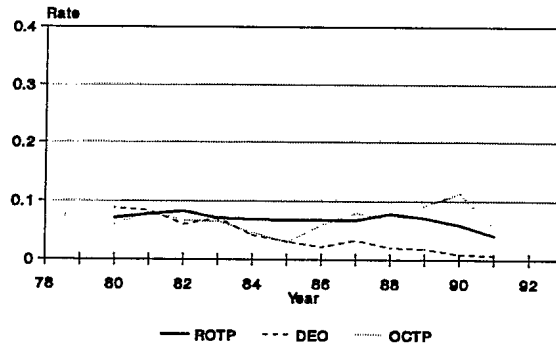
Promotion Rates

6. Major Plans For the non-maritime engineers ROTP promotion rates have been generally higher, while OCTP promotion rates have been most erratic due to small numbers (Figure F - 5). The only significant² difference in promotion rates was between ROTP and DEO officers to the LCol rank. FRP influences are apparent at all ranks in the latter years.

² All statements on statistical significance are tested at the 95 percent confidence level.

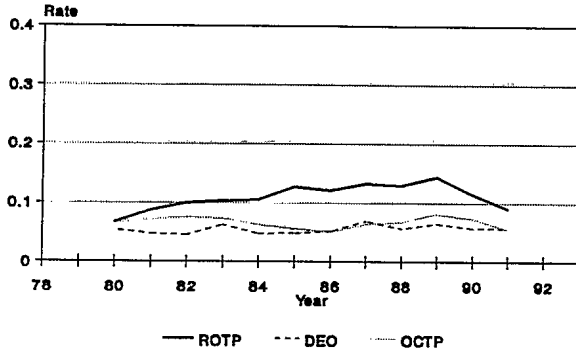
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Promotion Rates - Major Plans (5 yr avg)
 To Colonel Rank



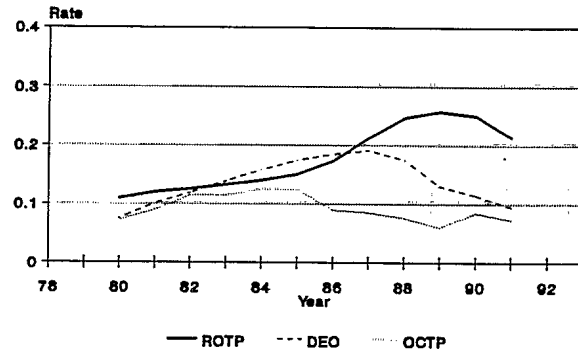
ENGINEER MOCs LESS MARE - 41,42,43,46

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Colonel Rank



ENGINEER MOCs LESS MARE - 41,42,43,46

Promotion Rates - Major Plans (5 yr avg)
 To Major Rank



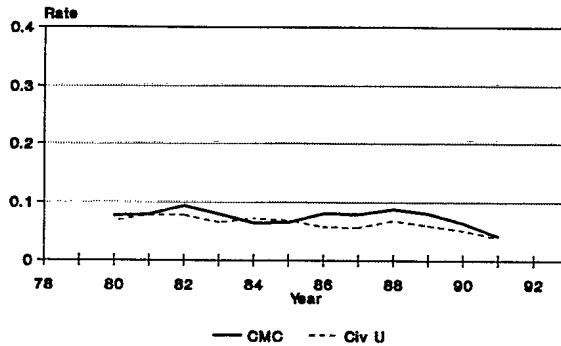
ENGINEER MOCs LESS MARE - 41,42,43,46

Figure F - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 Engineering MOCs Less MARE

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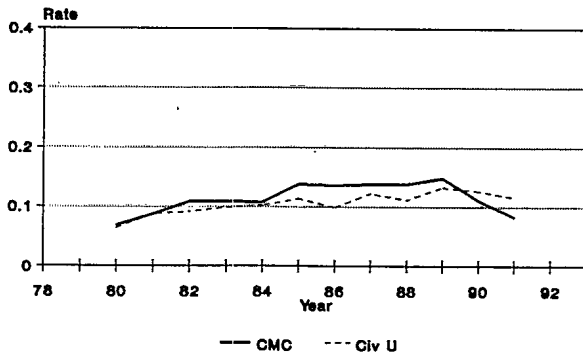
7. ROTP - CMC/Civilian University In comparing ROTP promotion rates, CMC rates were generally higher at all ranks examined, however the statistical tests on differences were inconclusive (Figure F - 6). A recent decline in rates apparent for all ROTP officers is possibly related to the FRP.

Promotion Rates for ROTP (5 yr avg)
 To Colonel Rank



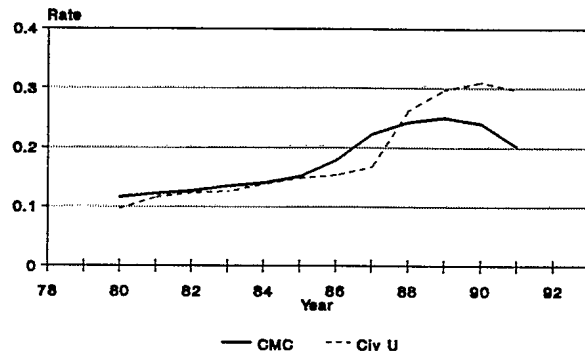
ENGINEER MOCs LESS MARE - 41,42,43,45

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Colonel Rank



ENGINEER MOCs LESS MARE - 41,42,43,45

Promotion Rates for ROTP (5 yr avg)
 To Major Rank



ENGINEER MOCs LESS MARE - 41,42,43,45

Figure F - 6: ROTP Promotion Rates
 5-year Moving Averages
 Engineering MOCs Less MARE

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Retention

8. Minor Plans The minor plan retention curves for non-maritime engineering officers reveal that the average length of service was 12.8 YCS (23.8 YOS) for those commissioned under UTPM, 10.4 YCS (27.8 YOS) for CFR, and 2.7 YCS (28.8 YOS) for the 'other' plans (Figure F - 7).

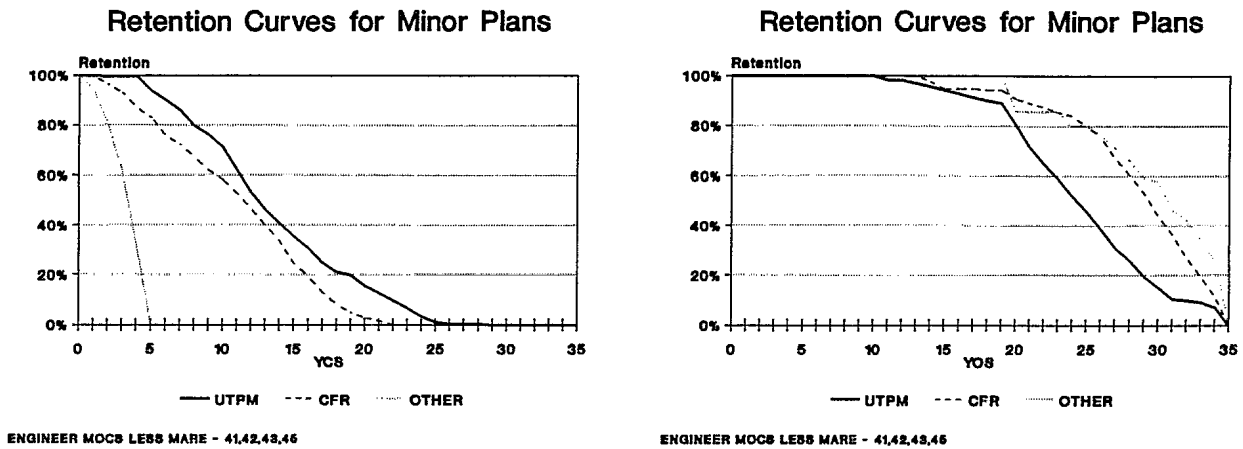


Figure F - 7: Minor Plan Retention Curves
 Engineering MOCs Less MARE

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9. **Major Plans** ROTP attrition increased after three YCS following obligatory service (Figure F - 8). After four YCS DEO retention was significantly better than that for ROTP. DEO early retention levelled off between five and seven YCS, possibly influenced by obligatory service after post-graduate courses. Increased ROTP attrition at seven YCS corresponds to ten YOS, a point where pre-OCDP officers tended to leave. DEO retention was about 65 percent, and ROTP retention about 57 percent to the end of the IE at 20 YOS. All three plans showed increased attrition at the start of the IPS, but DEO attrition rates were the greatest. The OCTP curve revealed little because of small numbers, but there was significantly different retention. For non-maritime engineering officers commissioned under ROTP the average length of service was 14.9 YCS (19.2 YOS), 16.4 YCS (17.7 YOS) for DEO, and 23.4 YCS (26.9 YOS) for OCTP.

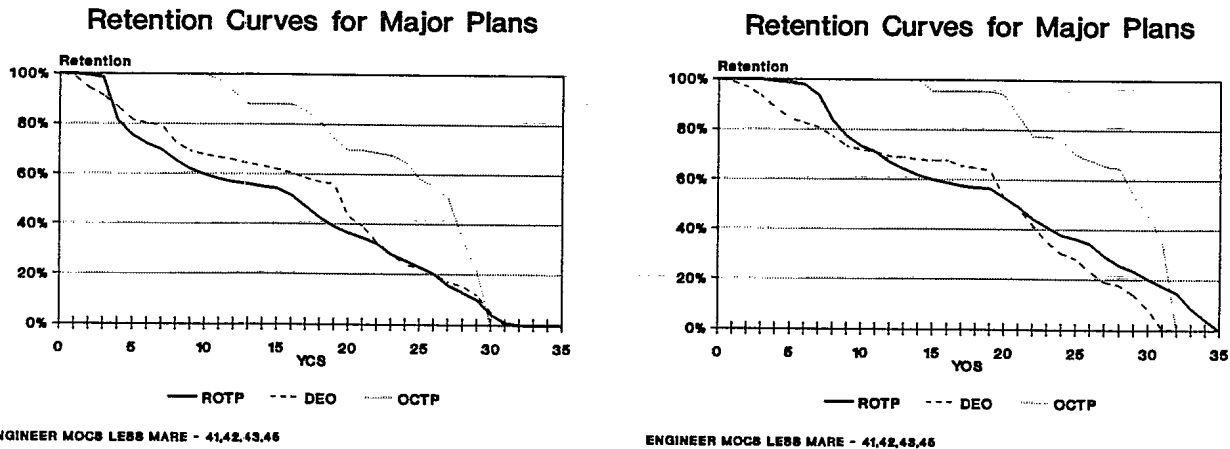
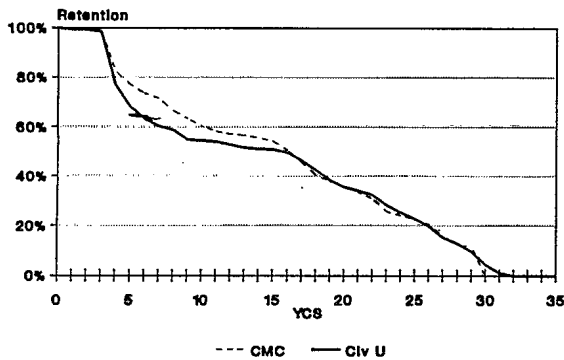


Figure F - 8: Major Plan Retention Curves
 Engineering MOCs Less MARE

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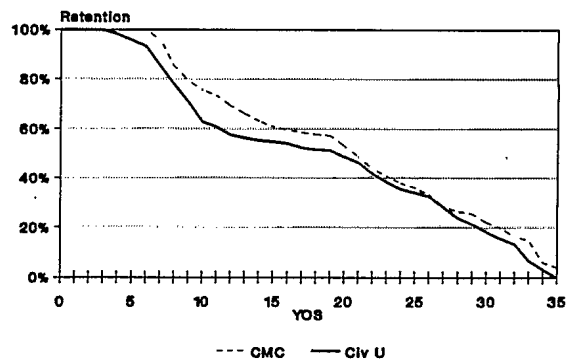
10. ROTP - CMC/Civilian University The YCS retention curves for non-maritime ROTP engineers are similar for the initial period of obligatory service, but CMC officer retention was better until 15 YCS, and throughout on the YOS curves (Figure F - 9). Retention of officers from civilian universities was significantly lower when it levelled off slightly between seven and eight YCS, possibly to accept the offered gratuity. About 57 percent of CMC and 51 percent of civilian university officers served through the IE, and both YCS and YOS curves indicate similar IPS retention. The average length of service was 14.8 YCS (19.6 YOS) for CMC officers, and 14.1 YCS (17.9 YOS) for civilian university ROTP officers.

Retention Curves for ROTP Officers



ENGINEER MOCs LESS MARE - 41,42,43,45

Retention Curves for ROTP Officers



ENGINEER MOCs LESS MARE - 41,42,43,45

Figure F - 9: ROTP Retention Curves
 Engineering MOCs Less MARE

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11. Civilian University - ROTP/DEOD Of those non-maritime engineering officers that attended civilian universities, DEOD officers showed earlier attrition than did ROTP, but only ROTP officers responded to the nine YCS gratuity (Figure F - 10). About 53 percent of DEOD and 51 percent of ROTP officers completed 20 YOS, then DEOD retention subsided. The average length of service was 14.1 YCS (17.9 YOS) for civilian university ROTP officers and 14.4 YCS (16.2 YOS) for DEOD officers.

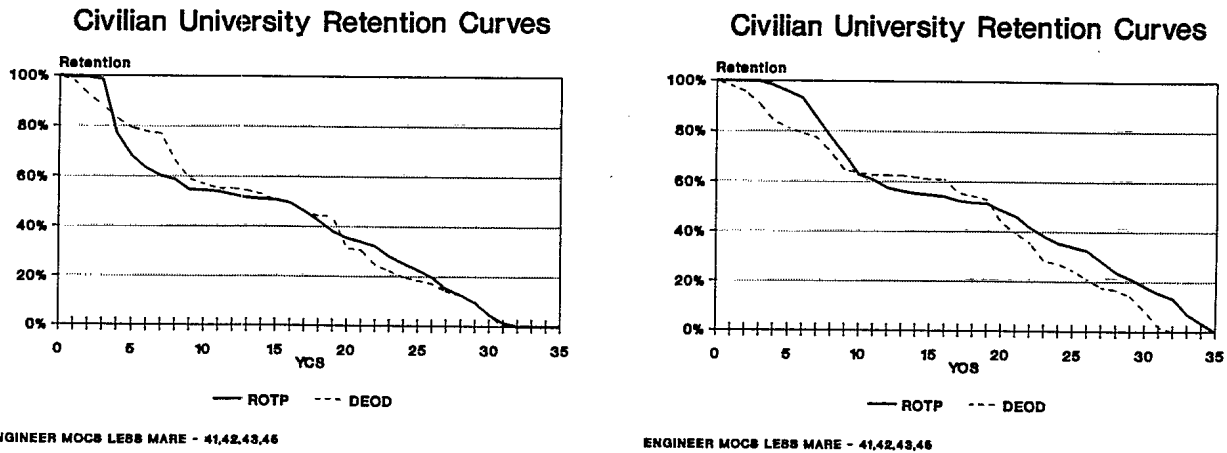


Figure F - 10: Civilian University Retention Curves
 Engineering MOCs Less MARE

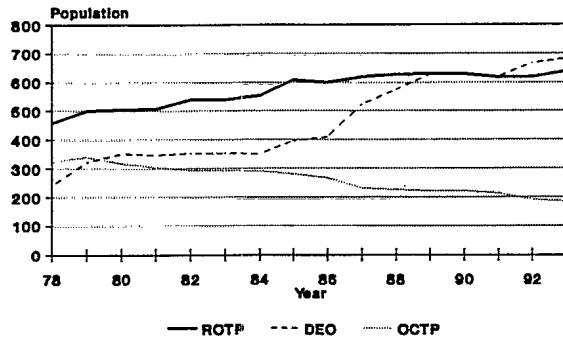
ANNEX G
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SUPPORT OCCUPATIONS

Strength

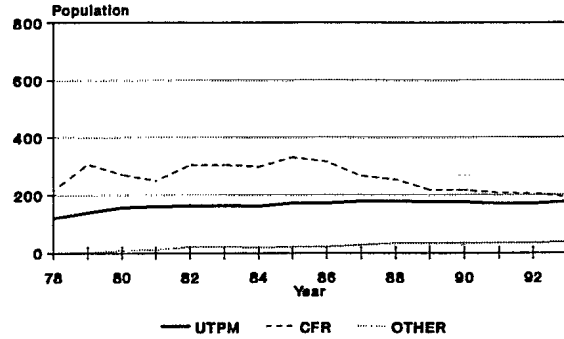
1. The population of officers in the support MOCs grew by 41 percent in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure G - 1, were:

Trained Effective Strength - Major Plans
All Ranks



PADM & LOG - 68,69

Trained Effective Strength - Minor Plans
All Ranks



PADM & LOG - 68,69

Figure G - 1: Trained Effective Strength
All Commissioning Plans - Support MOCs
Ranks - Lt to Col

- a. ROTP - an increase of 40 percent over the period, with most of it occurring prior to 1985;
- b. DEO - an increase of 183 percent, most of it having taken place since 1986;
- c. OCTP - a decrease of 43 percent over the period, mostly between 1983 and 1987;
- d. UTPM - an increase of 48 percent over the period, with most of it from 1978 to 1980;
- e. CFR - a decrease of 12 percent over the whole period, but having increased by over 50 percent by 1985; and

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- f. other plans - an infinite percentage increase from none in 1978 to 36 officers by 1993.

Commissioning Plan Distribution

2. Because there were changes in the composition of the support MOCs, commissioning plan distributions in the period from 1978 to 1993 were also examined and showed:

a. for all officers:

- (1) ROTP - a proportion of 34 percent in 1978, decreased to 31 percent in 1979, increased to 33 percent by 1985 and has since remained at that level,
- (2) DEO - a proportion of 18 percent in 1978 increased smoothly to 36 percent by 1993,
- (3) OCTP - a proportion of 24 percent in 1978 decreased to a proportion of 10 percent by 1993, and
- (4) minor plans combined - a proportion of 24 percent in 1978 decreased to 21 percent by 1993, having been as high as 29 percent in 1982/83;

b. for junior officers:

- (1) ROTP - a proportion of 39 percent in 1978 decreased to 28 percent by 1993,
- (2) DEO - a proportion of 13 percent in 1978 more than tripled to 44 percent by 1993,
- (3) OCTP - a proportion of 20 percent in 1978 decreased to seven percent by 1993, having been as low as four percent in 1987, and
- (4) minor plans combined - a proportion of 28 percent in 1978 decreased to 21 percent by 1993, having been as high as 35 percent between 1982 and 1986; and

c. for senior officers all changes in distributions occurred smoothly between 1978 and 1993:

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- (1) ROTP - a proportion of 22 percent doubled to 44 percent,
- (2) DEO - a proportion of 28 percent decreased to 21 percent,
- (3) OCTP - a proportion of 33 percent decreased to 15 percent, and
- (4) minor plans combined - a proportion of 17 percent increased to 20 percent.

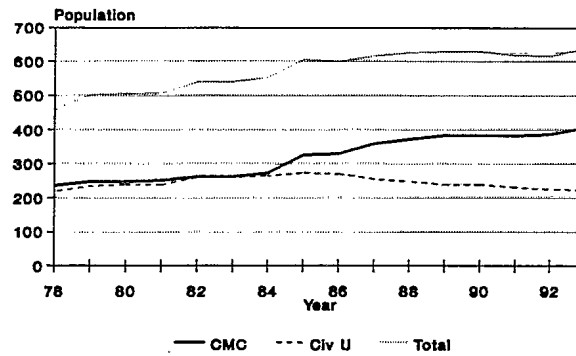
ROTP - CMC/Civilian University

3. ROTP numbers in the support MOCs increased by 40 percent. Whereas the number of ROTP officers from both sources was about equal until 1984, between 1978 and 1993 the increase was 73 percent for the CMC component while it was only one percent for graduates from civilian universities (Figure G - 2). Over the full period CMC graduates went from representing 51 to 64 percent of ROTP support officers; civilian university ROTP graduates decreased their representation from 48¹ to 35¹ percent.

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

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Trained Effective Strength
ROTP Commissioning Plan



FADM & LOG - 68,69

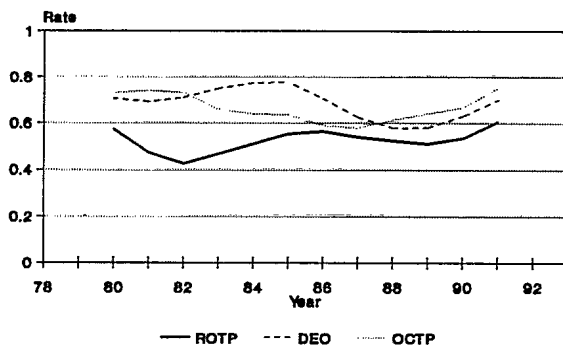
Figure G - 2: Trained Effective Strength
ROTP - Support MOCs
Ranks - Lt to Col

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Eligibility Rates

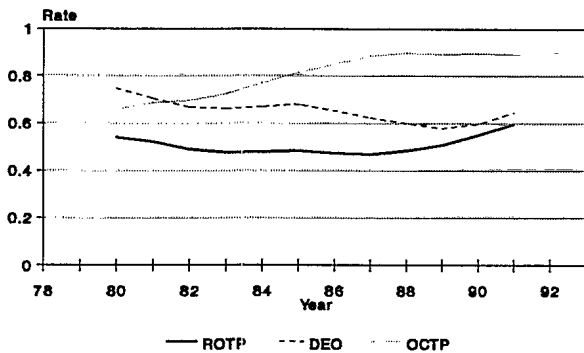
4. Major Plans Eligibility rates for OCTP officers in the support MOCs have generally been higher at the Capt and Maj ranks, and on par with DEO at the LCol rank. The ROTP eligibility rates have been the lowest except at the Capt rank. ROTP Capt eligibility has been fairly constant, while DEO and OCTP rates have decreased since 1984 (Figure G - 3).

Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Colonel Rank



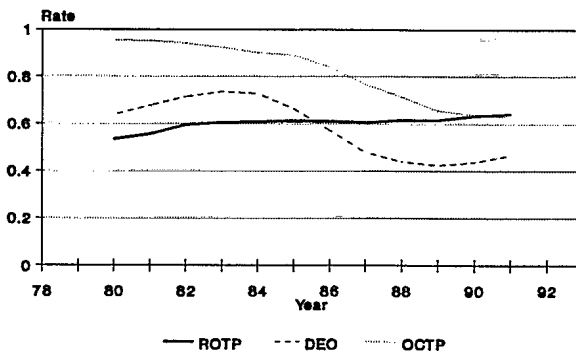
PADM & LOG - 68,69

Elig. Rates - Major Plans (5 yr avg)
 Major Rank



PADM & LOG - 68,69

Elig. Rates - Major Plans (5 yr avg)
 Captain Rank



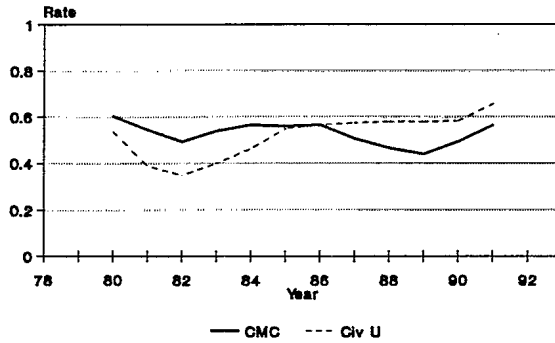
PADM & LOG - 68,69

Figure G - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 Support MOCs

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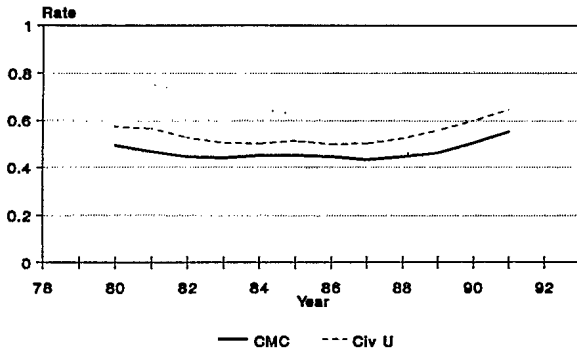
5. ROTP - CMC/Civilian University Eligibility rates for CMC graduates have been consistently lower at the Capt and Maj ranks (Figure G - 4). LCol eligibility rates were lower for officers from civilian universities prior to 1985 and for CMC graduates since 1986.

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Colonel Rank



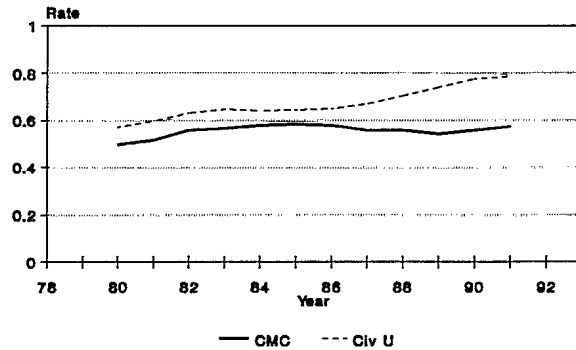
PADM & LOG - 68,69

Eligibility Rates for ROTP (5 yr avg)
 Major Rank



PADM & LOG - 68,69

Eligibility Rates for ROTP (5 yr avg)
 Captain Rank



PADM & LOG - 68,69

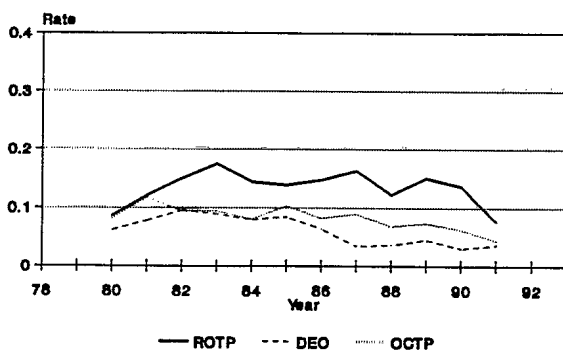
Figure G - 4: ROTP Eligibility Rates
 5-year Moving Averages
 Support MOCs

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Promotion Rates

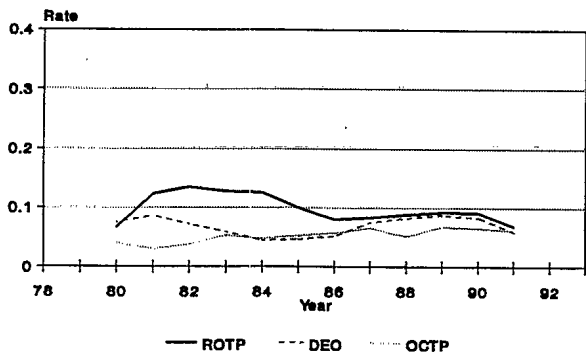
6. Major Plans ROTP promotion rates for officers in the support MOCs have generally been the highest (Figure G - 5). The differences were significant² for promotion rates to the rank of Maj.

Promotion Rates - Major Plans (5 yr avg)
 To Colonel Rank



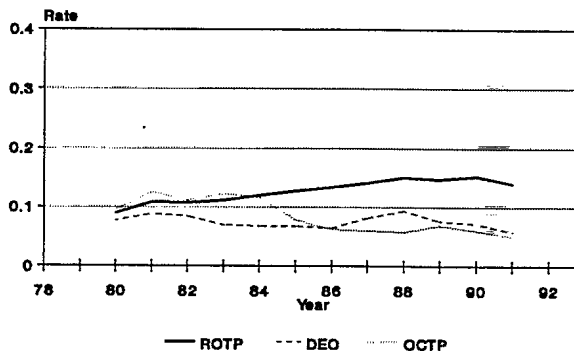
PADM & LOG - 68,69

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Colonel Rank



PADM & LOG - 65,69

Promotion Rates - Major Plans (5 yr avg)
 To Major Rank



PADM & LOG - 65,69

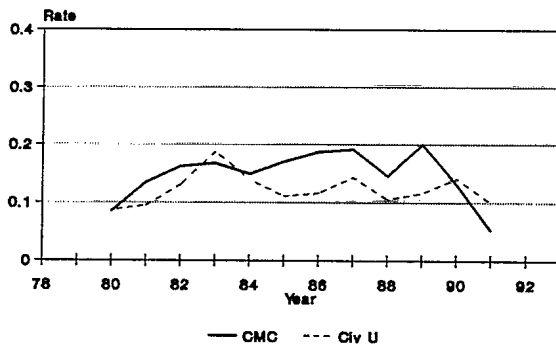
Figure G - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 Support MOCs

² All statements on statistical significance are tested at the 95 percent confidence level.

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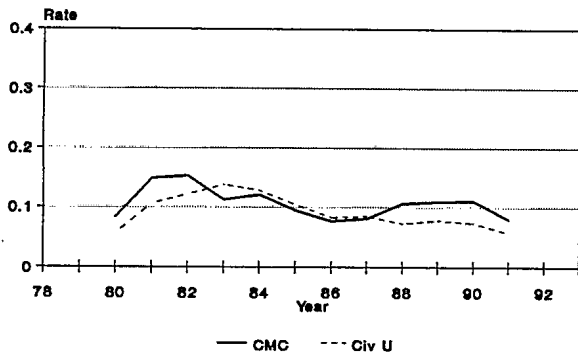
7. ROTP - CMC/Civilian University Civilian university and CMC promotion rates to all ranks examined for officers in the support MOCs have been similar (Figure G - 6). The effects of the FRP are visible at all ranks as a drop in promotion rates since 1990.

Promotion Rates for ROTP (5 yr avg)
 To Colonel Rank



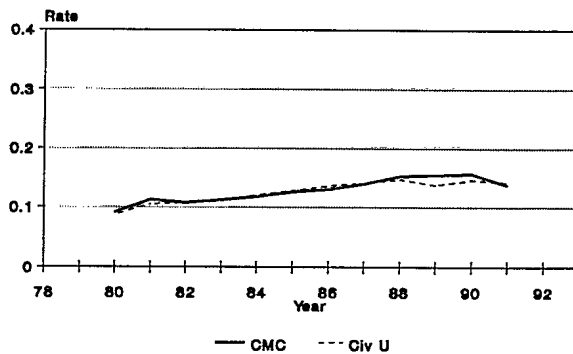
PADM & LOG - 88,89

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Colonel Rank



PADM & LOG - 88,89

Promotion Rates for ROTP (5 yr avg)
 To Major Rank



PADM & LOG - 88,89

Figure G - 6: ROTP Promotion Rates
 5-year Moving Averages
 Support MOCs

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Retention

8. Minor Plans The minor plan retention curves reveal that in the support MOCs the average length of service was 13.2 YCS (24.7 YOS) for officers commissioned under UTPM and 10.0 YCS (26.3 YOS) for CFR (Figure G - 7). There were too few officers from 'other' plans for analysis.

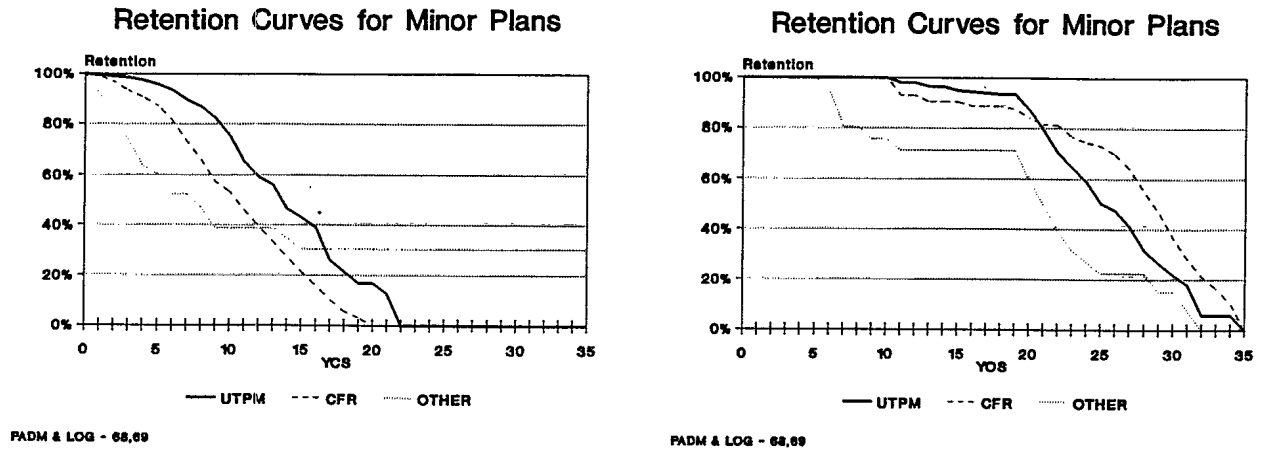
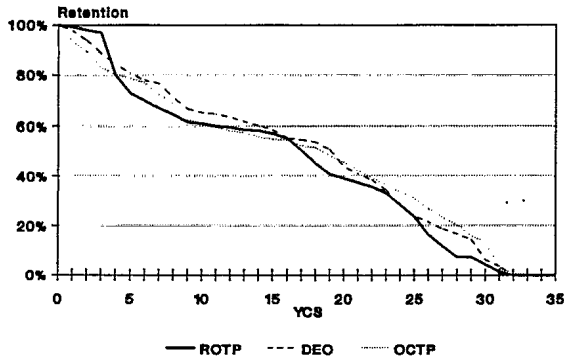


Figure G - 7: Minor Plan Retention Curves
 Support MOCs

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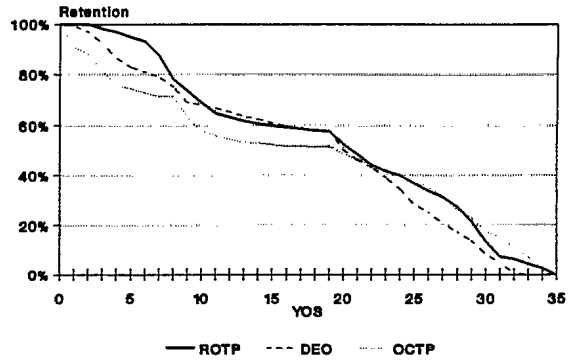
9. Major Plans ROTP attrition increased in the YCS plot following obligatory service, but between nine and 16 YCS, retention of officers from the support MOCs for all three plans was indistinguishable (Figure G - 8). The average length of service was 15.0 YCS (18.5 YOS) for ROTP officers, 16.2 YCS (17.2 YOS) for DEO, and 15.9 YCS (16.5 YOS) for OCTP.

Retention Curves for Major Plans



PADM & LOG - 68,69

Retention Curves for Major Plans



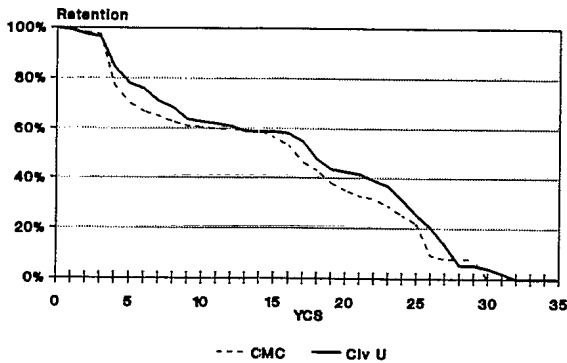
PADM & LOG - 68,69

Figure G - 8: Major Plan Retention Curves
 Support MOCs

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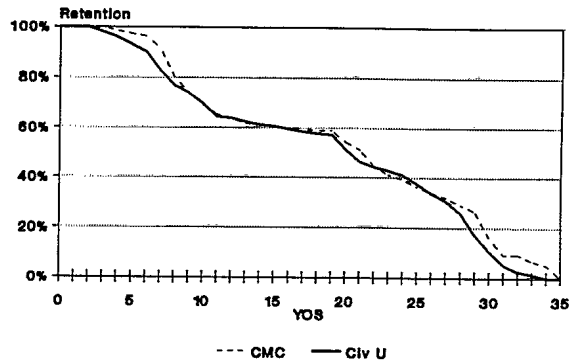
10. ROTP - CMC/Civilian University The YCS retention curves for ROTP officers from the support MOCs are similar for the first three YCS, but CMC attrition rates following obligatory service were higher (Figure G - 9). Officer retention from both backgrounds converged around nine YCS. Retention levels at 20 YOS were about 59 percent for CMC and about 58 percent for civilian university officers. The YOS curves indicate that officers from civilian universities had slightly higher post-IPS attrition than CMC officers. The average length of service was 14.4 YCS (18.9 YOS) for CMC officers; and for civilian university ROTP officers it was 15.7 YCS (18.2 YOS).

Retention Curves for ROTP Officers



PADM & LOG - 88,89

Retention Curves for ROTP Officers



PADM & LOG - 88,89

Figure G - 9: ROTP Retention Curves
 Support MOCs

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11. Civilian University - ROTP/DEOD Of those officers in the support MOCs that attended civilian universities significantly different retention patterns were observed for the early period: DEOD officers showed earlier attrition while ROTP officers had higher attrition following obligatory service. From then on retention was almost identical (Figure G - 10). The average length of service was 16.8 YCS (17.5 YOS) for DEOD officers and 15.7 YCS (18.2 YOS) for civilian university ROTP officers.

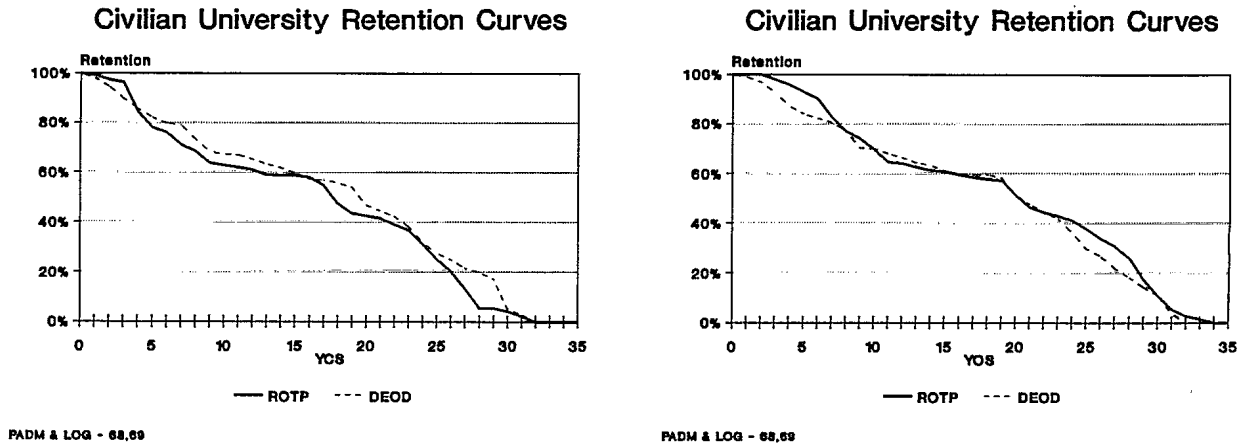


Figure G - 10: Civilian University Retention Curves
 Support MOCs

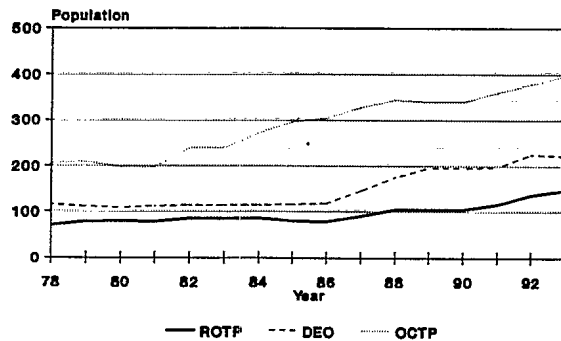
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MINOR OCCUPATIONS

Strength

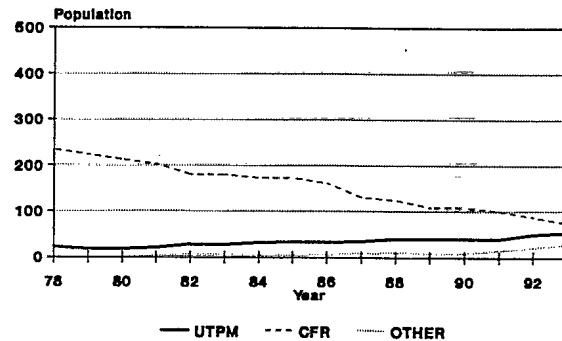
1. The population of officers in the minor MOCs grew by 43 percent in the period from 1978 to 1993. For individual commissioning plan populations the changes, as illustrated in Figure H - 1, were:

Trained Effective Strength - Major Plans
All Ranks



MINOR MOCs - 63,64,81,82

Trained Effective Strength - Minor Plans
All Ranks



MINOR MOCs - 63,64,81,82

Figure H - 1: Trained Effective Strength
All Commissioning Plans - Minor MOCs
Ranks - Lt to Col

- a. ROTP - an increase of 107 percent over the period, mostly since 1986;
- b. DEO - an increase of 93 percent, most of it having taken place since 1986;
- c. OCTP - an increase of 94 percent over the period, the increase coming after a stable period from 1978 to 1981;
- d. UTPM - an increase of 145 percent over the period, but small numbers are involved;
- e. CFR - a decrease of 68 percent over the period; and

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- f. other plans - an infinite percentage increase due to an introduction of three officers in 1981, reaching a strength of 30 by 1993.

Commissioning Plan Distribution

2. Because there were changes in the composition of the minor MOCs, commissioning plan distributions in the period from 1978 to 1993 were also examined and showed:

a. for all officers:

- (1) ROTP - a proportion of 11 percent in 1978 and 1986 increased to 16 percent by 1993,
- (2) DEO - a proportion of 18 percent in 1978 increased to 24 percent by 1993, having been 17 percent between 1984 and 1986,
- (3) OCTP - a proportion of 32 percent in 1978 increased to 43 percent by 1993 with a high of 45 percent in 1987, and
- (4) minor plans combined - a proportion of 39 percent in 1978 decreased to 17 percent by 1993;

b. for junior officers:

- (1) ROTP - a proportion of 12 percent in 1978 eventually increased to 14 percent by 1993, but the figures varied through the period reaching a low of eight percent,
- (2) DEO - a proportion of 16 percent in 1978 increased to 26 percent by 1993, having been as low as 15 percent in 1985,
- (3) OCTP - a proportion of 31 percent in 1978 increased to 45 percent by 1993, having been as high as 50 percent in 1987, and
- (4) minor plans combined - a proportion of 41 percent in 1978 decreased to 15 percent by 1989, where it remained until 1993; and

c. for senior officers:

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- (1) ROTP - a proportion of nine percent in 1978 increased to 20 percent by 1987, where it remained,
- (2) DEO - a proportion of 22 percent in 1978 decreased to 20 percent by 1993, with lows of 18 percent in 1982/83 and 1991/92,
- (3) OCTP - a proportion of 32 percent in both 1978 and 1993, with a low of 28 percent in the middle of the period, and
- (4) minor plans combined - a proportion of 37 percent in 1978 decreased from a high of 42 percent in 1980/81 to 22 percent by 1993.

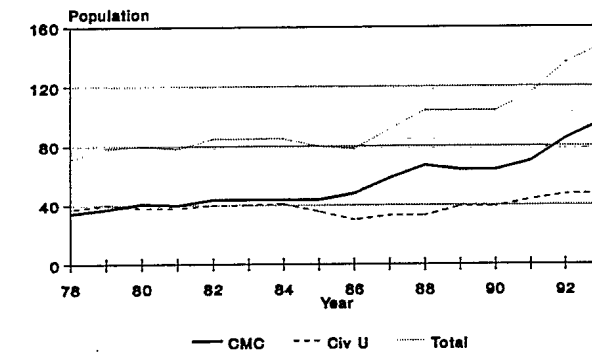
ROTP - CMC/Civilian University

3. The number of ROTP officers in the minor MOCs increased by 104 percent; the CMC component increased by 182 percent and the civilian university component increased by 30 percent (Figure H - 2). Between 1978 and 1993, CMC graduates went from representing 48 to 65 percent of ROTP officers in the minor MOCs; civilian university ROTP graduates decreased their representation from 52 to 33¹ percent.

¹ Total is less than 100 percent where uncertain or missing university type data has not yet been validated/corrected by the individual officer.

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Trained Effective Strength
ROTP Commissioning Plan



MINOR MOCs - 63,64,81,82

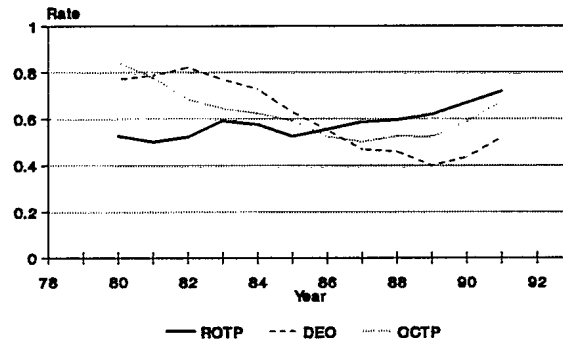
Figure H - 2: Trained Effective Strength
ROTP - Minor MOCs
Ranks - Lt to Col

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Eligibility Rates

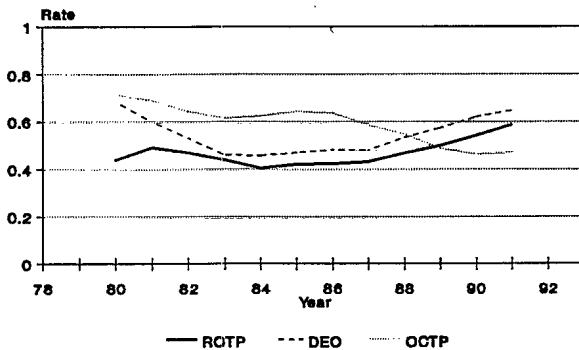
4. Major Plans Between 1980 and 1985 eligibility rates for DEO officers in the minor MOCs were generally higher than those for OCTP and ROTP at the Capt and LCol ranks. DEO Eligibility rates dropped below the OCTP and ROTP rates between 1986 and 1991. ROTP eligibility rates were generally lowest at the Maj rank (Figure H - 3).

Elig. Rates - Major Plans (5 yr avg)
 Lieutenant-Colonel Rank



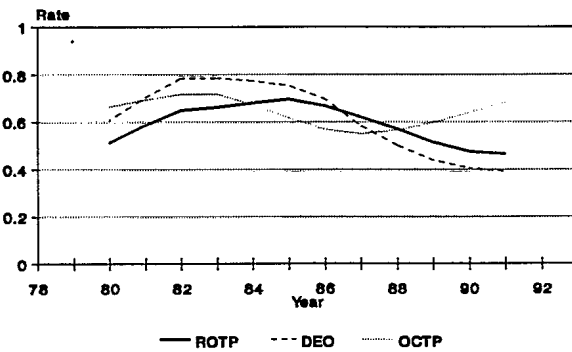
MINOR MOCs - 63,64,81,82

Elig. Rates - Major Plans (5 yr avg)
 Major Rank



MINOR MOCs - 63,64,81,82

Elig. Rates - Major Plans (5 yr avg)
 Captain Rank



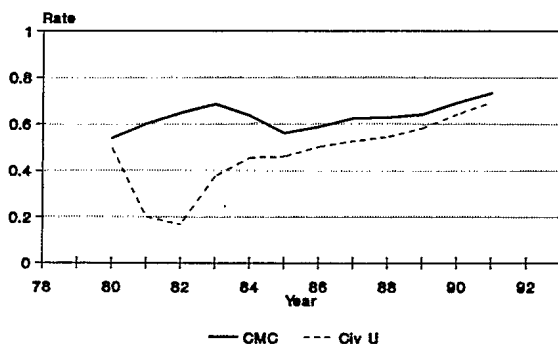
MINOR MOCs - 63,64,81,82

Figure H - 3: Eligibility Rates - Major Plans
 5-year Moving Averages
 Minor MOCs

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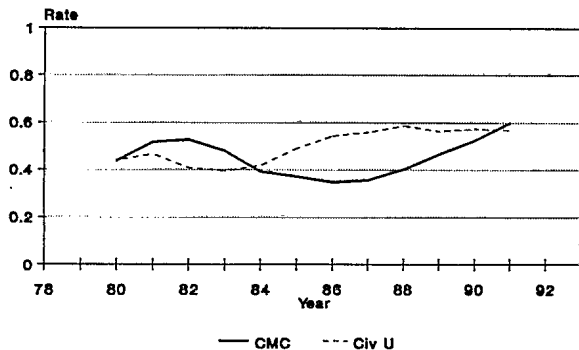
5. ROTP - CMC/Civilian University Eligibility rates at the Capt and Maj ranks for CMC and civilian university graduates were comparable over the first half of the period, but the rates for CMC graduates were lower thereafter (Figure H - 4). Conversely, the CMC rates have been consistently higher at LCol rank.

Eligibility Rates for ROTP (5 yr avg)
 Lieutenant-Colonel Rank



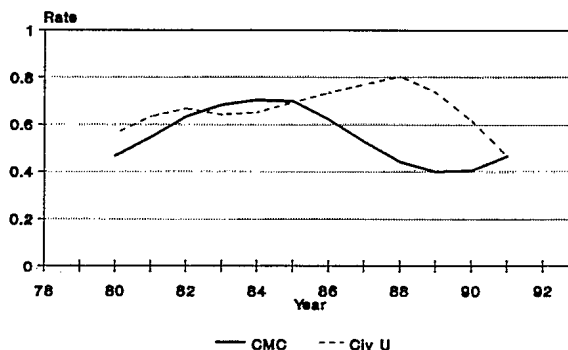
MINOR MOCs - 83,84,81,82

Eligibility Rates for ROTP (5 yr avg)
 Major Rank



MINOR MOCs - 83,84,81,82

Eligibility Rates for ROTP (5 yr avg)
 Captain Rank



MINOR MOCs - 83,84,81,82

Figure H - 4: ROTP Eligibility Rates
 5-year Moving Averages
 Minor MOCs

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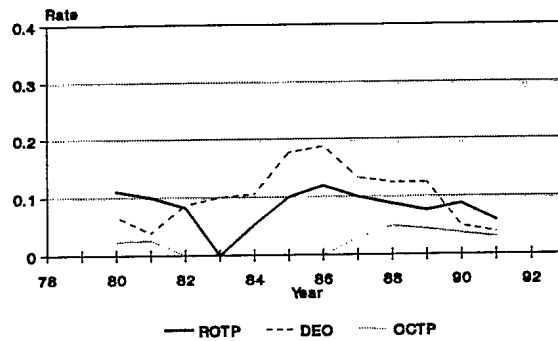
Promotion Rates

6. Major Plans Except to the Col rank where the number of promotions for officers in the minor MOCs was too small to be meaningful, ROTP promotion rates have generally been the highest and OCTP rates the lowest (Figure H - 5). The differences were significant² for promotion rates to the Maj rank.

² All statements on statistical significance are tested at the 95 percent confidence level.

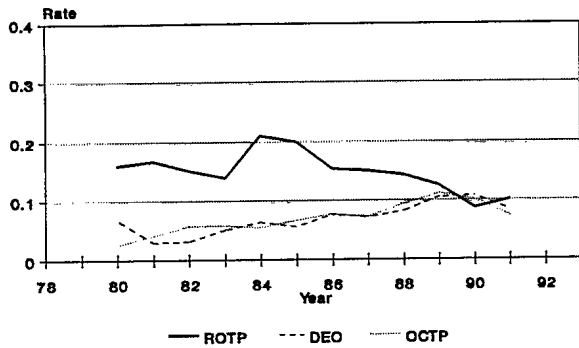
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Promotion Rates - Major Plans (5 yr avg)
 To Colonel Rank



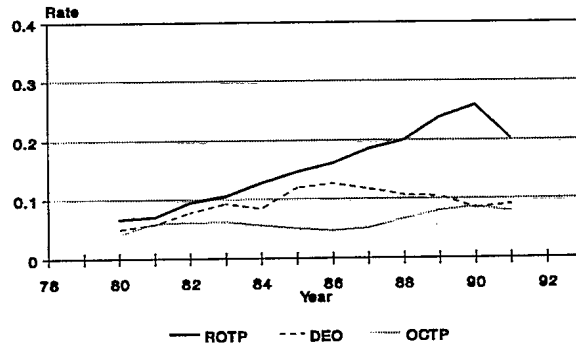
MINOR MOCs - 83,84,81,82

Promotion Rates - Major Plans (5 yr avg)
 To Lieutenant-Colonel Rank



MINOR MOCs - 83,84,81,82

Promotion Rates - Major Plans (5 yr avg)
 To Major Rank



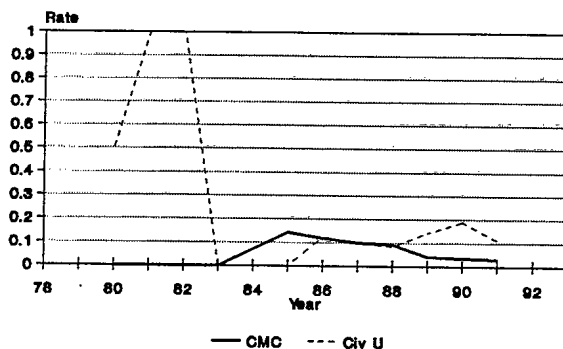
MINOR MOCs - 83,84,81,82

Figure H - 5: Promotion Rates - Major Plans
 5-year Moving Averages
 Minor MOCs

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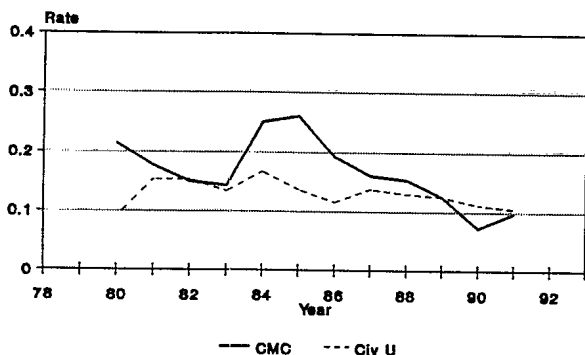
7. ROTP - CMC/Civilian University Where the number of officers promoted warranted analysis, CMC promotion rates to the Maj and LCol ranks were generally higher. However statistical tests conducted on differences were inconclusive (Figure H - 6).

Promotion Rates for ROTP (5 yr avg)
 To Colonel Rank



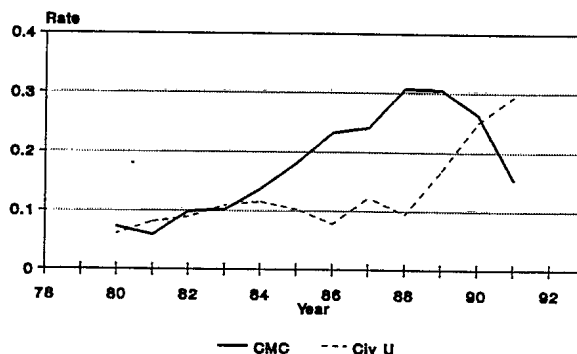
MINOR MOCs - 63,64,81,82

Promotion Rates for ROTP (5 yr avg)
 To Lieutenant-Colonel Rank



MINOR MOCs - 63,64,81,82

Promotion Rates for ROTP (5 yr avg)
 To Major Rank



MINOR MOCs - 63,64,81,82

Figure H - 6: ROTP Promotion Rates
 5-year Moving Averages
 Minor MOCs

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Retention

8. Minor Plans The minor plan retention curves provide little meaningful information as too few officers in the minor MOCs have been commissioned under UTPM or the 'other' plans. The average length of service for CFR officers was 13.0 YCS (29.2 YOS) (Figure H - 7).

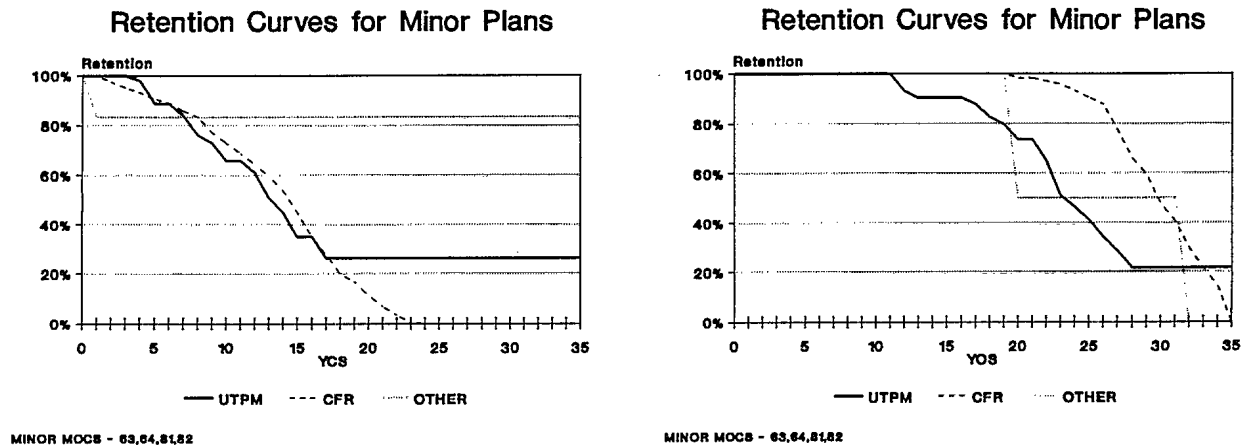


Figure H - 7: Minor Plan Retention Curves
 Minor MOCs

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9. Major Plans ROTP officer attrition increased following obligatory service, but retention levelled off going into the IE (Figure H - 8). DEO and OCTP attrition rates were initially lower and similar; OCTP retention was slightly higher throughout. The average length of service was 16.1 YCS (19.5 YOS) for ROTP officers, 13.8 YCS (15.9 YOS) for DEO, and 18.2 YCS (20.2 YOS) for OCTP.

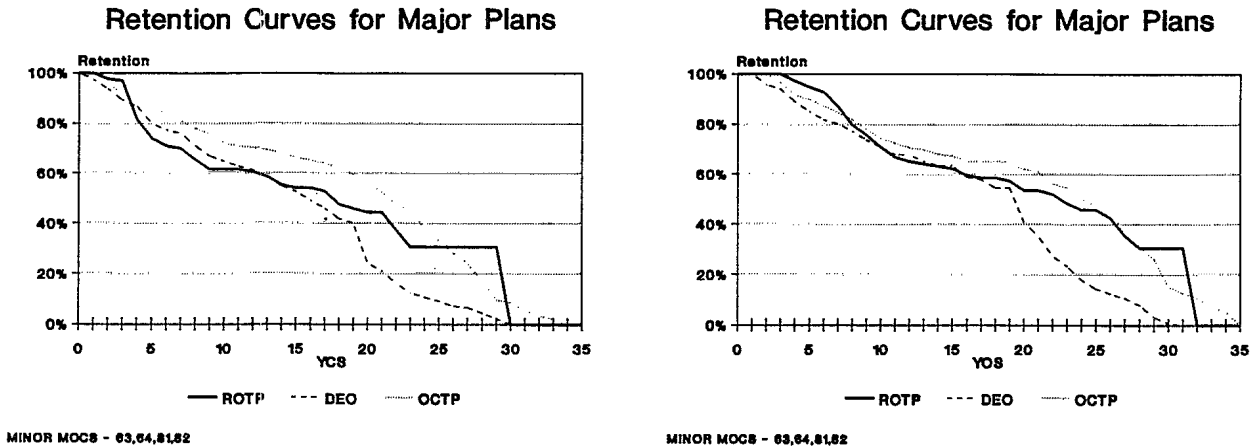
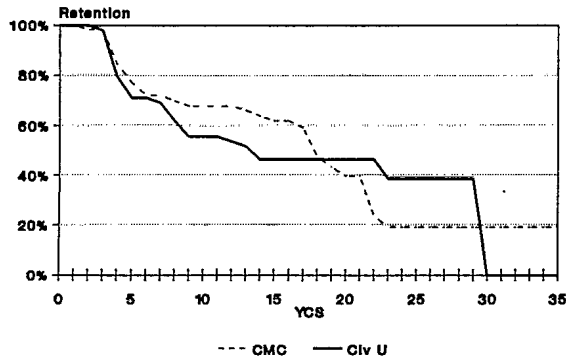


Figure H - 8: Major Plan Retention Curves
 Minor MOCs

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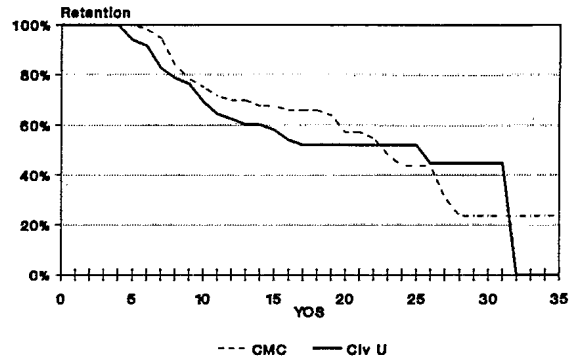
10. ROTP - CMC/Civilian University The number of ROTP officers in the minor MOCs has always been low, never above 50 officers until 1986 so retention curves here are meaningless (Figure H - 9). The average length of service was 17.0 YCS (21.1 YOS) for CMC graduates, and 16.1 YCS (19.9 YOS) for ROTP officers from civilian universities.

Retention Curves for ROTP Officers



MINOR MOCs - 63,64,81,82

Retention Curves for ROTP Officers



MINOR MOCs - 63,64,81,82

Figure H - 9: ROTP Retention Curves
 Minor MOCs

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11. Civilian University - ROTP/DEOD Insufficient data were available for analysis of those officers in the minor MOCs that attended civilian universities (Figure H - 10).

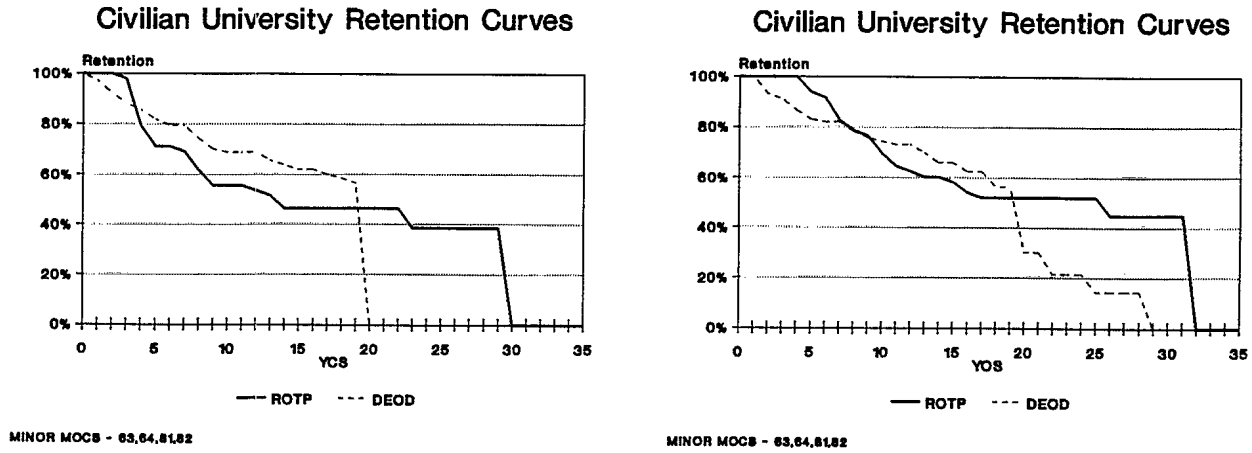


Figure H - 10: Civilian University Retention Curves
 Minor MOCs

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This project report is broken into three volumes. Volume I contains the detailed analysis of CF officers as a whole followed by a discussion on the overall study results. Volume II contains the detailed analysis of each of the MOC groups examined, and Volume III contains the detailed analysis of each of the individual MOCs studied.

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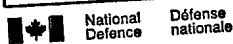
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