# Women in Science <br> IC and Engineering at the <br> Communications <br> Research Centre 

June 1995

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June 1995

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## Acknowledgements

Our very sincere thanks to Pat Guigues of Consulting and Audit Canada for her knowledge, patience and perceptiveness in guiding us from a list of frustrations to a vision of the positive workplace CRC can be for women. Our thanks to the CRC Board of Directors for giving us the opportunity to prepare this report, to Bob Chartrand who advised on ways to start the project, and to the Special Measures Initiative Fund of the Public Service Commission for providing the funding for the project. Special thanks to Jocelyne Côté-O'Hara and to Jacques Lyrette for taking the time to meet with us and for listening to our concerns.

## Preface

This project originated at the October, 1994 meeting of the Board of Directors of the Communications Research Centre when the Board established a Sub-Committee on Human Resources to advise CRC on ways it could attract and retain female scientists and engineers under its rejuvenation plan. The Sub-Committee, whose members were Jocelyne Côté-O'Hara, Sheelagh Whittaker and Robert Olley, reported to the Board at its November meeting, recommending:

1) that a senior woman at CRC be tasked to report on the conditions of work and employment practices and procedures as they relate to women's participation in the CRC workplace;
2) that contact should be made with organizations which support women in sciences, engineering, communication and technology;
3) that professional faculties and schools in Canadian universities in computer sciences, engineering, pure sciences or other disciplines be approached with an outline of CRC's objectives of recruitment with appropriate emphasis on the identification of female candidates;
4) that CRC meet face to face with organizations which are downsizing their workforce and could assist CRC in its recruitment program of qualified women.

This report responds to the first and second of these recommendations. Mr. Jacques Lyrette, President of CRC, appointed Dr. Dorothy Phillips as the senior woman at CRC to prepare a report. During the preparation of the report, contact has been made with several organizations supporting women in their careers in these technical fields. (See Appendix F)

The process followed in preparing this report may be of interest to those who are preparing similar work. The first step was to identify those women at CRC already holding science or engineering positions - CRC identified 10 women. These women were then invited to a meeting with the President to discuss the Board's recommendations and the conditions of work at CRC. This was a free ranging exchange which lasted about 2 hours. A second meeting was held with Jocelyne Côté-O'Hara who had chaired the Sub-Committee of the CRC Board of Directors. She
described her own interest and experience in preparing recommendations regarding women's employment in the Public Service and listened carefully to the concerns of the women. From these two meetings, a list of concerns was drawn up and categorized into the following issues:

Career Planning - women don't see that their careers can progress in the way men's do.

Family Life Benefits - women have trouble balancing career and family life.
Pregnancy Benefits - women lose time from their career when pregnant.
Special Hiring Arrangements - there are not many women at CRC in science and engineering; probably CRC is not keeping up with proportions graduating from universities in relevant fields.

Recruiting Process - recruiting is somewhat clumsy and slow at present and women don't know benefits of working here.

Scholarship Program for Women - financial support is an incentive for women to continue their studies.

Coop Students - numbers of women coop students are probably lower than their proportion in universities.

Women Working Among Men - women often feel alone among men at CRC and in Ottawa.

Business Travel for Women - women have concerns about safety, especially when they are travelling. Sometimes they need to make different arrangements than would be usual for men.

Harassment - some women at CRC have felt harassed by some of the behaviour of men.

Ten of the women scientists and engineers at CRC (see Appendix A) then decided to meet as a committee chaired by Dorothy Phillips to try to find solutions to the problems they had identified. Using the issues as an outline, they contracted with Patricia Guigues of Consulting and Audit Canada who has an excellent knowledge of women's issues and the policies of the Public Service related to them. Her role was to discuss each of these issues with the committee; to bring information about what can and cannot be done within the Public Service laws, regulations and
guidelines; to review the available literature to find out whether there were other issues that the group should consider, to gather demographic information about the ratio of women in relevant programs at universities; to identify a list of relevant Canadian organizations for women in science and engineering; to suggest measures to be used to record CRC progress in achieving gender balance; to prepare a framework for a scholarship program; and finally, to write the report.

The committee then met weekly with Patricia Guigues to discuss these issues and design recommendations. This list of categories of issues proved to be complete for the needs of this small group of women. Many ideas were discussed under each topic. This was an iterative process with Patricia Guigues bringing information each week regarding past practice in other departments as well as information about regulations or policies. The group then discussed and redesigned each recommendation on the basis of this information. It took at least two and sometimes three meetings before a specific recommendation was approved by the group.

In some cases the discussion was rather heated and opinions were voiced on alternate sides of an issue. In the end, the group was able to reach consensus on all of the issues and recommendations. The group was surprised how many of the recommendations they were making could be done within the rules and guidelines; most of what is recommended in this report is already government policy and will take only some directive action within CRC and in some cases, some funding. In three cases, what the committee wanted to recommend could not be done within the Treasury Board regulations. These recommendations are included in the report and will be taken by some of the committee members to the Professional Institute of the Public Service as recommendations.

The rationale for each recommendation was carefully thought out. For example, the group considered seriously recommending quotas or special funds for hiring women into positions at CRC since that would be one way of ensuring that more women are hired. However, most believed that women who are hired under such arrangements suffer because both they and their colleagues are unsure whether they are hired because they are women or because of their qualifications. In the end the group decided that splitting the responsibility for hiring women equally between the corporate level and the manager would be the right balance. This balance would maintain the merit principle while providing incentive to managers to seriously consider hiring women.

Some of the issues discussed did not lead to recommendations. For example, the group talked about recommending a day-care facility at CRC but found the group to be too small to make such a recommendation and the women who already have satisfactory day-care arrangements would not want to change them. However, the group considered that day-care at CRC may be beneficial for new parents or for parents who currently do not have satisfactory day-care arrangements. At the group's recommendation, a question was placed in the survey of Alternate Work

Arrangements currently being undertaken at CRC to find out whether a day-care facility would be welcomed by enough people to make it reasonable. In one case, the group considered a recommendation - that women be allowed to borrow a cellular phone when travelling by car on business - but found that anyone at CRC can sign out a phone when travelling. In another case a recommendation was included in the report - that women be allowed to bring someone with them when working at CRC in silent hours - but we later discovered that CRC policy already covers most instances.

This is one vision of the CRC workplace from 10 women who have a particular set of needs. As other women join CRC, this vision should be reviewed, both for whether the recommendations have been implemented satisfactorily, and for other improvements that could make the workplace more accommodating and supportive for women then on staff. We suggest that an update exercise be undertaken about every two years.

We believe that some of these ideas will be relevant to women in other positions at CRC, and some of them to men at CRC as well. We hope the ideas and the process of arriving at them may also be useful to other groups in Industry Canada and the Public Service.

Dorothy Phillips
June, 1995

## RECOMMENDATIONS

## Commitment

1. That CRC establish clear annual goals and make commitments to the recruitment, development and advancement of women in the Scientific Research and Engineering occupational groups. The goals established for the number of women scientists and engineers at CRC should reflect the demographics of women graduating from Canadian universities with appropriate qualifications for work at CRC.
2. That CRC review and modify the existing performance appraisal forms for SE-RES and SE-REM employees to ensure that supervisors can be assessed against their achievement of employment equity objectives. (The EN-ENG group already has this as part of their appraisal.)

## Recruiting

3. That corporate funding be made available to managers to cover up to $50 \%$ of salary costs for up to two years for purposes of hiring females into science and engineering positions. This should include indeterminate, term, contract, co-op students, summer students, exchange programs, and post-doctoral positions.
4. That CRC develop a marketing strategy aimed at increasing the representation of women in the scientific and engineering fields.
5. That CRC establish a corporate fund to reimburse line managers' budgets for $100 \%$ of travel costs when female scientists or engineers represent CRC at school fairs, or other opportunities to market CRC.
6. That the President establish a CRC Junior Research Scholarship and Fellowship Program to encourage female students to pursue studies in science and engineering.
7. That CRC establish a Committee to develop guidelines for managers regarding the Co-op Student Program or other student programs, to ensure that the students have experience that will add to their education and make them interested in working at CRC later.
8. That CRC monitor the Co-op Student Program, conduct exit interviews, and track the progress of students, including those eventually hired by CRC into science and engineering positions.
9. That CRC establish a Mentorship Program which would include women in science, engineering and the technical groups. The Program should include a mentoring workshop available to all CRC employees (males and females) and should focus on ways to establish mentoring relationships.

## Conditions of Work

10. That managers at CRC support employees who wish to take advantage of alternate work arrangements in order to permit them to balance family and work life.
11. That the Vice-President delegate salary dollars for full-time positions to line managers of scientists or engineers who are on maternity leave in order to permit those managers to reallocate the salary dollars to support the projects of that employee whenever possible.
12. That an employee caring for pre-school aged children and who is working at least $60 \%$ of the time be offered full-time employment when the employee wishes to revert to working full time.
13. That the full-time salary dollars for employees working at least $60 \%$ of a full-time position and caring for pre-school aged children remain with the line manager to be used to enhance the work of the employee whenever possible.
14. That the Director of Human Resources provide CRC employees who are contemplating taking long-term leave or opting for alternate working arrangements with an information package describing benefit entitlements.
15. That an electronic document concerning what benefits and information are available for women at CRC be prepared and made available on CRC networks.

## Conditions of Work that are Not Current Policy

16. That the President of CRC support the Study Group's position that sick leave benefits should be extended to include the caring for sick children or elderly parents.
17. That the President of CRC support the Study Group's position that the benefits currently offered for adoption leave be expanded to be the same as those offered for maternity leave.
18. That the President of CRC support the Study Group's position that women who work at least $60 \%$ of the time and who are caring for pre-school aged children are entitled to increments annually as though they were working on a full-time basis.

## Career Development and Training

19. That CRC introduce a career management program for both men and women who occupy positions in the Scientific and Professional Group.
20. That the criteria used for the assessment of employees in the SE-RES occupational group include the assessment of an employee's productivity in relation to the amount of time the employee spent to achieve results.
21. That CRC consider training strategies to improve the representation of women at more senior levels.
22. That a CRC corporate funding be established to cover costs incurred as a result of female scientists and engineers attending training courses for career development purposes.
23. That prior to an employee going on maternity leave, a project plan be developed jointly by the manager and the employee which would allow projects to continue during the duration of the maternity leave to the credit and advancement of the employee.
24. That the President of CRC establish a committee with the mandate to develop a set of guidelines or parameters designed to determine whose name should be on a publication. To ensure women's concerns are addressed, the committee membership should include at least one female scientist.

## Work Environment

25. That Code of Conduct Workshops be provided and be mandatory for all CRC employees, that the President of CRC introduce each workshop, linking the values of CRC to the acceptable code of conduct and emphasizing the consequences of unacceptable behaviour.
26. That CRC provide safety workshops during fiscal year 1995-96 with emphasis placed on safety and security tips for women travellers.
27. That women at CRC be permitted to bring someone with them to the work site when they are required to work during the silent hours.

## Monitoring

28. That a monitoring program be established which will track progress and determine CRC's achievement of employment equity results in areas such as recruiting, training and development, and staffing. The monitoring program should include exit interviews and a system for keeping track of co-op students who wish to leave their address with CRC and who may be potential candidates for employment after graduation.

## IMPLEMENTATION

29. That CRC call a meeting of professional women at CRC to determine whether they are interested in establishing a Professional Women's Association at CRC.
30. That an Action Plan be prepared with specific goals and lead responsibility identified for each recommendation.
31. That this report be distributed to all CRC employees.

## 1. Employment Equity for Women

Since the report of the Royal Commission on the Status of Women in 1970, government policy has focused on initiatives designed to make the Public Service more representative of the Canadian population. The Abella Commission Report in 1984 laid the foundation for many of the employment equity policies which exist today. That Commission stressed the need for special measures to ensure equal opportunities for all Canadians, regardless of gender, race, ethnicity or disability.

The federal government responded to the Abella Report by introducing the Employment Equity Act in 1986 and developing an employment equity policy for the Public Service. The Public Service made concerted efforts to eliminate systemic barriers that unintentionally discouraged the participation of persons in designated groups. This caused substantial changes and revisions to collective agreements, pension and employment legislation, test methodologies, etc.

In 1988 the government established a Task Force to examine barriers to women in the Public Service. Following its report, "Beneath the Veneer", government departments actively pursued measures to attract, develop and retain women at all levels. The Treasury Board, for its part, established a number of consultation groups, comprised of members from designated groups from both inside and outside government. The results of these consultations have been positive so far.

Despite all these initiatives, when we examine women in the Public Service, and particularly women in non-traditional occupational groups such as science and engineering, there is no doubt that there is still a long way to go before we have a truly representative workforce. CRC is no exception.

## 2. Methodology

Throughout this assignment the Study Group established and maintained continuous consultation with members of Consulting and Audit Canada to determine areas of concern with respect to women in science and engineering at CRC. A review was conducted of existing literature addressing issues impacting on women in scientific and engineering professions to determine the success of some organizations in increasing the representation of women. The focus of the review was on the recruitment and retention of women in the science and engineering fields.
Demographic information was obtained from the Public Service Commission, Industry Canada and the Association of Universities and Colleges of Canada to determine current representation levels of women. Information gathered was analyzed, discussed with the Study Group, and recommendations formulated, as appropriate.

## 3. The Organization


#### Abstract

The Communication Research Centre was established to conduct scientific research and innovative engineering which contribute to the orderly development and accessibility of communications technologies, systems and services for the benefit of all Canadians. CRC reports to a Board of Directors, consisting of 20 volunteer members from across Canada who represent academic, private sector and other institutional interests in the communications field. The Board provides advice to the President on such matters as CRC's strategic research plan and business plan. CRC also reports to the Minister of Industry Canada.


As the chart at Appendix B indicates CRC's organizational structure consists of three Vice-Presidents reporting to the President:

Executive Vice-President - responsible for the development of strategy and plans, business development, and site, research, technical and corporate services

Vice-President, Communications Systems Research

Vice-President, Radiocommunications and Broadcast Research

- responsible for mobile and personal communications, satellite applications, projects, systems and technologies, MSAT Program, antennas and integrated electronics, and optoelectronic technologies
- responsible for radio sciences, radiocommunications technologies, radio broadcast technologies, television broadcast technologies, and network technologies.

CRC employs approximately 411 full and part-time indeterminate and term employees. Approximately 39\% of the population are employed in the Science and Engineering categories. CRC employs 47 term employees ( $11 \%$ of the total population), most of these are employed in the Engineering and Land Survey group, occupying all levels of positions from ENENG 1 to ENENG 5.

Of the total of 155 scientists and engineers at CRC, 10 (6.5\%) are women. Two female engineers are at the ENENG 2 level, 2 at the ENENG3, 1 at ENENG4 and 1 at ENENG 6. Three female scientists are at the RES 1 level and the fourth is at the RES 2 level. In addition, there is one female engineer who is a Commerce Officer and one female scientist who is an Executive. These
latter two were not counted in the above figures since they no longer function as scientists or engineers.

### 3.1 Numbers of Women at CRC and in Other Organizations

Table 1 below indicates that as at December 31, 1994, of the total population in the Engineering group at CRC (101), 6 or $5.9 \%$ were women, which is lower than both Industry Canada (9.7\%) and the Public Service (7.5\%). In the Scientific Research group at CRC, women accounted for $7.4 \%$ (4/54), which is also lower than both Industry Canada ( $10.5 \%$ ) and the Public Service ( $11.4 \%$ ). (The full figures for men and women are presented in Table 1C, Appendix C)

To match even Industry Canada's percentage of women in both of these fields $(9.9 \%$ ) would require replacing male scientists or engineers who leave CRC by hiring 5 more women, an increase of $50 \%$ over the present number of women at CRC.

TABLE 1

|  | Communications <br> Research Centre |  | Industry Canada <br> not including CRC |  | Public Service |  |
| :--- | :--- | :--- | :--- | :--- | ---: | ---: |
|  | \# Females | \% Females | \# Females | \% Females | \# Females | \% Females |
| ENENG | 6 | 5.9 | 21 | 9.7 | 200 | 7.5 |
| SERES | 4 | 7.4 | 6 | 10.5 | 225 | 11.4 |
| TOTAL | 10 | 6.4 | 27 | 9.9 | 425 | 9.2 |

However, the frequency of women already employed is not a complete indication of the demographic picture in Canada. The availability of women with appropriate qualifications should also be taken into account.

For that reason, the methodology for this study also included an examination of the number of women currently enrolled in science and engineering at Canadian universities. (Statistics obtained from the Association of Universities and Colleges of Canada are provided at Appendix D.) These numbers were compared against the qualifications acceptable for scientists or engineers hired at CRC. These acceptable qualifications were obtained by asking the CRC Directors to indicate the topics that they consider important when they hire into science or engineering positions at CRC. (See Appendix C, Table 2C). The Directors indicated a rather wide range of
topics that they would consider important in candidates for positions at CRC. The most frequently cited were topics in Communications and Telecommunications and in Information Technology and Electronics.

Comparing these topics with the statistics available from the universities does not provide a direct match. What was available from universities was listed by university categories of study. Nevertheless, we can assume that the topics of interest to Directors hiring at CRC would most probably be contained in programs of study including electrical engineering, computer science, mathematics, physics, chemistry. We have further assumed that hiring at CRC would require a Bachelor's Degree or Master's Degree in Engineering fields, a Master's or Ph.D. in computer science and a Ph.D. in mathematics, physics, or chemistry. Table 2 lists the percent females graduating and enrolled in these fields over the years from 1990 to 1994 and an average of these percentages.

TABLE 2
Percent Females Graduating and Enrolled in Canadian University Programs of Interest to CRC.

| Percent Females |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 1990-91 | Graduating |  |  | Enrolled |  |  |  |
|  |  |  | 1991-92 | 1992-93 | 1993-94 | 1990-91 | 1991-92 | 1992-93 | 1993-94 |
| Electrical | Bachelors | 8.2 | 8.3 | 8.7 | 8.7 | 9.1 | 7.7 | 11 | 11.6 |
| $g$ | Masters | 8.6 | 8.8 | 10.5 | 9.7 | 23.4 | 10.2 | 10.4 | 12.3 |
| Computer | Masters | 18.6 | 23 | 20.2 | 21 | 19.7 | 21.8 | 21.9 | 23 |
|  | Ph.D. | 20 | 5.3 | 20.8 | 17.2 | 14.4 | 14.9 | 16.2 | 15.5 |
| Mathematics | Ph.D. | 20.8 | 8 | 8.3 | 7.6 | 13.5 | 15.2 | 15.8 | 20.3 |
| Physics | Ph.D. | 8.8 | 5.9 | 12.7 | 13.1 | 12.4 | 13.1 | 15.5 | 15 |
| Chemistry | Ph.D. | 27.2 | 24.5 | 22.2 | 22 | 23.1 | 28.7 | 22.8 | 24.4 |
| Average \% |  | 14.2 | 9.9 | 13.5 | 12.9 | 15.4 | 13.8 | 15.1 | 16.3 |

The data in Table 2 indicate that the percentages of women graduating from university programs of interest to CRC are considerably higher than the current level of employment at CRC. The average graduating percentages shown in the last line of the table indicate that there are approximately $10-16 \%$ women graduating. In some fields there is a substantially higher proportion of women graduating than is found at CRC, for example, at the Masters level in Computing Science, there are over 20\% female graduates and enrolled women in the last three years. The percentages of women enrolled in these fields, averaging about $15 \%$, indicating that there should be a steady supply of women with the qualifications that CRC is seeking.

Though the particular skills required for the very specific needs of CRC cannot be reflected in this gross an analysis, it is apparent that CRC falls short of meeting the demographics of percent females graduating in Canada with relevant skills. It is probable that among these graduates, CRC could find well qualified women who would fit the broad range of knowledge identified by the Directors. To meet at least a $15 \%$ average over the next few years, CRC should aim at replacing male scientists and engineers who leave with at least 13 women.

Thus, considering the current levels of women scientist and engineers in the public service, and the percentages of women graduating in relevant fields, CRC could aim at hiring between 5 and 13 women into the current population of scientist and engineers within the next few years. If the total population of scientists and engineers can be increased at CRC, these absolute numbers could be higher still. Since there may be some movement in and out of CRC among these women, CRC could aim at a higher level still in order to maintain an average balance among men and women that reflects the demographics of those graduating.

It is also apparent that the major under-representation of women at CRC is among the senior levels. By righting the balance at the lower levels, this under-representation could be removed in the longer term but would take a long time, perhaps 15-20 years to complete. Since most of the hiring into positions at CRC is done at the lower levels, this appears to be the most likely method of changing the balance at the senior levels. By aiming to hire somewhat more than the demographic averages of women at the lower levels, CRC could probably, in the next 15-20 years, move toward representing the demographic averages at the senior levels.

## 4. Issues

The issues addressed in this report reflect the concerns expressed by members of the Study Group. In most cases, improvements cannot be addressed through "quick fix" solutions. Experiences of other organizations have shown that it takes five years or longer for an organization to see results in increasing the representation of women.

The main issues identified in this report impact on recruiting, training and career advancement of women. While the focus of this report is to improve the representation and career development of women in science and engineering at CRC, many of the recommendations can be applied to women in other occupational groups, within CRC and Industry Canada.

### 4.1 Commitment

Not only is employment equity for women considered to be ethically correct, but it also makes good business sense not to ignore a growing portion of the available workforce. In today's environment, decision-making processes at CRC can only be enhanced by having the broadest range of abilities and viewpoints. of both men and women.

Studies have shown that those organizations which have put considerable efforts into the development of their employment equity plans and which have defined specific goals and responsibilities have achieved high rates of female representation. It is not surprising, therefore, that federal government departments and agencies are asked to develop employment equity plans and to establish monitoring mechanisms to measure progress.

The statistical tables at Appendix C indicate that, not only are women under-represented in the scientific and engineering occupational groups, but they are also under-represented within the various levels of those groups. CRC may wish to examine ways of attracting and recruiting women and ways of providing developmental opportunities which would enable them to advance to more senior levels in the organization.

## Recommendation \#1

That CRC establish clear goals and make annual commitments to the recruitment, development and advancement of women in the Scientific Research and Engineering occupational groups. The goals established for the number of women scientists and engineers at CRC should reflect the demographics of women graduating from Canadian universities with appropriate qualifications for work at CRC.

CRC's commitment to improving the representation of women must be articulated and spearheaded by its top management. In addition, its planning process should be strengthened so that managers actively participate in the setting of objectives. In this regard, managers (those reporting to Directors, CRC Directors, and Vice-Presidents) should meet on an annual basis to identify CRC's human resource management strategic issues and develop action plans to meet their long-term requirements. These meetings should include the establishment of employment equity objectives for women.

The President of CRC should hold managers accountable for the achievement of their employment equity objectives. One way to do this is through the annual performance appraisal process.

## Recommendation \#2

That CRC review and modify the existing performance appraisal forms for SE-RES and SE-REM employees to ensure that supervisors can be assessed against their achievement of employment equity objectives. (The EN-ENG group already has this as part of their appraisal).

Linking the performance appraisal process to the achievement of CRC's employment equity objectives for women may not in itself ensure results. Other initiatives should also be explored. Any initiatives taken, however, must be viewed as beneficial to managers in order to have a "buy in" to the change. For example, financial incentives available to managers might encourage them to recruit and provide career development opportunities for women in the scientific and engineering fields. (See Recommendation \#3.)

### 4.2 Recruiting

The Study Group discovered that most new employees at CRC have previously been co-op students, contractors, term employees of post-doctoral fellows. For that reason, the recommendations in this section focus on ensuring that females are represented in these groups.

## a) Special Measures

The Study Group believes that special measures are required to increase the representation of women in science and engineering at CRC. These measures are aimed at employment equity while maintaining the merit principle.

Employment equity aims to ensure equal access to employment opportunities for those who have historically been excluded from being hired and promoted because of systemic or attitudinal resistance to their equal participation. The most common argument against employment equity is that it threatens the notion of merit. This is a myth. Much more than academic qualifications are considered when a candidate is termed "qualified" for a position. Most obviously, when "personal suitability" is considered, but also in considering "education" and "abilities", the evaluation is based in part on a subjective assessment of collegiality, language, philosophy, and to some extent also on culture and interests. Consciously or unconsciously, individuals tend to feel most comfortable with people who seem most like them. If this tendency is not questioned in the employment selection process, the most successful candidates will often be the ones who most closely resemble the people interviewing them.

The Study Group believes that the best way to provide an incentive for managers to make a conscious effort to consider women more carefully in their hiring is to have a financial incentive available to them for hiring women. At the same time, the manager should be required to use some of his/her own section funds for hiring women to ensure that each person is hired for her potential contribution to the group. This balance would also ensure that other employees also believe the women are hired for their ability to contribute, making the women's position in the group more tenable. The Study Group believes that this balance would best be maintained by having partial funding available at the corporate level for hiring women.

The Study Group wishes to state clearly that their intention is to MAINTAIN the merit principle and NOT to reduce the merit of those being hired. The intention of this recommendation is to remove the systemic inequities which occur from attitudinal resistance to equal participation of women. We believe that this recommendation accommodates BOTH the merit principle and incentives for managers to consider women more carefully.

## Recommendation \#3

That corporate funding be made available to managers to cover up to $50 \%$ of salary costs for up to two years for purposes of hiring females into science and engineering positions. This should include indeterminate, term, contract, co-op students, summer students, exchange programs, and post-doctoral positions.

The Study Group believes that CRC could be more proactive in its search for female recruits in science and engineering. For example, they would like to see female representatives from the Scientific Research and Engineering groups participate in Selection Boards and attend school fairs, career days, open houses, etc. Other suggestions include:

- scheduling campus visits early in the school year to ensure that CRC is actively recruiting students at the same time or earlier than its competitors. This is particularly important since there is a low number of female graduates and competition to recruit them is high.
- using narrow and broadband networks to market CRC as an employer committed to employment equity.
- linking CRC recruitment needs to Industry Canada's recruitment strategies.


## Recommendation \#4

That CRC develop a marketing strategy aimed at increasing the representation of women in the scientific and engineering fields.

Some managers may not have sufficient funds to pay the necessary travel costs to send female scientists and engineers to school fairs, etc.

Recommendation \#5

That CRC establish a corporate fund to reimburse line managers' budgets for $100 \%$ of travel costs when female scientists or engineers represent $C R C$ at school fairs, or other opportunities to market $C R C$.

## B) CRC Juntor Research Scholarship and Fellowshit Program

Industry Canada has terminated its Canada Scholarships Program in response to federal cutbacks announced in the February 27, 1995 budget. The Canada Scholarships Program was designed to attract students into science and engineering fields of study. In light of the Group's mandate to explore issues and make recommendations for improvement, the following is submitted for consideration:

Recommendation \#6

That the President establish a CRC Junior Research Scholarship and Fellowship Program to encourage female students to pursue studies in science and engineering.

The following is the suggested framework for the Program:

- it should be co-supervised by CRC and its partners;
- the President of CRC should establish Memoranda of Understanding with CRC partners to acquire corporate sponsorship and funding for the Junior Research Fellowship Program
- it should be made available to female engineering and science students to permit them to conduct research at CRC
- it should be available to students in the Honours, BSc., Masters, or PhD Programs
- it should provide "hands on" experience under the guidance of CRC senior researchers
- it could be administered by the Natural Sciences and Engineering Research Council of Canada (NSERC), the Ottawa-Carleton Research Institute (OCRI) or CRC
- an allowance should be provided to cover salary and a portion of travel and living expenses and these costs should be determined on a case-by-case basis.


## c) Co-op Student Program

The Study Group discussed some programs in Europe which place emphasis on training to prepare students to meet professional standards. CRC should examine its current use of the Public Service Co-op Student Program and ensure it includes the professional development of students while on assignment. In addition, guidelines for managers should be established to ensure that students have experience that will add to their education and that they are made aware of the wide range of work available to them at CRC.

Recommendation \#7
That CRC establish a Committee to develop guidelines for managers regarding the Co-op Student Program or other student programs, to ensure that they have experience that will add to their education and make them interested in working at CRC later.

There is no formal system in place to track students who have been employed at CRC under the Co-op Student Program. As a result, it was impossible to determine during this study the number of students hired at CRC into science and engineering positions after graduation. In addition after completion of an assignment under the Co-op Student Program, there is no consistent means of conducting exit interviews. Exit interviews can be a useful means of providing CRC with valuable information (such as the determination of how students viewed CRC as an employer, the value of the assignments vis-à-vis individual training requirements, etc.). CRC may wish to include information gleaned from exit interviews in their monitoring report as well as information concerning female co-op students hired into CRC positions.

Recommendation \#8

That CRC monitor the Co-op Student Program, conduct exit interviews, and track the progress of students, including those eventually hired by CRC into science and engineering positions.

## D) Mentorship Program

Newly-appointed female engineers or scientists sometimes experience feelings of isolation working at CRC, a predominately male environment. A mentorship program is a support system which can allow women to share experiences and knowledge and prepare for more senior level positions. It can also ensure a smooth transition of new employees into the workplace, provide continuity, and promote excellence with respect to research activities. The Study Group endorses a mentorship program for CRC on the provision that it be voluntary and not rigid in structure. They also see a need for a training workshop to brief employees on what constitutes a good mentorship program. Women in the Scientific Research and Engineering Groups should be encouraged to attend.

Recommendation \#9

That CRC establish a Mentorship Program which would include women in science, engineering, and the technical groups. The Program should include a mentoring workshop available to all CRC employees (males and females), and should focus on ways to establish mentoring relationships.

### 4.3 Conditions of Work

## a) Alternate Work Arrangements

The most critical area affecting women in science and engineering at CRC concerns family life. Despite recent government initiatives, such as alternate work arrangements, managers at CRC are either not cognizant of, or are not empathetic to employees who want to take advantage of these arrangements. Alternate work arrangements are seen by the Study Group to be an effective means of permitting women to balance home and work needs.

Recommendation \#10
That managers at CRC support employees who wish to take advantage of alternate work arrangements in order to permit them to balance family and work life.

## B) Maternity Leave

At CRC, while an employee is on maternity leave, the salary dollars for that employee remain with the Vice-President of the Branch. This can have a negative effect, not only on the research project which in some cases is delayed until the employee returns, but on the career development of the employee. For example, a female employee may not receive credit for a project to which she has contributed, either because it was not completed or because it was completed by someone else. The Study Group believes that if managers were able to keep the salary dollars it would provide the flexibility to continue work on the project.

## Recommendation \#11

That the Vice-President delegate salary dollars for full-time positions to line managers of scientists or engineers who are on maternity leave in order to permit those managers to reallocate the salary dollar's to support the projects of that employee whenever possible.

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## c) Part-time Employment

The Vice-President should also consider delegating salary dollars for full-time positions when an employee caring for pre-school aged children works at least $60 \%$ of the time. This would permit managers not only to supplement productivity of the project but it would also empower managers with the authority and flexibility for spending to meet operational needs.

Another major area of concern is that women at CRC who work part-time to care for pre-school aged children can be offered full-time employment at management's discretion. When this is not granted, it can have a negative effect on career development opportunities for women.

Recommendation\#12
That an employee caring for pre-school aged children and who is working at least $60 \%$ of the time be offered full-time employment when the employee wishes to revert to working full time.

## Recommendation \#13

That the full-time salary dollars for employees working at least $60 \%$ of a full-time position and caring for pre-school aged children remain with the line manager to be used to enhance the work of the employee whenever possible.

## D) Communcations

There have been a number of instances when women have not always been made aware of the benefits they were entitled to when they went on maternity leave. The Professional Institute of the Public Service of Canada (PIPSC) has distributed a brochure entitled "Maternity Leave and Other Forms of Leave for Parental Responsibilities in the Federal Public Service". This brochure is designed to help female members of PIPSC make the best use of their maternity leave and related benefits. A similar brochure or information package describing a number of leave benefits, work arrangements, etc. could be very useful to CRC staff.

Recommendation \#14
That the Director of Human Resources provide CRC employees who are contemplating taking long-term leave or opting for alternate working arrangements with an information package describing benefit entitlements.

Recommendation \#15
That an electronic document concerning what benefits and information are available for women at CRC be prepared and made available on CRC networks and that this report be distributed to all employees of CRC in print form.

### 4.4 Conditions of Work That Are Not Current Policy

There are some aspects of employment which are not possible under the current laws and regulations of the Treasury Board, but which the Study Group believed would substantially improve the conditions of employment for women. The following three recommendations (Recommendations $16,17, \& 18$ ) are in that category. They cannot currently be granted in the federal public service, but the women in the Study Group are gathering information about approaches to these issues by other employers and will present these recommendations to the Professional Institute of the Public Service of Canada, asking that they be part of their next negotiations. The Study Group asks that the President support these recommendations to the extent of his ability, possibly by advocating these changes to the laws and regulations.

## A) Sick Leave

In some private sector organizations, employees are permitted to use their sick leave credits to care for their sick children or elderly parents. In most cases, women are the ones who take on this responsibility. In the federal Public Service, parents who care for a sick child can very quickly exhaust the five days of "family related leave" allowed for this purpose. As a result, they must resort to taking annual leave. Parents with pre-school aged children are seen to be particularly vulnerable since it is at these ages when more childhood illnesses occur. The practice of taking annual leave to take care of a sick child places an unfair burden on women.

With an ageing population, care for the elderly will take on more and more importance. As a result, it is expected that an extra burden will be placed on employees who may be required to look after elderly parents. In many cases that burden will rest on the shoulders of women in the workplace.

In order to adapt to women's needs, there is a need to examine existing benefit entitlements of employees. Any changes to benefits in employee collective agreements will require further negotiations between the bargaining agents and the employer. Members of the Study Group have indicated that they will be approaching their bargaining agent to consider negotiating the use of an

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employee's sick leave for purposes of caring for a sick child or elderly parent. In turn, they will be requesting the President of CRC to support the Study Group's position in this regard.

Recommendation \#16
That the President of CRC support the Study Group's position that sick leave benefits should be extended to include the caring for sick children or elderly parents.

## B) Adoption Leave

Concern was also expressed over the fact that adoption leave benefits are less than what is granted for maternity leave. The Study Group believes that there is a need for a more positive attitude towards adoption. As with the issue concerning the extended use of sick leave, the Study Group will be submitting a recommendation to their collective bargaining agent to negotiate expanding the benefits for adoption leave to be the same as those offered for maternity leave.

Recommendation \#17

That the President of CRC support the Study Group's position that the benefits currently offered for adoption leave be expanded to be the same as those offered for maternity leave.

## c) Annual Increments

There is a perception that women who work part-time to care for pre-school aged children are not only financially disadvantaged but are disadvantaged from a career development perspective. This is because annual increments and advancement through the salary bands of an occupational group/level are calculated based on the number of days actually worked. The Study Group indicated that they will be approaching their bargaining agent to request that the determination of annual increments be negotiated with the employer to ensure that women who work at least $60 \%$ of the time and who are caring for pre-school aged children can receive annual increments as though they were working on a full-time basis.

Recommendation \# 18
That the President of CRC support the Study Group's position that women who work at least $60 \%$ of the time and who are caring for pre-school aged children are entitled to increments annually as though they were working on a full-time basis.

### 4.5 Career Development and Training

## a) Career Management

The majority of female scientists and engineers at CRC are at the lower levels of their occupational groups. Some members of the Study Group attribute this to the fact that women who take pregnancy leave or care and nurturing leave are out of the workplace for a considerable period of time. One of the challenges facing CRC in this regard is to find a means of identifying women who have demonstrated the ability and potential to assume more senior level responsibilities and to provide opportunities for career development. Organizations in both the private and public sectors who have had success in career developing their employees have in place a successful Career Management Program. Some of the key elements in a Career Management Program include:

- a human resource management information system
- succession planning activities
- skills inventories
- structured employee performance review process
- training
- job profiles, competency profiles, and career paths, and
- career counselling.

The Study Group views a career management program as key to ensuring sound management of employees who not only occupy positions in science and engineering but in the Scientific and Professional Group. Although a career management program is primarily a management tool, it should take into consideration both the needs of the organization and the career aspirations of individuals.

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Recommendation \#19
That CRC introduce a career management program for both men and women who occupy positions in the Scientific and Professional Group.

The criteria used to assess Research Scientists at CRC is based on productivity. Women who are on leave or who work part-time for the purpose of caring for pre-school age children may be able to be very productive in the time they work. If they could be evaluated based on their actual work time, rather than on the elapsed time since the previous evaluation, women would be able to demonstrate their productivity more effectively.

Recommendation \#20
That the criteria used for the assessment of employees in the SE-RES occupational group include the assessment of an employee's productivity in relation to the amount of time the employee spent to achieve results.

## B) Training

Training is an important factor if CRC is to provide developmental opportunities for women in the scientific and engineering fields. By providing both formal and informal training opportunities, CRC can help women improve their current job performance and prepare them for higher level positions. As mentioned earlier in this report, efforts made towards the advancement of women in science and engineering must have real substance and must be supported by senior management.

There are several ways to prepare women for more senior level positions. Some organizations, for example, permit talented, high potential women who are at the middle management level to learn more about the inner workings of senior management. They do this by allowing them the opportunity to participate in high level meetings, such as strategic planning sessions. Other opportunities include establishing brainstorming sessions, problem-solving task forces, week-end retreats, etc. that will bring together all levels of management. By observing senior executives, middle managers can see the importance of having excellent interpersonal skills, the need to be self-directed, etc. and can develop a personal training plan based on those requirements. CRC might wish to adopt some of these training strategies to improve representation of women at the more senior levels.

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Recommendation \#21
That CRC consider training strategies to improve the representation of women at more senior levels.

## c) Corporate Sponsorshili

As mentioned earlier, due to fiscal restraints, some managers may not have sufficient funding to provide training opportunities for scientists and engineers. Ways should be explored to provide funding in the short-term to enable women to receive developmental training.

Recommendation:\#22

That a CRC corporate funding be established to cover costs incurred as a result of female scientists and engineers attending training courses for career development purposes.

## D) Intellectual Contribution

Intellectual contribution to a project has a significant impact on the career advancement of scientists at CRC. As mentioned earlier, women scientists who have made a significant contribution to a project prior to and sometimes during maternity leave are not always given credit for the project.

Recommendation \#23

That prior to an employee going on maternity leave, a project plan be developed jointly by the manager and the employee which would allow projects to continue during the duration of the maternity leave to the credit and advancement of the employee.

There appears to be inconsistency in the application of intellectual contribution practices across CRC. This can be disadvantageous to an employee since one of the criteria used to assess a scientist is to have one's name on publications and to receive recognition for intellectual contribution to a project.

Recommendation \#24

That the President of CRC establish a committee with the mandate to develop a set of guidelines or parameters designed to determine whose name should be on a publication. To ensure women's concerns are addressed, the committee membership should include at least one female scientist.

### 4.6 Work Environment

## A) Code of Conduct

Recent news releases and Treasury Board's policy on harassment have heightened awareness for employers to play a lead role in providing a positive work environment that is free of harassment and which supports productivity and the personal goals, dignity and self-esteem of every employee. The word "harassment", however, often generates a kind of uneasiness among employees. The Study Group recognizes the need for CRC to establish and communicate a code of conduct to all of its employees. In communicating the code of conduct to CRC employees, the issue of harassment, and the consequences of that type of behaviour in the workplace should be addressed. The communication strategy developed in this regard should include a memorandum to all staff and a series of workshops. Workshop objectives should include:

- defining harassment and distinguishing between different forms of harassment
- identifying the roles and responsibilities of the President, managers, employees, respondents and Harassment Co-ordinators
- understanding the redress process
- understanding the role of the Public Service Commission and the Canadian Human Rights Commission
- defusing situations
- understanding what constitutes appropriate business dress and behaviour in the home environment and when on travel status.

Any case studies used in the workshop should be appropriate for the CRC work environment.

Recommendation \#25
That Code of Conduct workshops be provided and be mandatory for all CRC employees, that the President of CRC introduce each workshop, linking the values of CRC to the acceptable code of conduct and emphasizing the consequences of unacceptable behaviour.

## B) SAFETY

Members of the Study Group see a need for all females at CRC to be aware of potential dangers when travelling alone. The content of these courses should be adjusted to meet the needs of CRC. The Study Group believes that women should be accompanied when working during silent hours, particularly since CRC buildings are in an isolated location. The Study Group recognizes that this is already policy and that, with the consent of the Chief of Protection and Safety Services, it is possible to bring a companion into CRC during silent hours and that permission is denied only when there is a safety issue that could create a liability for CRC.

Recommendation \#26

That CRC provide safety workshops during fiscal year 1995-96 with emphasis placed on safety and security tips for women travellers.

Recommendation \#27

That women at CRC be permitted to bring someone with them to the work site when they are required to work during the silent hours.

### 4.7 Monitoring Results

The Study Group recognizes the importance of the President being kept apprised of CRC's progress in the achievement of employment equity objectives for women and taking appropriate alternative measures to ensure that objectives can be met.

Recommendation \#28
That a monitoring program be established which will track progress and determine CRC's achievement of employment equity results in areas such as recruiting, training and development, and staffing. The monitoring program should include exit interviews with women who leave employment in science and engineering positions at CRC, and, if possible, with those who have left CRC over the past several years. Monitoring should also include a system for keeping track of co-op students who wish to leave their address with CRC and who may be potential candidates for employment after graduation.

It is suggested that the monitoring program be administered by CRC's Director of Human Resources who will provide the President and Vice-Presidents with quarterly progress reports, clearly identifying the current representation of women in Scientific Research and Engineering, by occupational group and level, and by Branch. The monitoring report would determine Branch progress towards the achievement of CRC's employment equity objectives, including initiatives taken to improve the representation of women (e.g. number of women, by group and level, who have attended developmental training courses and conferences; number of women by group and level who have been promoted, or placed in a temporary assignment at a higher level (acting appointments); number of women who have left the organization, etc.). Appendix E to this report lists some of the tools that CRC should consider using to monitor its progress towards achieving its employment equity objectives.

## 5. Implementation

A Professional Association of Women at CRC would help to establish professional links between women at CRC and to erode feelings of isolation among new women on staff. It might also consider whether there are issues of concern to women at CRC that have not been covered in this report and review these concerns on a regular basis. The 10 women in the science and engineering categories who prepared this report did not think they were a large enough group to establish an ongoing association and would like to meet with other women at CRC to explore whether an association is warranted.

Recommendation \#29
That CRC call a meeting of professional women at CRC to determine whether they are interested in establishing a Professional Women's Association at CRC.

These recommendations focus on two aspects of the employment of women at CRC: 1) the recruitment of additional women to reflect the demographics of those graduating from university in appropriate areas, and 2) the conditions of work of those women employed as scientists and engineers at CRC.

The women in this committee believe that these recommendations, when implemented, will provide a working environment which reflects the society more closely and which invites women with excellent and relevant qualifications into a supportive work environment at CRC.

Recommendation \#30
That an Action Plan be prepared with specific goals and lead responsibility identified for each recommendation.

The Study Group believes that it is important for all CRC employees to consider these issues carefully.

Recommendation \#31
That this report be distributed to all CRC employees.

# Appendix A Study Group Members 

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## Appendix B The CRC Organization

| Board of Directors <br> Chairman | President <br> CRC - CITI <br> Executive V.P. | Senior Site <br> Coordination <br> Committee |
| :---: | :---: | :---: |
|  | V.P. <br> Communications <br> Systems Research <br> Broadcast Research <br> V.P. Radio- |  |

- Strategy and Plans
- Business Development
- Site Services
- Research Services
- Technical Services
- Corporate Services
- Mobile and Personal Communications
- Satellite Applications and Projects
- Satellite Systems and Technologies
- MSAT Program
- Antennas and Integrated Electronics
- Optoelectronic Technologies
- Radio Science
- Radiocommunications Technologies
- Radio Broadcast Technologies
- Television Broadcast Technologies
- Network Technologies


## 

## Appendix C Distribution of EN-ENG and SE-RES Public Service, Industry Canada, Communications Research Centre

Table 1C

| Distribution of ENENG and SERES - December, 1994 |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Public Service |  |  |  | Industry Canada* |  |  |  | Communications Research Centre |  |  |  |
|  | Male | Female | Total | Female \% | Male | Female | Total | Female \% | Male | Female | Total | Female \% |
| Eneng1 | 4 | 7 | 11 | 63.6 | 0 | 2 | 2 | 100 | 0 | 0 | 0 | 0 |
| ENENG2 | 59 | 20 | 79 | 25.3 | 11 | 1 | 12 | 8.3 | 12 | 2 | 14 | 14.3 |
| ENENG3 | 560 | 100 | 660 | 15.2 | 31 | 7 | 38 | 18.4 | 19 | 2 | 21 | 9.5 |
| ENENG4 | 976 | 52 | 1,028 | 5.1 | 63 | 5 | 68 | 7.4 | 25 | 1 | 26 | 3.8 |
| Enengs | 677 | 16 | 693 | 2.3 | 59 | 3 | 62 | 4.8 | 28 | 0 | 28 | 0 |
| ENENG6 | 172 | 5 | 177 | 2.8 | 30 | 3 | 33 | 9.1 | 11 | 1 | 12 | 8.3 |
| TOTAL | 2,448 | 200 | 2,648 | 7.6 | 194 | 21 | 215 | 9.8 | 95 | 6 | 101 | 5.9 |
| SERES1 | 141 | 74 | 215 | 34.4 | 7 | 3 | 10 | 30 | 7 | 3 | 10 | 30 |
| SERES2 | 682 | 113 | 795 | 14.2 | 18 | 3 | 21 | 14.3 | 18 | 1 | 19 | 5.3 |
| SERES3 | 357 | 28 | 385 | 7.3 | 10 | 0 | 10 | 0 | 9 | 0 | 9 | 0 |
| SERES4 : | 442 | 8 | 450 | 1.8 | 13 | 0 | 13 | 0 | 13 | 0 | 13 | 0 |
| SERES5 | 116 | 2 | 118 | 1.7 | 3 | 0 | 3 | 0 | 3 | 0 | 3 | 0 |
| TOTAL | 1,738 | 225 | 1,963 | 11.5 | 51 | 6 | 57 | 10.5 | 50 | 4 | 54 | 7.4 |

* not including CRC

Source: Public Service Commission and Communications Research Centre

## Appendix C Research Topics and Sub-Topics that DIRECTORS CONSIDER IMPORTANT FOR CANDIDATES AT CRC

Table 2C

|  | Number of Responses |
| :---: | :---: |
| Information Technology |  |
| General | 6 |
| Expert Systems | 3 |
| Hardware Design | 2 |
| Operating Systems | 2 |
| Programming | 6 |
| Software Engineering | 4 |
| Very Large Scale Systems | 1 |
| Database Management | 0 |
| Systems Design | 2 |
| Psychophysics * | 1 |
| Experimental Psychology * | 1 |
|  |  |
| Electronics |  |
| General | 7 |
| Materials | 3 |
| Sensors | 2 |
| Microelectronics | 5 |
| Optoelectronics | 5 |
| Microwaves | 9 |
| Instrumentation | 4 |
| Transducers | 2 |
|  |  |
| Communications |  |
| General | 10 |
| Networks | 8 |
| Hardware Design | 6 |
| Communications Signal Processing * | 1 |
| Transmissions * | 1 |
| Communications Theory * | 1 |

* Categories added by Directors

Table 2C (Cont'd)

|  | Number of Responses |
| :---: | :---: |
| Telecommunications |  |
| General | 9 |
| Equipment Design | 7 |
| System Engineering | 10 |
| Data Communications | 10 |
| Radio | 10 |
| Radar | 2 |
| Satellite | 10 |
| Navigational Aids | 1 |
| Signal Processing * | 3 |
| Modulation and Channel Coding * | 1 |
| Error Correcting Code* | 1 |
| Radio Science * | 1 |
| RF Design * | 1 |
| Image Processing * | 1 |
| Television * | 1 |
| Computer Aided Design * | 1 |
| Telecommunications and Computer Communications * | 1 |
| Digital Communications * | 1 |
| System and Signal Analysis * | 1 |
| Network and Systems * | 1 |
|  |  |
| Electromagnetics |  |
| Theory * | 1 |
| Fundamentals of Electromagnetic Fields * | 1 |
| Electromagnetics * | 1 |
| Fields and Waves * | 1 |
| Electromagnetic Waves and Radiating System * | 1 |
| Antenna Theory and Design * | 1 |
| Transmission Line Theory * | 1 |
| Microwave Circuits and Antennas * | 1 |
| Electromagnetic Compatibility * | 1 |
|  |  |
| Mathematics |  |
| Random Process and Probability * | 1 |
|  |  |

* Categories added by Directors


## Appendix D Female Enrollment Figures for Engineering and Science Programs CANADIAN UNIVERSItIES (SUMMARY)

Table 1D

|  | Percentage of Females |  |  |  |
| :--- | :--- | :--- | :--- | :--- |
|  | $\mathbf{1 9 9 0} \mathbf{- 1}$ | $\mathbf{1 9 9 1 - 2}$ | $\mathbf{1 9 9 2 - 3}$ | $\mathbf{1 9 9 3 - 4}$ |
| Bachelor Program |  |  |  |  |
|  |  |  |  |  |
| Enginecring and Applied Science |  |  |  |  |
| Chemical Engineering | 25.8 | 32.6 | 35.1 | 36.4 |
| Civil Engineering | 19.1 | 20.2 | 21.2 | 22.0 |
| Electrical Engineering | 9.1 | 7.7 | 11.0 | 11.6 |
| Mechanical Engineering | 9.6 | 9.8 | 10.4 | 10.0 |
|  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |
| Chemistry | 37.8 | 39.4 | 42.0 | 38.5 |
| Computer Science | 19.6 | 20.1 | 20.3 | 22.4 |
| Mathematics | 38.4 | 39.2 | 38.8 | 39.6 |
| Physics | 15.4 | 25.1 | 18.3 | 18.7 |
|  |  |  |  |  |
| Masters Program |  |  |  |  |
|  |  |  |  |  |
| Enginecring and Applied Science |  |  |  |  |
| Chemical Engineering | 27.0 | 23.0 | 27.7 | 32.4 |
| Civil Engineering | 16.3 | 18.5 | 19.7 | 17.0 |
| Electrical Engineering | 23.4 | 10.2 | 10.4 | 12.3 |
| Mechanical Engineering | 10.0 | 11.7 | 12.8 | 14.0 |
| Mathematics and Physical Sciences |  |  |  |  |
| Chemistry |  |  |  |  |
| Computer Science | 33.2 | 33.0 | 34.6 | 41.4 |
| Mathematics | 19.7 | 21.8 | 21.9 | 23.0 |
| Physics | 29.9 | 28.4 | 30.3 | 30.4 |
|  | 14.8 | 14.5 | 15.6 | 18.0 |

## Appendix D Female Enrollment Figures for Engineering and Science Programs Canadian Universities (Summary)

Table 1D (Cont'd)

|  | Percentage of Females |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | $\mathbf{1 9 9 0 - 1}$ | $\mathbf{1 9 9 1 - 2}$ | $\mathbf{1 9 9 2 - 3}$ | $\mathbf{1 9 9 3 - 4}$ |
| Doctoral Program |  |  |  |  |
|  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |
| Chemical Engineering | 12.8 | 13.6 | 12.0 | 14.6 |
| Civil Engineering | 9.1 | 8.7 | 9.0 | 12.2 |
| Electrical Engineering | 7.6 | 8.4 | 12.2 | 6.7 |
| Mechanical Engineering | 8.2 | 8.7 | 8.8 | 9.6 |
|  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |
| Chemistry | 23.1 | 28.7 | 22.8 | 24.4 |
| Computer Science | 14.4 | 14.9 | 16.2 | 15.5 |
| Mathematics | 13.5 | 15.2 | 15.8 | 20.3 |
| Physics | 12.4 | 13.1 | 15.5 | 15.0 |
|  |  |  |  |  |

Source: Association of Universities and Colleges of Canada

## Appendix D Enrollment Figures for Engineering and Science Programs - Canadian Universities (Summary)

Table 2D

|  | 1990-1 |  |  | 1991-2 |  |  | 1992-3 |  |  | 1993-4 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Male | Fem. | $\%$ <br> Fem. | Male | Fen. | $\begin{gathered} \hline \% \\ \text { Fem. } \end{gathered}$ | Male | Fem. | $\begin{gathered} \% \\ \text { Fem. } \end{gathered}$ | Male | Fem. | $\begin{gathered} \% \\ \text { Fem. } \end{gathered}$ |
| Bachelor Program |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemical Eng. | 1994 | 693 | 25.8 | 2076 | 1006 | 32.6 | 2047 | 1106 | 35.1 | 2090 | 1197 | 36.4 |
| Civil Eng. | 4007 | 943 | 19.0 | 4430 | 1123 | 20.2 | 4468 | 1200 | 21.2 | 4558 | 1284 | 22.0 |
| Electrical Eng. | 7200 | 725 | 9.1 | 7260 | 604 | 7.7 | 7353 | 906 | 11.0 | 7328 | 958 | 11.6 |
| Mechanical Eng. | 6911 | 735 | 9.6 | 7113 | 769 | 9.8 | 7245 | 838 | 10.4 | 7222 | 806 | 10.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemistry | 2350 | 1428 | 37.8 | 2361 | 1538 | 39.4 | 2408 | 1746 | 42.0 | 2632 | 1650 | 38.5 |
| Computer Science | 6545 | 1596 | 19.6 | 7034 | 1764 | 20.0 | 7648 | 1947 | 20.3 | 8338 | 2406 | 22.4 |
| Mathematics | 5569 | 3468 | 38.4 | 5479 | 3528 | 39.2 | 5417 | 3436 | 38.8 | 5239 | 3428 | 39.6 |
| Physics | 2391 | 435 | 15.4 | 2280 | 765 | 25.1 | 2315 | 517 | 18.2 | 2304 | 531 | 18.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Masters Program |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemical Eng. | 289 | 107 | 27.0 | 314 | 94 | 23.0 | 313 | 120 | 27.7 | 334 | 160 | 32.4 |
| Civil Eng. | 563 | 110 | 16.3 | 625 | 142 | 18.5 | 716 | 176 | 19.7 | 801 | 164 | 17.0 |
| Electrical Eng. | 1066 | 325 | 23.4 | 1097 | 125 | 10.2 | 1171 | 136 | 10.4 | 1158 | 163 | 12.3 |
| Mechanical Eng. | 642 | 71 | 10.0 | 695 | 92 | 11.7 | 792 | 116 | 12.8 | 758 | 123 | 14.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemistry | 415 | 206 | 33.2 | 400 | 197 | 33.0 | 409 | 216 | 34.6 | 367 | 259 | 41.4 |
| Computer Science | 685 | 168 | 19.7 | 730 | 204 | 21.8 | 790 | 222 | 21.9 | 758 | 226 | 23.0 |
| Mathematics | 365 | 156 | 29.9 | 413 | 164 | 28.4 | 379 | 165 | 30.3 | 424 | 185 | 30.4 |
| Physics | 476 | 83 | 14.8 | 485 | 82 | 14.5 | 453 | 84 | 15.6 | 438 | 96 | 18.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

## Appendix D Enrollment Figures for Engineering and Science Programs - Canadian Universities (Summary)

Table 2D (Cont'd)

|  | 1990-1 |  |  | 1991-2 |  |  | 1992-3 |  |  | 1993-4 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Male | Fem. | $\begin{gathered} \% \\ \text { Fem. } \end{gathered}$ | Male | Fem. | $\begin{gathered} \% \\ \text { Fem. } \end{gathered}$ | Male | Fem. | $\begin{gathered} \text { \% } \\ \text { Fem. } \end{gathered}$ | Male | Fem. | $\begin{gathered} \hline \% \\ \text { Fem. } \end{gathered}$ |
| Doctoral Program |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemical Eng. | 280 | 41 | 12.8 | 287 | 45 | 13.6 | 293 | 40 | 12.0 | 309 | 53 | 14.6 |
| Civil Eng. | 439 | 44 | 9.1 | 451 | 43 | 8.7 | 514 | 51 | 9.0 | 523 | 73 | 12.2 |
| Electrical Eng. | 657 | 54 | 7.6 | 767 | 70 | 8.4 | 627 | 87 | 12.2 | 873 | 63 | 6.7 |
| Mechanical Eng. | 415 | 37 | 8.2 | 504 | 48 | 8.7 | 651 | 63 | 8.8 | 603 | 64 | 9.6 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemistry | 755 | 227 | 23.1 | 615 | 247 | 28.6 | 842 | 248 | 22.8 | 852 | 275 | 24.4 |
| Computer Science | 351 | 59 | 14.4 | 378 | 66 | 14.9 | 418 | 81 | 16.2 | 446 | 82 | 15.5 |
| Mathematics | 453 | 71 | 13.5 | 490 | 88 | 15.2 | 607 | 114 | 15.8 | 500 | 127 | 20.2 |
| Physics | 606 | 86 | 12.4 | 639 | 96 | 13.1 | 676 | 124 | 15.5 | 704 | 124 | 15.0 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Source: Association of Universities and Colleges of Canada

## Appendix D University Graduation from Engineering and Science Programs in Canada (Summary)

Table 3D

|  | Percentage of Females |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | 1990-1 | 1991-2 | 1992-3 | 1993-4 |
| Bachelor Program |  |  |  |  |
| Enginecring and Applied Science |  |  |  |  |
| Chemical Engineering | 26.6 | 30.7 | 32.1 | 30.8 |
| Civil Engineering | 12.4 | 17.4 | 17.5 | 18.1 |
| Electrical Engineering | 8.2 | 8.3 | 8.7 | 8.7 |
| Mechanical Engineering | 7.2 | 9.0 | 8.9 | 9.5 |
| All Engineering | 11.7 | 12.9 | 13.9 | 14.3 |
| Mathematics and Physical Science |  |  |  |  |
| Chemistry | 36.7 | 37.4 | 36.6 | 41.9 |
| Computer Science | 19.8 | 19.8 | 21.9 | 19.6 |
| Mathematics | 39.7 | 39.4 | 41.8 | 40.7 |
| Physics | 15.1 | 14.5 | 14.7 | 16.8 |
| All | 28.8 | 28.7 | 30.5 | 30.2 |
| Masters Program |  |  |  |  |
|  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |
| Chemical Engineering | 26.2 | 27.6 | 21.3 | 22.4 |
| Civil Engineering | 12.2 | 14.1 | 17.4 | 19.2 |
| Electrical Engineering | 8.6 | 8.8 | 10.5 | 9.7 |
| Mechanical Engineering | 5.3 | 11.0 | 9.3 | 10.2 |
| All Engineering | 12.7 | 13.2 | 13.9 | 14.6 |
|  |  |  |  |  |
| Mathematics and Physical Sciences |  |  |  |  |
| Chemistry | 35.8 | 38.3 | 33.0 | 38.2 |
| Computer Science | 18.6 | 23.0 | 20.2 | 21.0 |
| Mathematics | 26.1 | 27.9 | 28.8 | 37.0 |
| Physics | 12.0 | 13.1 | 17.0 | 14.0 |
| All | 21.5 | 25.3 | 24.8 | 26.5 |
|  |  |  |  |  |

## Appendix D University Graduation from Engineering and Science Programs in CANADA (SUMMARY)

Table 3D (Cont'd)

|  | Percentage of Females |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
|  | $\mathbf{1 9 9 0} \mathbf{- 1}$ | $\mathbf{1 9 9 1 - 2}$ | $\mathbf{1 9 9 2 - 3}$ | $\mathbf{1 9 9 3 - 4}$ |
| Doctoral Program |  |  |  |  |
|  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |
| Chemical Engineering | 10.9 | 12.7 | 21.3 | 4.6 |
| Civil Engineering | 9.6 | 10.1 | 11.9 | 6.6 |
| Electrical Engineering | 1.9 | 7.1 | 5.3 | 8.1 |
| Mechanical Engineering | 5.6 | 1.8 | 8.7 | 4.4 |
| All Engineering | 6.5 | 8.8 | 10.7 | 7.7 |
| Mathematics and Physical Science |  |  |  |  |
| Chemistry |  |  |  |  |
| Computer Science | 27.2 | 24.5 | 22.2 | 22.0 |
| Mathematics | 20.0 | 5.3 | 20.8 | 17.2 |
| Physics | 20.8 | 8.0 | 8.3 | 7.6 |
| All | 8.8 | 5.9 | 12.7 | 13.1 |
|  | 20.2 | 16.7 | 16.8 | 16.1 |

Source: Association of Universities and Colleges of Canada

## Appendix D University Graduation Figures for Engineering and Science Programs

Table 4D

|  | 1990-1 |  |  | 1991-2 |  |  | 1992-3 |  |  | 1993-4 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Male | Fem. | $\begin{gathered} \hline \% \\ \text { Fem. } \end{gathered}$ | Male | Fem . | $\begin{gathered} \% \\ \text { Fem. } \\ \hline \end{gathered}$ | Male | Fem. | $\%$ <br> Fem. | Male | Fem. | $\begin{gathered} \% \\ \text { Fem. } \end{gathered}$ |
| Bachelor Program |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemical Eng. | 459 | 166 | 26.6 | 432 | 191 | 30.7 | 466 | 220 | 32.1 | 476 | 212 | 30.9 |
| Civil Eng. | 831 | 118 | 12.4 | 843 | 177 | 17.4 | 921 | 195 | 17.5 | 984 | 217 | 18.1 |
| Electrical Eng. | 1746 | 156 | 8.2 | 1746 | 159 | 8.3 | 1756 | 167 | 8.7 | 1698 | 162 | 8.7 |
| Mechanical Eng. | 1694 | 132 | 7.2 | 1671 | 165 | 9.0 | 1662 | 162 | 8.9 | 1711 | 180 | 9.5 |
| All Engineering | 6231 | 825 | 11.7 | 6204 | 920 | 13.0 | 6362 | 1024 | 13.9 | 6405 | 1071 | 14.3 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemistry | 625 | 362 | 36.7 | 608 | 364 | 37.4 | 613 | 350 | 36.3 | 535 | 386 | 41.9 |
| Computer Science | 1759 | 435 | 19.8 | 1789 | 442 | 19.8 | 1800 | 506 | 21.9 | 1910 | 467 | 19.6 |
| Mathematics | 1245 | 819 | 39.7 | 1282 | 834 | 39.4 | 1289 | 926 | 41.8 | 1356 | 930 | 40.7 |
| Physics | 552 | 98 | 15.1 | 584 | 99 | 14.5 | 521 | 90 | 14.7 | 525 | 106 | 16.8 |
| All | 4477 | 1813 | 28.8 | 4543 | 1833 | 28.7 | 4470 | 1959 | 30.5 | 4592 | 1988 | 30.2 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Masters Program |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemical Eng. | 104 | 37 | 26.2 | 97 | 37 | 27.6 | 140 | 38 | 21.3 | 125 | 36 | 22.4 |
| Civil Eng. | 224 | 31 | 12.2 | 220 | 36 | 14.1 | 251 | 53 | 17.4 | 273 | 65 | 19.2 |
| Electrical Eng. | 373 | 35 | 8.6 | 404 | 39 | 8.8 | 418 | 49 | 10.5 | 447 | 48 | 9.7 |
| Mechanical Eng. | 196 | 11 | 5.3 | 235 | 29 | 11.0 | 224 | 23 | 9.3 | 292 | 33 | 10.2 |
| All Engineering | 1234 | 179 | 12.7 | 1448 | 220 | 13.2 | 1549 | 250 | 13.9 | 1645 | 282 | 14.6 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemistry | 120 | 67 | 35.8 | 119 | 74 | 38.3 | 134 | 66 | 33.0 | 123 | 76 | 38.2 |
| Computer Science | 284 | 65 | 18.6 | 245 | 73 | 23.0 | 261 | 66 | 20.2 | 305 | 81 | 21.0 |
| Mathematics | 187 | 66 | 26.1 | 165 | 64 | 27.9 | 193 | 78 | 28.8 | 153 | 90 | 37.0 |
| Physics | 219 | 30 | 12.0 | 199 | 30 | 13.1 | 210 | 43 | 17.0 | 202 | 33 | 14.0 |
| All | 996 | 273 | 21.5 | 879 | 298 | 25.3 | 985 | 324 | 24.8 | 964 | 347 | 26.5 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

## Appendix D University Graduation Figures for Engineering and Science Programs (CONT'D)

Table 4D (Cont'd)

|  | 1990-1 |  |  | 1991-2 |  |  | 1992-3 |  |  | 1993-4 |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Male | Fem. | $\begin{gathered} \% \\ \text { Fem. } \end{gathered}$ | Male | Fem. | $\%$ <br> Fem. | Malc | Fem. | $\%$ Fem. | Male | Fem. | $\%$ Fem. |
| Doctoral Program |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Engineering and Applied Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemical Eng. | 57 | 7 | 10.9 | 55 | 8 | 12.7 | 59 | 16 | 21.3 | 62 | 3 | 4.6 |
| Civil Eng. | 66 | 7 | 9.6 | 71 | 8 | 10.1 | 74 | 10 | 11.9 | 85 | 6 | 6.6 |
| Electrical Eng. | 105 | 2 | 1.9 | 104 | 8 | 7.1 | 125 | 7 | 5.3 | 137 | 12 | 8.0 |
| Mechanical Eng. | 51 | 3 | 5.6 | 56 | 1 | 1.8 | 63 | 6 | 8.7 | 87 | 4 | 4.4 |
| All Engineering | 361 | 25 | 6.5 | 373 | 36 | 8.8 | 425 | 51 | 10.7 | 480 | 40 | 7.7 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Mathematics and Physical Science |  |  |  |  |  |  |  |  |  |  |  |  |
| Chemistry | 134 | 50 | 27.2 | 145 | 47 | 24.4 | 165 | 47 | 22.2 | 156 | 44 | 22.0 |
| Computer Science | 36 | 9 | 20.0 | 54 | 3 | 5.3 | 42 | 11 | 20.8 | 53 | 11 | 17.2 |
| Mathematics | 57 | 15 | 20.8 | 69 | 6 | 8.0 | 100 | 9 | 8.2 | 110 | 9 | 7.6 |
| Physics | 104 | 10 | 8.8 | 112 | 7 | 5.9 | 103 | 15 | 12.7 | 113 | 17 | 13.1 |
| All | 387 | 98 | 20.2 | 460 | 92 | 16.7 | 491 | 99 | 16.8 | 516 | 99 | 16.1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Source: Association of Universities and Colleges of Canada

# Appendix E Suggested Monitoring Tools to TRACK PROGRESS MADE TOWARDS ACHIEVEMENT OF EMPLOYMENT EQUITY OBJECTIVES 

Table 1E

Representation of Women and Men in CRC

| Number of Women in SE-RES positions |  |
| :--- | :--- |
| Number of Men in SE-RES positions |  |
| Number of Women in EN-ENG positions |  |
| Number of Men in EN-ENG positions |  |
| Number of Women in Technical Support Groups |  |
| Number of Men in Technical Support Groups |  |
| Number of Women employees (all groups) |  |
| Number of Men employees (all groups) |  |

Table 2E
Employment Status of Women and Men in CRC

|  | Full-Time | Part-Time |
| :--- | :---: | :---: |
| Number of Women in SE-RES Positions |  |  |
| Number of Men in SE-RES Positions |  |  |
| Number of Women in EN-ENG Positions |  |  |
| Number of Men in EN-ENG Positions |  |  |
| Number of Women in Technical Positions |  |  |
| Number of Men in Technical Positions |  |  |
| Number of Women (all groups) |  |  |
| Number of Men (all groups) |  |  |

Table 3E

## Representation of Women and Men in Scientific and Engineering Positions

| Number of Women SE-RES at upper management level |  |
| :--- | :--- |
| Number of Men SE-RES at upper management level |  |
| Number of Women EN-ENG at upper management level |  |
| Number of Men EN-ENG at upper management level |  |
| Number of Women Technologists at upper levels |  |
| Number of Men Technologists at upper levels |  |
| Number of Women (all groups) at upper management levels |  |
| Number of Men (all groups) at upper management levels |  |
| Number of Women SE-RES at middle management level |  |
| Number of Men SE-RES at middle management level |  |
| Number of Women EN-ENG at middle management level |  |
| Number of Men EN-ENG at middle management level |  |
| Number of Women in Technical Groups who are at middle management leyel |  |
| Number of Men in Technical Groups who are at middle management level |  |
| Number of Women (all groups) at middle management level |  |
| Number of Men (all groups) at middle management level |  |
| Number of Women SE-RES who are supervisors |  |
| Number of Men SE-RES who are supervisors |  |
| Number of Women EN-ENG who are supervisors |  |
| Number of Men EN-ENG who are supervisors |  |
| Number of Women in Technical Groups who are supervisors |  |
| Number of Men in Technical Groups who are supervisors |  |
| Number of Women (all groups) who are supervisors |  |
| Number of Men (all groups) who are supervisors |  |

Table 4E

## Number of Applicants for Employment

| Number of Women that applied for a Scientist position |  |
| :--- | :--- |
| Number of Men that applied for a Scientist position |  |
| Number of Women that applied for an Engineering position |  |
| Number of Men that applied for an Engineering position |  |
| Number of Women that applied for a position in the Technical Group |  |
| Number of Men that applied for a position in the Technical Group |  |
| Number of Women that applied for positions for All Groups |  |
| Number of Men that applied for positions for All Groups |  |

# Appendix F Canadian Organizations Promoting Girls and Women in Engineering, Science And Technology 

## Organizational Profiles

| APASE | Association for the Promotion and Advancement of Science Education |
| :--- | :--- |
| AWES | Association of Women in Engineering and Sciences |
| AWG | Association for Women Geoscientists |
| AWSN | Alberta Women's Science Network |
| CAWIS | Canadian Association of Women in Science |
| CCLOW | Canadian Congress for Learning Opportunities for Women |
| CCWEST | Canadian Coalition of Women in Engineering Science and Technology |
| CFG | Comité Femme en Ingénierie (de l'Ordre des ingénieurs du Québec) |
| CRIAW | Canadian Research Institute for the Advancement of Women |
| DAWEG | Division for the Advancement of Women in Engineering and Geoscience <br> (of the Association of Professional Engineers and Geoscientists of BC) |
| IFIAS | International Federation of Institutes for Advanced Study (Northern |
|  | Telecom/NSERC Women in Engineering Chair) |
| SCWIST | Society for Women in Science and Technology |
| WIP | Women Inventors Project |
| WISE | Women in Science and Engineering |
| WISEST | Women in Scholarship, Engineering, Science and Technology |
| WITT | Women in Trades, Technology, Operations and Blue-Collar Work |


| LKC |
| :--- |
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| C.2 |
| Women in science and |
| engineering at the |
| Communications Research |
| Centre |
|  |

## ACTION PLAN

## Report on Women in Science and Engineering at CRC June 1995

| $\mathbf{N}^{\text {o }}$ | Recommendations | Actions | Lead |
| :---: | :---: | :---: | :---: |
| 1 | That CRC establish clear annual goals and make commitments to the recruitment, development and advancement of women in the Scientific Research and Engineering occupational groups. The goals established for the number of women scientists and engineers at CRC should reflect the demographics of women graduating from Canadian universities with appropriate qualifications for work at CRC. | Recruitment - Based on managers' input, develop complete lists of qualifications or skill sets required for CRC positions. <br> - Request the Public Service Commission to perform a market analysis of women graduating from Canadian universities; such analysis to correspond to the qualifications or skills sets required for CRC positions. <br> - Based on the demographics contained in the market analysis (supply available) establish goals and commitments for recruitment and establish recruiting level salaries, as required. <br> Development - Determine, in conjunction with the Public Service Commission, the requirements for and criteria of a professional development program (also refers to No. 19). <br> Advancement - Complete the establishment of SE-REM-1, SE-REM-2, EN-ENG-5 expert and project manager positions, enabling CRC to offer two career paths for engineers and research scientists, research or research management. <br> - Managers to formalize succession plans. <br> - Establish training program for research management career path. (also refers to no. 19) | Human Resources Director Carol Brooks |
| 2 | That CRC review and modify the existing performance appraisal forms for SE-RES and SE-REM employees to ensure that supervisors can be assessed against their achievement of employment equity objectives. (The EN-ENG group already has this as part of their appraisal.) | Survey and analysis currently being conducted concerning existing.CRC appraisal program, including recommendations for revision of various appraisal forms. Note: with the establishment of SE-REM-1 and SE-REM-2 positions, it is expected that responsibility for overall human resources management, employment equity objectives, will rest with these positions. | Human Resources Director Carol Brooks |


| 3 | That corporate funding be made <br> available to managers to cover up to <br> 50\% of salary costs for up to two <br> years for purposes of hiring females <br> into science and engineering <br> positions. This should include <br> indeterminate, term, contract, co-op <br> students, summer students, exchange <br> programs, and post-doctoral positions. | The corporate financial situation will be assessed <br> to determine how best to fund this initiative. <br> Options will be determined and evaluated. | Corporate Services <br> Director <br> Sherril Minns |
| :--- | :--- | :--- | :--- |
| 4 | That CRC develop a marketing <br> strategy aimed at increasing the <br> representation of women in the <br> scientific and engineering fields. | Develop direct mail pamphlet targeted to <br> undergraduate students in the engineering and <br> science faculties of Canadian universities and <br> explore methods of distribution. | Site Development <br> Managing Director <br> Robert Ward |
| 5 | That CRC establish a corporate fund <br> to reimburse line managers' budgets <br> for 100\% of travel costs when female <br> scientists or engineers represent CRC <br> at school fairs, or other opportunities <br> to market CRC. | CRC is reimbursing loo\% of travel costs <br> associated with duty travel. | Corporate Services <br> Director <br> Sherril Minns |
| 6 | That the President establish a CRC <br> Junior Research Scholarship and <br> Fellowship Program to encourage <br> female students to pursue studies in <br> science and engineering. | Develop a follow-up special measures initiatives <br> fund proposal requesting PSC support for the <br> development of the Fellowship Program and a <br> CRC Scholarship Program. | Human Resources <br> Director <br> Carol Brooks |
| 7 | That CRC establish a Committee to <br> develop guidelines for managers <br> regarding the Co-op Student Program <br> or other student programs, to ensure <br> that the students have experience that <br> will add to their education and make <br> them interested in working at CRC <br> later. | President to appoint a Manager at CRC to <br> address this recommendation. | President <br> Jacques Lyrette |
| 8 | That CRC monitor the Co-op Student <br> Program, conduct exit interviews, and <br> track the progress of students, <br> including those eventually hired by <br> CRC into science and engineering <br> positions. | President to appoint a Manager at CRC to <br> address this recommendation. | President <br> Jacques Lyrette |


| 9 | That CRC establish a Mentorship Program which would include women in science, engincering and the technical groups. The Program should include a mentoring workshop available to all CRC employees (males and females) and should focus on ways to establish mentoring relationships. | Information on Industry Canada's program will be requested, revised, as required, and proposed for implementation within CRC. | Human Resources Director Carol Brooks |
| :---: | :---: | :---: | :---: |
| 10 | That managers at CRC support employees who wish to take advantage of alternate work arrangements in order to permit them to balance family and work life. | Training sessions for managers at CRC on AWA. <br> President to make training sessions mandatory. | President <br> Jacques Lyrette <br> Human Resources <br> Director <br> Carol Brooks |
| 11 | That the Vice-President delegate salary dollars for full-time positions to line managers of scientists or engineers who are on maternity leave in order to permit those managers to reallocate the salary dollars to support the projects of that employee whenever possible. | - | Vice-Presidents William Sawchuk Robert Huck |
| 12 | That an employee caring for preschool aged children and who is working at least $60 \%$ of the time be offered full-time employment when the employee wishes to revert to working full time. |  | Vice-Presidents William Sawchuk Robert Huck |
| 13 | That the full-time salary dollars for employees working at least $60 \%$ of a full-time position and caring for preschool aged children remain with the line manager to be used to enhance the work of the employee whenever possible. |  | Vice-Presidents William Sawchuk Robert Huck |
| 14 | That the Director of Human Resources provide CRC employees who are contemplating taking longterm leave or opting for alternate working arrangements with an information package describing benefit entitlements. | A Human Resources Bulletin will be issued to all employees advising them that information and advice is now readily available from CRC Pay and Benefits Specialists, by personal appointment. As well, any employee availing himself/herself of long-term leave or alternative work arrangements is provided with written personalized information (letter format) concerning all benefits. | Human Resources Director Carol Brooks |


| 15 | That an electronic document concerning what benefits and information are available for women at CRC be prepared and made available on CRC networks. | Advice will continue to be provided on a personal basis both verbally and in writing by Compensation and Benefits. The CRC women's web site will list who to contact. | Human Resources Director Carol Brooks |
| :---: | :---: | :---: | :---: |
| 16 | That the President of CRC support the Study Group's position that sick leave benefits should be extended to include the caring for sick children or elderly parents. | Correspondence will be prepared for PCRC. This correspondence will advise the Treasury Board of this issue. | Human Resources Director Carol Brooks |
| 17 | That the President of CRC support the Study Group's position that the benefits currently offered for adoption leave be expanded to be the same as those offered for maternity leave. | Correspondence will be prepared for PCRC. This correspondence will advise the Treasury Board of this issue. | Human Resources Director Carol Brooks |
| 18 | That the President of CRC support the Study Group's position that women who work at least $60 \%$ of the time and who are caring for pre-school aged children are entitled to increments annually as though they were working on a full-time basis. | Correspondence will be prepared for PCRC. This correspondence will advise the Treasury Board of this issue. <br> … .... | Human Resources Director Carol Brooks |
| 19 | That CRC introduce a career management program for both men and women who occupy positions in the Scientific and Professional Group. | Development - Determine, in conjunction with the Public Service Commission, the requirements for and criteria of a professional development program. (also refers to no. 1) <br> Advancement - Complete the establishment of SE-REM-1, SE-REM-2, EN-ENG-5 expert and project manager positions, enabling CRC to offer two career paths for engineers and research scientists, research or research management. <br> - Managers to formalize succession plans. <br> - Establish training program for research management career path. (also refers to no.l) | Human Resources Director Carol Brooks |
| 20 | That the criteria used for the assessment of employees in the SERES occupational group include the assessment of an employee's productivity in relation to the amount of time the employee spent to achieve results. |  | President as Chair of the SE-RES Promotion Committee |


| 21 | That CRC consider training strategies to improve the representation of women at more senior levels. | President to appoint a Manager at CRC to address this recommendation. | President Jacques Lyrette |
| :---: | :---: | :---: | :---: |
| 22 | That a CRC corporate funding be established to cover costs incurred as a result of female scientists and engineers attending training courses for career development purposes. | Options will be evaluated to determine an appropriate means of funding these initiatives. | Corporate Services Director Sherril Minns |
| 23 | That prior to an employee going on maternity leave, a project plan be developed jointly by the manager and the employee which would allow projects to continue during the duration of the maternity leave to the credit and advancement of the employee. | Directors to provide copies of project plans to their VP's. | Directors |
| 24 | That the President of CRC establish a committee with the mandate to develop a set of guidelines or parameters designed to determine whose name should be on a publication. To ensure women's concerns are addressed, the committee membership should include at least one female scientist. | President to appoint Director. | President Jacques Lyrette |
| 25 | That Code of Conduct Workshops be provided and be mandatory for all CRC employees, that the President of CRC introduce each workshop, linking the values of CRC to the acceptable code of conduct and emphasizing the consequences of unacceptable behaviour. | Treasury Board is currently in the process of reviewing and revising the harassment policy. Preliminary investigation has revealed that changes are being contemplated which will significantly alter existing roles and responsibilities, processes, redress mechanisms etc. It is expected that the Public Service Commission will assume responsibility for the development of appropriate training courses for management, mediators, staff relations officers, etc. In view of the above, it does not appear timely to develop workshops at this time. It is recommended that this recommendation be included as a Human Resources objective, but postponed until the new Treasury Board Policy is released. | Human Resources Director Carol Brooks |
| 26 | That CRC provide safety workshops during fiscal year 1995-96 with emphasis placed on safety and security tips for women travellers. |  | Protection and Safety Services Chief Pierre Lyonnais |


| 27 | That women at CRC be permitted to bring someone with them to the work site when they are required to work during the silent hours. |  | Protection and Safety <br> Services <br> Chief <br> Pierre Lyonnais |
| :---: | :---: | :---: | :---: |
| 28 | That a monitoring program be established which will track progress and determine CRC's achievement of employment equity results in areas such as recruiting, training and development, and staffing. The monitoring program should include exit interviews and a system for keeping track of co-op students who wish to leave their address with CRC and who may be potential candidates for employment after graduation. | Human Resources will monitor and provide reports on employment equity results in terms of recruitment, CRC professional development programs and research management training. It is recommended, however, that management assume responsibility for exit interviews and a system for keeping track of Co-op students who may be potential candidates for employment after graduation. President to appoint a Manager at CRC to address this recommendation. It is further recommended that exit interviews could be utilized, to some extent, to monitor the success of recommendation \#7. | Human Resources Director Carol Brooks |
| 29 | That CRC call a meeting of professional women at CRC to determine whether they are interested in establishing a Professional Women's Association at CRC. | Meeting to be called by September 30, 1995 | Applications Research Coordinator Dorothy Phillips |
| 30 | That an Action Plan be prepared with specific goals and lead responsibility identified for each recommendation. | Draft to be submitted to CRCMC June 23, 1995 | Human Resources <br> Director <br> Carol Brooks <br> Applications Research Coordinator Dorothy Phillips |
| 31 | That this report be distributed to all CRC employees. |  |  |



