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SUMMARY

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Ministry of State for
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BACKGROUND

Over the past decade, several surveys and studies have been carried out to identify problem areas related to personnel policy in federal science organizations. In December 1970, a report entitled "A Study of Scientific Personnel in the Federal Government" was submitted to the Task Force which had been set up to review the organization of federal natural science. This report concluded that the research manager was the key figure in government science and, consequently, considerable emphasis should be placed on an analysis of his role as well as on the need for making him more effective as a manager of scientific activities.

A Public Service Commission study which followed in March 1974 recommended a "unified and coordinated approach to the training and development" of research managers. The study led to the establishment of a two-week PSC executive development course entitled, "Management Development for Research Managers".

MOSST involvement in this area resulted from both the recommendations of the Special Committee of the Senate on Science Policy (Lamontagne Committee) and the April 1978 Cabinet decision on the enhancement of technology transfer from government laboratories to industry. The latter specifically asked MOSST, among other initiatives, to examine related personnel policy issues in conjunction with TBS, PSC and science departments in order to facilitate implementation of government policy in this area.

In November 1977, MOSST released a report, entitled "Scientific Manpower in the Federal Government (Phase I)", which was circulated to major science departments for comment. While drawing a profile of the federal scientific community, the report confirmed the presence of most problems which had been identified in previous reports. The need to address these problems had, over the years, become more pressing in view of increasing budgetary restraints on all federal departments, the necessity for better accountability of federal programs, and the crucial role of the managers in the public service.

As a result of the response of the Treasury Board Secretariat, the Public Service Commission and science departments to the phase one report, it was decided that MOSST should first develop, in general terms, the government expectations of its scientists and research

managers. This was to be examined in terms of both their ongoing and new functions. It was considered that such a statement would provide the basic principles for developing procedures and standards for major phases of personnel management: staffing, job assignment, performance appraisal, training and development, promotion and transfer policies. In addition, this statement should also be useful in implementing personnel policy aspects of the April 1978 Cabinet decision on the transfer of technology.

Phase two of the MOSST study of "Scientific Manpower in the Federal Government" thus had the following terms of reference:

> "Prepare a statement of principles governing the role and performance of scientific personnel in the Public Service within the context of new policy directives and current constraints; and to develop mechanisms to enhance the mobility of scientists with a view to improving science and technology transfer to outside the government".

For purposes of this study, contacts were established in major science departments, the Treasury Board Secretariat and Public Service Commission. These contacts were particularly useful in discussing the first paper of the report which seeks to define the role of the government scientist and science manager. Extensive consultations were held with science departments in order to evolve a reasonably balanced perspective on new and ongoing functions of federal science organizations. The resulting paper was discussed at the January 1979 meeting of the Committee of Science ADMs so that it now reflects the consensus of the major science departments.

Comments of TBS and PSC participants were also helpful in examining the feasibility of implementing mechanisms for managerial innovations at departmental and central agency levels within existing administrative and budgetary constraints. Useful suggestions were made to develop mechanisms for enhancing technology transfer through the mobility of scientists within and outside government, as well as through evolving management training and development programs for scientific personnel.

PROJECT DISCUSSION

In view of new and ongoing expectations of government for its science missions, this report, prepared as a collection of four papers,* deals with the need for suitable modifications and innovations in the personnel management system related to scientific personnel in the public service. Its major aim is to provide senior managers with the flexibility to respond adequately to recent federal science policy and program thrusts. Each paper stands by itself, examining the need for improvements in various spheres of personnel management, and identifying a range of mechanisms and opportunities available to the managers for training and development of their scientific personnel.

In this summary, the four papers are briefly described along with their major conclusions. This is followed by a separate section which presents the recommendations for all the papers. The first one, entitled "Recent Science Policy Initiatives and the Role of the Scientist and Research Manager in the Public Service", develops a statement of government expectations of its science missions. It seeks to ensure that S&T-related policy and program thrusts are considered in the development of procedures and standards for staffing, training and assessment of scientific personnel. In the context of new and ongoing functions expected of science missions, appropriate recognition should be given to desirable organizational objectives as well as employee objectives; and both excellence and productivity (relevance) should be used in appraising all scientific activities — scientific research, research management or technology transfer.

The central theme of the second paper, "Training and Development of Research Managers in the Public Service", is that although the broad aims of management development are no different from those of non-scientists, in the management of science functions, particular types of management abilities and attributes are required. Science management within federal science-oriented departments is organized in terms of various functional levels, and the skills and talents to fulfil these functions vary from one level to the other. Departments, in conjunction with the Public Service Commission, should consider developing modules in the training and educational programs which would meet the functional needs of science organizations at all levels of management.

*Presented under separate cover entitled "Background Papers".

The third paper, "Temporary Movement of Scientists Between Government Laboratories and Canadian Industry", was prepared with a view to enhancing the transfer of federal know-how to industry through scientific personnel exchange programs. It was found that the movement of S&T personnel between government and industry has been largely confined to executive management development rather than technology transfer to industry through the exchange of scientific personnel at the laboratory level. The departmental efforts in this direction have been limited with no major initiative for enhancing technology transfer or for obtaining better customer/user orientation in the research work of their laboratories.

The final paper, "Renewable Term and Rotational Appointments", like the earlier one on temporary transfer of scientific personnel, has been included because of a recommendation in the Cabinet decision of April 1978 on technology transfer. MOSST, in this decision, was asked to examine the feasibility of renewable term appointments for research heads, with single term appointments becoming normal practice and technology transfer a criterion for renewability of the term. This paper shows that although the idea has certain advantages, the laboratory director in mission departments, unlike the department head at a university, is a line manager responsible for all aspects of managing the personnel and assets of the laboratory, and is accountable for the achievement of program results for which he is judged on a wide range of criteria such as relevance, timeliness and communicability of results, as well as their scientific quality. The conclusion is developed that the use of such appointments would offer no real advantage to departments. Two alternatives are examined. First, departmental laboratories require a major review of their work at least every five years to ensure that they continue to respond to departmental missions. At the same time the position and performance of the laboratory director would be assessed according to the above criteria in addition to the regular appraisal procedure. External monitors could be included to examine the quality of work performed. Second, the use of rotational assignments at two levels, involving primarily coordination functions, is proposed for the purpose of training and development of scientific personnel.

Several assumptions are common to all four papers. Firstly, the science manager is the key figure in the government science system. The quality of the management of

science in federal laboratories is fundamentally dependent on the quality of the science managers. Secondly, to be an effective science manager, knowledge of general management is necessary but not sufficient. Special skills and attributes are needed to manage science activities and highly qualified personnel. An appropriate mix of talents and skills will have to be achieved comprising the specialized knowledge and experience for research management with the aptitude and skills for general management. Thirdly, any training and development of scientific personnel in the public service must meet the objectives of a federal science organization, the department and the government as a whole. Finally, the organization and nomenclature of science units within federal departments and agencies vary according to their functions, size, geographical dispersion, and the nature of their clients.

The study has not discovered new problems. Those problem areas identified earlier by a task force to examine scientific personnel in government [2] continue to exist. Due to slow progress over the years in modifying structural mechanisms, the desirable flexibility for senior managers in meeting their organizational objectives has not been achieved. This report provides an overview of the situation by bringing together four major issue areas pertaining to improving the effective utilization of highly qualified personnel in science organizations. In each area several mechanisms are examined with the conclusion that the choice of one over the other, or of two or more in combination, would vary from department to department, depending on the preference of the various managers concerned as well as organizational needs.

[1] For a detailed discussion of trends in this direction, see:

Public Service Commission, Public Service and Public Interest, Ottawa, 1978.

[2] W.L. Ellis, A Study of Scientific Personnel in Government, a report prepared for the Task Force to review government's natural science organization (Chairman: Dr. Pierre R. Gendron), December 1970, Ottawa.

RECOMMENDATIONS

Recommendations resulting from this study are summarized below and are identified by each paper.

Recent Science Policy Initiatives and the Role of the Scientist and Research Manager in the Public Service

Recommendation 1 : *Science-oriented departments and agencies, in conjunction with MOSST, should ensure that those engaged in federal scientific activities are aware of new and ongoing expectations by the government of its science missions as identified in the 'Role' paper.*

Recommendation 2 : *Science-oriented departments, Treasury Board Secretariat and the Public Service Commission should apply the principles enunciated in the 'Role' paper to the various functions of personnel management (staffing, job assignment, performance appraisal, training and development, promotions and transfer of personnel) for all scientific occupational groups in order to align knowledge, skills and experience of government scientific personnel with federal science policy and program thrusts.*

Training and Development of Research Managers in the Public Service

Recommendation 3 : *The Treasury Board Secretariat, in conjunction with the science-oriented departments and the Public Service Commission, should consider establishing an interdepartmental committee on training and development (T&D) of science managers to identify the T&D needs of science departments, and to coordinate the effort required for effective action at departmental and central agency levels.*

Recommendation 4 : For centrally established programs, the Public Service Commission should examine the feasibility of developing a series of course packages/modules for training and development of science managers at various levels of management, based on identified needs. Active participation of departmental science managers and training and development officers should be sought for developing these courses which would emphasize training and development needs of existing personnel through creating an awareness of contempory R&D management skills and techniques.

Recommendation 5 : Departments in consultation with the PSC should identify those areas in the training programs which could be developed internally and those to be acquired from interdepartmental and external sources. This would also involve a comparison of sources for course content, fees, dislocation costs and course development charges.

Recommendation 6 : As part of its executive education program, the Public Service Commission should examine the feasibility of including in their courses on executive training content to familiarize managers with or without a scientific background, with the purpose and use of scientific activity in a government setting and its linkages with other sectors.

Recommendation 7 : Science-oriented departments should develop in conjunction with the March 1977 policy directive of the Treasury Board on "Identification of Training and Development Needs and the Evaluation of Results" sufficient information to integrate human resource planning systems within departments with training and development requirements of the various levels of science management.

Recommendation 8 : *Departments should encourage both the science managers and the training and development (T&D) officers to become aware of available opportunities and to set up the desired program standards to develop appropriate T&D plans for each research establishment.*

Recommendation 9 : *Departments should encourage on-the-job training assignments for development of science managers, combined with an educational curriculum to improve skills in particular areas of management. Such career assignments can be developed through rotational positions within the laboratory setting, or outside it within the department, interdepartmentally or through exchanges with other sectors.*

Temporary Movement of Scientists Between Government Laboratories and Canadian Industry

Recommendation 10 : *Based on the approach followed by the Office of the Auditor General, the Public Service Commission in conjunction with the Treasury Board Secretariat, should examine the Interchange Canada program for the purpose of using this mechanism to establish a specific exchange program for R&D personnel with the objective of promoting technology transfer from government to industry at the laboratory level, as well as developing managers. Criteria for eligibility would be related to the needs of the individual, department and industry sector.*

Recommendation 11 : *The Treasury Board Secretariat, in conjunction with MOSST and science-oriented departments, should take steps to modify existing policies, relevant Personnel Management Manual (PMM) chapters, and related mechanisms to remove identified impediments to exchanging scientific personnel between government laboratories and industry in the following areas: leave of absence, pay and benefits, secondment, and personal services contracts in order to facilitate such exchanges and to improve their effectiveness in technology transfer and contracting-out, and their response to other government policies for R&D.*

Recommendation 12 : *The Treasury Board Secretariat, in conjunction with MOSST, the Public Service Commission and science-oriented departments, should develop a long range plan for the gradual increase of exchanges between the government laboratories and industry.*

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Recommendation 13 : *In view of the limited nature of movement of scientific personnel between government and industry, the Public Service Commission and the Treasury Board Secretariat should publish and circulate a bulletin on available programs, mechanisms and criteria for exchanges between the two sectors, in industry as well as in federal departments.*

Renewable Term and Rotational Appointments

Recommendation 14 : *The laboratory director, being a line manager, is responsible for producing research results in support of the department's mission, and for managing the personnel and assets of his laboratory to this end. His performance is judged on*

the basis of his success in contributing to the mission; criteria such as relevance, timeliness and communicability of results (as well as their scientific quality) are applied. In order to ensure that this response to the departmental mission continues regular annual appraisals should be augmented by a major review of his performance and of the work of the laboratory at least every five years.

Recommendation 15 : *Further to the foregoing recommendation, rotational appointments should be considered for positions involving primarily coordination of R&D activities, for the purpose of training and development, at levels below the laboratory director and the director general.*

Recommendation 16 : *Departments and agencies should identify those positions in research establishments, and in research planning and coordination, which are appropriate for rotational appointments and develop the necessary criteria for defining the positions based on the nature of the S&T functions, organizational structure and nomenclature, and the size and geographic distribution of the research establishments.*

Recommendation 17 : *The Treasury Board Secretariat and the Public Service Commission should examine ways to facilitate the use of rotational appointments, by developing criteria necessary to select and appoint candidates, appraise their performance, and return the incumbents to line functions so as to benefit both the individuals and the organizations.*

Recommendation 18 : *The Treasury Board Secretariat and the Public Service Commission, in conjunction with MOSST, should examine the possible impact of any new government personnel policy proposals (e.g. Senior Manager classification) on movement of federal scientific personnel within a department.*