



Peat Marwick

Indian and Northern Affairs Canada

***Evaluation of the Post-Secondary
Education Assistance Program***

Information Systems Analysis

Final Report

Prepared by:

**Peat Marwick Consulting Group
Ottawa**

January 24, 1989

E96.2
E825
1989
c.1

Indian and Northern Affairs Canada

Evaluation of the Post-Secondary Education Assistance Program

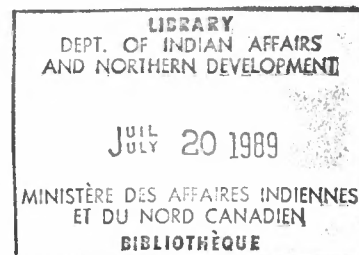
Information Systems Analysis

Final Report

Prepared by:

**Peat Marwick Consulting Group
Ottawa**

January 24, 1989





May 3, 1989

Your file Votre référence

Our file Notre référence

Members of the Departmental Audit
and Evaluation Committee

Evaluation of the Post-Secondary Education Assistance
Program Information System

Attached for your review is an evaluation report concerning the management information system used by the Post-Secondary Education Assistance Program (PSEAP). This report makes recommendations for the design of a new information system for the program. A separate evaluation report will be issued on the results achieved by PSEAP.

Background: PSEAP provides financial assistance to eligible Indians and Inuit to assist them in preparing for and acquiring post-secondary education. PSEAP currently funds over 15,000 students. The estimated 1989-90 budget is \$131 million, about two thirds of which is administered by Indian organizations.

The 1988 Report of the Auditor General found that the program has not maintained an adequate management information system and that it is difficult to measure program effectiveness.

Findings: The evaluation finds:

- Participation, completion and deferral rates are key indicators of program results. These have been recognized previously as important performance indicators, but program information systems to date have not been implemented in ways that produced the basic data needed to determine these rates.

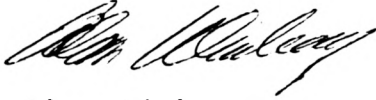
.../2

- . Periodic evaluations (using surveys) should be conducted to determine employment rates of program participants following exit from the program and the extent to which program participants obtain employment in their fields of study. Such a survey should be conducted once every three years. This information cannot be collected on a day-to-day basis from administrative data.
- . Information needed for reporting results, conducting follow-up studies and on-going program management is presented in the attached table. A revised application form in duplicate is recommended. This will facilitate data collection from bands lacking computer or staff resources.
- . A reallocation of program management resources will be necessary to implement changes which would result in more systematic collection and reporting of program effectiveness data. Estimated one-time implementation costs for an improved information system range from \$40,000 to \$180,000 depending on specific requirements. Ongoing costs to maintain the system are estimated to range from \$25,000 to \$36,000 annually.

Recommendations: Successful collection of required program management and results information calls for implementation of a revised information system. It is recommended that:

- . Regional databases should maintain information on each student benefitting from the program, even when the program is band-administered;
- . Contribution agreements should more explicitly specify band reporting responsibilities, especially the requirement for data on individual students;
- . One individual at headquarters should have designated responsibility for a new national system;
- . A standardized national application form and progress report should be developed to ensure that all the necessary data are collected;

- . New software should be developed for use by all regional offices for data collection and reporting purposes. Where useful, this software would be made available to bands possessing appropriate computer equipment.



Alan Winberg
Director
Evaluation Directorate

Attach.

Information Requirements

Post-Secondary Education Assistance Program

Systematic collection of the following information would provide a good basis for managing the program, reporting key aspects of program results, and conducting follow-up studies on employment of participants after they leave the program.

Identification

Student name*
Date of birth*
Sex
Residency (on reserve/off reserve)
Band name/code*
Number of dependents
Address (permanent and temporary)*
Telephone Number (permanent and temporary)*

Administrative Information

Region
Administrative Organization
(INAC/band/tribal council)
Approved or Deferred*
Time Period Covered by Approval/Deferral
Approval/Non-Approval of Release of Personal
Information to Employers
Bill C-31 vs non Bill C-31
Program Component (PSEAP/UCEP)*

Education Plan

Name of Institution*
Attendance (Full Time/Part Time)
Degree/Diploma Sought
Specialization/Program/Field of Study
Standard number of academic years to complete current program
Year first enrolled in current program
Number of years completed of current program
Number of years enrolled in current program
Number of years funded by PSEAP
Projected year of completion of current program
Other programs undertaken; level achieved

Incentives Data

Doctoral Studies (Y/N)
- Amount of Incentive
Other Graduate Studies (Y/N)
- Amount of Incentive
Special Incentive Scholarship (Y/N)
- Amount of Scholarship

Academic Achievement (Y/N)

- Description of Achievement
- Amount of Scholarship

Financial Data

Tuition Fees
Living Costs
Transportation Costs
Total Costs

Student Achievement

Achievement (Graduate/Continuing/Withdrawal)*

- * These data elements are needed to compile the ongoing program performance indicators (i.e., participation, completion and deferral rates). Some of these data (i.e., name, birthdate, approval/deferral, program component, achievement) are necessary for the three indicators to be tracked on an ongoing basis. The remaining asterisked items will facilitate contacting students for a periodic survey thereby obtaining data for the two indicators to be measured on a periodic basis (i.e., employment rate, extent of employment in own field of study).

implementation procedures, inadequate consultation of user needs, the lack of funds and resources to support the system, and a lack of commitment to making the system work. The new management information system which we have recommended differs from its predecessor in a number of fundamental ways:

- Data is stored in the system at the student level, rather than in aggregate form as was the case with PSEMIS. A system based on data at the individual student level will better meet the needs of regional offices in managing the program. This will eliminate the necessity for the variety of regional post-secondary education databases which are currently in place, and in the event of changing information requirements in the future, only one system need be modified. The regions we consulted were generally supportive of such a national system.
- The maintenance of detailed data on individual students will allow for much greater flexibility in reporting, enabling the aggregation of basic data elements in any way desired.
- Whereas PSEMIS required only aggregate program data from bands, the new management information system will require the regions to maintain band data at the individual student level (in electronic form only). The regions we consulted were not opposed to this. Indeed, the highly successful PSIS system in Ontario is designed in this way. Two other regions also maintain individual data on band-administered students to some extent, and the fourth region expressed a willingness to do so. The main advantage to be gained is the elimination of the need to contact all bands in the region in response to Headquarters' ad hoc requests for re-aggregation of data already existing on the system. This will allow for a speedier response to ad hoc requests and more regular reporting requirements for bands (who would no longer have to address ad hoc requests).
- The system we are proposing will include data items to be collected on an optional basis in order to meet specialized regional and local requirements. PSEMIS addressed only the core and management information required by Headquarters and did not include optional fields for comprehensive information.
- Data entry to the system will be from original source documents, such as student applications and progress reports rather than from special coding forms as was the case with PSEMIS.

Updating Information Requirements for PSEAP

Three of the five performance indicators which we have identified in this report (i.e., participation rate, graduation rate, application deferrals) have previously been identified by INAC for PSEAP. From our interviews, however, we have determined that the data allowing for their measurement have not been available or have been unreliable. Application deferrals is a relatively new occurrence (1987/88 policy changes) and was therefore not part of the original PSEMiS reporting requirements. Graduation figures have been completely unavailable, highly inaccurate, or have not been available until literally years after the end of a particular academic year. Enrollment data have been available for the determination of participation rate, but were unreliable in some regions due to non-reporting by bands and in one case, due to an information system based on number of applications rather than number of students.

As a result of this study, we have reaffirmed the department's choice of these three indicators for the program. We have also made recommendations, for the development and implementation of a new management information system which will ensure that the necessary data is collected in order to reliably measure these indicators. The system will also maintain the information needed to conduct a periodic survey of past students in order to provide measures of the two new indicators proposed in this report (i.e., employment rate and employment in field of study).

As part of the current study, we have updated the information requirements for PSEAP. We have identified an initial set of mandatory data elements to be collected by the program. The subsequent revision of application forms and the inclusion of these data in the new information system for the program will ensure that all of the data required for determination of the indicators is collected and reported on. Furthermore, a national system with standardized application forms and software will ensure that data for these indicators is collected and reported on in a standardized manner.

Features of the New System Proposed

Two previous attempts have been made to implement an automated information system for the PSEAP program which allows for the reporting of regional data to Headquarters (CEIS in 1978/79 and more recently, PSEMiS). Both of these attempts have failed for various reasons including poor

EXHIBIT 2

**IMPLEMENTATION COSTS FOR
A DECENTRALIZED MICROCOMPUTER-BASED
INFORMATION SYSTEM
FOR PSEAP**

IMPLEMENTATION PHASE	ESTIMATED COSTS ¹
Analysis of Requirements	\$12,000 - \$18,000
Design and Development of Software	\$20,000 - \$50,000
Hardware and System Software Acquisition ²	Upgrading Regional Systems: \$4,000 - \$32,000 OR Purchase of New Equipment for Regional Offices: \$40,000 - \$96,000
Installation ² and Training ³	Installation: \$800 for 8 regional offices
Initial Data Entry, or Conversion ²	\$5,600 - \$11,200 for 8 regional offices
TOTAL IMPLEMENTATION COSTS	\$42,400 - \$112,000 with upgrades \$78,400 - \$176,000 with purchase of new equipment

Notes:

1. Estimated costs do not include travel costs and other expenses, nor do they include costs for departmental staff time.
2. Costs are only provided for establishing systems in the eight regional offices as we have no basis upon which to make estimates for local (i.e., band, district office) requirements. (Upgrades would range from \$500 - \$4,000 per machine and purchase of new equipment from \$5,000 - \$12,000 per machine.)
3. Training costs are limited to costs for internal staff time, and travel and living expenses for band representatives.

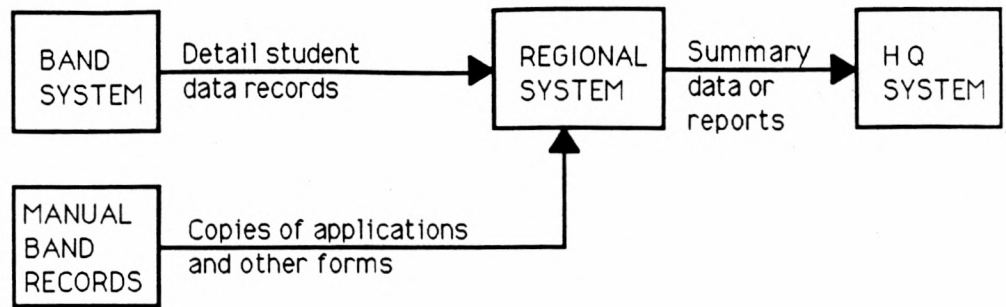


Figure 1

While the information needs of Headquarters will form the minimum requirements for a common system, we also recommend that additional information used by particular bands and regions be included in the database, to the extent feasible. Such information would be considered "optional", so that bands and regions which do not need the information would not have to enter it.

Cost Considerations

Costs for a computer system include both initial and on-going costs. Exhibit 2, overleaf, summarizes our cost estimates for initial implementation of the recommended system. Note that we have presented only ballpark estimates of implementation costs, as detailed estimates cannot be made without a more extensive analysis of specific system and hardware requirements. Furthermore, we have provided estimates for the implementation of systems in the eight regional INAC offices only, as we do not have sufficient information concerning local hardware and software requirements at this time. As may be seen from the Exhibit, implementation costs for a decentralized, microcomputer-based information system for PSEAP range from \$40,000 to \$180,000, depending on specific requirements.

In terms of on-going costs of the system, these would include:

- Regular data entry (approximately 7 to 14 person days of staff time for every 1,000 students).
- Operating costs (\$1,000 per year, per machine, plus staff time).
- Maintenance of software and documentation (\$5,000 per year).
- Maintenance of hardware (\$300 to \$500 annually, per machine).

the information requirements for on-going program management and administration. Through further consultations with regions and bands, additional elements may be deemed essential and added to this list.

Other information items may be included on the management information system to be collected on an optional basis in order to meet specific regional or local needs.

Recommended System for PSEAP

We recommend that a new national management information system be developed and implemented for the PSEAP program. Given the importance of regional and band acceptance of the system and the need to satisfy local information requirements, we recommend a decentralized approach where regions, and bands with appropriate computer facilities, would maintain a comprehensive database containing historical data on individual students which they administer. As part of the current study, the types of processing and volumes of data have been examined and a microcomputer solution is appropriate.

An overview of the recommended system architecture is shown in Figure 1, below. Each regional office would have a system with a comprehensive database containing individual data for all students in the region, including band-administered students. Computerized bands would transfer a copy of their database records to the region on a regular basis via modem or floppy diskettes. Non-computerized bands could send copies of applications and other source documents to the region for entry into the regional system. The region would produce standard summary data as required by Headquarters, and submit this data on a regular basis, either in electronic form or on a printed report produced by the computer. Any ad hoc information requests requiring special aggregation of student data on the system could be processed by the regions without the need to consult bands.

EXHIBIT 1

RECOMMENDED MANDATORY DATA ELEMENTS FOR PSEAP

Student Identification/Demographics	Incentives Data
<ul style="list-style-type: none"> • Student Name* • Date of Birth* • Sex • Residency (On Reserve/Off Reserve) • Band Name/Code* • Number of Dependents • Address (Permanent and Temporary)* • Telephone Number (Permanent and Temporary)* 	<ul style="list-style-type: none"> • Doctoral Studies (Y/N) <ul style="list-style-type: none"> - Amount of Incentive • Other Graduate Studies (Y/N) <ul style="list-style-type: none"> - Amount of Incentive • Special Incentive Scholarship (Y/N) <ul style="list-style-type: none"> - Amount of Scholarship • Academic Achievement (Y/N) <ul style="list-style-type: none"> - Description of Achievement - Amount of Scholarship
Administrative Requirements	Financial Data
<ul style="list-style-type: none"> • Region • Administrative Organization (INAC/band/tribal council) • Approved or Deferred* • Time Period Covered by Approval/Deferral • Approval/Non-Approval of Release of Personal Information to Employers • Bill C-31 vs non Bill C-31 • Program Component (PSEAP/UCEP)* 	<ul style="list-style-type: none"> • Tuition Fees • Living Costs • Transportation Costs • Total Costs
Education Plan	Student Achievement
<ul style="list-style-type: none"> • Name of Institution* • Type of Institution (University/College/Vocational, etc.) • Attendance (Full Time/Part Time) • Degree/Diploma Sought • Specialization/Program/Field of Study • Year in Program • Date of Entry into Program • Projected Year of Graduation • Total Student Months for Program • Number of Months Previously Utilized (in another program) • Number of Months Utilized (in current program) • Number of Months Remaining 	<ul style="list-style-type: none"> • Achievement (Graduate/Continuing/Withdrawal)*

* These data elements are needed to compile the performance indicators identified in this report. Some of these data (i.e., name, birthdate, approval/deferral, program component, achievement) are necessary for the three indicators to be tracked on an ongoing basis. The remaining asterisked items will allow the department to contact students for a periodic survey thereby obtaining data for the two periodic indicators.

Performance Indicators for PSEAP

As a result of our analysis of the program's stated objectives and intended impacts, the following results indicators were identified as being relevant to the PSEAP program:

1. Participation rate of Indians in post-secondary education.
2. Graduation rate of Indians from post-secondary education.
3. Number of PSEAP applications deferred on an annual basis.
4. Employment rate of program participants following exit from the program.
5. Extent to which program participants obtain employment in their field of study.

The first three indicators above would be tracked on an on-going basis by the management information system for the program and reported annually to Headquarters. The last two indicators would be determined on a periodic basis, say, every three years, through a survey of past program participants. These indicators would not be tracked by the information system, although the system would maintain the necessary data to aid the department in contacting past students for the survey.

It is worth noting that the first three indicators listed are in line with the performance indicator profiles already identified by the department for the PSEAP program. The two periodic indicators (employment rate, employment in field of study) are new, and are required to measure the intended impacts of the program.

Recommended Mandatory Data Elements

Based on our discussions with Headquarters officials and a limited number of regional and band representatives, as well as the performance indicators identified above, we were able to develop a basic list of data elements to be collected by the program for students on an on-going basis. Our recommended mandatory data elements are depicted in **Exhibit 1, overleaf**.

Collection of those items in Exhibit 1 marked with asterisks would ensure that the necessary data exist for monitoring and reporting on program results and effectiveness. Collection of the remaining items in the exhibit would fulfill

3. The Regions are generally supportive of a new national information system to replace PSEMIS, even though most of them have already implemented customized regional systems. According to the Regions, the primary advantages of a national system are standardized reporting requirements and procedures and the transferral to Headquarters of the responsibility for updating software in response to changing information requirements. The Regions also hope that a new system might overcome some of the limitations of their present systems, for example, the inability to maintain historical data on program participants.
4. With the impending implementation of new program policies and guidelines, the time is right for development and introduction of a new management information system.
5. Native administrative organizations (e.g., bands, tribal councils) appear to be genuinely interested in reporting program information to the department, but are frustrated by a lack of consistency in departmental information requirements and the absence of proper tools to ensure ease of reporting (e.g., proper automated support, funds, clerical staff and other human resources).
6. Good communications between regional offices and bands appears to be an essential factor in assuring compliance with program reporting requirements on the part of bands.
7. The program guidelines and regional contribution agreements with bands are very vague in relation to reporting requirements. The contribution agreements are generally not being enforced in that students from bands who refuse to report continue to be funded.

Information Requirements

In fulfillment of the study objective, we identified the key information requirements for the PSEAP program. This included information required to monitor and report on program results and information needed for on-going program administration and management.

based on the draft policy for the Post-Secondary Student Assistance Program (June 17, 1988).

Study Approach

We employed three basic methodologies in our approach to the Information Systems Analysis module of the evaluation study:

- An in-depth file and documents review.
- Personal interviews with responsible officers at INAC Headquarters and in the Alberta, Manitoba, Ontario and Quebec regional offices.
- Telephone interviews with Indian education administrators in these four regions.

Study Findings

The most significant findings of the study are as follows:

1. The current management information system for the Post-Secondary Education Assistance Program (i.e., PSEMIS) does not meet the needs of INAC Headquarters due to outdated information specifications. It also does not fulfill the needs of the Regions and native administrative organizations, since it was designed strictly for the reporting of aggregate data to Headquarters, rather than allowing Regions and bands to manage and administer the program on a day-to-day basis. PSEMIS has fallen into general disuse and is probably not salvageable.
2. PSEMIS suffered primarily from poor implementation and a lack of commitment to making it work. There was inadequate initial consultation of users regarding their information and system requirements; the software was not adequately tested; insufficient resources were allocated for training, technical support and system operation at the regional level; and there was no one at Headquarters who had direct responsibility for the system. PSEMIS was also too time-consuming to use and the reporting function was very inflexible as a result of the system's inability to store individual student data.

Background

The Post Secondary Education Assistance Program (PSEAP) provides financial assistance in the form of grants to eligible Indians and Inuit to assist them in preparing for, and acquiring post-secondary education. PSEAP currently funds over 14,000 students. Estimated expenditures in 1988-89 amount to \$131 million. About 60% of the program funding is administered by Indian bands and tribal councils through contribution agreements negotiated with the regional offices of the Department.

The current information system for PSEAP consists of two components:

- A national computerized database called the Post-Secondary Education Management Information System (PSEMIS) which is used to report aggregated regional statistics to Headquarters for the generation of national program data; and
- Regional databases (in various forms) which maintain detailed data on individual students funded by the program.

Study Objectives

The Evaluation Directorate of Indian and Northern Affairs Canada is currently conducting an evaluation of the Post-Secondary Education Assistance Program (PSEAP). The current study comprises one module of this evaluation effort. This study addressed a single basic evaluation issue:

- What results information should be collected by those administering the program?

The study focussed on potential improvements that could be brought to the existing management information system in order to increase the system's capacity for producing useful results information in a reliable and efficient manner.

The PSEAP program is currently considering significant changes to its policy and associated guidelines. The current study was undertaken with the proposed PSEAP policy changes in mind. Thus the performance indicators which were identified and the recommendations which were developed were

Résumé

Objectifs de l'étude

La Direction de l'évaluation du Ministère des affaires indiennes et du Nord Canada mène à l'heure actuelle une évaluation du Programme d'aide à l'éducation post-secondaire (PAEP). L'étude en cours comprend un module de cet effort d'évaluation. La question principale traitée par ce module se rapporte aux indicateurs de performance à recueillir par les personnes s'occupant de l'administration du Programme. L'étude a considéré aussi des améliorations potentielles à apporter au système actuel pour la gestion de l'information, afin d'augmenter de manière fiable et efficace, la capacité du système de produire l'information requise concernant les résultats du programme.

Le Programme PAEP envisage actuellement des changements importants à sa politique et aux lignes directrices associées. L'étude en cours a été entreprise en tenant compte des changements proposés à la politique PAEP. Les indicateurs de performance identifiés et les recommandations élaborées ont donc étaient basés sur l'ébauche d'une politique pour le Programme d'aide à l'éducation post-secondaire (document daté du 17 juin 1988).

Approche de l'étude

Nous avons employé trois méthodologies de base dans notre approche au Module de l'Analyse des systèmes informatiques: un examen approfondi des dossiers et des documents; des entrevues personnelles avec les agents responsables à la Direction générale de l'AINC, aux bureaux régionaux en Alberta, au Manitoba, en Ontario et au Québec; et des entrevues téléphoniques avec des administrateurs indiens dans ces quatre régions.

Recommandations de l'étude

1. Un nouveau système national pour la gestion de l'information devrait être développé et implanté pour le programme. Ce nouveau système

devrait incorporer certains éléments des systèmes informatiques régionaux en opération qui se sont avérés satisfaisants.

2. Nous recommandons une approche décentralisée où les régions et les bandes entretiendraient une base de données complète contenant des données historiques sur chaque étudiant dépendant de leur administration.
3. La base de données du bureau régional devrait entretenir l'information au niveau de chaque étudiant pour tous les étudiants de la région (y compris ceux administrés par les bandes).
4. Le ministère devra considérer la compensation des bandes pour l'acquisition du matériel et d'autres ressources nécessaires à l'entretien du système informatique.
5. Le ministère devrait aussi s'assurer que les bureaux régionaux ont le matériel et les ressources humaines adéquats (e.g. des préposés s'occupant de l'entrée des données et des opérateurs d'ordinateur) pour répondre aux exigences opérationnelles du système.
6. Les descriptions des responsabilités des bandes relativement à la soumission des rapports devraient être plus claires dans les accords de contribution avec les bandes, en particulier l'exigence de fournir des données sur les étudiants individuels.
7. Un ou plusieurs individus spécifiquement désignés à la Direction générale de l'AINC devraient avoir la responsabilité pour un nouveau système informatique national. De telles responsabilités devraient être identifiées dans chaque région et dans chaque bande.
8. Un formulaire de demande et un rapport d'activité standardisés devraient être élaborés en consultation étroite avec les régions.
9. Le programme devra adopter un plan d'action pour le développement et l'implantation du système. Ce plan devrait inclure les étapes de base suivantes:
 - une détermination des exigences du système
 - le développement du logiciel

- l'acquisition du matériel et des ressources
- la formation et l'implantation.

L'implantation du nouveau système devrait coïncider aussi étroitement que possible avec l'adoption de nouvelles politiques et de lignes directrices pour le programme.

10. Finalement, le programme PAEP devrait s'assurer que le nouveau système informatique national recueille l'information nécessaire pour mesurer les indicateurs de résultat et de performance décrits dans ce rapport.

Executive Summary

Study Objectives

The Evaluation Directorate of Indian and Northern Affairs Canada is currently conducting an evaluation of the Post-Secondary Education Assistance Program (PSEAP). The current study comprises one module of this evaluation effort. The primary issue addressed by this module pertained to the results information that should be collected by those administering the program. The study also focussed on potential improvements that could be brought to the existing management information system in order to increase the system's capacity for producing useful results information in a reliable and efficient manner.

The PSEAP program is currently considering significant changes to its policy and associated guidelines. The current study was undertaken with the proposed PSEAP policy changes in mind. Thus the performance indicators which were identified and the recommendations which were developed were based on the draft policy for the Post-Secondary Student Assistance Program (June 17, 1988).

Study Approach

We employed three basic methodologies in our approach to the Information Systems Analysis module of the evaluation study: an in-depth file and documents review; personal interviews with responsible officers at INAC Headquarters and in the Alberta, Manitoba, Ontario and Quebec regional offices; and telephone interviews with Indian education administrators in these four regions.

Study Recommendations

1. A new national management information system should be developed and implemented for the program. This new system

should incorporate certain elements of existing regional information systems which have been found to be successful.

2. We recommend a decentralized approach where Regions and bands would maintain a comprehensive database containing historical data on individual students which they administer.
3. The regional office database should maintain information at the level of the individual student for all students in the region (including those which are band-administered).
4. The department will need to consider compensating bands for the acquisition of hardware and other resources needed to maintain the information system.
5. The department should also ensure that the regional offices have adequate hardware and human resources (e.g. data entry clerks/computer operators) to meet system operation requirements.
6. Descriptions of band reporting responsibilities should be made more explicit in contribution agreements with bands, especially the requirement for data on individual students.
7. One or more individuals at INAC Headquarters should have designated responsibility for the new national information system. There should also be designated responsibility in each Region and in each band.
8. A standardized national application form and progress report should be developed in direct consultation with the Regions.
9. The program should adopt an action plan for system development and implementation. This plan should include the following basic steps:
 - Determination of System Requirements
 - Software Development
 - Acquisition of Hardware and Resources
 - Training and Implementation.

Implementation of the new system should coincide as closely as possible with the adoption of new program policies and guidelines.

10. Finally, the PSEAP program should ensure that the new national information system collects the information required to measure the outcome and performance indicators delineated in this report.

Contents

	Page
Executive Summary.....	i
Résumé.....	iv
Background.....	1
Study Objectives.....	1
Study Approach.....	2
Study Findings.....	2
Information Requirements.....	3
Performance Indicators for PSEAP.....	4
Recommended Mandatory Data Elements.....	4
Recommended System for PSEAP.....	5
Cost Considerations.....	6
Key Factors for Success.....	7
Updating Information Requirements for PSEAP.....	7
Features of the New System Proposed.....	7
Other Factors for Success.....	9
Study Recommendations.....	10

Annex 1: Technical Report

Other Factors For Success

Our study recommendations incorporate a number of other factors which will ensure the success of the new management information system for the program.

- Designated responsibility for the system at Headquarters and in each region will eliminate another key contributing factor to the failure of PSEMIS.
- Proper implementation of the system, as outlined in our study recommendations, will aid in guaranteeing the success of the system. Based on our preliminary determination of information and system requirements, this is a fairly standard system and software development should be relatively straightforward. The key to success lies in adequate consultation of regions and bands regarding their information and system requirements, adequate software testing, sufficient financial and human resources to support the system, proper training, on-going technical support, software updates which incorporate user concerns, etc.
- With the implementation of our study recommendations, non-reporting by bands should become less of a problem. This will be as a result of:
 - improved communications between regional offices and bands with the designation of this responsibility to a regional official
 - more specific reporting requirements and fewer ad hoc requests to be addressed by bands
 - the ease of sending duplicate copies of application forms and progress reports for non-computerized bands in contrast to the manual compilation of aggregate PSEMIS statistics
 - the provision of standard software and associated training to bands with adequate computer facilities.

We also recommend that the department consider funding bands for the acquisition or upgrading of hardware. This would relieve the regional offices, to a large extent, of having to assume the data entry function for bands.

Study Recommendations

Based on the study findings, we put forth the following recommendations:

1. A new national management information system should be developed and implemented for the program. This new system should incorporate certain elements of existing regional information systems which have been found to be successful.
2. We recommend a decentralized approach where Regions and bands with appropriate computer facilities would maintain a comprehensive database containing historical data on individual students which they administer. Computerized bands would transfer a copy of their database records to the regional office on a regular basis; non-computerized bands would send copies of application forms and progress reports to the regional office for data entry. The Regions would produce summary data as required by Headquarters and submit this data either in electronic form or via computer-generated hardcopy reports.
3. The regional office database should maintain information at the level of the individual student for all students in the region (including those which are band-administered). This will greatly facilitate the response of Regions to ad hoc requests from Headquarters requiring special aggregation of student data. Turnaround time should improve significantly as individual bands will no longer have to be contacted by the regional office.
4. The department will need to consider compensating bands for the acquisition of hardware and other resources needed to maintain the information system. Bands will need to acquire equipment which is compatible with that of the regional office and is capable of meeting system storage and processing requirements. Software should be provided free of charge to interested administrative organizations with adequate facilities.
5. The department should also ensure that the regional offices have adequate hardware and human resources (e.g. data entry clerks/computer operators) to meet system operation requirements.
6. Descriptions of band reporting responsibilities should be made more explicit in contribution agreements with bands. The agreement should specify exactly what data is required from the band and that

information on *individual* students is needed, either through the provision of copies of application forms/progress reports or through the maintenance of the national information system. The reporting frequency should also be explicitly specified.

7. One or more individuals at INAC Headquarters should have designated responsibility for the new national information system. This is perhaps the most important requirement for implementing a successful system. This individual would have overall responsibility for system development, implementation, operation, monitoring, training, and ensuring that data is available through the system for national reporting. There should also be designated responsibility in each Region and in each band. The regional representative would oversee training and monitoring of band office staff and will ensure that regular communication is maintained with bands. Communications between INAC Headquarters, the Regions, and the bands is essential.
8. A standardized national application form and progress report should be developed for the program to ensure that all the necessary data are collected. These forms should be developed in direct consultation with the Regions. The forms would serve as the input documents for the information system and should incorporate a carbon copy which may be sent to the regional office for data entry where bands are not computerized. The application form should contain a declaration to be signed by the student acknowledging that he or she is aware that the information contained on the form will be submitted to INAC for internal use.
9. The program should adopt an action plan for system development and implementation. This plan should include the following basic steps:
 - *Determination of System Requirements:* We recommend that a preliminary detailed analysis of system requirements be done and a report presented to the Regions and bands for review. The Regions would solicit feedback from individual bands. A national meeting of regional representatives could then be held to determine final system requirements for the program, including information and reporting requirements. A consensus should be reached as to what data need to be collected on the national application form. Headquarters must then specify which fields on the form are mandatory for program reporting purposes; other data may be

collected on an optional basis. Reporting specifications and frequency should also be agreed upon.

- *Software Development* : Software must be developed according to system specifications.
 - *Acquisition of Hardware and Resources*: An assessment should be undertaken of existing hardware and resources in the regional offices. Computers should be purchased and staff allocated as required. Proposals from bands should be responded to.
 - *Training and Implementation*: A training program must be developed and provided to all regional staff and bands intending to implement the national system. The recommended approach is to have a regional representative attend a training session at Headquarters and then return to train individual bands. Training will have to be carried out on an on-going basis as there tends to be high turnover among band office staff. Implementation of the new system should coincide as closely as possible with the adoption of new program policies and guidelines.
10. Finally, the PSEAP program should implement the outcome and performance indicators delineated in this report and ensure that the new information system collects the information required to measure these indicators. This work should begin as soon as possible.

Annex 1

Evaluation of the Post-Secondary Education Assistance Program Information Systems Analysis

Technical Report

Contents

	Page
I - INTRODUCTION.....	I.1
Study Objectives.....	I.1
Study Approach.....	I.2
Background	I.2
The Post-Secondary Education Assistance Program (PSEAP)	I.4
II - THE CURRENT INFORMATION SYSTEM.....	II.1
The Post-Secondary Education Management Information System (PSEMIS).....	II.1
Regional Databases on Individual Students	II.5
III - STUDY FINDINGS	III.1
Problems and Difficulties with PSEMIS.....	III.1
Regional Information Systems.....	III.7
Band/Tribal Council Systems	III.19
IV - INFORMATION REQUIREMENTS	IV.1
Results Information Requirements	IV.1
Administrative Information Requirements.....	IV.5
Recommended Mandatory Data Elements	IV.7
V - SYSTEM OPTIONS	V.1
General System Requirements	V.1
Implementation Options.....	V.2
Cost Considerations.....	V.6
VI - CONCLUSIONS AND RECOMMENDATIONS.....	VI.1
Study Conclusions	VI.1
Study Recommendations	VI.2

APPENDICES

- Appendix A - List of Individuals Consulted
- Appendix B - PSEMIS Input Forms

I - Introduction

Study Objectives

The Evaluation Directorate of Indian and Northern Affairs Canada is currently conducting an evaluation of the Post-Secondary Education Assistance Program (PSEAP). The current study comprises one module of this evaluation effort. The primary issue addressed by this module pertained to the results information that should be collected by those administering the program. The study also focussed on potential improvements that could be brought to the existing management information system in order to increase the system's capacity for producing useful results information in a reliable and efficient manner.

The study objectives were to:

1. Identify information that is needed to monitor and report on program results, as well as data needed to define resource requirements for the program, i.e., determine the various information needs and requirements for performance indicators, outcome measurements, and resource and financial accountability data.
2. Describe and analyze the existing information system.
3. Identify limitations of the existing system and ways to improve the system and define the constraints, if any, within which an improved system must operate.
4. Recommend how required results information should be collected, processed and reported, including appropriate indicators, data collection forms, related computer programs, and suggested changes or additions to information requirements to be included in program applications forms, guidelines and contribution agreements.
5. Identify implementation requirements and options, in terms of cost, resources and training requirements for implementing the recommended improvements.

The PSEAP program is currently considering significant changes to its policy and associated guidelines. The current study was undertaken with the proposed PSEAP policy changes in mind. Thus the performance indicators which were identified and the recommendations which were developed were based on the draft policy for the Post-Secondary Student Assistance Program (June 17, 1988). We understand that this policy is subject to change following consultation with various Indian groups in the regions. These consultations were concurrent with the present study and were not completed as of its termination.

Study Approach

We employed three basic methodologies in our approach to the Information Systems Analysis module of the evaluation study:

- An in-depth file and documents review which gave us an understanding of the PSEAP program and the current management information system for the program (PSEMIS). Our primary sources of information regarding PSEMIS were the system guide, the Computer Operational Procedures Guide, an extract from the PSEAP handbook on PSEMIS and a final document presenting PSEMIS explanation matrices, structure and reports.
- Personal interviews with responsible officers at INAC Headquarters and in the Alberta, Manitoba, Ontario and Quebec regional offices.
- Telephone interviews with Indian education administrators and counsellors in each of these four regions.

A list of the individuals consulted is provided in Appendix A to this report.

Background

In this section, we provide an overview of federal government activities in native education.

The constitutional basis of the federal government's special relationship with Indians stems from the British North America Act which assigns exclusive authority to the Parliament of Canada to legislate with respect to "Indians and lands reserved for the Indians".

With respect to education, the Indian Act empowers the Minister of Indian and Northern Affairs Canada (INAC) to operate schools and to enter into agreements with provincial governments, territorial commissioners, school boards, and religious and charitable organizations for the education of registered Indian children from ages six to seventeen inclusive, living on reserves or Crown land. Under various Treasury Board authorities, a wide range of educational and student support services may be extended to natives from pre-kindergarten to post-secondary programs. INAC is also authorized to fund cultural/educational centres, Indian political associations' education offices and local Indian education authorities.

The objectives of the federal government's native education programs are three-fold:

- To assist and support natives in having access to educational programs and services which are responsive to their needs and aspirations, and consistent with the concept of native control of education.
- To assist and support the native peoples in preserving, developing, and expressing their cultural identity, with emphasis upon their native languages.
- To assist and support natives in developing and having access to meaningful occupational opportunities consistent with their individual and community needs and aspirations.

Indian and Northern Affairs Canada is responsible for six education-related programs:

- Instructional Services - Band Schools.
- Instructional Services - Provincial Schools.
- Instructional Services - Federal Schools.
- Student and Educational Support Services for Elementary and Secondary Education.
- Post-Secondary Education.
- Cultural/Educational Centres.

Of relevance to the current study is the Post-Secondary Education Assistance Program which is described in the ensuing paragraphs.

The Post-Secondary Education Assistance Program (PSEAP)

Development

In the 1950's, Treasury Board provided INAC with limited authority to provide training to Indians and Inuit. Throughout the 1960's, the volume and scope of training services evolved considerably.

In 1968, in response to the special training needs of Indians, Treasury Board authorized INAC to supplement Department of Manpower and Immigration services. This authority covered the provision of post-secondary education assistance to Indians and Inuit, which were not funded by Manpower.

Further authority was given to INAC in 1972 to make contributions to Band Councils specifically for the provision of post-secondary education services to Indians.

Consultations with Indian students and band representatives in the mid-1970's resulted in the development of Program Circular E-12 which was approved by Treasury Board in 1977. It spelled out the policy and guidelines governing INAC's financial assistance to registered Canadian Indian and Inuit post-secondary students.

Overview

The Post-Secondary Education Assistance Program currently provides financial assistance and counselling to registered Canadian Indians and Inuit who qualify for entrance into and/or have been accepted into programs or courses at accredited universities, colleges, CEGEP's, or technology institutes where the completion of secondary school is a normal requirement for entry.

Under the present guidelines, eligible post-secondary students receive funding for tuition and registration fees, books and supplies, special clothing and equipment, special accommodation costs, living expenses, transportation, and tutorial assistance. Additional allowances are provided for dependents

living with the student. Incentive grants are also provided for students enrolled in post-graduate studies.

The program consists of three main components:

1. The Post-Secondary Education Assistance Program provides financial support to students who qualify for entrance and/or have been accepted into accredited post-secondary institutions.
2. The University and College Entrance Preparation Program (UCEP), approved in 1983 as an additional component to PSEAP, provides financial assistance to registered Indian and Inuit students enrolled in entrance preparation programs offered by Canadian post-secondary institutions which allow students to attain the academic level required for entrance to degree and diploma credit programs.
3. The Indian Studies Support Program component funds Indian-controlled and other post-secondary institutions for developing and implementing special post-secondary education programs for native people. A maximum of 12% of the department's post-secondary budget may be allocated to this component.

In 1969/70, there were 800 program participants funded at a cost of \$.4 million. In 1975/76, annual expenditures had risen to \$4.2 million and by 1987/88, program costs totalled \$94 million. This increase reflects the steady growth in enrollment from 2,500 students in 1975/76 to an estimated 14,000 participants in 1987/88. The budget for 1988-89 consists of \$131 million and 24 person years are allocated to administer the program. About 60% of the program funding is currently administered by Indian bands and organizations through contribution agreements negotiated with the regional offices of INAC. In some regions (e.g., Manitoba), the program is 100% band-administered.

For monitoring program performance and for financial purposes, a computerized database called the Post-Secondary Education Management Information System (PSEMIS) was established in 1985-86. Through this system, regional summary data are reported to Headquarters where national statistics are produced. Data on individual students are maintained at the regional offices.

1987/88 Policy Changes

In 1987, several changes were announced to INAC Circular E-12 which had guided the post-secondary program over the last 10 years. These changes included:

- Canadian residency requirements - only those students residing in Canada for at least 12 consecutive months prior to applying are eligible for assistance.
- The requirement for regions to manage the program within a fixed annual allocation.
- A priority system for selecting students with five priority categories ranging from continuing students (priority 1) to students returning to post-secondary studies after having previously dropped out (priority 5).
- The elimination of the special half-salary allowances for graduate students (by the end of fiscal year 87/88).

Proposed Policy Changes

The PSEAP program is currently considering further changes to its policy and associated guidelines with implementation planned for 1989/90. There are five key objectives in altering the program at this time:

- To improve the academic success rate of program participants.
- To focus the program more directly on the goals of Indian self-government and economic self-sufficiency.
- To give Indian groups more control over administration of the program.
- To make the program less complex and easier to administer.
- To ensure that the annual budget is used as effectively and efficiently as possible.

Below, we summarize the major changes which have been proposed to the post-secondary program. The proposed policy is currently being discussed

with representatives of band/tribal councils in each region via a consultation process.

Redefinition of the Program's Purpose

The program's objective will be redefined to place greater emphasis on the successful completion of post-secondary studies (i.e., graduation). The new objective statement reads as follows:

"to assist Indians and Inuit to gain access to post-secondary education and to graduate with the qualifications and skills needed to pursue individual careers and to contribute to the achievement of Indian self-government and economic self-reliance".

Stronger Emphasis on Indian Control

The program's operating guidelines will be separated from Departmental policy thus allowing Indian groups administering the program at the local level the opportunity to establish their own guidelines within the general framework of the program policy.

Simplified Program Structure

Full-time students will now be eligible for three types of assistance: tuition assistance (including tuition, registration and student fees, and the cost of books and supplies), travel assistance (for students and their dependents who attend schools away from their permanent residence) and assistance for living expenses. Part-time students are eligible to receive assistance for tuition and the cost of required books and supplies.

The duration of assistance for living and travel expenses would be limited to:

- 24 months for those in a two year program at a university or college.
- 32 months for those in a three year program at the above institutions.
- 40 months for a student pursuing a four year university degree.
- 48 months for a graduate or professional degree.

Tuition assistance will not be subjected to time limits.

Additional Incentives for Students

In addition to the incentives for graduate students which will be continued, two new scholarships are being proposed. One will be given in recognition of academic excellence to students who have achieved high academic standing in their program studies. The other is a special incentive scholarship which will be awarded to students who pursue disciplines related to native self-government or economic self-reliance. The amount of the scholarship is to be determined by the administering organization but may not exceed \$1,000.

Information Requirements

Under the new policy, the administering organization is responsible for maintaining an information system which provides information on student participation and performance. This includes information such as the student's name, institution attended, program of study and other information required to support resourcing submissions and evaluation of the program.

Logic Model for PSEAP

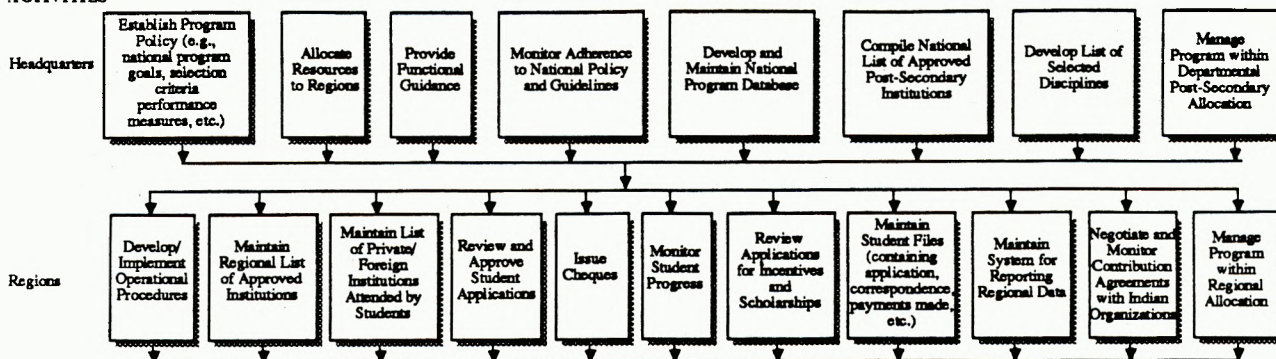
Exhibit 1, overleaf, depicts a logic model for PSEAP. This model was based on the new policy and guidelines for the program provided to us by INAC officials. Recall that these documents are currently in draft form.

The logic model has five levels: activities, outputs, impacts and effects, program objective and education activity objective. Activities are the basic work processes supporting the program, while outputs are the products of these activities. Together, the activities and outputs of the program are intended to lead to a number of impacts and effects, i.e., are intended to have certain positive impacts on the population of registered Canadian Indians and Inuit. These impacts and effects are intended to lead to the fulfillment of the program objective which in turn operates in support of the overall objective of the Education Activity.

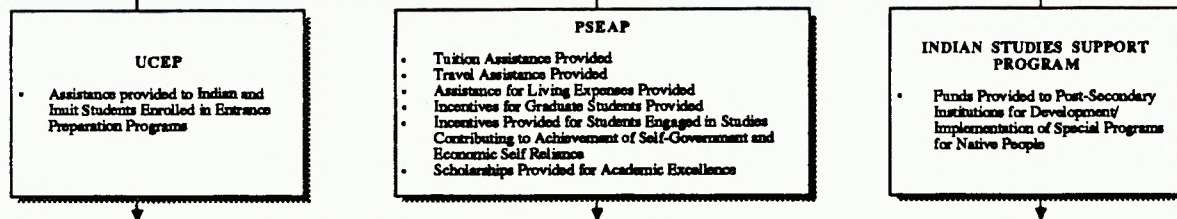
EXHIBIT 1

LOGIC MODEL FOR THE POST SECONDARY EDUCATION ASSISTANCE PROGRAM

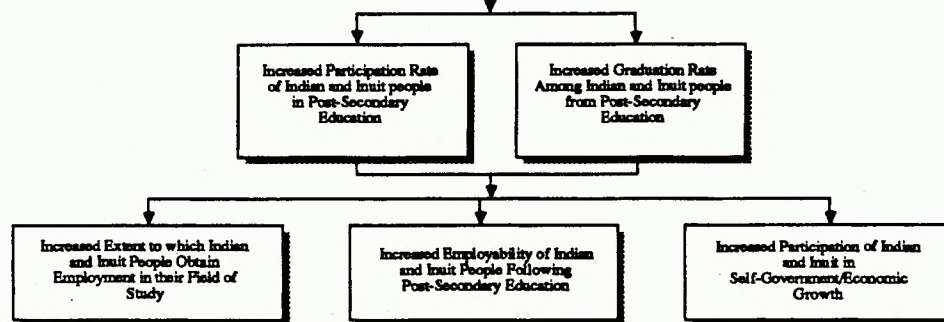
ACTIVITIES



OUTPUTS



IMPACTS AND EFFECTS



PROGRAM OBJECTIVE

To assist Indians and Inuit to gain access to post-secondary education and to graduate with the qualifications and skills needed to pursue individual careers and to contribute to the achievement of Indian self-government and economic self-reliance.

EDUCATION ACTIVITY OBJECTIVE

To ensure that all eligible Indians have access to a quality and range of elementary/secondary education that is relevant to the social, economic, and cultural needs and conditions of the individuals, bands and communities being served; to encourage and support the educational and/or career development opportunities of Indians and Inuit through post-secondary education and to support Indians and Inuit in preserving, developing and expressing their cultural heritage.

II - The Current Information System

In this chapter, we describe our understanding of the current information system for PSEAP. First we describe the Post-Secondary Education Management Information System (PSEMIS) which is the system used to report aggregated regional statistics to Headquarters so that national program data can be generated. Then we shall briefly discuss a second set of databases - those used to maintain information (e.g., name, address, telephone number) on individual PSEAP/UCEP students at the regional offices.

The Post-Secondary Education Management Information System (PSEMIS)

Brief History

In this section, we present a brief history of the involvement of information systems in the post-secondary education program. In compiling this description, we drew on our interviews with INAC Education Branch officials and a previous evaluation report for the PSEAP program (1985).

Until 1978/79 the information system in place for PSEAP was purely manual. In 1978/79, the Continuing Education Information System (CEIS), a national computerized database on native post-secondary students came into existence. System requirements were defined, a mainframe operation was devised and a pilot study undertaken. Two forms, *Application for Education Assistance* and *Continuing Education Individual Progress Report* were designed to collect data on student demographics, educational background, type of institution attended, type of program, educational goals, anticipated graduation date, funding allocation, student weeks used, current program status and reasons for program withdrawal.

The system become fully operational in 1980, but was plagued by difficulties. During the first two years of operation, there were no user manuals for the system and regional staff were not trained in its use. Programming and technical difficulties resulted in inaccurate reports. For example, the editing

system was poor and made it very difficult to effect changes to the data. There were also complaints that the forms were cumbersome and time consuming to complete and completed forms often contained inaccuracies. Both INAC regional staff and bands often did not fill out the forms, lacking confidence in the system and having doubts as to whether the data were ever to be used in a meaningful way.

The system finally fell into disuse in 1984. Officials from Headquarters subsequently met with regional and band representatives to discuss information requirements for a new system and the Post-Secondary Education Management Information System or PSEMIS was born. The following sections describe the system in greater detail.

Purpose

The purpose of PSEMIS is to aid in the capture, consolidation, and reporting of statistics related to the Post Secondary Education Assistance Program which is funded by Indian and Northern Affairs Canada. INAC regional offices use PSEMIS to report up-to-date statistics on post-secondary students funded by the region to Headquarters in June and October of each year.

The data reported to Headquarters by PSEMIS are used to:

- plan and support Post Secondary and UCEP Program funding for the current and future fiscal years
- monitor student trends to assist in the planning of Program requirements
- answer **ad hoc** questions from the Minister's office and Parliamentary inquiries
- provide appropriate information to Native Employment Program initiatives as well as to other employment initiatives for students.

Data Collected

Three main types of information were identified for the post-secondary program at a national meeting held in 1985: core information, management information and comprehensive information. A description of the three categories is provided below.

Core information is used by Headquarters to justify the approval of funds by Treasury Board and includes enrollment and financial information. The parameters of core information are shown in **Exhibit 2, overleaf**.

Management information is additional information required by Headquarters and the regional offices to justify the program. This includes data on student demographics and study plans. The parameters of management information are shown in Exhibit 2.

Comprehensive information is used at the local level to manage and deliver the program. The information is collected and compiled by Band/Tribal/District offices through student application forms and progress reports. The information assists the department to formulate and evaluate policy, prepare operational plans and resource requirements, monitor delivery services, control expenditures, and assess performance. Headquarters and regional offices may request units of this information in aggregate form on an ad hoc basis in response to ministerial and/or parliamentary inquiries.

Core information and management information units are mandatory and are collected at the band/tribal council or district office level and rolled-up to Headquarters through PSEMIS. Enrollment and demographic information use the academic year (September 1 to August 31) as the reporting timeframe, whereas PSEMIS financial data represents the expenditures during a fiscal year (April 1 to March 31). Comprehensive information used for local program management and delivery is not included in PSEMIS.

Roles and Responsibilities

Band or Tribal Council Administered Programs

Bands have responsibility for the application process. Bands may design their own application forms or use the national forms provided by the Department. Once completed by the student (with the aid of a post-secondary counsellor), application forms are normally retained by the bands. Bands are also responsible for maintaining student progress report forms. PSEMIS input forms are completed by the band office or counsellor for each student, by transferring the required PSEMIS core and management information from the application forms and progress reports.

Bands have two alternatives for reporting PSEMIS data. The band office may submit the individual PSEMIS input forms to the regional office for entry into the system on a regular basis. Optionally, band office staff may complete a

EXHIBIT 2
MANDATORY INFORMATION PARAMETERS

CORE INFORMATION	MANAGEMENT INFORMATION
<ul style="list-style-type: none"> • Total number of students • Total number of student weeks • Total number of part-time students and full-time students • Total actual costs • Student achievement <ul style="list-style-type: none"> - how many graduates - how many continuing - how many not continuing 	<ul style="list-style-type: none"> • Personal Data: <ul style="list-style-type: none"> - Age breakdown - Male/female - Number of students with dependents and number of dependents - Number of students residing off-reserve and on-reserve • Study Plan: <ul style="list-style-type: none"> - Year of study: academic year and number of years in PSEAP - Field of study - Degree/diploma sought, e.g., Bachelor, Masters, PhD.

NOTES:

1. The parameters for the UCEP program are identical to those of PSEAP with the following exceptions:
 - UCEP student achievement consists of the number of students completing UCEP and the number of students who did not complete UCEP. The number continuing is not appropriate as UCEP is generally a one-year program.
 - The study plan parameters are not applicable to the UCEP program.
2. The PSEMIS guide contains detailed definitions of each information parameter.

PSEMIS local roll-up form which summarizes the mandatory PSEMIS information for the entire office twice yearly, in June and October. Examples of PSEMIS input forms may be found in Appendix B. Exhibit 3, overleaf, depicts the flow of PSEMIS information in the case of a band or tribal council administered program.

District or Regionally Administered Programs

The structure of the system is similar to that of band controlled programs, although the actual implementation of PSEMIS may vary from region to region. Generally, applications and progress reports are processed and maintained by counselling staff and the regions are responsible for managing data entry.

Regional Education Responsibilities

The regions are responsible for establishing district procedures for effective and efficient data input and to negotiate arrangements with bands. The region must also ensure that contribution agreements with bands include a reporting clause and a monitoring function by the district or region.

Headquarters Education Directorate Responsibilities

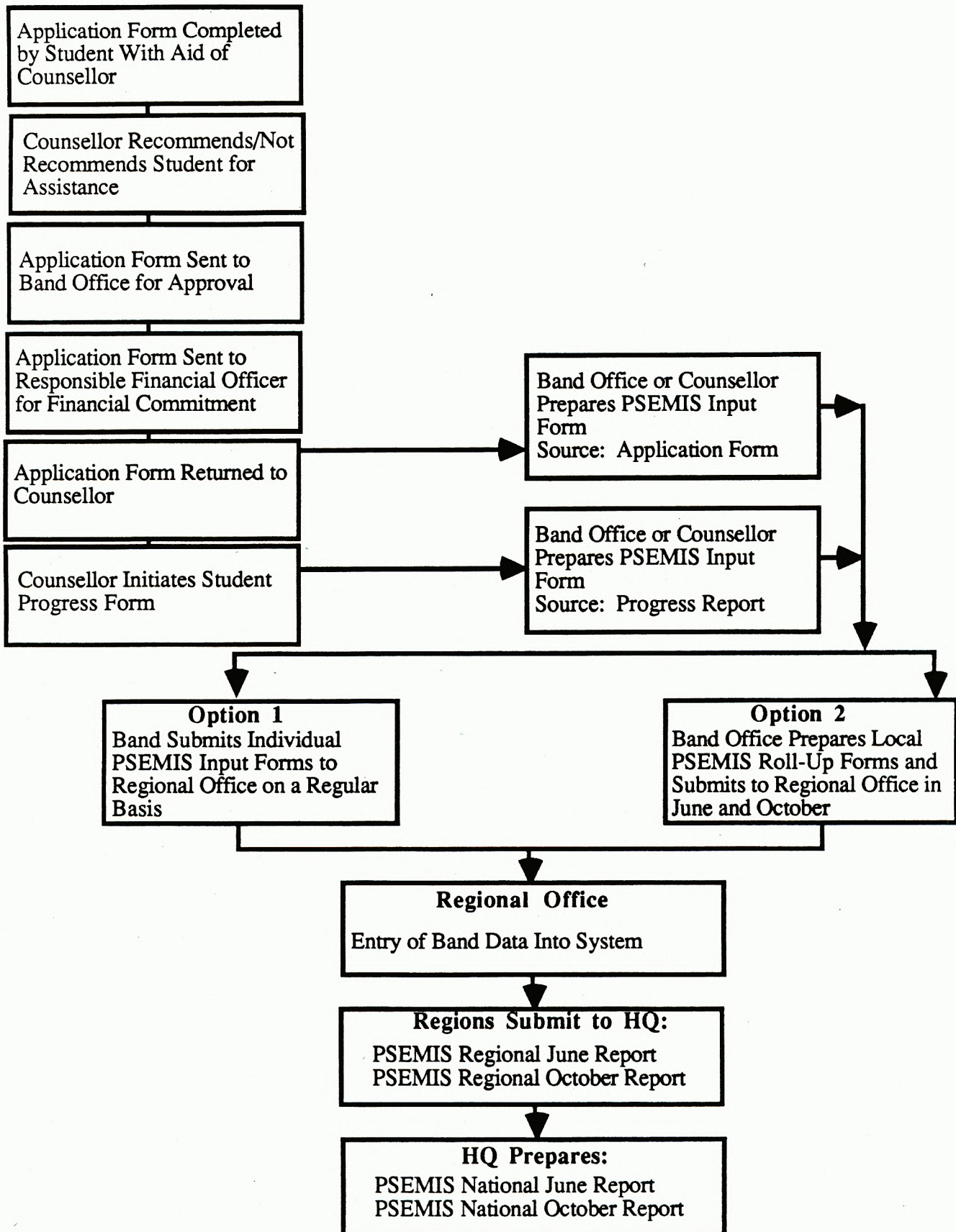
The main responsibilities of the Education Directorate at Headquarters are the coordination of system requirements, computerization and the subsequent monitoring of the system.

System Operation

PSEMIS operates with the DBase III database management system on a WANG-PC micro-computer. The system allows for the entry/update at regional offices of the core and management information described previously. Regional reports may then be printed in either a detailed or summary format. The summary format displays one aggregate total for the region. If data are entered for each local office, the detailed format may be used to display information down to this level of detail. Once the regional reports have been prepared, the regional office creates a diskette containing aggregate regional data which is forwarded to the Education Directorate at Headquarters. At Headquarters, a national database is created through the consolidation of the files from the individual regions. National reports are then generated which reflect regional totals for the statistical parameters as well as national totals.

EXHIBIT 3

PSEMIS INFORMATION FLOW - BAND-ADMINISTERED PROGRAM



Regional Databases on Individual Students

INAC regional offices maintain databases containing information on individual students (e.g., names, addresses, telephone numbers etc.) These databases generally cover INAC-administered students within the region, and in most cases, include at least some information on band-administered participants as well. The Atlantic region is a notable exception, as individual data is not requested from the bands. The regions vary widely as to what information is available on individual PSEAP students on these databases. For example, Saskatchewan, British Columbia and Manitoba do not retain address and telephone number data while each of the other five regions do.

The database format also varies from region to region. Manitoba and the Atlantic for example, have not, as of yet, computerized their databases. Both of these regions employ a manual filing system.

Each of the other six regions maintain PSEAP student data on an automated database, although both Quebec and Alberta supplement their automated systems with manual files containing more in-depth information.

We shall describe the databases of Alberta, Ontario and Quebec, as well as Manitoba's manual system in further detail in the chapter on Study Findings.

III - Study Findings

In this chapter, we present the results of our discussions with INAC staff at Headquarters as well as departmental personnel and native education administrators in four regions (Alberta, Manitoba, Ontario and Quebec). The chapter first outlines problems and difficulties with the current management information system (i.e., PSEMIS) as identified by INAC interviewees. Then we present a more detailed look at the information systems which have evolved to meet the needs of the post-secondary program in each of the regions, together with any identified gaps or weaknesses. Finally, we describe the band situation, including the extent to which computerized systems are being used for program administration, and difficulties which exist with respect to departmental reporting requirements and the reporting process.

Problems and Difficulties with PSEMIS

Our initial interviews with INAC staff at Headquarters revealed that the current management information system has not been very successful in providing the information required to administer and monitor the PSEAP program. Our regional discussions confirmed this indicating that, in fact, PSEMIS has fallen into general disuse. Note that some of the regions are still providing Headquarters with the required PSEMIS statistics - they are simply not using the system itself to input and report the data. Rather, they are using their own systems to generate the PSEMIS data which are then either transferred manually onto PSEMIS reporting forms and sent to Ottawa, or simply phoned in to Headquarters. One region reported that they had not been asked to provide PSEMIS data on a routine basis in over a year and a half.

In this section, we outline some of the weaknesses and problems with PSEMIS which have no doubt contributed to its downfall. These difficulties were identified by Headquarters staff and to a greater extent, by regional personnel who have had more direct contact with and use of the system.

Software Deficiencies

According to all of the regions we interviewed, a major reason why they no longer use PSEMIS is that PSEMIS never really worked properly. Three regions specifically mentioned that the most recent version of the software allowed them to input the data but would not permit the generation of a printed

report. Headquarters was made aware of this difficulty but a working version of PSEMIS was never delivered.

Failure to Meet Regional Needs

Another significant problem, identified both by Headquarters and regional interviewees, was that PSEMIS was not designed to meet regional needs. This was due to inadequate consultation of system users in the regions and insufficient consideration of their requirements in defining the original system requirements.

PSEMIS was designed primarily to accommodate the needs of Headquarters. The regions have somewhat different information requirements than Headquarters. Whereas Headquarters requires information and data to justify the program to Treasury Board and to Parliament, and to determine resourcing requirements, the regions primarily need information to support day-to-day operations and administration of the program. For example, PSEMIS was designed with a reporting frequency of twice a year. The regions, however, need the information to be continuously updated and reported on for ongoing management of the program.

More seriously, PSEMIS was designed strictly as a reporting system for summary data, that is, a system which allowed the regions to input and report specific aggregate program statistics to Ottawa. To give an example, for the demographic report on number of dependents, regions were required to enter into PSEMIS, the number of male students and the number of female students with zero, one, two, three, four, five and six or more dependents. For the home residence report, the number of males and females living off-reserve, on-reserve and on crown land had to be entered. The system did not incorporate a means for deriving the aggregate data from individual student files and in fact did not permit the storage of individual data at all. If a region had an automated student database, their system might be programmed to output the required summary statistics; these would then have to be manually re-entered into PSEMIS. If no such database existed, reporting would consist of manually calculating the aggregate data by counting individual PSEMIS input forms or student applications. Furthermore, if bands chose to submit individual PSEMIS input forms rather than the local roll-up input form, band totals would also have to be manually derived. Note that a complete re-counting would have to occur for the second report in June and all fields that had changed would have to be edited.

To re-emphasize then, PSEMIS was meant strictly for the reporting of pre-calculated aggregate statistics desired by Headquarters. PSEMIS did not meet

regional needs in that the system did not allow for the maintenance of a database containing individual student files which is needed by the regions to administer and manage the program (except where the program is 100% band-administered). Furthermore, PSEMIS allowed only for the capture of core and management information, whereas certain regions had additional information requirements. One region attempted, but was unable to customize PSEMIS to meet their own requirements.

Inadequate Resources to Support System

The regions felt that inadequate resources were put behind the system. The regional offices claimed they were not allocated funds for technical support and training. They were not provided with clerical staff to undertake the necessary calculations and/or to perform data entry. Funding was not available to support the development of computerized student databases in order to ease the time-consuming and labour-intensive task of counting individual applications.

Regional interviewees strongly felt that in cases where the program was band-administered, that the bands should have been provided with computers capable of running the PSEMIS software so that data entry could be effected at the band level. Resources were never made available for this.

Poor Implementation

At least two regions mentioned that there was inadequate hands-on training provided during system implementation. With respect to user documentation, our exploration of the Computer Operational Procedures Guide indicated a lack of detail and the absence of examples to guide the beginner.

Several interviewees (including someone at Headquarters), pointed out that there was no one person or group of people at Headquarters directly responsible for PSEMIS. Consequently, the regions received little encouragement to use the system and little assistance when they encountered problems. Furthermore, interviewees felt that there was a lack of resident technical expertise at Headquarters; regions had difficulty making Headquarters staff understand the nature of their problems with the system.

Too Time-Consuming

Almost all interviewees commented on the fact that reporting through PSEMIS was too time-consuming. First of all, regions mentioned that the determination of PSEMIS summary statistics required two to three weeks of work in the absence of a computerized student database. In addition, we were

informed that the inputting process was extremely time-consuming. In fact, one individual stated that it was faster to complete the PSEMIS report forms by hand than to use the system entry and reporting functions.

Editing within PSEMIS was also described as cumbersome and unnecessarily time-consuming. Specifically, it was noted that it was impossible to go directly to the record one wished to modify. Instead the system started at the first record and required scrolling through all records until the one to be edited was reached.

Inflexible Reporting

PSEMIS was designed to produce 15 October reports (9 for PSEAP and 6 for UCEP) and 4 June reports (2 for each program component). These reports basically correspond to the PSEMIS local roll-up forms included in Appendix B. The October reports included estimated student enrollment and costs as well demographic data and course information. The June reports provided actual student enrollment and financial data.

PSEMIS reporting was very inflexible in that the system only provided the 15 reports it was programmed to output, even though other breakdowns of the data should be possible. For example, PSEMIS could report the number of males and females in the region attending full-time and part-time. PSEMIS could also report the number of males and females by their age category. The system could not, however, report the number of full-time and part-time students in each age grouping. This was again a function of PSEMIS' inability to store individual student data. Once the information was stored in aggregate form, re-aggregation of the data in other ways became impossible.

Outdated Information Requirements

All of the regions commented that Headquarters' information requirements, as defined by PSEMIS, were somewhat out of date. Recently, Headquarters has requested that the regions provide much data not reported via PSEMIS (e.g., number of graduates by field of study, breakdowns of data by Bill C-31 and non-Bill C-31 students etc.). Regions with their own computerized student databases have had to continuously modify their own systems to meet Headquarter's changing information requirements. The regions usually had the requested data available for departmentally-administered students (due to the enhanced flexibility of individual student databases) however, the difficulty lay with the band data which in several regions, were in aggregate form according to strict PSEMIS specifications. Thus to handle new informational requests, the regional office had to contact each band office and request that they provide

the information. As many bands, were not automated, this meant a lengthy turnaround time as individual application forms had to be referred to and counted.

Flow of Information from Native Administrative Organizations

In all regions except the Yukon, PSEAP funds are administered to some extent by Indian band councils and organizations through contribution agreements negotiated with INAC regional offices. Overall, the program is approximately 60% band-administered, although in some regions (e.g., Manitoba and British Columbia) PSEAP is entirely administered by the bands. The trend in the future will be toward total band-administration of PSEAP and it is estimated that a level of 85% band-administration will eventually be attained.

The INAC regional offices are partially or entirely dependent on bands to provide them with information on PSEAP students. The flow of information from bands to regional offices varies greatly, with inconsistencies in the type and quality of data provided to INAC offices from region to region and band to band. For example, in Ontario, the bands provide the regional office with a host of information on individual students (e.g., names, band membership, gender, age, year of program entry, name of institution attended, etc.). There are few difficulties with non-reporting which the Ontario office attributes to their efforts in maintaining a good relationship with each band.

In Alberta, bands are not asked to provide any individual data, only aggregated program statistics, to the regional office. In Quebec, either summary data or individual data are reported, depending on the band. Again, according to regional interviewees, the problem of non-reporting is virtually non-existent in these regions, (except perhaps for the missing of reporting deadlines). In Manitoba, some bands report individual student data, others provide complete PSEMIS statistics in aggregate form. Here non-reporting is a distinct problem with two major bands accounting for close to 30% of the region's program participants providing only minimal summary data (i.e., total number of students and total costs).

Where bands refuse or are reluctant to provide information that has been requested, there were a number of reasons and contributing factors identified by INAC interviewees. (The band point of view will be addressed in a future section):

- Manual compilation of the PSEMIS data is too time-consuming and native administrative offices do not have sufficient clerical staff for this work.
- Where computerized systems exist, band office staff are frustrated by software and hardware problems (e.g., system crashes due to power failures, memory limitations of the computer etc.)
- Native education counsellors see PSEMIS reporting as an administrative burden which is inconsistent with their role of counselling students.
- Bands do not understand the Department's need for this information. The government is viewed as being too bureaucratic and there is some doubt as to whether the information is really needed and whether it will ever be used in a meaningful way.
- Bands do not derive any direct benefit through the provision of this data. The current information system does not meet the information requirements of the bands.
- Bands may be spending post-secondary funds on other education programs (e.g., skills training) and wish to keep the department ignorant of this practice.
- Refusal on the part of the band is a political stance. This probably accounts for a small minority of the cases.

One interviewee noted that audits of contribution agreements with bands have shown that reporting requirements are continually not being met. It seems that there has been little enforcement of contribution agreements in the past. The one notable exception is the Alberta region which has recently stopped funding one small band as they did not provide the requested data.

Our examination of one regional contribution agreement indicated that reporting requirements do not appear to be well-specified in that the exact statistics to be reported and the reporting frequency are not explicitly stated.

Another issue which has arisen in relation to obtaining information from bands, are bands which have entered into Alternative Funding Arrangements (AFA) with the federal government. The AFA initiative was designed to transfer responsibility for the re-design of programs and establishment of funding priorities to Indian Councils while at the same time making Indian

leaders more accountable to their memberships for the management of resources and the development of their communities. Under the AFA agreement, band leaders are accountable to their members for managing the full range of programs that serve them. These include lands, membership, education, social development, capital facilities, community services, band management and resources, and economic and employment development. To date, 10 AFA agreements have been signed in Canada. Fifty-two other bands and five tribal councils representing an additional 39 bands have applied for entry into the AFA process.

Under AFA, bands, and not the department, monitor the band's affairs. According to an information bulletin circulated by INAC, the only essential reporting requirement under the agreement is that an annual expanded audit be submitted to both INAC and the band membership. Thus the increasing trend toward AFA agreements was a source of considerable concern to many of our Headquarters and regional interviewees who felt that although it had not accounted for a large proportion of program non-reporting to date (due to the small number of bands involved), it could play a significant role in making information increasingly difficult to obtain in the future.

The Ontario regional office, however, had a more positive outlook regarding AFA. They felt that the lack of reporting requirements for AFA bands was largely a misconception. According to our interviewees, AFA bands are required to provide the same information on students as other bands. The regional office has asked the two AFA bands in their region to report individual data to the regional office this year, and feel confident that the bands will be co-operative.

Quebec noted that one AFA band in the region does not provide the office with information. The band, however, related to us that they would be quite willing to provide any required data (either in aggregate form or on individual students). They had not done so in the past as no one had asked them to.

Regional Information Systems

In this section, we shall describe the information systems which exist for PSEAP/UCEP in the regional offices of INAC. In each case, we elucidate the weaknesses and limitations as identified by system users, and present regional requirements and recommendations for a new national management information system for the program.

Manitoba

System Description

In Manitoba, the program is close to 100% band-administered; the regional office itself administers only about 30 students. The region has not, as of yet, developed a computerized individual student database. Instead, it maintains a manual filing system with a file for each of the 26 native administrative organizations in the region. Program reports, which are received from the bands on an annual basis (in June) are maintained in these files. These reports vary somewhat in format. Some bands provide data on individual students on a form which the regional office provides to them. This form requests the band to list the student's name, band membership, birthdate, sex, number of dependents, residency, institution attended, program name, year of study, full-time versus part-time attendance, student weeks used, costs, and achievement (i.e., basically the PSEMIS reporting requirements). Other bands which are computerized, provide the same data in the form of computer printouts. Two major bands, accounting for 30% of post-secondary students in the region, refuse to provide individual data but provide a few basic summary statistics (e.g, number of students and total funds utilized).

Regional education staff have access to two WANG computers which were intended for use with PSEMIS, but are currently not being used for administration of the post-secondary program.

System Limitations

There are two significant limitations which affect the effective and efficient reporting of data to Headquarters:

- Manual compilation of PSEMIS statistics from band data which exists in a variety of formats is time-consuming.
- Refusal of certain bands to provide necessary data causes PSEMIS statistics to be only 70% complete.

Requirements and Recommendations for a National System

Manitoba regional personnel had strong views and opinions on how to make a national system work in a region which is unique in that the program is almost entirely band-administered. Interviewees felt that the bands and administrative organizations in their region were functionally equivalent to

INAC district offices in other regions. Hence, they proposed a system in which bands would be provided with computers, standardized software and appropriate training. The software should allow for the maintenance of a database on individual students. Data entry should occur at the band level and transfer of data to the regional office could be effected via telecommunications lines or the shipping of diskettes. Regional staff must also be allocated to oversee the system and co-ordinate the compilation of data at a regional level.

The key, according to regional interviewees, is to keep the information requirements to a minimum. Select a few critical items of information required for reporting to Treasury Board and Parliament to include on the system (e.g., name, band, family number, sex, age, number of dependents, program, duration of program, costs, student weeks and student achievement). It was felt that something along the lines of Ontario's PSIS system, with a somewhat reduced number of fields, could be made to work in Manitoba.

Some other key considerations include:

- The system must be simple in nature, easy to operate and user friendly. Detailed user documentation written for computer-illiterate individuals must be provided.
- The system should be designed to run on IBM or 100% IBM compatible machines, rather than less expensive computers which are not up to the industry standard.
- The system must be sufficiently flexible to provide a variety of reports with the data broken down in different ways.
- Headquarters should meet with regional and band representatives to determine system requirements. Regional and band commitment to the system at the start of the project is crucial.
- Bands should be convinced of the system's utility and made aware of potential benefits available to them (e.g., they could easily produce statistics on their own students; they could use the computer for other purposes etc.)
- Some bands are already computerized and have sophisticated systems which offer financial reporting and cheque issuing modules as well as a student database. These bands may be reluctant to use a national system which does not fulfill their needs as readily as their own system does.

Alberta

System Description

In Alberta, administration of the PSEAP program is shared by the department and 30 native administrative organizations (i.e., bands/tribal councils). Currently, the regional office administers the program for about 720 PSEAP/UCEP students (960, if Bill-C31 students are included) while the native organizations are responsible for approximately 870 individuals. The largest band (with respect to number of participating students) provides administrative services to approximately 235 post-secondary students.

The regional office has developed a LOTUS 1-2-3-based program for maintaining information on individual students administered by the department. This program outputs the required PSEMIS summary statistics for these students. Aggregate data on band-administered individuals are provided to the region twice annually (a committed report in November, and a report on actual expenditures in June). The band data are entered together with the regional summary data into a second program module (designed for aggregate data) which automatically sums departmental and band statistics to derive final PSEMIS figures for the entire region. These data are transferred onto PSEMIS regional report forms and sent to Headquarters.

The individual student database is based on selected fields from the Alberta Region Application for Educational Assistance and the Alberta Region Progress Report including:

- Student identifier code (region, district, band code, family number, birthdate).
- Basic student information (name, sex, marital status, number of dependents, residency, highest grade completed, previous student weeks used).
- Education plan (UCEP vs. PSEAP, full-time vs. part-time, degree/diploma sought, program/course, institution attended, occupational field code, length of program, year of study, expected date of graduation, effective period).
- Estimated costs (broken down by category of assistance) and student weeks.

- From the progress report, student performance (i.e., continuing, graduated or withdrew), date of graduation, date of withdrawal, reason for withdrawal.
- Actual costs and student weeks used.
- Counsellor's comments.

The system was designed to collect and aggregate core and management information in fulfillment of Headquarters' reporting requirements and to handle the region's need to administer the program for individual students on a day-to-day basis.

Note that Bill C-31 students are also entered into the database. A special student identifier code is used to designate Bill C-31 students on the system, which allows the region to breakdown reported statistics by Bill C-31 and non-Bill C-31 individuals, as required.

System Limitations

The major limitations of the current system, as identified by regional interviewees are as follows:

- LOTUS 1-2-3 is limited in its functionality; a DBASE III system, for example, would be preferable.
- A separate student database is used for each academic year. Thus basic demographic information must be re-entered year after year for continuing students, and tracing a student through four years of university requires accessing four different databases. Furthermore, to update the previous student weeks used (a cumulative variable), the previous year's database must be consulted, the cumulative figure calculated and the new total re-input into the current year's database.
- The two program modules are not linked, that is, summary data generated from the individual student database must be manually re-input into the aggregate data module.
- The regional office must frequently modify their program to keep up with Headquarters' changing information requirements.
- The reporting of limited data by bands in a pre-specified summary format makes it difficult for the regional office to respond to

Headquarters' ad hoc requests for data which are new or aggregated in a different way.

Requirements and Recommendations for a National System

In general, Alberta regional staff supported the idea of a national information system for the program, to be used across Canada by regional offices and bands alike. The basis of this system would be a standard application form and progress report. Headquarters would have overall responsibility for system development and would hence be responsible for modifying the system in the event of changing information requirements.

Interviewees suggested that PSEMIS is basically not useful and could not easily be improved to meet their needs. They recommended, instead, a micro-based DBASE III or similar system, with the capability of maintaining an individual student database which automatically generates the necessary summary reports for Headquarters. As in Manitoba, regional officers strongly felt that bands should be provided with computers, software, and adequate training. They felt this would greatly facilitate the provision of individual student data on the part of bands.

A much less effective alternative would be to have the native administrative organizations send carbon copies of application forms/progress reports to the regional office for data entry. This approach would involve increasing the region's allocation of PY's, as insufficient staffing exists currently to undertake these tasks. It was also suggested that certain bands might be somewhat reluctant to provide the copies, although we were informed that the contribution agreements with the bands gives the regional office the right to access student application forms. In fact, the regional office currently conducts a periodic program review involving travel to each band office to review student files.

As a final point, users of the current system stressed the importance of being able to track individual students through the duration of their post-secondary studies. For cumulative variables such as costs and weeks used, the database could include both data for the current year and a series of figures representing past years/semesters. Other variables such as marital status and number of dependents would remain unchanged until a change in status necessitated the editing of these fields.

Ontario

System Description

Comparatively, Ontario is one of the larger regions in terms of number of program participants, with approximately 4,400 PSEAP and close to 80 UCEP students in 1986/87. Over 60% of these students belong to bands who, by provision of a contribution agreement with the regional office, administer the assistance program to their own members. The remaining students are administered by the department, receiving cheques and services from one of seven district offices in the region.

In 1985/86, just after CEIS ceased operation, the region developed and implemented the Post-Secondary Information System (PSIS). The system requirements were defined so as to meet the needs of both the regional office and bands who administer the program, as well as to allow for the extraction of PSEMI statistics for Ottawa. The software was developed by First Nations Technical Institute (FNTI), a native organization headquartered near Belleville, which was established to train native people in the use, maintenance, and manufacture of computers.

PSIS is a DBASE III system. At the regional office, it runs on a Spirit micro-computer (reportedly IBM-compatible). The software has been made widely available to bands across the province, together with a mandatory three-day training session. Bands operate PSIS on Tandy 1000 computers.

As with the Alberta system, PSIS maintains information on individual post-secondary students for a given year. The input document is the Ontario region application form which is completed by students with the aid of education counsellors in district offices or bands. In certain district offices, the practice is to key information directly into the computer as the student relates it to the counsellor. The completed application form is printed out on the spot and the student signs the computer output. This document (or the handwritten application form, as the case may be) is maintained in personal files at the local level. The regional office has no need or desire to store the original signed documents.

The PSIS database was designed to accept all fields on the Ontario application form. The information collected is similar to that maintained in Alberta; however, the Ontario system contains the following additional fields of information:

- As part of the student identifier, the position number.
- Student enrollment (i.e., new student, from UCEP, re-enrollment).
- Application date.
- Band name (in addition to the band code).
- Address and telephone number.
- Administering district.
- Location of institution.
- Institutional acceptance.
- Counsellor's recommendation.
- Priority category.
- INAC or band administration.

Progress reports completed by education counsellors update a student's electronic file with achievement information (i.e., graduated, completed year, partly completed year, withdrawal and reasons for withdrawal, where applicable). These reports are completed by counsellors as soon as there is a change in student status or at the end of the academic year.

PSIS allows users in the Ontario office to output a standard regional report modelled after the PSEMIS format. The system also permits the generation of custom reports which list student data for selected fields (up to three sorts on a maximum of 12 fields).

FNTI is responsible for maintenance and technical support of the system including the operation of a hotline service for users. They also co-ordinate the compilation of regional data for the Ontario office. Individual bands transfer their files by diskette to the appropriate district office which merges files and sends a diskette to FNTI. FNTI merges data from all district offices to produce a final database which is transmitted via telecommunications lines to the regional office for preparation of regional reports. Reporting by the regional office to Headquarters is accomplished by telephone.

System Limitations

A number of limitations exist with the PSIS system and the present reporting structure. According to regional staff:

- Computer memory limitations make it impossible for the system to maintain historical information on all students. Currently, in order to trace a student's program history, one has to search a different database for each past year of interest. Furthermore, as the student identifier is based partly on the band code, an individual's identifier code may change as a result of a change in band membership (for example, through marriage). The present system does not allow the new identifier to be linked to the old number, and hence no link exists to previous student data.
- PSIS is based on the number of applications rather than the number of students. If a student reapplies during the year (e.g., for a summer session), the system creates an entirely new record for the student. Thus, when Ontario reports on student enrollment to Headquarters, some double-counting may exist in the figures. It was suggested that FNTI could probably, with some additional programming, modify the system to report the actual number of students, as well as the number of applications.
- Headquarters' information requirements are continually changing, resulting in a constant need for corresponding modifications to PSIS.
- Insufficient funds exist to operate the region's three day PSIS training program for bands. This is due to a high turnover of staff at the band level and the consequent need for retraining. Also, limited funds exist to arrange for travel of band members to and from the training session.
- The system is not universal at the band level. Some bands continue to provide the district offices with manual records. The region would like all reporting to occur in electronic form but cannot insist on this as the department provides no capital support for the acquisition of hardware by bands administering the program. There is currently no mandate for such a system to be in place at the band level. Capital expenditures would be easier to justify and obtain if such a mandate existed.

- The Tandy computers used by bands have insufficient storage capabilities. As band offices tend to use the computers for other elements of band administration, they often exceed the memory capabilities of the hard disk leading to frequent system crashes.
- The processing capabilities of the micro-computer in the regional office are severely limited. The system locks up for hours processing simple PSIS requests.
- Progress report information (i.e., student achievement data) on the system is not up-to-date making it difficult to assess program performance in the past year. The regional office is still awaiting 1986/87 progress report data. The region attributes this to a lack of staff at the local level.

Requirements and Recommendations for a National System

Senior officials within the Ontario regional education office felt that there is a need for a national standardized information system for the PSEAP program. Such a system should be fast-processing and have sufficient storage capacity to maintain historical data on individual students. For these reasons, it was suggested that a central service bureau with the capacity to allow for simultaneous use by multiple users would be a potential solution. Regions could have terminals tied in to a central mainframe/mini computer in Ottawa (à la CEIS). Unlike CEIS, however, which was a dedicated system, terminals should be microcomputers capable of handling other functions.

Other considerations include:

- The development of a long range training plan to ensure that key regional personnel are thoroughly trained in the system's use.
- Software development should probably be handled by an Indian organization such as FNTI.
- The information system for the program likely cannot be confined to an electronic medium. Physical documentation with the student's signature must be maintained on file as a means of checking on student eligibility.

Quebec

System Description

Administration of the Post-Secondary Educational Assistance Program is executed by the department and fifteen native organizations (e.g., bands, tribal councils). Between 75 and 85% of program participants in the region are administered by the bands.

The current information system used in the Quebec regional office to support the Post-Secondary Education Assistance Program is a PC-based system which was developed to meet the needs of the regional office and to provide the information required by Headquarters. It is our understanding that it was implemented because PSEMIS no longer supported the information needs of the Quebec regional office and Headquarters.

The regional office uses a DBASE III software program which operates on IBM-compatible Mintel hardware. The DBASE III program enables the regional administration to maintain information on individual students and to enter individual or aggregate student information as received from the band. The system has the ability to access information by individual students and in total and can produce reports as required.

It is our understanding that the Quebec regional office has recently revised its source of data for the system. Through the end of September 1988, the main source of information had been the national application form and, for the bands administering the program, some customized forms designed by the bands. The regional office identified deficiencies with the standard application and, as a result, has proposed a revised application for those students administered by the regional office and an abbreviated form for the band-administered programs to collect student profile information. The region noted that the office has specialized information needs which Headquarters may not have.

The customized system allows the region to obtain reports with information on various fields. The system has 30 fields with which they can handle elective requests on aggregate or individual data.

It appears that the information provided by the bands differ, in that information may be provided in the aggregate or for each student. In the latter case, the information provided for each student may differ across bands as it appears that the bands have developed their own reporting formats for the regional office. The new form which has been proposed to collect student

profile data for band-administered students includes the student's surname, given name, date of birth, whether the applicant is new or continuing, full-time or part-time, on or off-reserve, the family and C-31 number, marital status, dependents, dependents' date of birth, the program, year of training, total duration of training, institution, location, postal code, title of diploma sought, expected graduation date, financial assistance record (rates and years for ten funding categories), units used, and level of priority. In the past, some updates had been requested through a report which was sent by the regional office to the bands for revisions. It is our understanding that this has not been initiated this year by the regional office. The office notes that they are in the process of modifying the data base and have been requesting the information directly.

System Limitations

The major factor which appears to, and will continue to, limit the ability of the regional office to report data to Headquarters is that information requests from Headquarters appear to be sporadic and data required to fill these requests may not be readily available.

Requirements and Recommendations for a National System

The Quebec office identified four features which would be expected in such a system. The four requirements are that the system:

- Capture information.
- Manipulate the data.
- Produce reports on a timely basis.
- Handle ad hoc or specific requests.

The regional personnel have noted that the most workable national system would be one for which all bands would provide information on each student. This would ensure a more complete data base and might also serve to validate the bands' compliance with the program requirements. The regional office personnel suggested that duplicate copies of an application form be provided to the regional office for data input. They felt that bands would be willing to provide the copies and that regional office staffing levels appeared to be sufficient to handle data entry requirements. The regional office noted that it may be feasible to implement a PC-based system only in the larger band offices. A computer may not be cost effective for some of the smaller bands with only a few students in the program.

For such a system to succeed, based on the Quebec regional office comments, it is also necessary that:

- Personnel using the system must be sufficiently instructed in its use.
- Headquarters should provide on-going technical support.
- The system should support the data requirements of the regional offices.
- Headquarters information requests should be consistent and documented clearly rather than being requested over the telephone.

Band/Tribal Council Systems

We conducted telephone interviews with 12 different bands and tribal councils who administer the PSEAP program in Ontario (3), Quebec (4), Manitoba (3), and Alberta (2). The bands to be interviewed were judgementally selected by regional INAC personnel and hence do not comprise a representative sample. Thus, our findings as related in this section are not intended to be generalizable to native organizations across the four regions of interest.

Extent of Computerization

According to the regional offices (with the exception of Ontario), most of the native administrative organizations are probably not computerized. On the other hand, all but two of the bands we talked to reported having at least one micro-computer in the band office (although this is not necessarily used to support a student database for the post-secondary program). One band's education office has no micro-computers, but is linked via 4 or 5 terminals to a central, band-owned mainframe computer. The last of the 12 bands is planning to acquire a micro-computer by the end of the year. In some organizations, the computer is dedicated to the education function; in others, it is shared by the entire band office, or even, in one case, by the entire community.

Various brands of micro-computers are being utilized including IBM, AT&T, Zenith, Wang, Apple, MIND, and Tandy.

Existing Systems for PSEAP Administration

From our discussions with bands/tribal councils, it is evident that certain native administrative organizations have, over the last one or two years, began to consider, develop, and implement computerized information systems for the PSEAP program.

Only three of the twelve organizations we consulted with did not have a computerized student database containing program and demographic information on individual students. These bands have, to date, continued to rely on manual filing systems holding application forms, progress reports, transcripts, information release authorizations, etc., on program participants. Of the three currently manual bands:

- One does not require an automated database due to the limited number of students involved (i.e., less than 10).
- One has purchased a DBASE III package with the intention of developing an information system but has no resources to pay for software development and system operation.
- One will acquire a computer by the end of the year which will be used to support a student database, a financial control system for the program, and a word-processing function (i.e., form letters to students, etc.).

It should be noted that the first two bands are presently using computerized financial accounting packages to aid in controlling program finances.

The three Ontario administrative organizations we interviewed have each implemented the PSIS system developed by FNTI and report to the regional office by sending floppy disks to FNTI on a regular basis. Two of these organizations have recently acquired FNTI's newly-developed Post-Secondary financial accounting package, although neither have fully implemented it yet.

In the other regions, bands are using a variety of custom-designed packages, usually developed by an external software company according to the band's specifications. These information systems maintain a variety of basic program and demographic information on students (usually input from the application form). Updating of files is carried out either at regular intervals or on an as needed basis. Often, the system was designed to fulfill additional program administration functions carried out by the band. In several cases an accounting system and/or cheque issuing module is integrated with the student

information database. Another system generates a payroll which is sent to the band's financial department for the issue of cheques. In one band, the system stores data on both high school and post-secondary students.

In most cases, the software was developed to meet the band's own needs as well as to address INAC reporting requirements. In one band, the program was tailored specifically to output PSEMIS reports. The band office currently transfers the data onto PSEMIS forms provided by the regional office but soon hopes to be able to send their printouts as is.

Other systems which were described to us, do not appear to be as successful in aiding bands to fully meet PSEMIS reporting requirements as certain elements or fields are not included in the system. Generally, the required data is partially outputted by the computer and partially obtained through manual consultation of physical files, which contain additional information. Reports tend to be produced by manually transferring computer output and file data onto reporting forms provided by the regional office. In one case where aggregate data is requested, manual manipulation or calculation of totals from computer print-outs of individual data is necessary.

Difficulties in Reporting

In this section, we outline band representatives' reasons for the reluctance or refusal of certain bands to report to the department. We also delineate the limitations of existing information systems within bands which make it difficult for them to report, and discuss other difficulties which they have with the reporting requirements and reporting process in general.

Reluctance or Refusal to Report

We only spoke to one band which actually refuses to provide more than basic summary data (i.e., total number of students, total cost) to the regional office. This band had submitted a proposal for the development of an information system for PSEAP which was turned down by Ottawa. The band had asked for funding to support capital purchases, software development, start-up costs and system operation.

They have since proceeded with the system on their own and it is now in operation. Most of the standard application data is maintained on their system but they refuse to report this data due to INAC's initial lack of co-operation and support. A band representative stated that they would be willing to provide more data to INAC if the department were to show a willingness to support their band, and others, in their system development endeavours.

Several other bands (who do report data, but are somewhat reluctant to do so) stated that no overhead funding is provided to them for administration of the program. Consequently, no funds exist for information maintenance and reporting purposes (for example, there is a lack of resources to hire clerical/office staff).

Other reasons given for refusal or reluctance to report echo those previously provided by regional INAC interviewees:

- Some doubt exists as to whether INAC is really using all of the information provided. Bands would like to know exactly how the information is being used and why it is needed.
- Reporting is too time-consuming.
- Reporting is an administrative burden that detracts from their role as education counsellors.
- Mistrust of the department. One band believes that INAC manipulates the figures they provide and gives them less money than they are entitled to.

System Limitations

For bands that administer the program to only a handful of students (e.g., less than 25), manual reporting does not appear to present any particular problems. For bands with larger numbers of participants (e.g., 100 or more), who do not have a computerized student database, reporting involves a significant manual effort which is both tedious and time-consuming. One medium-sized band who is asked to report aggregate data estimated that the manual compilation process requires about two weeks.

As previously described, program reporting in some bands is aided by an automated information system. As we have seen, however, these systems generally do not fully meet departmental reporting requirements. The system may not include all of the information needed, it may not generate data in aggregate form, or it may not print reports in the required format. Supplementary manual work is necessary in all of these cases. In the one case which we encountered where the program was specifically tailored to meet PSEMIS requirements, we were informed that the system is not very flexible. The program will print out PSEMIS reports, but will not produce other reports

of the same data aggregated in other ways. Thus when reporting requirements change, additional programming will be necessary.

It should be pointed out that many of these bands have just begun to use these systems and may not yet have experienced their system's full potential.

Several bands commented that, with the new computerized system in place, there is seemingly twice as much work as before. The application form must be completed manually (as before) but now it must also be entered into the computer.

Ontario's PSIS is the closest thing that exists to a provincial system. Although the system was well implemented and has been in operation for two full years, the following difficulties were noted by Ontario bands:

- Insufficient information is retained from the three-day training session to use the more sophisticated PSIS modules.
- The custom reports function is very difficult to use.
- Transfer of data via modem would be preferable.
- Basic student demographic information must be re-entered year after year. Not having to do so would save 90% of the work.
- There is a lack of user support from FNTI. FNTI does not respond immediately to problems. Closer ties with the Institute are needed.
- Duplicate information is being submitted to some district offices which require bands to submit the original signed application forms. These bands do not feel they are trusted by the department.
- Basic revisions to PSIS are necessary, however, most of these are required at the application form level (e.g., addition of the area code to the telephone number field; a campus code is needed to identify different campuses within an institution; the field occupational code should be an academic code rather than a skills training code; the degree/diploma field should be expanded to include medicine, law and other degrees; the length of the program should be in months not years, etc.).
- PSIS should include an automatic check on the student identifier code to ensure that the individual is a status Indian. This would involve the

entry of the department's official list of registration numbers into the system.

Interviewees strongly felt that one of the major limitations to effective reporting on the part of bands is a lack of resources and staff at the local level. Resources are needed for the development of automated information systems - both for software development and the acquisition of computers and other related equipment. (One band estimated that the development and implementation of their system, including hardware, cost about \$60,000). Clerical staff are required for data entry and day-to-day operation of the system. Bands firmly believe that the department should support and finance their system development efforts. Below, we present some examples which illustrate band needs in this respect:

- One band has purchased a DBASE III package with the department's promise of support but can not proceed with system development due to a lack of resources.
- One band has submitted a proposal to the department for funding to modify their existing system to include student demographic data. Currently this data is compiled manually.
- One band has recently laid off their computer clerk due to a lack of resources. Consequently, data entry for the PSEAP program has not been completed.
- One band does not update estimated costs and other student data during the year due to lack of clerical staff.
- One band's computer is not being used as it is in need of repair and no funds exist to undertake this work.

Another contentious issue with some bands in relation to program reporting, is that the department continually changes its information requirements. The data requested for routine reports changes on a regular basis and ad-hoc requests for new information are frequently received. Bands felt that the department should specify the exact data they require and stick with it. If ad-hoc informational requests are necessary, bands should be given sufficient lead time to compile the data (especially if this must be done manually).

As a final point, two bands mentioned that they would like some feedback from the department, for example, in the form of a report on their own students, or reports on a regional or even national level.

In summary, the bands we consulted appeared to genuinely want to report to the department, but were frustrated by the lack of proper automated support, the lack of consistency in reporting requirements, and the lack of funds, human resources, and time.

Requirements for a National System

Bands were primarily interested in day-to-day accounting and budgetary functions. In other words, the financial control aspect of the program was of primary importance to band education officials. Generally, statistics on student characteristics were of lesser interest. Some bands thus felt that a national system should have a financial accounting and cheque issuing module integrated with the student database. Other bands did not feel this was necessary as these functions were carried out by their financial departments.

IV - Information Requirements

One of the key objectives of this study is to identify the information requirements for the new Post Secondary Education Assistance Program. This includes the information required to monitor and report on program results (i.e., performance indicators and outcome measurements) and information needed for on-going program administration and management. The first step in this process is to identify the various groups within the Department who require some type of information on the program (i.e., the potential users of the proposed information system) and the purpose for which the information is required. **Exhibit 4, overleaf**, summarizes this information and is based on our interviews with INAC Headquarters staff as well as regional staff and native education counsellors in four INAC regions.

In the remainder of this chapter, we delineate the specific information requirements of these various groups. First we address the information which should be collected in order to monitor program performance and program results. Then we identify other information required for general program administration and management.

Results Information Requirements

One of the central objectives of this study was to identify the results information that should be collected on a regular basis on the Post-Secondary Education Assistance Program. By results information, we are referring to the collection of data which enable management at all levels of the department to assess the success, or effectiveness, of the PSEAP program. The collection of results information on programs is becomingly increasingly important throughout government. In an era of constrained resources, managers must regularly assess the performance of their programs.

The identification of results information requirements required conducting the following tasks (1) Developing indicators for the measurement of results (alternatively called outcomes or impacts); (2) Identifying the sources for the data required in order to apply the indicators; and, (3) Recommending the method and frequency of data collection (e.g., collected regularly by the

EXHIBIT 4

POTENTIAL SYSTEM USERS	PLANNED USE OF INFORMATION
INAC Headquarters <ul style="list-style-type: none"> Evaluation Directorate Policy and Planning Directorate, Education Branch Program Operations, Education Branch Resources and Management Systems, Education Branch Planning Division, Indian Services Financial Reporting Directorate 	<ul style="list-style-type: none"> To provide a database to facilitate future evaluations of the program (e.g., a survey of participants and/or ex-participants) To plan and to support Post-Secondary program funding for the current and future fiscal years To monitor student trends to assist in the planning of future program requirements To ensure adherence to program guidelines (e.g., maximum funding limits) To justify the approval of funds by Treasury Board To provide information and statistics in response to ad hoc questions and inquiries from the Minister's office, M.P.'s, members of the Senate and other federal department agencies To provide information on students to prospective employers To determine resourcing requirements for the program To compile performance indicators report for Indian Services on an annual basis To provide statistics for ministerial inquiries, part III (main estimates) and departmental annual report To provide information used in part III (main estimates)
INAC Regional Offices	<ul style="list-style-type: none"> To assist in day-to-day program administration and management To establish regional resourcing requirements To assist in monitoring contribution agreements To assist in reporting to Headquarters To allow for regional audits
Local Level <ul style="list-style-type: none"> Indian Bands/Tribal Councils/Administering Organizations INAC District Offices 	<ul style="list-style-type: none"> To allow Indian bands to manage and deliver the program To assist bands under AFA to be accountable to band membership To allow District offices to manage and deliver the program

program through its administrative processes, or through special data collection efforts every few years). In this section, we present the results of these tasks.

The first step in developing appropriate results indicators for the PSEAP program was to review the stated objectives and intended impacts of the program, which are contained in the logic model presented earlier in Exhibit 1. As described in the PSEAP logic model, the program is intended to achieve the following direct impacts:

- Increased participation rate of Indian and Inuit people in post-secondary education.
- Increased graduation rate of Indian and Inuit people from post-secondary education.

As a result of achieving of the foregoing, the program then is intended to result in the following "higher level" impacts:

- Increased employability of program participants following post-secondary education.
- Increased participation of program participants in self-government/economic growth.
- Increased extent to which participants obtain employment in their field of study.

As a result of our analysis, the following results indicators were identified as being relevant to the PSEAP program:

1. Participation rate of Indians in post-secondary education.
2. Graduation rate of Indians from post-secondary education.
3. Number of PSEAP applications deferred on an annual basis.
4. Employment rate of program participants following exit from the program.
5. Extent to which program participants obtain employment in their field of study.

The first three indicators above would be tracked on an on-going basis by the management information system for the program and reported annually to Headquarters. The last two indicators would be determined on a periodic basis, say, every three years, through a survey of past program participants. These indicators would not be tracked by the information system, although the system would have to maintain the necessary data to aid the department in contacting past students for the survey.

It is worth noting that the first three indicators listed are in line with the performance indicator profiles already identified by the department for the PSEAP program.

Each of the five indicators is described in greater detail below.

1. Participation Rate

A basic indicator of the effectiveness of the PSEAP program is the trend annually in the percentage of the total eligible Indian and Inuit population who are attending a post-secondary institution. This participation rate can be defined in two ways:

- (i)
$$\frac{\text{number of Indian students enrolled (18 - 24 years of age)}}{\text{total registered Indian population (18 - 24 years of age)}}$$
- (ii)
$$\frac{\text{number of Indian students enrolled (18 - 39 years of age)}}{\text{total registered Indian population (18 - 39 years of age)}}$$

The only difference between the two indicators is that the first indicator focuses on those people who are typically of the age to be in a post-secondary institution. The second indicator allows for the fact that there may be relatively more "adult" students among the Indian population who are enrolled in a post-secondary institution compared to the non-Indian population.

In terms of data sources, a properly functioning management information system for PSEAP would provide the numerator in the above indicators. More specifically, once the program application forms have been filled in at the beginning of the academic year and the data from the application forms then entered into the computer by INAC regional offices and bands, INAC Headquarters would report the number of Indian and Inuit students enrolled, broken down by age. This number could be updated at the end of the school year, to account for any drop-outs from the program during the school year.

The denominator of the indicators is available from the membership system operated by the Membership Division of Lands, Revenues and Trusts.

In summary, data required to measure the participation rate for the PSEAP program would be obtained from a properly functioning program management information system. This indicator would be available on an annual basis.

(ii) Graduation Rate

An important results indicator for PSEAP is the graduation rate of program participants. In other words, to what extent do Indian and Inuit students who enroll in post-secondary programs eventually graduate from these programs?

The graduation rate can be defined as follows:

$$\frac{\text{number of graduates in a year}}{\text{total number of students currently enrolled}}$$

For example, if 150 students graduated out of university in a particular year, and the total population of students funded by PSEAP currently enrolled in university was 3000, then the graduation rate would be 5%. It should be noted, however, that this figure represents only the number of graduates in any one year out of the three or four years that a particular cohort would spend in university. Thus, an approximation for the actual graduation rate would be three or four times this figure. However, for the purposes of monitoring the performance of the PSEAP program, the simple indicator for the annual graduation rate would be tracked from year to year.

(iii) Number of Applications Deferred

This indicator is defined as the number of eligible students whose applications were deferred because of the fixed annual allocation for the program and the priority system for eligibility. This indicator would be obtained from the management information system on an annual basis.

(iv) Employment Rate

The fourth indicator is the employment rate of PSEAP participants following exit from the program. We recommend that this indicator only be calculated on a periodic basis, since a survey of previous program participants would be required. In order to conduct such a survey, a properly functioning management information system is required, since data on the names, addresses and telephone numbers of participants would need to be accessed. Since a

survey would only be conducted, say, every three years, the system would need to maintain and provide access to each year's files on program participants.

A survey of previous program participants would identify their employment status following program exit (there are three basic categories: employed, unemployed and out of the labour force).

(v) Employment in Field of Study

One of the objectives of the program is for students graduating from post-secondary institutions to obtain employment in their field of study. The success of the program in this area could be assessed through the survey described above, by asking previous program participants to describe their employment history following program exit.

Administrative Information Requirements

During the course of the study, we were provided with a list of administrative information requirements identified for PSEAP based on the new policy and program guidelines. This list was prepared by the Policy and Planning Directorate, Education Branch, in consultation with Program Operations and various other user groups at Headquarters. This list is reproduced in **Exhibit 5, overleaf**.

During our discussions with INAC staff and band representatives, we were able to identify some additional information needed by interviewees for program management/administration purposes. These requirements are depicted in **Exhibit 6, overleaf**.

As may be seen from the exhibits, most of this data may be collected via a revised standard program application form, although obviously the entire form would not be completed by the student. Parts of the administrative requirements section in particular, would be completed by an education counsellor or the administrative office. Student achievement data would be collected by a progress report form completed by a counsellor.

Interviewees expressed an interest in seeing both current financial data and cumulative figures for any given student. Furthermore, Headquarters interviewees indicated a need to be able to easily generate reports breaking down any field by any other (e.g., number of males and females who are approved and deferred). This function is particularly important with respect to

EXHIBIT 5**ADMINISTRATIVE INFORMATION REQUIREMENTS
IDENTIFIED BY POLICY AND PLANNING DIRECTORATE**

Student Identification/Demographics	Incentives Data
<ul style="list-style-type: none">• Student Name• Date of Birth• Sex• Residency (On Reserve/Off Reserve)• Band Name/Code• Number of Dependents	<ul style="list-style-type: none">• Doctoral Studies (Y/N)<ul style="list-style-type: none">- Amount of Incentive• Other Graduate Studies (Y/N)<ul style="list-style-type: none">- Amount of Incentive• Special Incentive Scholarship (Y/N)<ul style="list-style-type: none">- Amount of Scholarship• Academic Achievement (Y/N)<ul style="list-style-type: none">- Description of Achievement- Amount of Scholarship
Administrative Requirements	Financial Data
<ul style="list-style-type: none">• Region• Administrative Organization (INAC/band/tribal council)• Approved or Deferred• Time Period Covered by Approval/Deferral• Approval/Non-Approval of Release of Personal Information to Employers	<ul style="list-style-type: none">• Tuition Fees• Living Costs• Transportation Costs• Total Costs
Education Plan	Student Achievement
<ul style="list-style-type: none">• Name of Institution• Attendance (Full Time/Part Time)• Degree/Diploma Sought• Specialization/Program/Field of Study• Year in Program• Projected Year of Graduation• Total Student Months for Program• Number of Months Previously Utilized (in another program)• Number of Months Utilized (in current program)• Number of Months Remaining	<ul style="list-style-type: none">• Achievement (Graduate/Continuing/Withdrawal)

EXHIBIT 6

ADDITIONAL ADMINISTRATIVE INFORMATION REQUIREMENTS IDENTIFIED BY INTERVIEWEES

Information Requirements	Identified By		
	HQ	Region	Band
<u>Student Identification/Demographics</u>			
Family Number		✓	
Position Number		✓	
Social Insurance Number			✓
Treaty Number			✓
Marital Status		✓	✓
Address (Permanent and Temporary)		✓	✓
Telephone Number (Permanent and Temporary)		✓	✓
Highest Grade Completed		✓	✓
Name of Mother			✓
Name of Father			✓
Name of Dependents			✓
<u>Administrative Requirements</u>			
Program Component (PSEAP/UCEP)	✓	✓	✓
Bill C-31 vs non Bill C-31	✓	✓	
Indian Controlled/Non-Indian Controlled Institution	✓		
Enrollment in Special Programs (funded by ISSP)	✓		
Institutional Acceptance (Final/Continued/Conditional)		✓	
Priority Category		✓	
District		✓	
<u>Education Plan</u>			
Anticipated Career or Profession	✓	✓	
Date of Entry into Program		✓	✓
Location of Institution		✓	✓
Campus Name/Code			✓
Type of Institution (University/College/Vocational)		✓	✓
<u>Student Achievement</u>			
Date of Graduation		✓	✓
Date of Withdrawal		✓	✓
Reasons for Withdrawal (Financial/Academic Employment/Other)		✓	

Student Achievement data where it is important to know, for example, how many students are graduating in each field of study and from each institution. Regional offices and bands need to be able to go one step further and print out individual data sorted on a given field. For example, they often need to make available to prospective employers, a list of the names and addresses of all graduates in a given field of study. The system should further be able to select out and print only the names of those individuals who have approved the release of personal information to potential employers.

Below we provide interviewee's comments on some of the administrative information requirements shown in the exhibits:

- The Description of Academic Achievement field has not as yet been defined. It will likely consist of the student's marks, standing or GPA.
- The Bill C-31 field is necessary as Bill C-31 students in the program must be tracked separately for a five year period.
- There is a need to identify students in Special Programs as here, the department is not only funding the student, but the institution as well.
- Data on the student's expected profession or career will aid the department in deciding what special programs should be funded.
- Finally, note that under the new program, students are eligible for only three types of assistance, and time limits for assistance are measured in student months rather than weeks.

Note that Exhibits 5 and 6 together comprise most of the information requirements identified during the course of our interviews. This is not intended to be a final list of information to be collected by the program as we only addressed the needs of four regions and a limited number of bands. Rather, it gives an example of the types of data which might be included on a comprehensive national information system for the PSEAP program. Consultations with the regions and bands are required to produce a more comprehensive initial listing. A national meeting should then be held to eliminate duplicate or similar items and to pare the list down to the most essential elements which may then be included on application forms and in the national information system. Headquarters can then identify the information required on a mandatory basis for program reporting. Other data may be collected optionally by regions and bands.

Recommended Mandatory Data Elements

Based on our discussions with Headquarters officials and a limited number of regional and band representatives, as well as the performance indicators identified earlier in this report, we recommend that, as a minimum, the following data be collected by the program on an on-going basis:

- All of the information requirements identified in Exhibit 5.
- Address (permanent and temporary).
- Telephone number (permanent and temporary).
- Bill C-31 versus non Bill C-31.
- Program component (PSEAP/UCEP).
- Date of entry into program.
- Type of institution (university/college/vocational, etc.).

Collection of these data for individual students on a mandatory basis would ensure that the necessary data exist for monitoring and reporting on program effectiveness as well as for on-going program management and administration. Through further consultations with regions and bands, additional elements may be deemed essential and added to this list. Other information items may be included on application forms/progress reports to be collected on an optional basis in order to meet specific regional or local needs.

V - System Options

This chapter presents a general analysis of the options for implementing a new information system to support the PSEAP program. While detailed hardware and software requirements and estimates of implementation and operating costs cannot be made without a more extensive analysis of specific functional requirements, ballpark estimates of these factors are presented, based on information available.

General System Requirements

As discussed previously, PSEMIS and other existing systems have not been particularly successful because they have not been easy to use and have been viewed as simply a reporting requirement from Headquarters, rather than as a useful system for the bands and regions. In order to be successful, any new computerized system must have the following characteristics:

- The system must address the information needs of the bands and regions, as well as those of Headquarters.
- The system must be easy to learn and use. This generally implies a menu-driven system which allows users to see what their options are.
- The system must be well documented. On-line "help" (abbreviated instructions) can be very useful in addition to printed user manuals.
- The reporting features of the system must be flexible enough to allow a variety of ad hoc reports and inquiries.
- The database and software design must allow for the possibility of future additions or changes to the information stored and reported.
- The system hardware must be adequate to provide efficient operation and allow for growth.

Human engineering is a key factor in user acceptance of a system. Adequate consideration should be given to the design of menus and data screens so that they are easy to understand. It is also important that the system allow users to correct mistakes easily. Error messages should provide meaningful

explanations of a problem and some guidance toward its correction. The system should not "beep" unnecessarily.

Data entry to the system should be from original source documents, such as student applications and progress reports, rather than special coding forms. This will eliminate one of the problems with PSEMIS.

For flexibility in reporting, data should be stored at the student level, rather than in aggregate form. As noted previously, the use of aggregate data instead of detailed data on individual students prevents the reporting of information in ways which were not originally considered in the aggregation.

Implementation Options

There are two basic options for the implementation of a computer system to serve a number of groups:

- Centralized system and data.
- Distributed system and data.

A centralized system, running on a computer at Headquarters or a service bureau, would offer better control over software and facilitate Headquarters reporting by having a common database for all regions. However, this might be viewed as less desirable by the bands and regions, since they would have less direct control over their own data and reporting. Interfaces with other band or regional administrative systems (e.g. accounting) could be very difficult. Telecommunications costs (and processing charges, if a service bureau was used) could also make this option less attractive and could serve to limit ad hoc usage by bands and regions.

A decentralized system makes control and maintenance of software more difficult, but also offers more local control of data. Ad hoc reporting or interfacing to local systems would be facilitated, and there would be no direct incremental telecommunications or processing costs for local usage.

Given the importance of regional and band acceptance of the system and the need to satisfy local information requirements, a decentralized approach is recommended. The feasibility of this approach is discussed later in this chapter.

Recommended Architecture

An overview of the recommended system architecture is shown in Figure 1, following. Bands which have a need for their own computer system would have a database of their student information. Each regional office would have a system with a comprehensive database for all students in the region. Computerized bands would transfer a copy of their database records to the region on a regular basis. Non-computerized bands could send copies of applications and other source documents to the region for entry into the regional system. The region would produce summary data as required by Headquarters, and submit this data either in electronic form or on a printed report produced by the computer.

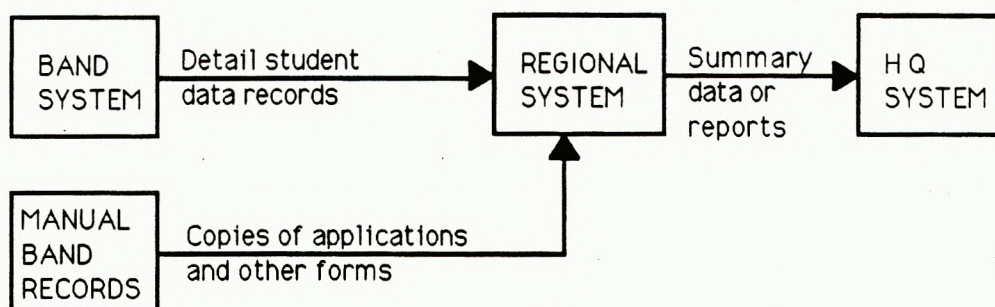


Figure 1

In the above architecture, it is assumed that Headquarters does not require a comprehensive database of all student detail information. Any ad hoc information requests requiring special aggregation of student data would be processed by the regions. Computerized bands would also be able to produce ad hoc reports and inquiries from their student data, or extract data for interfaces to other systems.

If the reporting requirements (determined by Headquarters) change, modified software would be distributed to all regions and bands to support the changes. We recommend that the software for the band and regional systems be identical to facilitate interfacing and to provide a common reporting capability for all users. While the information needs of Headquarters will form the minimum requirements for a common system, we also recommend that additional information used by particular bands and regions be included in the database, to the extent feasible. Such information would be considered "optional", so that bands and regions which do not need the information would not have to enter it.

Specialized interfaces and reports required by the bands should be handled as additions to the common system software and database, rather than as a modification to the basic system, in order to avoid compatibility problems when data is transferred to the regions.

Feasibility of Microcomputer Solution

The types of processing and volumes of data have been examined and appear to be suitable for a microcomputer solution. However, system performance is a key concern. Assuming that a microcomputer solution is implemented, it is very important that the hardware have adequate storage and processing capacity, and that the software be efficiently programmed to avoid the problems which have plagued some of the existing systems.

In estimating the amount of data which a regional system would have to handle, we have considered the information requirements presented in the previous chapter, and have made certain assumptions about the data to be stored and processed. We have assumed, based on regional recommendations, that the system will maintain information about a student during his or her entire post-secondary sponsorship, and that such information can be transferred to archival storage once the student is no longer funded by the program. Using "ballpark" estimates of the amount of data, a rough estimate of storage requirements can be obtained as follows:

- Assume 5,000 - 8,000 students per region (on-line at any one time).
- Assume roughly 200 bytes (characters) of personal data per student.
- Assume roughly 100 bytes (characters) of academic and financial data per academic year per student.
- Assume an average of 5 years of academic and financial data to be stored per student.

The information to be stored per student would be approximately 700 bytes ($200 + 5 \times 100$). The total storage requirements for 5,000 - 8,000 students would therefore be in the range of 3.5 - 5.6 megabytes (MB). Even doubling this range to allow for database overhead, related files, future growth, etc. would still be within the amount of data which is feasible to process on a microcomputer, since today's more powerful micros typically have hard disks with at least 40 MB.

The above is a very rough estimate to determine the feasibility of a microcomputer solution. Detailed analysis of information requirements would be needed before the actual storage requirements could be determined.

It should also be noted that a database of roughly 5 MB represents a large application, as microcomputer applications go. It is possible that a powerful microcomputer (e.g., one incorporating a "386" processor) will be required to provide adequate processing power in the larger regions. Existing microcomputer equipment might be suitable in some bands and regions, provided that the hardware is IBM compatible to allow for necessary interfacing. Again, a detailed analysis of processing requirements would be needed to determine suitable hardware.

Options for Data Transfer

In the recommended architecture, communication of data is required from the bands to the regions and from the regions to Headquarters. Detailed student data would be transferred from the bands to the regions, while summary data would be transferred from the regions to Headquarters. Data could be transferred either on physical media (e.g. diskettes) or by telecommunications.

Given the low frequency of data transfers (twice a year from the regions to Headquarters, perhaps monthly from bands to regions), dedicated telecommunications hookups are not likely to be cost-justified. The use of modems over regular telephone lines is the most viable telecommunications option. Commonly available modems provide data transfer rates of up to 240 bytes per second (2400 baud), and software packages (e.g. Crosstalk) provide for file transfers with error checking. Using the previous ballpark estimate of about 700 bytes of data per student, detail data records could be transmitted in approximately 3 seconds per student, or 20 students per minute. As noted previously, this is a very rough estimate to determine feasibility only.

Telecommunications would be feasible for individual bands to transfer a few hundred student records to the regional system with a long distance phone call. For larger transfers, the use of diskettes is likely to be more economical. Depending on the nature of the data to be reported by the regions to Headquarters, either telecommunications, diskettes or printed reports could be used.

Cost Considerations

Costs for a computer system include both initial and on-going costs, which are discussed in some detail in this section.

The initial costs of implementing a system include:

- Analysis of requirements.
- Design and development of software.
- Hardware and system software acquisition.
- Installation and training.
- Initial data entry, or conversion from an existing system.

The on-going costs of a system include:

- Regular data entry (staff time).
- Operating costs (staff time and supplies).
- Maintenance of software and documentation.
- Maintenance of hardware.

Each of these costs are discussed in more detail below. Note, however, that we have presented only ballpark estimates of implementation and operating costs, as detailed estimates cannot be made without a more extensive analysis of specific system and hardware requirements. **Exhibit 7, overleaf**, summarizes our cost estimates for initial implementation of the system. Note that these estimates are restricted to professional consulting time (i.e., travel and other expenses, and departmental staff time are not included). Furthermore, we have provided estimates for the implementation of systems in the eight regional INAC offices only, as we do not have sufficient information concerning local hardware and software requirements.

Analysis of Requirements

The effective analysis of requirements is crucial to the success of the system. Because of the variation in band and regional requirements, and the sensitivity of many bands to having reporting requirements imposed on them

EXHIBIT 7

**IMPLEMENTATION COSTS FOR
A DECENTRALIZED MICROCOMPUTER-BASED
INFORMATION SYSTEM
FOR PSEAP**

IMPLEMENTATION PHASE	ESTIMATED COSTS ¹
Analysis of Requirements	\$12,000 - \$18,000
Design and Development of Software	\$20,000 - \$50,000
Hardware and System Software Acquisition ²	Upgrading Regional Systems: \$4,000 - \$32,000 OR Purchase of New Equipment for Regional Offices: \$40,000 - \$96,000
Installation ² and Training ³	Installation: \$800 for 8 regional offices
Initial Data Entry, or Conversion ²	\$5,600 - \$11,200 for 8 regional offices
TOTAL IMPLEMENTATION COSTS	\$42,400 - \$112,000 with upgrades \$78,400 - \$176,000 with purchase of new equipment

Notes:

1. Estimated costs do not include travel costs and other expenses, nor do they include costs for departmental staff time.
2. Costs are only provided for establishing systems in the eight regional offices as we have no basis upon which to make estimates for local (i.e., band, district office) requirements. (Upgrades would range from \$500 - \$4,000 per machine and purchase of new equipment from \$5,000 - \$12,000 per machine.)
3. Training costs are limited to costs for internal staff time, and travel and living expenses for band representatives.

without visible benefit, it is important to ensure that all user needs are addressed, even if it is not feasible to meet all of them within a single database system. The analysis should identify how additional band and regional information requirements and interfaces could be accommodated.

We recommend that a preliminary detailed analysis of requirements be done and a report presented to the regions and bands for review. The regions would then solicit feedback from the individual bands. A nationwide meeting of regional representatives could then be organized to agree on the overall requirements for the system. Such a meeting might reasonably be expected to take two days.

The detailed analysis could require four to six weeks of systems analyst time at a typical rate of \$600 per day, for an estimated total of \$12,000 to \$18,000. This is a fairly substantial time allotment for a microcomputer system, but the time estimate is intended to allow for some difficulty in resolving local requirements. Travel costs for the analyst to visit the regions and for the final meeting of regional representatives would be additional.

Design and Development of Software

The cost of software development cannot be determined until requirements are defined. However, microcomputer systems of this scale typically require 2 to 4 months to develop and involve design and development costs in the \$20,000 to \$50,000 range, including documentation.

Hardware and System Software Acquisition

To the extent that it is possible to use existing microcomputer equipment, hardware acquisition costs can be avoided. However, some systems may need upgrading to provide additional disk storage, memory or a modem. Database software may also need to be installed (DBASE III, or a more sophisticated package if appropriate for the final system). Alternatives to DBASE III which should be considered include FOXBASE - a faster database system which is DBASE-compatible, (at \$450 per machine) and ORACLE - a powerful relational database system costing around \$2,000 per machine. The cost of hardware and software upgrades could range from \$500 to \$4,000 per machine, depending on what is necessary. To upgrade existing microcomputers in the eight INAC regional offices would thus cost from \$4,000 to \$32,000, assuming one machine per region.

If it is necessary to purchase new equipment (e.g., microcomputer, printer, system software, etc.), particularly for regional systems which may need more

powerful processors, the cost could be in the \$5,000 to \$12,000 range per machine (i.e., \$40,000 to \$96,000 for the eight regional offices), depending on capabilities required.

Installation and Training

New equipment installation by a vendor typically costs around \$100 per system in a metropolitan area. Installation of the new system software would have to be done by either the system developers or the users (after suitable training). We recommend that the system be designed and documented so that users can install the basic system by following a step-by-step procedure. Technical assistance may be required in some cases, especially if there are special interfaces to be incorporated. In some cases, bands or regions may have the necessary expertise available locally.

If the system is easy to use and well documented, user training should not require more than two or three days. The recommended approach is to have a regional representative attend a training session (perhaps for three or four days) at Headquarters, then return to install software and train individual bands.

Note that training will also have to be undertaken on an on-going basis as there tends to be a high level of turnover among band office staff.

Initial Data Entry, or Conversion

When the new system is installed, it will be necessary to enter existing student data, or convert such data from any existing system. While conversion requirements and feasibility will depend on the existing system and data stored, electronic conversion might require 2-4 days of a programmer's time at a typical rate of \$350 per day, or \$700 to 1400 total, plus any necessary travel. Such costs would need to be compared with the staff time required to manually reenter data into the new system.

Regular Data Entry

On-going data entry will require the allocation of staff time to enter data from the student applications or other source documents. Bands which have computer systems would enter their own data, while regions would enter data for their own students and for non-computerized bands. During peak periods (e.g. September), this could require 7 to 14 person-days of effort within a region or band to enter or update data for every 1,000 students. This could be undertaken by existing departmental secretarial/clerical staff or by short-term

temporary help in some cases. At \$12 per hour for temporary help (e.g., data entry clerk), the estimated cost would be \$630 to \$1,260 per 1,000 students.

Operating Costs

Microcomputers generally require very little in the way of operating costs, other than the staff time to use them. Paper, ribbons, diskettes, etc., should cost less than \$100 per month per machine. Staff time will have to be allocated for report generation, regular backups and data transmissions. These functions generally do not require constant attention, so that other activities could be done while the machine is producing a report, etc.

Maintenance of Software and Documentation

Whenever software changes are necessary to satisfy new regulations or information requirements, the software and documentation would be updated at Headquarters and redistributed to all users. If new requirements involve changes to database structure, a conversion utility would need to be included with the new software, and technical assistance to regions and bands may be required. The amount of software maintenance will depend on the degree that requirements change -- or the degree to which Headquarters wishes to pursue the inevitable list of user requests for enhancements. For a ballpark estimate, assume one new "release" of the system per year requiring about three weeks of programming at \$350 per day, or just over \$5,000 per year.

Maintenance of Hardware

New equipment generally carries a one-year warranty. Beyond that, hardware service agreements are available, typically costing up to 10% of the equipment value per year. Many users, however, prefer to pay for service only as necessary, since failure rates are usually low for good quality equipment. Given adequate care by the user, one might expect \$100 to \$200 in maintenance costs in the second year of use, and \$300 to \$500 annually after that, for each machine.

VI - Conclusions and Recommendations

This chapter outlines the conclusions and recommendations resulting from our analysis of the management information system requirements for the Post-Secondary Education Assistance Program. The study was undertaken primarily to identify the results information that should be collected by program administrators and to suggest improvements to the existing information system.

Study Conclusions

Based on the study findings, we have arrived at a number of conclusions. These are described below:

1. The current management information system for the Post-Secondary Education Assistance Program (i.e., PSEMIS) does not meet the needs of INAC Headquarters due to outdated information specifications. It also does not fulfill the needs of the Regions and native administrative organizations, since it was designed strictly for the reporting of aggregate data to Headquarters, rather than allowing Regions and bands to manage and administer the program on a day-to-day basis. PSEMIS has fallen into general disuse and is probably not salvageable.
2. PSEMIS suffered primarily from poor implementation and a lack of commitment to making it work. There was inadequate initial consultation of users regarding their information and system requirements; the software was not adequately tested; insufficient resources were allocated for training, technical support and system operation at the regional level; and there was no one at Headquarters who had direct responsibility for the system. PSEMIS was also too time-consuming to use and the reporting function was very inflexible as a result of the system's inability to store individual student data.
3. The Regions are generally supportive of a new national information system to replace PSEMIS, even though most of them have already implemented customized regional systems. According to the Regions,

the primary advantages of a national system are standardized reporting requirements and procedures and the transferral to Headquarters of the responsibility for updating software in response to changing information requirements. The Regions also hope that a new system might overcome some of the limitations of their present systems, for example, the inability to maintain historical data on program participants.

4. With the impending implementation of new program policies and guidelines, the time is right for development and introduction of a new management information system.
5. Native administrative organizations (e.g., bands, tribal councils) appear to be genuinely interested in reporting program information to the department, but are frustrated by a lack of consistency in departmental information requirements and the absence of proper tools to ensure ease of reporting (e.g., proper automated support, funds, clerical staff and other human resources).
6. Good communications between regional offices and bands appears to be an essential factor in assuring compliance with program reporting requirements on the part of bands.
7. The program guidelines and regional contribution agreements with bands are very vague in relation to reporting requirements. The contribution agreements are generally not being enforced in that students from bands who refuse to report continue to be funded.
8. In order to fulfill program monitoring, program evaluation and departmental reporting requirements (e.g., Main Estimates-Part III, INAC Annual Report), there is a definite need to collect results information for the program.
9. Most required results information for the program can easily be collected on an on-going basis from revised student application forms and other source documents. Information required for other outcome and performance indicators should be gathered on a periodic basis due to the difficulty in data collection. For example, post-graduate employment information could be gathered through periodic surveys of ex-participants.

Study Recommendations

Based on the study findings and the above conclusions, we put forth the following recommendations:

1. A new national management information system should be developed and implemented for the program. This new system should incorporate certain elements of existing regional information systems which have been found to be successful.
2. We recommend a decentralized approach where Regions and bands with appropriate computer facilities would maintain a comprehensive database containing historical data on individual students which they administer. Computerized bands would transfer a copy of their database records to the regional office on a regular basis; non-computerized bands would send copies of application forms and progress reports to the regional office for data entry. The Regions would produce summary data as required by Headquarters and submit this data either in electronic form or via computer-generated hardcopy reports.
3. The regional office database should maintain information at the level of the individual student for all students in the region (including those which are band-administered). This will greatly facilitate the response of Regions to ad hoc requests from Headquarters requiring special aggregation of student data. Turnaround time should improve significantly as individual bands will no longer have to be contacted by the regional office.
4. The department will need to consider compensating bands for the acquisition of hardware and other resources needed to maintain the information system. Bands will need to acquire equipment which is compatible with that of the regional office and is capable of meeting system storage and processing requirements. Software should be provided free of charge to interested administrative organizations with adequate facilities.
5. The department should also ensure that the regional offices have adequate hardware and human resources (e.g. data entry clerks/computer operators) to meet system operation requirements.
6. Descriptions of band reporting responsibilities should be made more explicit in contribution agreements with bands. The agreement

should specify exactly what data is required from the band and that information on *individual* students is needed, either through the provision of copies of application forms/progress reports or through the maintenance of the national information system. The reporting frequency should also be explicitly specified.

7. One or more individuals at INAC Headquarters should have designated responsibility for the new national information system. This is perhaps the most important requirement for implementing a successful system. This individual would have overall responsibility for system development, implementation, operation, monitoring, training, and ensuring that data is available through the system for national reporting. There should also be designated responsibility in each Region and in each band. The regional representative would oversee training and monitoring of band office staff and will ensure that regular communication is maintained with bands. Communications between INAC Headquarters, the Regions, and the bands is essential.
8. A standardized national application form and progress report should be developed for the program to ensure that all the necessary data are collected. These forms should be developed in direct consultation with the Regions. The forms would serve as the input documents for the information system and should incorporate a carbon copy which may be sent to the regional office for data entry where bands are not computerized. The application form should contain a declaration to be signed by the student acknowledging that he or she is aware that the information contained on the form will be submitted to INAC for internal use.
9. The program should adopt an action plan for system development and implementation. This plan should include the following basic steps:
 - *Determination of System Requirements:* We recommend that a preliminary detailed analysis of system requirements be done and a report presented to the Regions and bands for review. The Regions would solicit feedback from individual bands. A national meeting of regional representatives could then be held to determine final system requirements for the program, including information and reporting requirements. A consensus should be reached as to what data need to be collected on the national application form. Headquarters must then specify which fields

on the form are mandatory for program reporting purposes; other data may be collected on an optional basis. Reporting specifications and frequency should also be agreed upon.

- *Software Development* : Software must be developed according to system specifications.
- *Acquisition of Hardware and Resources*: An assessment should be undertaken of existing hardware and resources in the regional offices. Computers should be purchased and staff allocated as required. Proposals from bands should be responded to.
- *Training and Implementation*: A training program must be developed and provided to all regional staff and bands intending to implement the national system. The recommended approach is to have a regional representative attend a training session at Headquarters and then return to train individual bands. Training will have to be carried out on an on-going basis as there tends to be high turnover among band office staff. Implementation of the new system should coincide as closely as possible with the adoption of new program policies and guidelines.

10. Finally, the PSEAP program should implement the outcome and performance indicators delineated in this report and ensure that the new information system collects the information required to measure these indicators. This work should begin as soon as possible.

Appendices

- **Appendix A - List of Individuals Consulted**
- **Appendix B - PSEMIS Input Forms**

Appendix A

List of Individuals Consulted

Officials Consulted at INAC Headquarters

Terry Henderson	Director, Planning Division, Indian Services
David Wattie	Policy Officer, Policy and Planning Directorate
Darlene Gollesch	Policy Officer, Policy and Planning Directorate
Harold Gideon	Senior Officer, Program Operations
Maurice van Welter	Director, Resources and Management Systems
Collette Lacasse	Assistant Review Officer, Management Systems
Paul Bisson	Senior Project Executive, Education Branch
Doug Forbes	Education Officer, Education Branch (formerly Ontario Regional Officer)
Ken Ouelette	Acting Director, Financial Reporting Directorate

Officials Consulted at INAC Regional Offices

Ontario

Barry Denman	Regional Superintendent of Operations, Education
Alfred Eli	Post-Secondary Education Officer
Julie Brence	Database Analyst

Manitoba

Bob Buchan	Acting Director, Education
Ed Choptuik	Acting Superintendent of Student Services, Education
John Fedak	Acting Superintendent of Community Education and Special Services
Graham Lloyd	Education Counsellor

Alberta

Sheila Carr-Stewart	Director, Education
Charlie Green	Acting Director, Post-Secondary Education
Richard Yuen	Education Counsellor
Francis Roach	Education Counsellor
Gisela Klauka	Education Clerk

Quebec

Yvon Drolet	Administrateur du Programme de l'Education Post Secondaire
Gilles LaRose	Conseiller à l'Education Permanente

Native Education Administrators Consulted

Ontario

John Dudley	Northern Nishnawbe Education Council Sioux Lookout District
Barb Chum	Moose Band

Valerie McGregor

Aboriginal Post -Secondary Counselling Unit
Mississaugas of the New Credit

Clarke Dellar

Aboriginal Post-Secondary Counselling Unit

Blanch White

Aboriginal Post-Secondary Counselling Unit

Manitoba

Sharon Fiddler

Peguis Band

Rod Young

West Region Tribal Council

Gerald Courchene

Fort Alexander

Alberta

Laverne Arcand

Yellowhead Tribal Council

Ron Steinhauer

Saddle Lake

Joyce Pamp

Saddle Lake

Quebec

George St. Laurent

Restigouche Band

Raoul Canapé

Escoumins

François Neashish

Wemopaci

Jean Marie Volant

Betiamite

Appendix B

PSEMS Input Forms

- Individual Student Application Input Form, October
- Local Roll-up Input Form, October
- Individual Student Application Input Form, June
- Local Roll-up Input Form, June

POST-SECONDARY

<u>POST-SECONDARY</u>		ENROLLMENT										COSTS						ACHIEVEMENT								
		FROM UCEP			OTHER NEW			RE-ENROLLING			TOTAL			INSTRUCTIONAL SERVICES			SUPPORTY SERVICES			TOTAL	CONTINUING		GRADUATING		ROY CONTINUING	
		FY	PT	TOT	FY	PT	TOT	FY	PT	TOT	FY	PT	TOT	WEEKS	COSTS	WEEKS	COSTS	COSTS	A	F	A	F	A	F		
		A/F			A/F			A/F			A/F			A/F	A/F	A/F	A/F	A/F								
LAST YEAR	M																									
	F																									
	TOT																									
CURRENT YEAR	M																									
	F																									
	TOT																									
CURRENT YEAR +1	M																									
	F																									
	TOT																									
CURRENT YEAR +2	M																									
	F																									
	TOT																									
CURRENT YEAR +3	M																									
	F																									
	TOT																									
CURRENT YEAR +4	M																									
	F																									
	TOT																									

YEAR OF STUDY & DEGREE SOUGHT

		YEAR OF STUDY & DEGREE SOURCE															
		COMMUNITY COLLEGE/CESEP			UNIVERSITY DIPLOMA			UNIVERSITY BACHELOR				UNIVERSITY MASTERS			UNIVERSITY DOCTORAL		
		1	2	3	1	2	3	1	2	3	4	1	2	3	1	2	3
		TOT			TOT			TOT				TOT			TOT		
		A/F			A/F			A/F				A/F			A/F		
LAST YEAR	M																
	F																
	TOT																
CURRENT YEAR	M																
	F																
	TOT																
CURRENT YEAR +1	M																
	F																
	TOT																
CURRENT YEAR +2	M																
	F																
	TOT																
CURRENT YEAR +3	M																
	F																
	TOT																
CURRENT YEAR +4	M																
	F																
	TOT																

YEARS IN PSE PROGRAM - CURRENT YEAR STATUS

		YEARS IN PSE PROGRAM - CURRENT YEAR STATUS					
		1 YEAR	2 YEARS	3 YEARS	4 YEARS	5 YEARS	6 + MORE YEARS
COMMUNITY COLLEGE CECEP	M						
	F						
	TOT						
UNIVERSITY DIPLOMA	M						
	F						
	TOT						
UNIVERSITY BACHELORS	M						
	F						
	TOT						
UNIVERSITY MASTERS	M						
	F						
	TOT						
UNIVERSITY DOCTORAL	M						
	F						
	TOT						

FIELDS OF STUDY

[illegible]

DEMOGRAPHICS

		DEMOGRAPHICS															
		AGE CATEGORIES						NO. OF DEPENDENTS						HOME RESIDENCE			
		20 AND UNDER	21-25	26-30	31-35	36-40	41 AND OVER	0	1	2	3	4	5	6+	OFF-RESERVE	ON-RESERVE	CROWN LAND
								NO. OF STUDENTS									
LAST YEAR	M																
	F																
	TOT																
CURRENT YEAR	M																
	F																
	TOT																

PSEMS - OCTOBER SUBMISSION OPTION 1 - INDIVIDUAL STUDENT APPLICATION INPUT FORM

() MALE () FEMALE
 DEMOGRAPHICS
 LAST YEAR AGE NO. OF DEPENDENTS HOME RESIDENCE
 CURRENT YEAR () OFF-RESERVE () ON-RESERVE () CROWN LAND
 CURRENT YEAR () OFF-RESERVE () ON-RESERVE () CROWN LAND

POST-SECONDARY	ENROLLMENT			COSTS			ACHIEVEMENT			YEAR OF STUDY AND DEGREE SOUGHT				
	FROM UCEP	OTHER NEW	RE-ENROLLING FT IPT	INSTRUCTIONAL SERVICES WEEKS	SUPPORT SERVICES WEEKS	TOTAL COSTS	CONTINUING	GRADUATING	NOT CONTINUING	COMMUNITY COLLEGE/CEGEP	UNIVERSITY DIPLOMA	UNIVERSITY BACHELORS	UNIVERSITY MASTERS	UNIVERSITY DOCTORAL
LAST YEAR										1 2 3	1 2 3	1 2 3 4	1 2 3	1 2 3
CURRENT YEAR														
CURRENT YEAR +1														
CURRENT YEAR +2														
CURRENT YEAR +3														
CURRENT YEAR +4														

- CODES / SYMBOLS
- 1. M: MALE
 - 2. F: FEMALE
 - 3. TOT: TOTAL
 - 4. FT: FULL-TIME
 - 5. PT: PART-TIME
 - 6. A: ACTUAL
 - 7. F: FORECAST

NO. YEARS IN PSE PROGRAM _____
 OCCUPATIONAL FIELD: _____
 LAST YEAR _____
 CURRENT YEAR _____

PSEMS JUNE SUBMISSION OPTION 1 - INDIVIDUAL STUDENT APPLICATION - INPUT FORM

() MALE () FEMALE

POST-SECONDARY	ENROLLMENT						COSTS						UCEP	ENROLLMENT			COSTS	
	FROM UCEP		OTHER		NEW RE-ENROLLING		INSTRUCTIONAL SERVICES		SUPPORT SERVICES		TOTAL	FT		PT	WEEKS	COSTS		
	FT	PT	FT	PT	FT	PT	WEEKS	COSTS	WEEKS	COSTS								
LAST YEAR																		
CURRENT YEAR																		
CURRENT YEAR +1																		

CODES / SYMBOLS

1. M: MALE
2. F: FEMALE
3. TOT: TOTAL
4. FT: FULL-TIME
5. PT: PART-TIME
6. A: ACTUAL
7. F: FORECAST

