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MANPOWER PLANNING, TRAINING AND EMPLOYMENT PROJECT
MANPOWER TRAINING NEEDS SURVEY
DEPARTMENT OF STATISTICS
NATIONAL PLANNING AGENCY
KINGSTON, JAMAICA

Presented to:

UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
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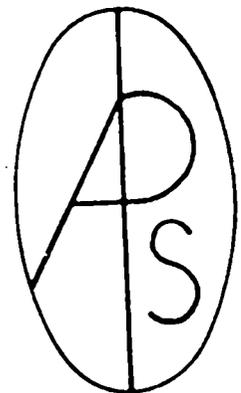


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I. MANAGEMENT SUMMARY

This report covers a four month technical assistance assignment to the Government of Jamaica in the area of Computer Systems Analysis supporting the Manpower Training Needs Survey. The survey consists of two studies, one a public sector survey undertaken by the National Planning Agency and the other a private sector survey of large establishments undertaken by the Department of Statistics. These two studies are expected to provide a vast amount of information related to the manpower training needs of Jamaica. The public sector survey will cover the organizations engaged in public administration (including Commission and non revenue earning statutory bodies). The private sector survey will collect data from a sample of establishments with 10 or more employees, and are engaged in commercial activities whether owned by private groups and/or the government.

The survey document produced will be used for both surveys. The document consists of two parts; Part I is completed by the personnel officers of the establishments surveyed and Part II is completed by a selected sample of individual employees. The sampling of employees within each establishment selected, will be determined after an analysis has been made of sub-organization units, their occupational composition and size. The establishments to be interviewed will be selected from the known population of large establishments stratified into 36 groups. This action will form the first stage selection of primary sampling units (PSUs). The sub-sampling units (SSUs) will be the sub-organizations within the PSU. The SSUs will be stratified into three groups based upon the percentage of critical occupations in the staff complement of each SSU. The organization questionnaire (Part I) is to provide data on labour demand while the employee questionnaire (Part II) is to provide data on labour supply. The scope of work covered by this assignment was to:

1. Assist in the organization of the questionnaire content so that the data could be easily captured for computer processing.
2. Develop the procedures for constructing a comprehensive computerized list of large establishments using various data files found in other government bodies.

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3. Recommend a procedure for creating a computer file of occupations and descriptions.
4. Devise a set of quantitative and qualitative checks of the survey data for use by field staff, manual editor/coders, and for computer edit checks.
5. Design a computerized software system that would process the input data collected and produce the desired final outputs for each of the two surveys.
6. Assess the human and machine resources needed to code, translate, edit and process the survey data.
7. Evaluate the manpower needs, in terms of systems development for the completion of computer application software.
8. Outline procedures for integrating manpower training and job skills from other survey sources.

In order to achieve the objectives of the job assignment it was necessary in several instances for the Systems Analyst to make various assumptions. The biggest of these was the determination of the final outputs. The desired outputs from the survey could not be specified before the end of the assignment, so the Systems Consultant used his knowledge and experience in data analysis to propose a series of tables that would be useful in analyzing the survey data requested in the questionnaires. The proposed tables are those labelled as groups D thru L in the list of final output tables. All of the tables recommended relate to labour demand information. The proposed completion date for the data collection is February 1980. This is highly optimistic. The systems development is expected to take a minimum of two person years of effort. This estimate include the time for producing the first priority tabulations as suggested in this report (mainly labour demand data). The additional requests as they relates to labour supply will increase the systems development effort.

The system is designed for the IBM System 3 computer, but could be adopted for the

3.

larger IBM System 370 with little or no change. It is designed for the processing of individual surveys and/or the combined data files. The survey data files are maintained as close to the original input as possible. The main specification given by the project managers was "the system must be highly flexible." The maintenance of the original input form will provide the greatest scope for meeting future objectives without limiting flexibility. The processing is expected to occur during the peak of the Department's normal load, on a computer that is slowly reaching its saturation point. No experienced systems person is available within the Department for assignment to the project. One trainee Systems Analyst is currently working on the development of programs pertaining to the list of establishments.

A set of recommendations have been made which, it is hoped, will improve the quality and timeliness of the final outputs. These are intended to:

- *reduce confusion regarding decisions taken
- *provide additional support for systems development (via local contractor, other government agencies and/or technical assistance)
- *upgrade the throughput capability of the System 3
- *insure that the System Design is adaptable in meeting future demands.

II. TERMS OF REFERENCE

A. BACKGROUND

As a component of the Manpower Planning Project the National Planning Agency (NPA) and the Department of Statistics (DOS) will be undertaking surveys of employment in the public and private sectors. These surveys are intended to determine the training needs for the various job categories by industrial sector. The public sector survey will be administered by the NPA and the private sector survey will be administered by the DOS. Upon completion of each individual survey and its resultant analysis, the data from the two studies will be combined in a National Manpower Training Need Projection.

4.

In their approach to the manpower training needs surveys the DOS and NPA must make the following adjustments to their work programs:

- modify the Labour Force Survey processing in order to gather more information regarding the inventory of occupation skills;
- expand the Survey of Agriculture to collect more precise information on occupations and job skills in the agricultural sector;
- undertake a manpower survey of large establishments (10 or more employees) to determine the occupations and training needs;
- undertake a manpower survey of small establishments (under 10 employees) to determine the occupations and training needs; and
- initiate a manpower study of central and local government agencies for the analysis of public sector manpower needs and occupations.

In the implementation of the two surveys the following tasks have been identified:

1. Compile a directory of occupations and descriptions to be used in the classification of jobs in the private and public sectors;
2. Draft questionnaires for:
Agricultural Production and Employment Survey; and Training Needs Surveys;
3. Create a List of Establishments and Governmental Agencies;
4. Design samples for the various surveys;
5. Prepare training manuals;
6. Set up mechanism for recruiting staff;
7. Establish job descriptions for new posts;
8. Train staff (Field Staff, Coders and Editors);
9. Field work;
10. Systems Development;
11. Editing, coding and data preparation; and
12. Report Preparation and Analysis;

B. STATEMENT OF WORK

The following tasks are those in which the Systems Consultant is expected to provide a significant amount of input.

1. Compile a directory of occupations and descriptions to be used in the classification of jobs in the private and public sectors;
2. Draft questionnaires for:
Agricultural Production and Employment Survey; and Training Needs Surveys;
3. Create a List of Establishments and Governmental Agencies;
4. Prepare training manuals on data collection and analysis;
5. Train staff (Field staff, Coders and Editors);
6. Systems Development; and
7. Editing, coding and data preparation (once the major portion of the Field Work on the Survey of large establishments is completed).

In carrying out these tasks, the Systems Consultant will be required to:

1. Outline the procedure to construct a computer oriented directory of job classifications with an ability to relate them between the public and private sectors;
2. Review the draft questionnaires for the training needs surveys and recommend a format which will facilitate the capture of the data from the completed questionnaires;
3. Outline the procedure for creating and maintaining an establishment registry stratified by size group and industry;
4. Review the training manual to ensure that correct procedures are included for the recording, coding and editing of responses;
5. Participate in the training of field staff to properly record responses and to detect inconsistencies; and
6. Prepare an overall system design for the processing of the public and private sector training needs surveys.

6.

In addition to the above the specialist shall outline the procedures for integrating manpower training and job skills from the public and private sector surveys and the sample survey on Agricultural Production and Employment with the data from the other studies.

III. METHODOLOGY

In performing this systems analysis assignment the following investigative processes and systems approaches were used.

A. LITERATURE/DOCUMENT REVIEW

1. Manpower Planning, Training and Employment Project Document - Project Agreement - USAID/Government of Jamaica;
2. Manpower Training needs Survey correspondence file - Department of Statistics;
3. Draft Report - Classification of the Functions of Government - United Nations Economic and Social Council;
4. Jamaica Classification of Occupation - Department of Statistics;
5. Jamaica Industrial Classification - Department of Statistics;
6. Standard Industrial Classification Manual 1972 - US Office of Management and Budget;
7. High Level Manpower Needs of Jamaica 1977-1981 - EUSSE;
8. System Documentation - Import Licences System, Trade Administrator;
9. System Documentation - National Housing Trust.

B. INTERVIEW/DISCUSSION

1. Project Staff - National Planning Agency
Department of Statistics
2. Computer Systems Manager - National Housing Trust
3. Director of Information System - Central Data Processing Unit
4. Director of Research - National Housing Trust
5. Training Specialist - Ministry of Youth, Sports and Community Development

7.

6. Systems Analyst - National Cash Register

7. USAID Project Personnel

C. SEMINAR/WORKSHOPS

1. Data Users' meeting

2. Seminar on Manpower Management Information Systems

D. RESOURCE ANALYSIS

IV. PROJECT DEVELOPMENT

The development of an information processing system requires the study of all inter-related elements operating in the environment which can have an effect upon the outcome of systems design objectives. The total system development process for the manpower training needs survey include the following major steps:

1. Systems Survey

2. Requirement Analysis

3. Systems Design

4. Systems Documentation

5. Programming

6. Systems Testing

7. Maintenance

The steps covered by the technical assistance assignment, which is the subject of this document, are those outlined in 1, 2, 3 and 4. The processes used in a System Survey embodies all the tasks of a detailed system analysis and design effort, but focuses on the identification of critical factors in which the final design of the system will be ultimately founded. Because of its function as a preliminary study of the problem, a great deal of project management contact and general investigation of the operating environment is required.

The Requirement Analysis step involves two closely related functions one feeding into the other. These are information gathering and task analysis. This step required a thorough

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knowledge of the inputs into the system as well as the desired outputs. The processes of the system are those tasks which are used to transform inputs into outputs. In as much as the inputs and outputs for the system were not previously defined it was necessary for the Systems Analysis to take an active role in their preparation. The three basic inputs into the manpower training needs studies are:

1. Occupation descriptions
2. Establishment Registry (Public and Private Sector)
3. Training needs survey questionnaires

The gathering of information on the systems requirement is not a simplistic routine approach. The inquiry quite often leads the analyst into the pursuit of information from secondary areas. In many cases the participants in this project were not fully cognizant at the time of some key facets of the training needs studies. The inability to have access to key informational elements of the study caused the Systems Analyst to use his experience in making some reasonable assumptions that would permit the design of a realistic processing methodology. The Systems Survey and Requirement Analysis have resulted in a flexible design which will allow for expansion and contraction of the data outputs. This report is intended to describe the components and processes of the systems design as well as the framework in which components and processes are grounded.

A. CLASSIFICATION OF OCCUPATIONS

1. Background

The Classification of Occupations handbook that is currently in use by the Department of Statistics was compiled in 1967. The handbook has been used as a guide in the coding and grouping of occupations from a number of censuses and surveys; these include :

1970 Population Census

Labour Force Surveys

Household Expenditure Survey

Internal Migration Survey

External Migration Records

World Fertility Survey

Energy Survey

In the process of coding occupations encountered on various survey documents it has been necessary to make adjustments to the handbook. In some cases they have added new codes and in other cases they have combined the new titles with those already existing. The modifications were effected by making hand-written entries in the handbooks used by the individual coders. Not all handbooks were amended in the same manner, nor were the methods of assigning new occupational titles to codes systematically applied. This is quite understandable in that the staff making the corrections were temporary clerks with no prior training in occupational classification. The inconsistency in assigning code to new occupations has not posed a serious problem to data analysis in past applications. The reason for this is the general trend to report and analyze occupational data at the major occupational group level.

2. Critical Occupation

The manpower training needs study requires the reporting and analysis of occupations at detailed levels, with special emphasis given to those occupations that are critical to developments in Jamaica. There are some industries in which technological changes have brought about the creation of new job categories which need to be given special consideration and individual codes. A staff of senior project officers have been given the task of identifying those occupations that are critical to the various industries.

3. Occupational Re-grouping

The amendments made to the classification of occupation handbook have resulted in the assignment of more than one occupation to the same code. It has resulted in the extensive use of the N.E.C. (not elsewhere classified) codes in the various major occupational groups. As time does not permit a full reclassification effort to be undertaken prior to the start of the manpower training needs survey, a special team was to be formed which included

experts from the Ministry of Youth and Sports and the Ministry of Labour with the intended purpose of using judgement and discretion in the regrouping of occupations. Based upon the changes made as a result of the critical occupation and regrouping exercises, a comprehensive list of occupations was to be constructed. This list was to be used as a guide in classifying occupations recorded in the manpower studies.

4. Computer file

The computerized directory of occupations is to be used as a master file in editing and reporting occupational data collected in the survey. The directory contains codes and descriptions for specific occupations as well as for occupation groups and sub-groups. The computer file will be stored in a manner that will allow sequential or random retrieval of occupational titles. In describing the title for each assigned code, up to 32 characters of information can be recorded per title line. Up to nine (9) title lines may be used to describe an individual occupation or an occupational group. There are currently three levels of grouping for individual occupation. Provision has been made on the computerized file for creating a lower level of groupings if necessary. The coding scheme used in the classification consists of 4 digit codes. The most major grouping is represented by a one digit code where:

- 0 = Professional, Technical and Related Occupations
- 2 = Administrative, Executive and Management Occupations
- 3 = Clerical and Sales Occupations
- 4 = Self-Employed Independent Producers
- 5 = Service, Sports and Recreation Occupations
- 6 = Craftsmen, Production Process and Operating Occupations
- 9 = Unskilled, Manual and General Workers

A further breakdown of the major grouping occurs at the second digit. The Craftsmen, Production Process and Operating Occupation has a third level sub-grouping at the third digit. The method of assigning codes has not been systematically applied and as a result

there are several cases where individual occupation and occupational groups have identical codes. An example of this can be found under code 3200. This code represents the group title of "Accounting and Computing Occupations" and the job title of "Book-keeper". To differentiate the two codes another suffix has been added to indicate the level of the code in the hierarchical structure i.e.

Code	Level	Description
5000-0	1	Service, Sports and Recreation Occupations
5000-0	2	Personal Services
5040-0	3	Laundering and Dry Cleaning Occupations
5041-0	4	Laundry Foreman
5042-0	4	Washing Machine Operator - Laundry
5043-0	4	Dry Cleaning Machine Operator
5044-0	4	Presser - Machine
5045-0	4	Presser - Hand
5049-0	4	Other Laundering and Dry Cleaning Occupations

The addition of the level digit will make the code uniquely identifiable. The steps to be used in creating the computer file are shown in Section 3 of the System Outline.

5. Other uses

Once the classification of occupations has been amended for use in the manpower training needs survey the new version must be consistently applied to all other data applications which will be used in the study of manpower supply and demand. Special concern must be given to the 1980 Census of Population, where detailed occupations will be recorded and reported. The use of the same occupations directory should also be considered in processing external migration records.

B. ESTABLISHMENT REGISTRY

1. Background

The private sector component of the Manpower Training Needs Survey will canvass a

sampling of large establishments (ten or more employees) operating in Jamaica. A prerequisite to the drawing of a suitable sample selection is the identification and stratification of the survey population. A comprehensive up-to-date computerized list which contains the number of employees does not currently exist. The number of employees and industrial sub-sector are key elements normally used for stratification by the Department of Statistics.

The previous establishment list used by the DOS for its Establishment Survey of Production was constructed using the 1976 National Insurance Scheme Employer file. Since that time a major revision of Industrial Classification has taken place. The new classification was applied to all establishments on record at the time. These establishments were coded, alphabetized and organized into a book for internal use. The entries in this book do not contain the number of employees. The primary use of this booklet was to code the Importer number on import trade warrants. Whenever a new importer was encountered a manual adjustment was made in the book. Entries were also made to the booklet as a result of documents received from the Registrar of Companies, indicating the registration of a new company. There is another manual list maintained by the National Accounts Section. This list has the number of employees but does not frequently reflect changes in terms of the size of the establishment.

2. National Housing Trust Employer File

When the National Housing Trust (NHT) came into existence in 1976, it used the National Insurance Scheme's computerized Employer file as a basis for creating its own computerized list. An extensive effort was undertaken to update the list for firms/establishments with 10 or more employees. The NIS employer file was updated and reorganized for the NHT computerized system. The new file did not carry the number of employees and has not been frequently updated for inactive organizations. An examination of the NHT processing system indicated the existence of a transitional "Receipts File". This file shows the contribution paid into the fund and the number of employees represented. This file is temporary and the number of employees is not transferred to any of the permanent files. By matching

the receipts file with the Employer Master File the number of employees, for those organizations reporting, can be recorded on the Employer Master File. Using the file of receipts for the last 6 months of 1978, the matching process was performed via computer processing. It should be noted that the number of employees reported on the receipts file indicate the number of persons for whom the return is being made. The period of reporting may be for one month to one year. Due to the possibility of frequent staff turn over the number may not accurately reflect the number of persons employed at any one time. Less than half of the entries on the master file had corresponding entries on the receipts file. A computer processing sub-system was developed that transformed the NHT file into a format for use in the Manpower Training Needs Survey. The identification number used by the NHT is a seven digit code. The second and third digits represent one of 81 industrial categories as defined by the National Insurance Scheme. In transforming the NHT employer records the computer programmers were instructed to translate 81 industrial codes to a corresponding category as used in the Standard Industrial Classification. In some cases there was one for one cross-reference while in others the NIS coding could be classified into a major industry group or an industrial sub-group. A cross-reference table was compiled for use in developing the computer programs (see cross-reference table in Section 2 of Systems Outline).

3. Trade Administrator

A computerized system was developed by the Trade Administrator's Department for the purpose of managing the Import Licences System. The manual list of establishments used by the Department of Statistics was used as a foundation in the creation and maintenance of an active Importer's file. The industrial classification coding scheme used by the Trade Administrator (TA) was the same as that used by the Department of Statistics. The Importer file maintained by the TA does not carry the number of employees. Further enquiry revealed the existence of a licence history file that had detailed data on the importer's prior year's performance, including the number of employees. The Licence History File does not carry the importer's code number. Each licence issued is assigned a unique licence

number. The applicant for a trade licence is required to submit the prior years performance for each application made, thus the same information may appear on many licence records. In order to link the two files the system designers recorded the last licence application number onto the Importer's Name and Address file. By matching the Licence History File with the Importer's name and address file on Licence number, it was possible to pick up the number of employees of records in those organizations which were issued an Import Licence. The Importer file contained a list of over 7700 names and addresses, while the number applying for licence was approximately 1200. The input into the creation of the establishment registry are shown in Figure A.

4. Public Sector Organization

The public sector as used in the broader definition refers to those operations which are owned, controlled and/or operated by the Jamaica Government. Some of these organizations are actively engaged in commercial operations, and may appear in any or all of the 10 industrial sector groups. The ISIC codes, as used in Jamaica, provides for the identification of those organizations related to public administration, but does not uniquely identify those government organizations engaged in other activities. The manpower training needs survey proposes to look at the needs of the public sector separately from that of the private sector, in the first instance. To this end the National Planning Agency undertook an effort to identify and classify all organizations in the public sector. Along with this effort was the classification of the public administration group into sub-organizations and also the assignment of function codes. The guide used in classifications of the functions of government was the UN's draft report on the subject issued on June 1, 1978. When completed, the organizations identified as the public sector will be entered in the Establishment List. Care must be taken that entries for the same organization, originating from the NHT or TA, should be removed.

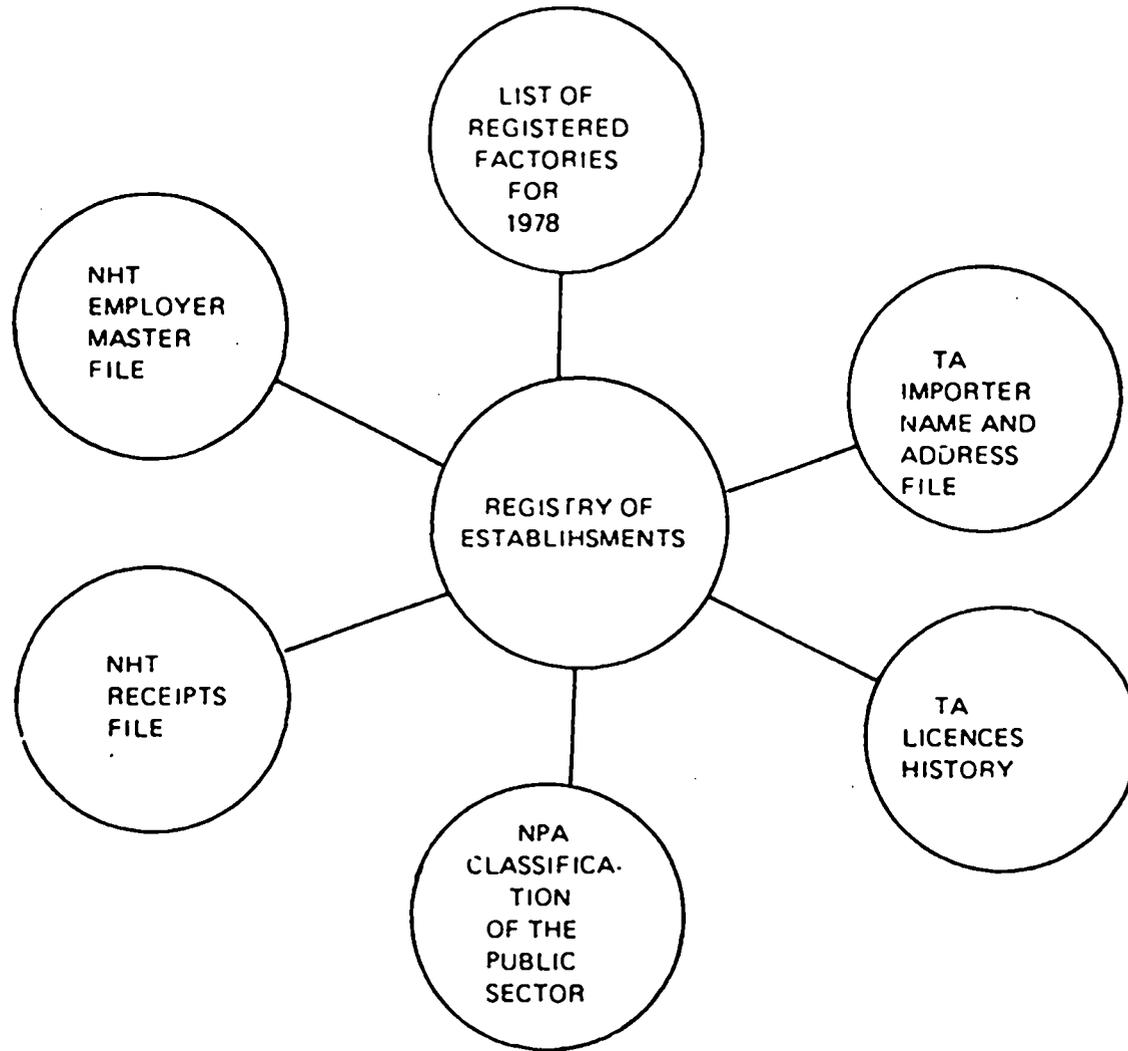
5. Creation of Computer File

The creation of the computer file called for the development of a series of computer

FIGURE A

CREATION OF A LIST OF ESTABLISHMENTS

INPUTS



programs and hundreds of hours of clerical support. The system flow procedure for the computer and clerical interface is shown in Section 2 of the Systems Outline. A total of six computer programs had to be written for the creation of the file. Four additional programs are necessary for selecting the sample and preparation of address labels. Due to the short span of time allowed for the creation of a suitable file, it is expected that there will be a number of establishments with improper classification assignments, as well as missing employee counts. There is much more information necessary for the Establishment Registry than is needed for the manpower training needs survey. The work of these aspects of the file has been put off to a later date. The characteristics that are of concern to the manpower studies are:

- Industrial Classification Code
- Establishment I.D.
- Parish
- Number of Employees
- Name
- Street/PO Address
- Location
- Size Group

The Systems Outline shows a detailed processing flow with the appropriate narrative and other documentation for the creation and maintenance of the file as it applies to the manpower training needs survey. Those processing steps that are directly related to the sample selection are also shown.

6. Other Users

The status of the file at the end of the manpower training needs activities will be such that additional work must be performed if it is to be used in other work areas. The National Accounts and Production Surveys reference code will have to be entered. The External Trade could make use of the file in maintenance of the Importers List. The nucleus of the

economic component of the Socio-economic Data Bank is a comprehensive file of establishments for tying together all of the economic data collected at the establishment level.

C. TRAINING NEED SURVEY

1. Survey Design Overview

Figure B shows an overview of the survey design as viewed by the Systems Analyst. Highlighted in the overview are those milestones that have a direct relation to Systems Design and Development. The Manpower Planning, Training and Employment Project, has as a major component a manpower training needs study. The study required three separate survey efforts to be undertaken; these are as follows:

- a. Public Sector
- b. Large Establishments in Private Sector
- c. Small Establishments in Private Sector

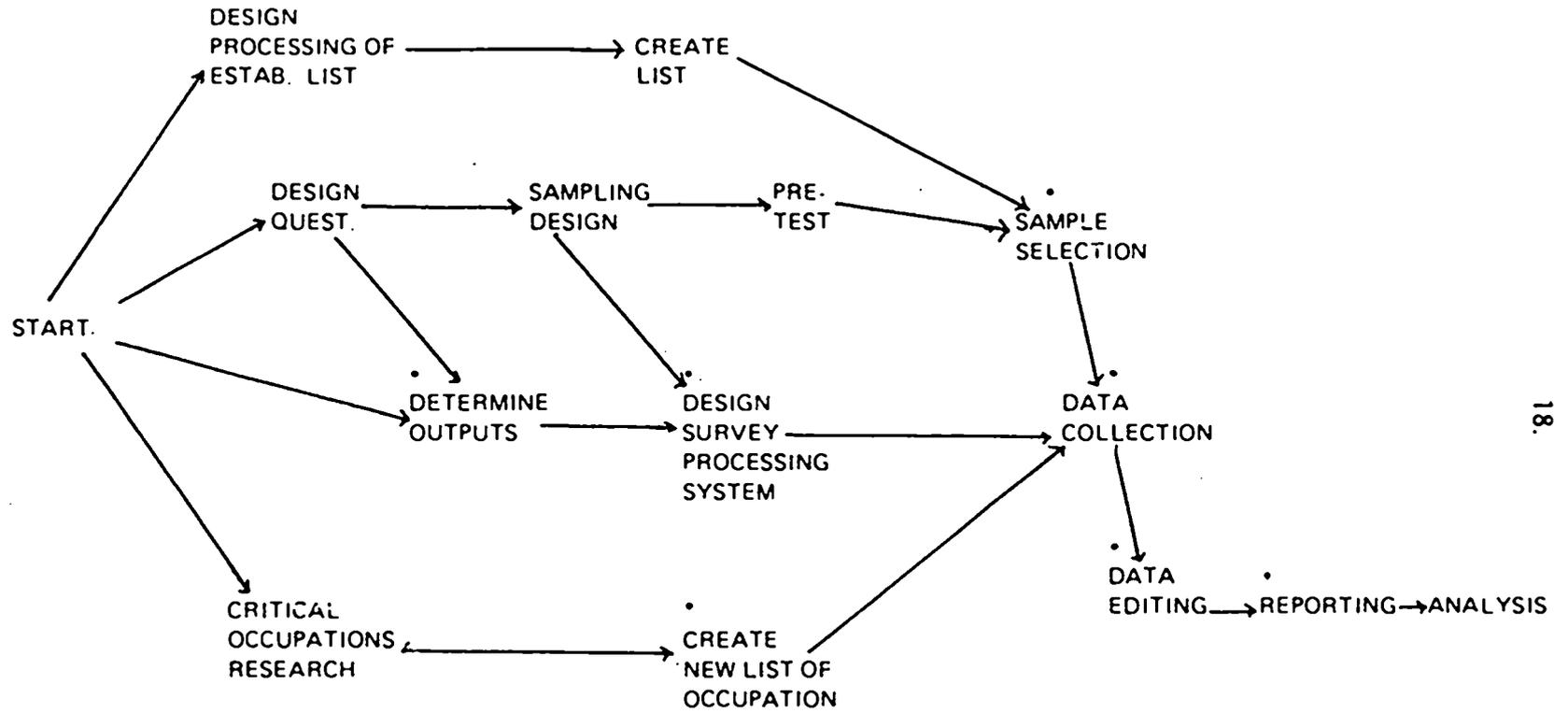
The public sector survey was to be performed by the National Planning Agency and the private sector surveys to be executed by the Department of Statistics. The public sector survey and the large establishments survey were to be performed concurrently with the remaining survey to be put into the field sometime in 1980.

As the two survey results were expected to be integrated for analysis of occupational training needs on a global basis (as opposed to sectoral) it was felt that one Systems Analyst should design the two survey processing systems. Soon after the Systems Analyst began his "System Survey", it became apparent that the non-financial resources for the systems development and processing of the public sector survey were significantly more difficult to acquire via the government's central data processing centre, than those accessible to the Department of Statistics for work in the private sector survey. It was decided that:

1. A common questionnaire would be used in the two surveys
2. The Department of Statistics would allow its keypunching resources to be used for the punching of the public sector survey, provided that it did not conflict with normal work schedules.

FIGURE B

MANPOWER TRAINING NEEDS SURVEY SURVEY DESIGN OVERVIEW



3. The computer programs developed by the Department of Statistics could be used in the processing of the public sector data provided that no additional systems development effort was incurred.
4. The Department's System 3 would be used for the processing of the public sector survey if common programs were developed.
5. The committed systems development effort would go up to the completion of the first priority tabulations specified in the systems designed. All additional requests would have to be viewed in the light of departmental priorities.
6. NPA and DOS are to have separate enumerators, coders and editors. Editing staff employed by NPA would be trained in conjunction with the staff of the DOS.

It was further agreed that the definition of the public sector would be redefined to include only those organizations related to public administration (central and local government) and non-revenue earning statutory boards and commissions. This definition would hold only for the survey field work. For processing and analysis the public sector would include all organizations owned, operated or controlled by government. The early phases of the survey planning called for the interviewing of establishments to collect all the desired information. It was later concluded that much of the information desired would not be readily available to personnel officers in the establishments. After undergoing various revisions the research methodology ended up as a multi-staged sample survey of establishments, sub-organizations within the establishment and employees.

2. Sample selection

The sample design recommended by the sampling expert is described in Section 9 of the Systems Outline. The second stage of the sample selection will depend largely upon the ability of the field staff to collect sufficient information on the organizational structure of the establishments chosen for the survey. It will also depend heavily upon the establishments providing a list of employees, their occupations and work stations. The sample

design aspect of the project is well documented, but needs to be simplified for the non-sampling specialists. Based upon the criteria set out by the sampling specialist a computer program will be developed to select the primary sampling units (PSU) of the private sector portion of the survey. The PSUs for the public sector study will be administratively chosen. Once the sample group has been selected these will be put into a special file for use in other aspects of the survey processing. The selection of employees for interview will depend upon the stratification of sub-sampling units within a PSU.

3. Computer Software Development

a. Questionnaire Design and Processing

The questionnaire to be used in the survey is divided into two parts. Part I is for establishments only, while Part II is for employees only. The questionnaire was designed prior to the determination of the sample design and desired output. No provision is made on the questionnaire for the recording of organizational sub-units that will be required for the second stage stratification. It is anticipated that another document will be developed to capture this information, as it is needed for selecting employees for interview, and is needed for calculating estimates of the population.

The questionnaire, as designed, is intended to minimize the need for manual coding. In addition to being self-coding, the questionnaire contains the format for data capture. A copy of the proposed questionnaire form is exhibited in Section 8 of the Systems Outline. In order to simplify the data management of the questionnaire through the processing cycles, a provision has been made for the batching of the data into small groups. The batch can include the questionnaires received from several establishments, but in no case should questionnaires from one establishment be included in more than one batch. Returns from the public sector should not be batched with those of the private sector. In cases where the number of questionnaires exceed a tolerable number, the batch will be divided into data set or sub-batches. A data set should be limited to no more than 60 documents.

b. Data preparation

The recommended data entry equipment for transforming the survey data into machine readable form is the IBM 3742 data entry machines. These are available both at CDPU and the Department of Statistics. The response data is to be punched according to three record layouts. The first will contain information on the status of the organization. The second layout will contain the data on the individual occupations within the establishment, while layout 3 pertains to the employees in the third stage sample. Five digits have been reserved for the punching occupation codes. The occupational classification as currently used in Jamaica calls for a four digit code. The extra digit is provided in expectation of a further breakdown of several occupation classifications, into two or more codes. If there is no further breakdown then the fifth digit should be zero.

In order to insure the safety of the data, it is recommended that all diskettes used in recording the survey data be labelled and stored in separate storage areas at all times. A diskett control form has to be designed (Figure C) as an aid in controlling the data flows. This form is to be maintained for the life of the manpower project. It will contain details on the transcription, conversion and release of the data.

c. Editing and Correction procedures

The editing procedures developed for computer processing will be as closely related to the manual editing as is mechanically possible. The specific edit checks to be made are outlined in the systems documentation. There are three specific types of error checks to be made, these are, consistency, range and skip checks. During the qualitative editing phase of the computer processing, reporting will be done by exception, that is only those conditions that do not conform to the editing validation rules will be printed. During the quantitative editing phase a control report will be prepared at frequent intervals to insure that all documents received are accounted for and also to indicate those sample units that did not respond. The quantitative control will show for each establishment the number of

23.

employees reported, the number of employees selected for interview and the number of completed questionnaires received from employees. Section 5 contains the format of the control report. The qualitative edit report format is also shown in Section 5. Special correction forms will be drawn up for entering correction activity. There will be one form for each record type. The form will be a sheet that can hold up to 15 correction lines. For each line that is to be corrected only the fields that are in error will have to be entered.

A file maintenance program will be developed to correct the previously edited data records. The program will allow for the removal of records from the file, the addition of new records and the changing of existing records. The control identification number will consist of:

Batch No.

ID Number

Record Type

Data Set No.

Line No.

d. Weighting the Survey Data

The sample selection and estimation procedure have been outlined by the sampling specialist assigned to the project and are too detailed for inclusion in this report. In general it calls for the stratification of the universe into 36 strata from which the first stage sample selection will be done. An analysis is to be made of the organizational structure of each selected PSU. The sub-organization units (SSUs) of the establishments selected in the first stage are to be stratified into 3 groups based upon the composition of the work force in each. There can be no more than 20 units per PSU. A final sampling is to be made of employees from all second stage units in the 3 strata. The number selected will vary depending upon the stratum and the number of employees in the PSU.

It will be necessary to weight the returns in order to present data as it relates to the universe.

The establishment questionnaires will require one level of weighting while the employees will require three stages. These weighting factors are to be supplied by the responsible officers in NPA and the Department of Statistics. A computer file composed of PSUs and all SSUs must be maintained. This file will contain the relevant estimators to be used in raising the individual data characteristics to that of the universe. It is estimated that there will be approximately 1,000 PSUs with an average of 5 SSUs each. The sampling specialist recommended the maintenance of a sampling schedule at the employee level. If this is done, the computer file would contain an additional 25,000 records of employees within the SSUs. The creation and maintenance of this file will require a considerable amount of systems development, clerical and keypunching time. Depending upon the method used in handling non-responses, it is very likely that all estimators will have to be adjusted prior to the preparation of the final outputs.

c. Tabulation schedule

The Systems Analyst was unable to obtain a comprehensive list of the final outputs desired as of the date of this report preparation. Information suitable for the formulation of three table formats was obtained. These tables are labelled A, B and C. In discussion with various members of the project team the Systems Analyst has devised a series of tables that would appear to be useful in the analysis of the survey data. These output tables are labelled series D through L. The tabulation are in two general groups; Labour Demand and Labour Supply. The labour supply data is obtained from the employee questionnaires whereas labour demand is derived from the establishment questionnaires. The labour supply information from the survey will cover only a small portion of the labour force. The other portion will have to be obtained from other sources such as the Labour Force Survey, the "Survey of Agricultural Production and Employment", and the Population Census of 1980. The Systems Analyst was unable to determine the desired output from these sources also.

The massive requirements of the overall project were such that the staff assigned to

administer the activities was spread thin, and as such the work on output requirements was given a low priority. This could be worked on only in "spare time". It was hoped that the user seminar would have provided a guide in determining the user needs, but this was not the case. It is expected that output requirements will be developed on an ad hoc basis. Figure D lists the proposed schedule of Final Output Tables.

4. Training Manual

At the time of this writing the Training Manual had not reached a stage of development where it could be reviewed by the Systems Analyst. The major concerns are that the interviewers and coders be well aware of the importance of legible handwriting in filling out the questionnaires, and that all responses are recorded. The training manual used by the field staff should be prepared in conjunction with the preparation of the training manual for the office coders and editors. The edit checks that are to be carried out by computer processing will be programmed according to the checks given to the clerical staff.

5. Staff Training

The training of enumerators is expected to take approximately one week. Less time will be required for training the coding and keypunch staff. The latter two groups can be trained in 2 days and one day respectively. The critical areas will be the training of enumerators and the training of Systems Analysts/Programmers. The level of competence required for the field staff to collect the data related to organization structure and staff composition of each sub-organization can be critical to the whole data collection process. Past experience has shown that the level of the enumerators hired on temporary projects for short periods has been lower than required to do a reasonably good job.

The Systems Development personnel for this project just aren't available within the government. Staff could be trained provided that the right persons can be found and

LIST OF FINAL OUTPUTS

FIGURE D
REPORT

All Tables are to be produced varying X from 1 to 3

Where 1 = Private Sector 2 = Public Sector and 3 = Both Sectors

GROUP	NUMBER		SORT NO.	PROGRAM NO.
A		Number of Persons Employed by Sex and 5 Years Age Group		
	X.1	Major Occupation Group (1 digit level)	18	19
	X.2	Occupation Sub-group (2 digits level)	18	19
	X.3	Industrial Occupation (4 digits level)	18	19
B	1	Number of Persons Employed by Sex and 10 Years Age Group		
	X.1	Major Industry Group and Major Occupation Group within Parish	20	21
	X.2	Major Industry Group and Occupation Sub-group within parish	20	21
	X.3	Major Industry Group and Detailed Occupation	22	23
	X.4	Industry Sub-group (2 digits level) and Occupation Sub-group (2 digits level)	24	25
	X.5	Industry Sub-group (2 digits level) and Detailed Occupation	24	25
	X.6	Detailed Industry by Detailed Occupation	26	27
C		Number of Vacancies by Vacancy Status		
	X.1	Parish Major Industry Group and Occupation Sub-Group	28	29
	X.2	Parish and Occupation Sub-group	30	31
	X.3	Detailed Occupation	32	33

GROUP	NUMBER		SORT NO.	PROGRAM NO.
D		Labour Demand by Occupation and Major Industry Group		
	X.1	Number Employed	32	34
	X.2	Number of Vacancies	32	34
	X.3	Number of Females Employed	32	34
	X.4	Number of Persons employed with below Minimum Education Qualification	32	34
	X.5	Number of Persons employed with below Minimum Training Qualification	32	34
	X.6	Staff Changes at full Capacity	32	34
	X.7	Expected Change in Demand by 1984	32	34
E		Labour Demand by Occupation and Ownership Status		
	X.1	Number Employed	32	35
	X.2	Number of Vacancies	32	35
	X.3	Number of Females Employed	32	35
	X.4	Number of Persons Employed with below Minimum Education Qualification	32	35
	X.5	Number of Persons Employed with below Minimum Training Qualification	32	35
	X.6	Staff Changes at full Capacity	32	35
	X.7	Expected Change in Demand by 1984	32	35

GROUP	NUMBER		SORT NO.	PROGRAM NO.
F		Labour Demand by Occupation and Size of Firm		
	X.1	Number Employed	32	36
	X.2	Number of Vacancies	32	36
	X.3	Number of Females Employed	32	36
	X.4	Number of Persons Employed with below Minimum Education Qualification	32	36
	X.5	Number of Persons Employed with below Minimum Training Qualification	32	36
	X.6	Staff Changes at Full Capacity		
	X.7	Expected Change in Demand by 1984	32	36
G		Net change in Staffing by Occupation and Change Activity during 1979		
	X.1	Size of Firm	40	41
	X.2	Major Industry Group	42	43
	X.3	Intermediate Industry Group (2 digits)	44	45
	X.4	Ownership Status	46	47
	X.5	All Establishments	32	37
H		Number of Establishments Providing training by Type of Training and Occupation		
	X.1	Size of Firm	40	41
	X.2	Major Industry Group	42	43
	X.3	Intermediate Industry Group	44	45
	X.4	Ownership Status	46	47
	X.5	All Establishments	32	37

GROUP	NUMBER		SORT NO.	PROGRAM NO.
I		Number of Firms Expecting Staff Changes over next 5 years by Occupation		
	X.1	Size of Firm	40	41
	X.2	Major Industry Group	42	43
	X.3	Intermediate Industry Group	44	45
	X.4	Ownership Status	46	47
	X.5	All Establishments	32	37
J		Recruitment - Number of Establishments by Occupation and Level of Recruitment Problems		
	X.1	Size of Firm	40	41
	X.2	Major Industry Group	42	43
	X.3	Intermediate Industry Group	44	45
	X.4	Ownership Status	46	47
	X.5	All Establishments	32	37
K		Occupations by Minimum Education Qualification for Position		
	X.1	Number Employed	32	38
	X.2	Number of Vancancies	32	38
	X.3	Number of Females Employed	32	38
	X.4	Number of Persons Employed with below Minimum Education Qualification	32	38
	X.5	Number of Persons employed with below Minimum Training Qualification	32	38
	X.6	Staff Changes at Full Capacity	32	38
	X.7	Expected Change in Demand by 1984	32	38

GROUP	NUMBER		SORT NO.	PROGRAM NO.
L		Occupations by Minimum Experience Qualification of Position		
	X.1	Number Employed	32	39
	X.2	Number of Vacancies	32	39
	X.3	Number of Females Employed	32	39
	X.4	Number of Persons Employed with below Minimum Education Qualification	32	39
	X.5	Number of Persons Employed with below Minimum Training Qualification	32	39
	X.6	Staff Changes at Full Capacity	32	39
	X.7	Expected Change in Demand by 1984	32	39

the project extended to take account of a minimum of 6 months in recruitment and training. The six months training will prepare them to develop computer programs of low to moderate levels of complexities under the supervision of an experienced person. During training the productivity of experienced persons would have to be sacrificed.

6. Resource Requirements

a. Coding

The purpose of a self-coded questionnaires format is to reduce the time spent in office coding. There are some questions in which it is desirable to have the responses coded in the office. The term coding as used in this report refers to office coding. The time spent on coding of questionnaires will be varying from coder to coder depending to a large extent upon experience, the quality of the questionnaire, and supervision. It is estimated that the coding of Part I will proceed at an average rate of 5 per day per person assuming an average 25 occupations per establishment. The coding of 1000 PSU returns should require approximately 200 person days. The coding of Part II (Employee Returns) is estimated to require one person day per 80 returns. This estimate is comparable to the time for coding the Labour Force returns (new persons can complete approximately 50 per day while the experienced coders do as many as 200 per day, note, approximately one half of the labour force returns cover persons outside of the labour force and do not require office coding). The estimate of total time for the coding or punching of Part II cannot be determined until the SSU have been stratified and the 3rd stage sample is selected. The number of employees is a determinant of the size of the sub-sample units. It can be roughly estimated at 13 person days per 1000 employee returns. Approximately 25 percent of the manual coding and editing time can be calculated for the correction of error detected during the computer edits, and for other data control functions.

b. Data Preparation

The estimate of data preparation time needed for the project, like the coding estimate, is dependent upon the number of PSU and employees selected for interview. Using

the known variables, as data elements per questionnaire and rate of punching it is possible to make some partial estimates. The punching of Part I will require 170 operator days per 1000 PSU's while the Part II will require 4.5 operator days per 1000 returns. The calculations are based on a punching rate of 8000 characters per hour, 5.5 hours of punching per day and a 30 percent error rate in punching and verification prior to computer editing. The repunching which will result from the computer detected errors can be estimated at 25 percent of the original estimates.

c. Systems Development

The Systems Development is estimated to require a minimum of two man years of support to the Manpower Training Needs Survey. If the targeted completion date of February 1980 is to be successfully reached, the project will call for the immediate assignment of four trained computer programmers. A large number of the computer programs are tabulation programs which cannot be produced by a software package. The Systems Design as provided in this report, is based upon the sampling design suggested by the Sampling Expert and can be seriously affected if the design is significantly changed as a result of the pre-tests. The outputs are primarily those suggested by the Systems Consultant and may not reflect the final output decided at a later date. The output suggested by the Systems Consultant did not put emphasis on the employee returns. The exploitations of this portion of the data base will result in a substantial increase in the requirements for systems development. A Human Resource Requirement Schedule is displayed in Figure E.

d. Machine Resources

The System 3 is slowly reaching the saturation point. The expansion of the system has proceeded according to plans, except for the installation of a high speed printer. The current 200 lines per minute printer is proving to be a bottleneck, as the present job inventory and the projected work schedule call for large numbers of data edits, tabulations and detail listings. The exchange of the low speed printer for one with a

MANPOWER TRAINING NEEDS SURVEY

FIGURE E

HUMAN RESOURCE REQUIREMENTS

(Person day)

TASK	*Clerical	Data Preparation	Systems Development
1) OCCUPATION LIST (DOS)	10	20	5
2) ESTABLISHMENT LIST			
Public Sector	20	4	
Private Sector	250	40	
Computer Programs		10	60
3) SAMPLE SELECTION			
PSU	1	1	
SSU (5000 Name, No. Employees, Sampling Fractions etc.)	500	50	
Computer Programs		10	50
4) INDUSTRIAL CLASSIFICATIONS	2	2	1
5) SURVEY QUESTIONNAIRE PROCESSING			
Coding and Editing:**			
Part 1	200	170	
Part 2	13	5	
Edit Corrections	3.25	1.25	
Computer Programs	1	12	80
Control Programs	10	5	20
Report Preparation 1st Priority Tables	10	60	300

33

*Include only those functions related to preparing and checking
Inputs and Outputs of Computer Processing

**Per 1,000 Returns

higher printing rate (600 lines per minute) has been under consideration since mid year 1977. For various reasons this action has been delayed. As the Department is seeking support for the ordering of an IBM System 38, it is felt in some quarters that the purchase of the 600 line per minute would not be a good idea at this time, due to the fact that it cannot be used on a System 38. The installation of an IBM System 38 may be as much as 4 years away, and should not stand in the way of increasing the present printer output rate. In order to avoid a conflict it was decided by the DOS to rescind the request for the purchase of a 600 lines per minute printer in favour of the rental of a 1000 lines per minute printer at substantial saving to the project. The delay in ordering the printer as well as the delay in the implementation of the manpower survey exercise is expected to cause severe scheduling problems for the computer operation units. The normal year end processing for the budget exercise, and the heavy Agricultural Census computer requirements and the processing of the approximately half million records relating to the Household Expenditure Survey are sure to cause a log jam that may relegate the Manpower outputs to a secondary priority. The installation of the high speed printer will provide some relief, but further steps should be taken to increase the tape speed. The relative benefits to be gained from increased tape speed are high with a low cost factor. To upgrade the tape speed from 20 KC (Model 1) to 40 KC (Model 2) would increase the monthly rental by J\$364. An upgrade from 20 KC to 80 KC (Model 3) would increase monthly rental by only J\$719 per month. The upgrading could be done in the office with only a small amount of foreign currency outflow involved. The cost of going from a model 1 to a model 3 plus the rental of a 1000 lines per minute printer for the life of the Manpower Project is still less than the original purchase plan.

D. INTER-RELATED MANPOWER RESEARCH

The survey of establishments seeks to gather data related to labour supply as well as labour demand. Keeping in mind that the coverage does not extend to the self-

employed, farm workers, or the unemployed, there are information gaps in manpower analysis that have to be filled. The small establishment survey which is to be undertaken at a later date will supply information on small establishments which will include some of the self-employed. The most likely support data on labour supply will have to come from the Labour Surveys, Agricultural Employment and Production Survey and the 1980 Population Census. The Manpower Project Management has been under pressure in other areas of the project and did not have time to discuss these aspects of information processing.

It seems that any effort to do long term planning in the area of manpower training and analysis must give serious consideration to the inflows and outflows of skills due to migration. The data system for the processing of migration is already in place and may not require significant changes in order to integrate the occupation element with the manpower data base.

In an attempt to demonstrate the usefulness of information from the various data sources the Systems Consultant developed four computer tabulations from the Labour Force Survey that were thought to be useful in casting more light on the relationship between Education and Training. These were:

1. Number of Persons in Occupations within Industry Sub-Groups Distributed by Education attainment and levels of training.
2. Number of Persons in Industry Sub-Groups within Occupation Categories Distributed by Education Attainment and levels of training.
3. Gross Tabulation of Educational Attainment and levels of training by Employment Status and Industry Sub-Group.
4. Gross Tabulation of Educational Attainment and Levels of training by Sex.

V. RECOMMENDATIONS, CONCLUSIONS AND ACKNOWLEDGEMENTS

A. Recommendations

1. There have been frequent changes of direction in the approach to implementing the Training Needs Surveys. These tend to cause an undue amount of confusion to those trying to implement decisions taken. It is recommended that in the

future decisions taken be documented, dated and speedily distributed to all technical persons associated with the project.

2. The role of System Analysis, Design, Development and Operations have been grossly underated as related to the Manpower Training Needs Survey. The magnitude of the systems development effort is such that there is very little likelihood of the project meeting the March 1980 target date, even if the field survey work was completed at that time. It is recommended that the project seek outside support from CDPU, local contractors and/or technical assistance.
3. The System has been designed to serve the needs of both the Department of Statistics as well as the National Planning Agency. It has been designed for use on the Department's System 3 computer. The design allows for the two data sub-files to be processed separately or together as one file. The Department's original expectation was to process only that data related to the private sector survey on its computer system. It was also expected that processing would occur outside of the peak processing period. It is recommended that, due to the added usage and crowded scheduling, support be given to upgrading the tape units from a model 1 to a model 3, and that this step be taken at an early date. The annual cost of this upgrade is J\$8568; or US\$4815.
4. Normally a system of this magnitude requires the assignment of a Systems Analyst from the project inception to completion. This project has put all of the Systems Analysis functions at the front end. Due to constant changes in direction there is a very high probability that these will have an effect upon the systems design and development. It is recommended that follow-up visits be made by the Systems Analyst to ensure that the system is meeting the objectives of the project.
5. The job titles in some cases require as many as six lines of descriptions. The report presentation would look more attractive if the definitions were shortened. It is therefore recommended that consideration be given to shortening the definitions not to exceed two lines.

B. Conclusion

The recent changes in direction of the Training Needs Surveys have expanded the project requirements. As diagrammed in the "Projected Manpower System - Flow of Information and People" the training needs survey was intended to provide information on labour demand. The diagram suggests that labour supply information would come from household surveys. The attempt to collect labour supply data from the survey of establishments has not only extended the resource requirements but has also extended the total time of the primary data collection and processing phases of the project.

The sample design calls for the stratification of the private sector into 36 strata based upon nine major industry groups and four size groups. The selection of establishments in the first two size groups would be a systematic random selection. At the same time much discussion has centered around the reporting industry sub-groups at the second digit level and even lower levels. There is a possibility that the number of strata may be increased to take in the lower level reporting requirements, especially in the manufacturing stratum.

Systems Development is a weak spot which cannot be over-looked, nor can it be given a low priority. The only persons currently assigned in this area is an Acting Statistician who is being trained as a Systems Analyst/Programmer.

C. Acknowledgement

The Systems Consultant takes this opportunity to say "Thanks" to all the staff at the Department of Statistics and the National Planning Agency who provided their willing co-operation and support to the completion of this assignment. The support provided by the USAID mission was encouraging and more than satisfactory. A special sign of gratitude goes to the secretarial staff at the Department of Statistics who spent many long hours in the drafting and completion of this document. Last but not least I would like to give a word of thanks to the Trainee Systems Analyst who acted as my counterpart.

SYSTEMS OUTLINE
MANPOWER TRAINING NEEDS SURVEY

**MANPOWER TRAINING NEEDS SURVEYS
SYSTEM IMPLEMENTATION PROCEDURES
SECTION 1
OVERVIEW**

The Manpower Training Needs Survey processing system revolves around the processing of four data files, these are:

1. Establishment List
2. Directory of Occupations
3. Directory of Industrial Classification
4. Surveys of Private Sector and Public Sector Organizations

These four files will be used to produce a series of output tables as listed in Section 7 of this documentation. This documentation is divided into 9 sections, which are as follows:

- Section 1. System Overview
 2. Creation of Establishment List
 3. Construction of Occupation and Industrial Classification
 4. Sample Selection
 5. Processing of Questionnaires - Manpower Training Needs Survey
 6. Record Layouts
 7. Report Specifications
 8. Questionnaire
 9. Sample Design

The system operating environment will be those of the Department of Statistics Data Centre. Computer programs will be written in RPG II and Cobol, at the discretion of the system development staff.

Tabular results from the System are divided into two priority groups. The second priority group will not be found in this documentation, but will appear as ad hoc requests from time to time.

The procedure for the Directory of Industrial Classification are not necessary as the file is already in existence. The thing that is necessary is to copy this file unto the manpower pack (R,1).

SECTION 2

CREATION OF ESTABLISHMENT LIST

The Establishment List is a magnetic tape of establishments identified by a seven digit code. There are two parts to the code number. The first part is a four digit industrial classification code representing a product group. The second part is a serial number assigned for each establishment falling within the product group. Where firms are engaged in several different products the code is usually assigned for that product which represents the major business activity. The major inputs to the list are shown in Figure A of the Consultant Report. The procedures outlined in this documentation does not cover the continuous maintenance of the file past those processes necessary for the selection of the sample for the Manpower Training Needs Survey. Upon completion of the work for the training needs survey, additional work must continue towards the assignment of the other variables and characteristics needed to make the file complete. These include the:

- Cross reference to the Income Tax file number

- National Accounts sub-group code

- Transactor Sector code

- Institutional Sector code

- Function code

- Percentage of Foreign ownership

A record layout for the recommended file is shown in Section 6 (RF No. 010). The primary sources to be used as inputs will be the name and address files used by the National Housing Trust and the Trade Administrator. The address file from both of these sources do not carry the number of employees, even though space may be provided in their correspondent record descriptions. Investigation has shown that each of the two sources maintain supplementary files from which the number of employees can be derived for some of the establishments listed. It is also to be noted that there are inactive entries on both files. Once these two files have been merged, an effort must be made to remove those entries representing inactive establishments. There is also a high probability that most organizations appearing on one list will also appear on the other. These will have to be identified and the

duplicate removed. The processing steps to be used are as follows:

Step 1. Sort Importers name and address file (RF No. 001) by licence number. This file will contain approximately 7700 entries. Less than 1500 will have a licence number attached
Input on magnetic tape output on the 5445 disk unit.

Step 2. Sort Licence History file by Licence Number. The Licence History file contains prior years accounting data of importers applying for a trade licence during the current year. There is one or more entries for each licence issued. The sort files are, in order of:

licence number

year of data

Record type

Output from sort is stored on the 5445 disk store unit.

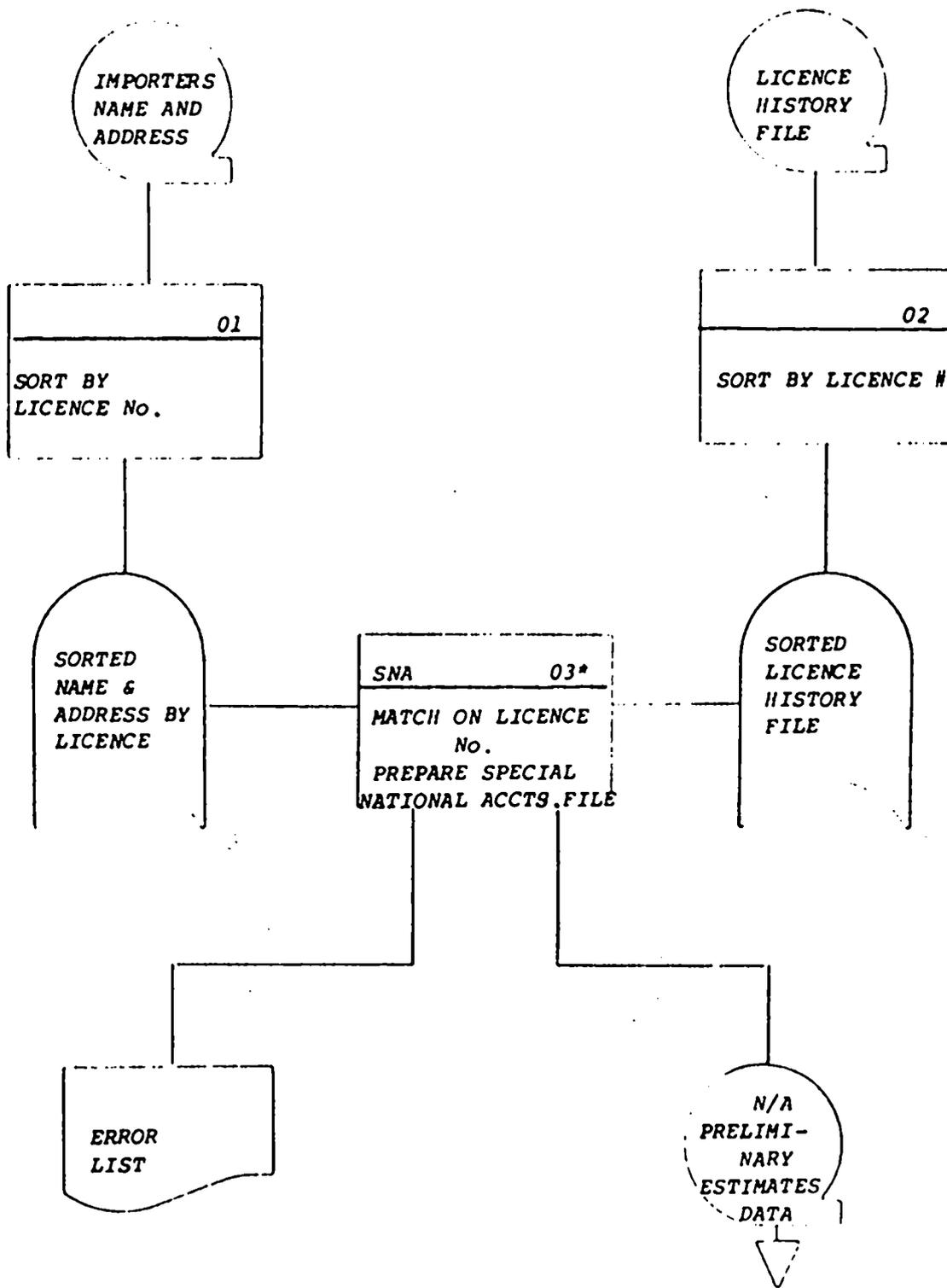
Step 3. Match the outputs from steps one and two above on licence number. Use the Licence History file as the primary file. Ignore all record types on History file except types 05 and 06. For each licence issued there is normally an 05 or 06 record (RF No. 002 and RF No. 003). In some cases there will be both. If both appears use the 05 record type, or else use whichever is present. The object of this program is to assign the name, address and importers number to those history records which match the name and address. The output from this step will be a tape of 05 and 06 record types with the corresponding name and address attached at the end. Use the first 80 characters of the name and address record. The output record should be 377 characters: that is 297 (the size of the licence history record + 80). Name and address records which have licence application numbers recorded must have a corresponding licence history record, otherwise a possible error condition exists. This error condition will some times occur when the importer fills out part VC (type 07) and ignores parts VA and VB (record types 05 and 06). This output tape is used both for processing establishment list and for the National Accounts percentage manual calculations.

The main use of this program for use in the establishment registry is to pick up the number

MANPOWER TRAINING NEEDS

ESTABLISHMENT REGISTRY

PROCEDURE FLOW



of employees reported on the licence history record. The number of employees can be found in variables in record type 05 and in record type 06. Use output in step No. 4.

Step No. 04 Sort output of step 3 by importers number. Use output in SNA 190 of National Account System and use in step 05 of this stream output on the 5455.

Step No. 05 Using the output of sort (step 4) as primary, match with the importers name and address file (same file used as input to step No. 1). Create a tape in format (RF 010). The output tape should consist of all records on the name and address file. Pick up number of employees from those matching records on the primary file. Create a list of importers showing the following fields:

- Importer's Number
- Number of Employees
- Name
- Address
- Location
- Size Group

Step No. 06 Sort - NHT Receipts (RF 004)

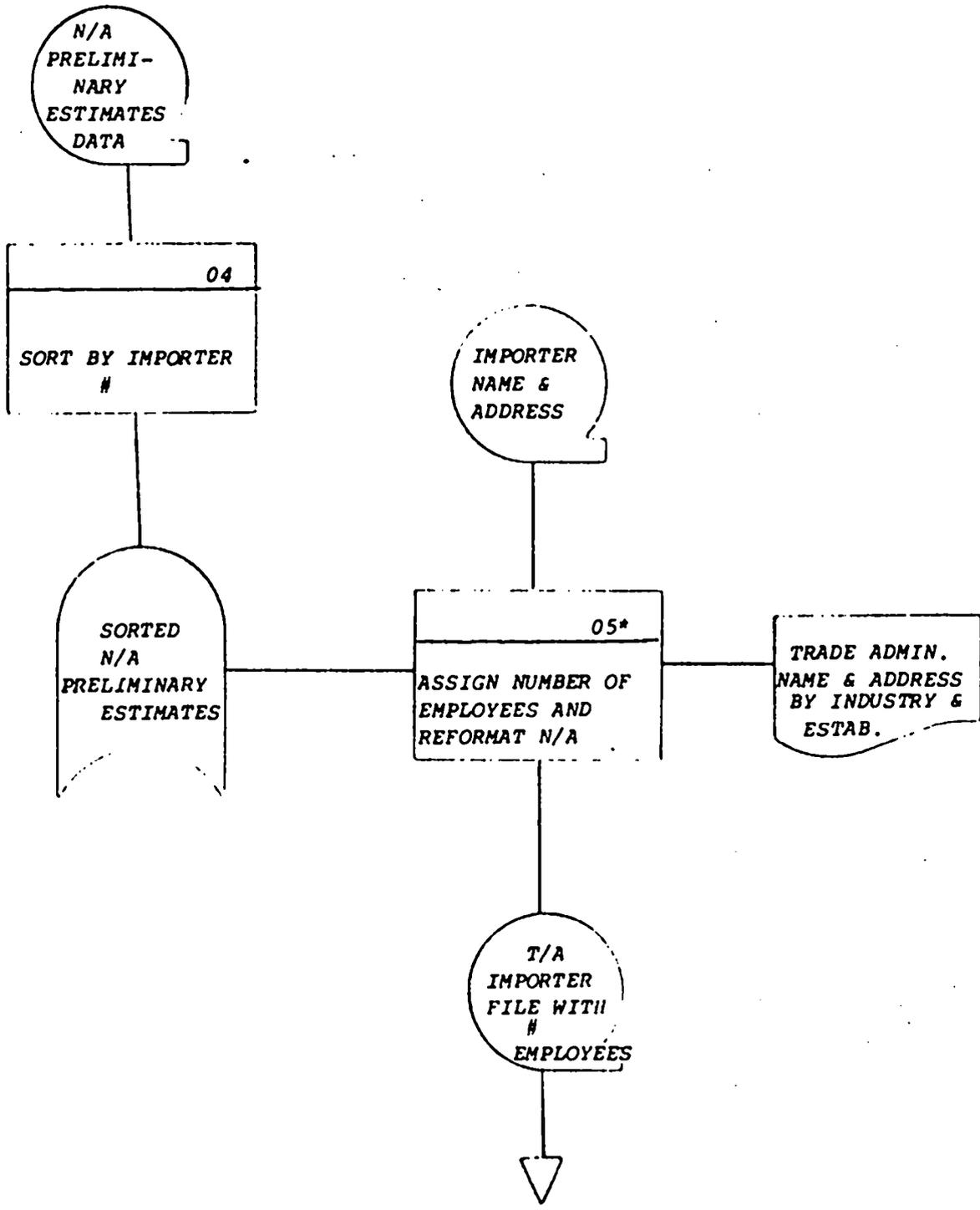
The NHT receipts file consists of the records representing the receipts from employers. These receipts can cover a period of one week to one year. For each submission the amount of contribution and the number of employees covered is indicated. The file is sorted by Employer Number

- Year of Contribution
- Month and Day of Contribution

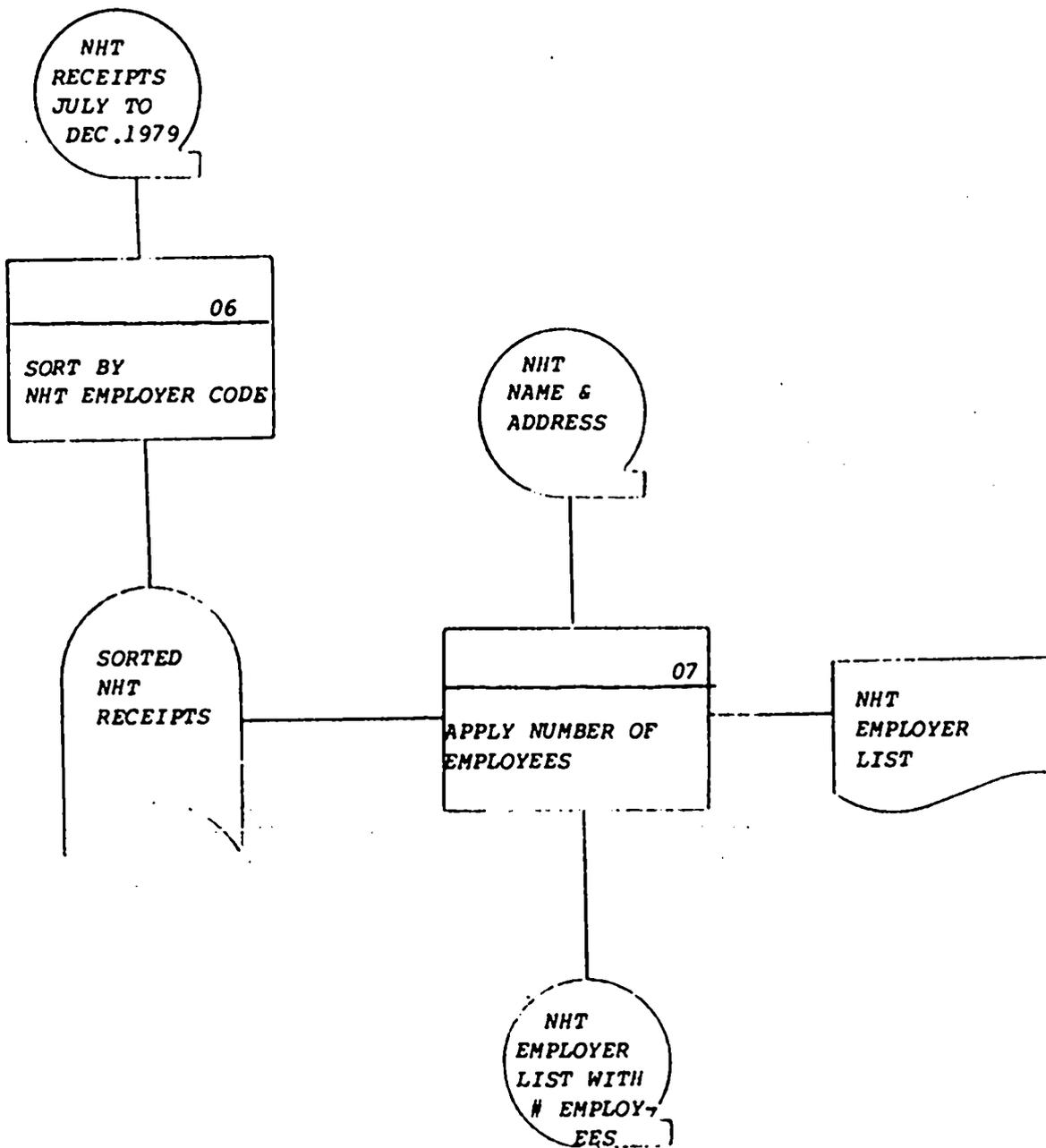
Output file is recorded on the 5445 disk unit.

Step No. 07 Match receipts file with Employer name and address (RF 005). The purpose of this program is to extract the number of employees from the receipts file and place on the name and address file in the reformatted layout. There may be many receipts from one employer, in which case the latest receipts that does not carry zero number of employees is to be used. The output file should contain all employers name and address records. In

MANPOWER TRAINING NEEDS STUDY



TO STEP # 8



TO STEP # 8

case where the receipts file does not have a corresponding record on the name and address file, an output record (RF 010) is created from the information available on the receipts record. Note that all receipt records carry an abbreviated name of employer. In some cases the unmatched receipt record will result from an invalid NHT identification code. The 2nd and 3rd digits of the NHT identification code indicates the nature of the business activity performed by the organization. These will not correspond to the Standard Industrial Classification used in Jamaica. There are 86 groups in the NHT grouping and over 200 in the SIC grouping. A cross reference table is shown in exhibit XX. Using this table assign SIC codes to the output. In some cases the NHT grouping will translate to a 4 digit code used in the SIC. In other cases it will translate to a higher grouping at the 1st, 2nd or 3rd digit. The refinement must be accomplished by clerical effort.

Step No. 08 Combine outputs of steps 5 and 7. This is accomplished by sorting the two files together in alphabetic order according to name. It is expected that there will be several entries with the same name. The minor sequences are identification number (DOS) and NHT.

Step No. 09 Create an alphabetized list of the combined file. Serialize the entries in increments of 10. This serial number will be used as the identification code for file maintenance. This will require the creation of a new file with the serial numbers placed in the field provided on the layout. The output tape is the same as the input except for the serial number. In creating the computer report the fields to be printed are:

- Size Group
- Serial Number
- NHT Code
- DOS ID Code
- Number of Employees
- Name
- Address
- Location
- Parish

NIS - SIC CROSS-REFERENCE

Industry	N.I.S. Code	D.O.S. Code
1 Sugar Estates	01	11111
2 Agricultural and Livestock Production	02	11100
3 Agricultural Services	03	11200
4 Forestry, Timber, Firewood	04	12000
5 Fishing Hunting	05	13100
6 Metal Mining	06	20000
7 Non metallic mining Quarry	07	31181
8 Sugar milling and refining	10	31181
9 Fruit and vegetable processing	11	31130
10 Bread, bakery, confectionery	12	31170
11 Meat, fish products, slaughter	13	31100
12 Other food products	14	31100
13 Brewing and distilling	15	31300
14 Aerated waters	16	31340
15 Tobacco products	17	31400
16 Textiles not made-up	20	32110
17 Ropes, Twine, Coir	21	32150
18 Made-up Textiles	22	32000
19 Footwear, manufacture and Repair	23	32040
20 Sawmill products	24	33000
21 Other wood (Mcl cork) Products	25	33100
22 Furniture and Fixtures	26	33200
23 Paper and Paper products	27	34100
24 Printing, publishing	28	34200
25 Tanning and leather product	29	32300
26 Cement, cement products	32	36900
27 Structuac Clay products	33	36900
28 Other non-metallic product	34	36910
29 Blacksmith and Welding	35	38100
30 Tin ware	36	38100
31 Other metal product	37	38100
32 Machinery products and Repairs	38	38200
33 Electrical machines and Appliances	39	38300
34 Motor vehicle repairs	40	38430
35 Ship Building and Repair	41	38410
36 Other vehicle and Repair	42	38400
37 Jewellery, Watchmaking and Repair	43	95140
38 Curois and articles of Straw	44	39090

NIS - SIC CROSS-REFERENCE

Industry	N.I.S. Code	D.O.S. Code
39 Other manufactured products	45	39000
40 Construction, plumbing, mason	47	50000
41 Electric Light and power	48	41010
42 Water and Sanitary Services	49	42000
43 Retail Trade-mainly food	50	62000
44 Wholesale Trade - Mainly food	51	61000
45 Other Retail and Wholesale Trade	52	60000
46 Banking and other Financial investment	53	81000
47 Insurance	54	82000
48 Real Estate	55	83100
49 Rail Transport	56	71110
50 Water Transport	57	71200
51 Air transport	58	71300
52 Omnibus transport	59	71120
53 Other road passenger transport	60	71130
54 Other road transport	61	71100
55 Services related to transport	62	71900
56 Storage and warehousing	63	71920
57 Communications (Telephone etc.)	64	72000
58 Central Government Administration Services	65	91001
59 Education (incl. Research Inst.)	66	93000
60 Health	67	93300
61 Religion	68	93901
62 Welfare	69	93400
63 Trade Associations	70	93501
64 Professional and Labour organizations	71	93500
65 Libraries, museums, public Gardens	72	94200
66 Other community services	73	93900
67 Law	74	83210
68 Accounting, Auditing, book-keeping	75	83220
69 Engineering and Tech. Contract	76	83240
70 Other Technical and Business Services	77	83200
71 Motion pictures and Theatres	78	94100
72 Other Recreational Activities	79	94000
73 Domestic Service	80	95300
74 Restaurants, cafes, taverns	81	63100
75 Hotel, Rooming House, Camps	82	63200
76 Laundering, Cleaning and Dyeing	83	95200
77 Barber and Beauty shops	84	95910
78 Photographic Services	85	95920
79 Other personal services	86	95900
80 Odd jobs	89	95000
81 Not specified	99	00000

FROM STEP
5

FROM STEP
7

TA
IMPORTER
FILE WITH
EMPLOYER
#

NIIT
EMPLOYER
LIST WITH
EMPLOYEES

08
SORT BY,
NAME, SIC, & NHT #

COMBINE
TA/NHT
NAME &
ADDRESS
SORTED BY
NAME

09*
CREATE ALPHA
LISTING, APPLY
SERIAL NUMBER

ALPHA
ESTABLISHMENT
LIST

SERIAL-
IZED
ESTABLISH-
MENT
LIST

STEP #
10

TO STEP # 13

Step No. 10 Consolidated Establishment List

The consolidated list of names and addresses will contain in excess of 20,000 entries. The list is to be compiled using the files of the Trade Administrator and the National Housing Trust. In many cases there will be duplication resulting from each file having contained an entry for the same firm. In many cases the duplicate firms will have slight differences in the way that the name was recorded. Those entries that have a Department of Statistics identification code are from the Trade Administrator file while those with NIS number originated from the NIS (NHT) file. The consolidated list has been presented in alphabetic order based upon the name of organizations listed. In cases where there are multiple entries with the same name the entries are further sequenced by the identification codes.

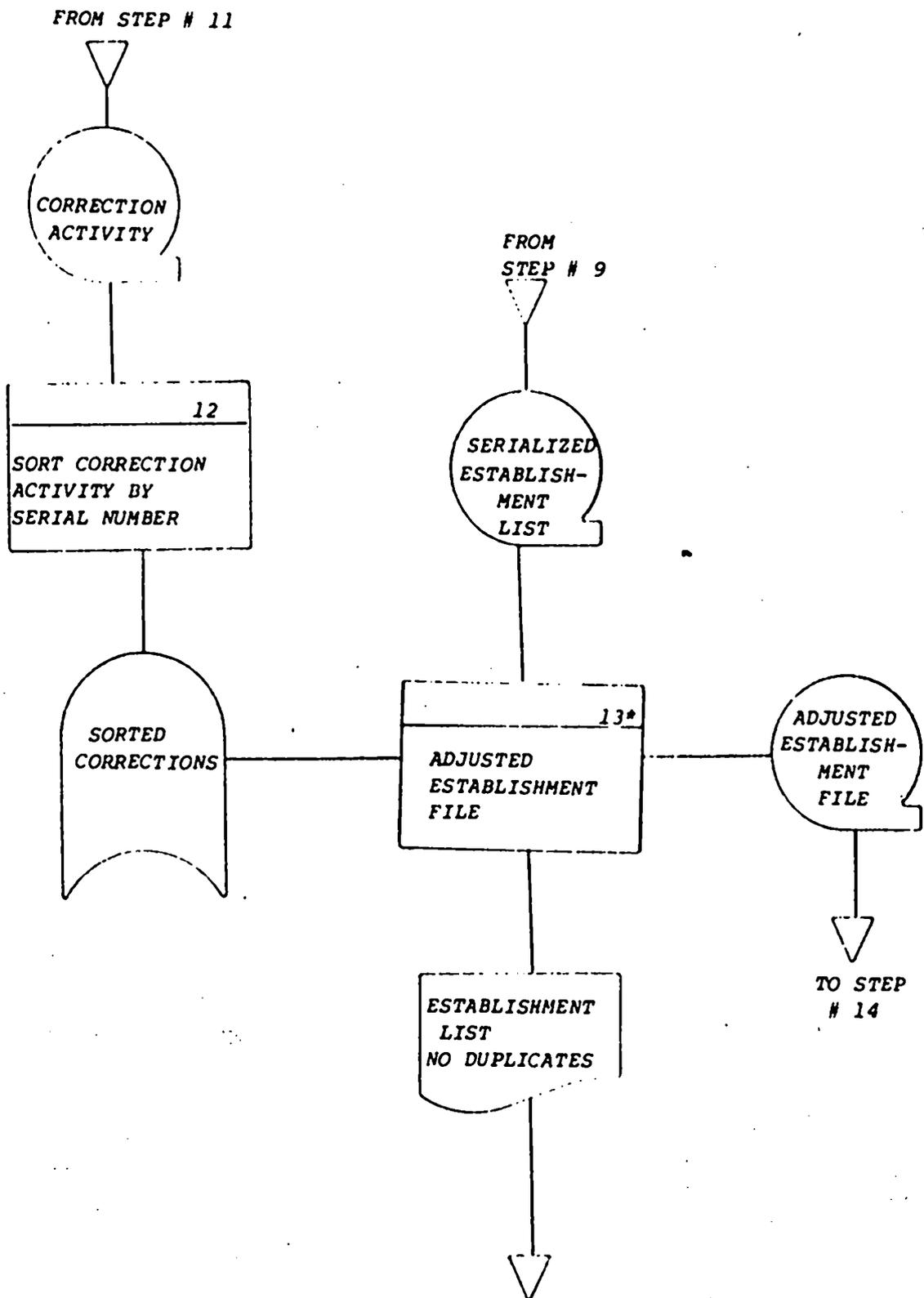
Using the consolidated list the staff of the Central Data Co-ordinating Division should take the following action -

1. Eliminate duplicate entries, giving preference to those entries that originated from the Trade Administrator file
2. For each entry on that is to be retained:
 - a) Insure that an appropriate Department of Statistics code number has been assigned
 - b) Where possible enter the correct NIS number
 - c) Insure that the number of employees is recorded on the file
3. Use other manually prepared lists that are available in the Department to obtain the number of employees for those computerized entries that do not specify the number of employees.

The entries on the consolidated list have been assigned unique serial numbers. These numbers are to be used solely for the purpose of making corrections to the list. There are three basic types of corrections for an entry; additions, changes and deletion.

1. Additions

This type of correction will occur when an entry was not included on either of the 2 files, in which case all of the relevant information must be submitted for inclusion in



the file. The persons must assign a unique serial number as the controlling identification.

2. Changes

Corrections of this stage will occur when information other than the assigned serial number requires changing. It will be used in cases where the DOS number, and/or NHT number and/or number of employees were missing or were recorded incorrectly. It will be used also for name and address changes.

3. Deletion

Use this correction type in cases where an entire entry is to be omitted from the list. Entries will usually require deletion if it is duplicated by another entry which is being retained.

Step No. 11 Keypunch corrections

Punch corrections according to record format RF 006. Punch only those entries where a correction has been made. There are three types of corrections. These have been outlined in Step 10. If the correction type is "A" punch all field. If it is a change activity punch only those fields that are being changed. In the case of deletion no other field need to be punched. After punching, convert the disketts to tape.

Step No. 12 Sort correction activity

The correction activity is to be sorted according to the serial number in position 1-6 of the record. The output should be placed on the 5445 disk unit.

Step No. 13 File Maintenance

Using the correction activity (primary) sorted on serial number in step 12 update the output tape (secondary) of step 9. (After the first correction cycle use the previous output of step 13). The file update is accomplished by matching the two files on serial number, and creating a new output tape. This tape should contain records as a result of:

- (1) All unmatched secondary
- (2) All unmatched primary with activity code of 'A'

(3) Matching secondary with a correction activity of 'C'.

(Modify only those fields that are punched in the correction activity record).

Step No. 14 Sort adjusted file on the DOS Establishment

Identification code number (SIC + sequence number) There may be duplicate on the code due to the inability to assign unique numbr in step 10. The duplication should be arranged according to name. The output to be recorded on magnetic tape.

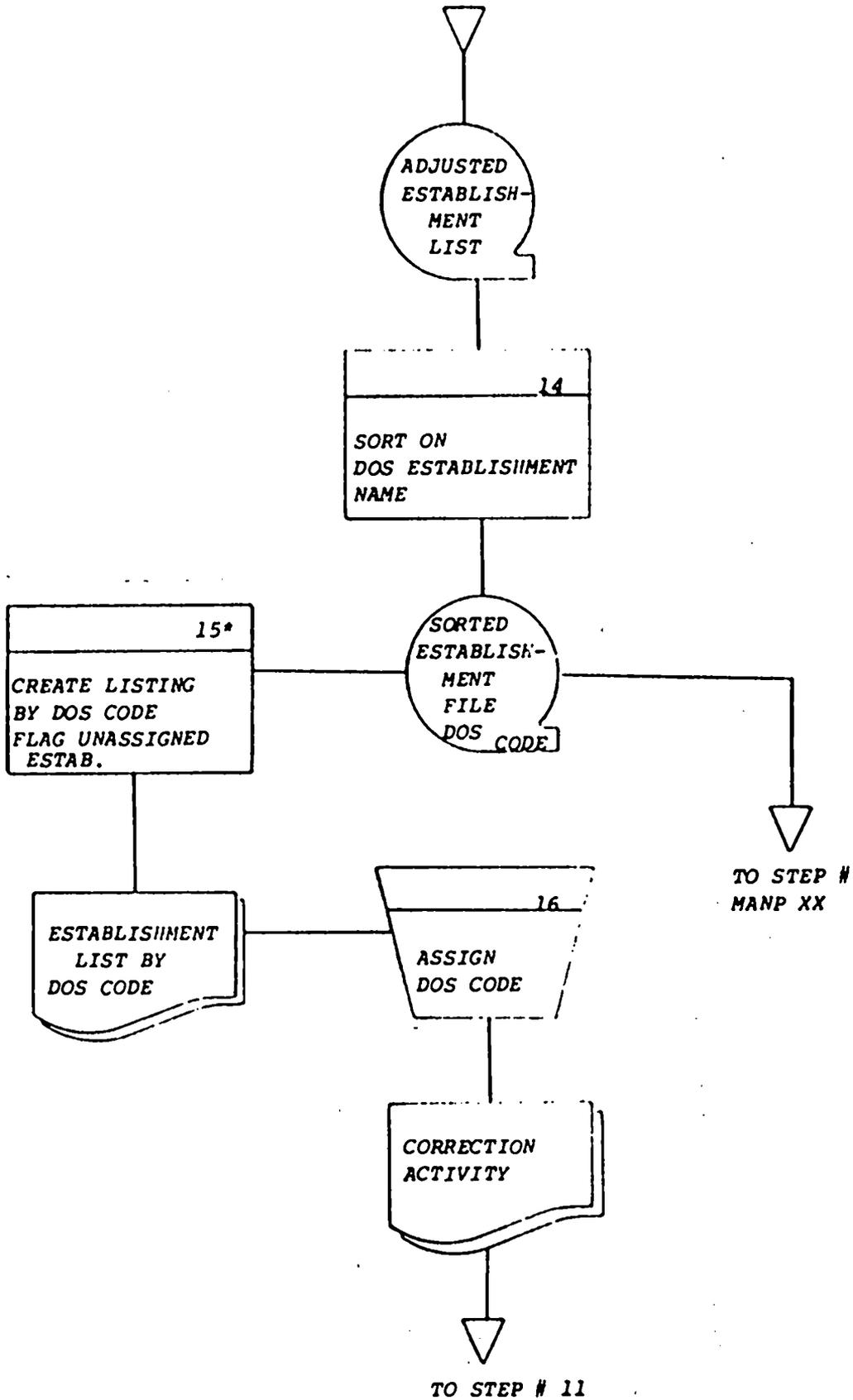
Step No. 15 Listing in numeric order by Establishment Number

Use same report layout as in step 9. Indicate with an asterick '*' behind the identification code number where the sequence number (the last three digits of the ID) is 000. Also, flag the number of employees field when the number of employees is zero. The input tape will be used in the sample selection process once it has been satisfactorily corrected. If there are additional corrections these will be made in step 16 and reprocessed through step 11 to 15.

Step No. 16 Assign DOS code

This manual process is similar to step 10. This step will focus less on the removal of duplicates than the assignment of the proper classification codes. Those records that are flagged should be corrected or removed from the file. There is a high probability that many of these will be inactive.

FROM STEP # 13



SECTION 3
CREATION - DIRECTORY OF OCCUPATIONS

Step No. 1

The Jamaica Classification of Occupations are to be entered onto 80 column coding sheets.

The format to be used is:

Position 1	Level Number
2-3	Line Number
4-7	Occupation Code
8	Zero
11-42	Job Description

The group level descriptions are indicated with by codes of less than four digits. The number of digits in the code will indicate the level of the grouping in the hierarchial coding structure. Punch all codes in four digits, zero-fill to the right when necessary. A fifth digit is provided in after the four digit occupation code for future expansion. The description should be recorded into a space of 32 characters.

The description lines may be used for one occupation or group title. The output should be recorded unto punched cards.

Step No. 2

Prepare a computer program to proof list the occupation file punched in step 1. Indent each level of title description two spaces. Print an asterick next to each code that is duplicated on Code No., Line No., and Level number. Also print the message 'DUPLICATE ENTRY' on the same line to the right of the title description, whenever a duplicate occurs.

Step No. 3

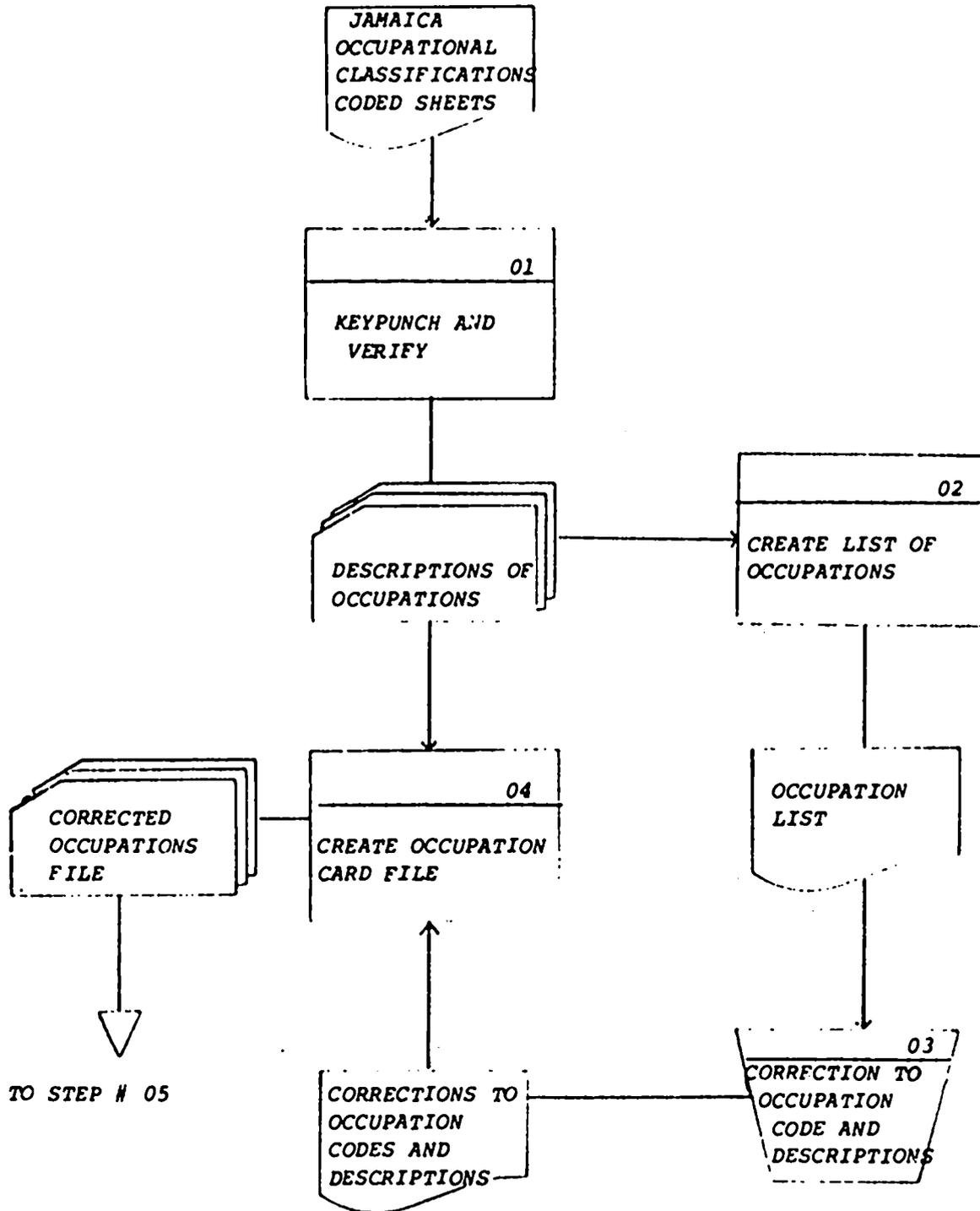
Proof read the listing produced in step 2, making necessary corrections on the computer print-out.

Step No. 4

Using computer print-out as corrected make the appropriate changes to the card file.

CREATION - DIRECTORY OF OCCUPATIONS

PROCEDURE FLOW



Step No. 5

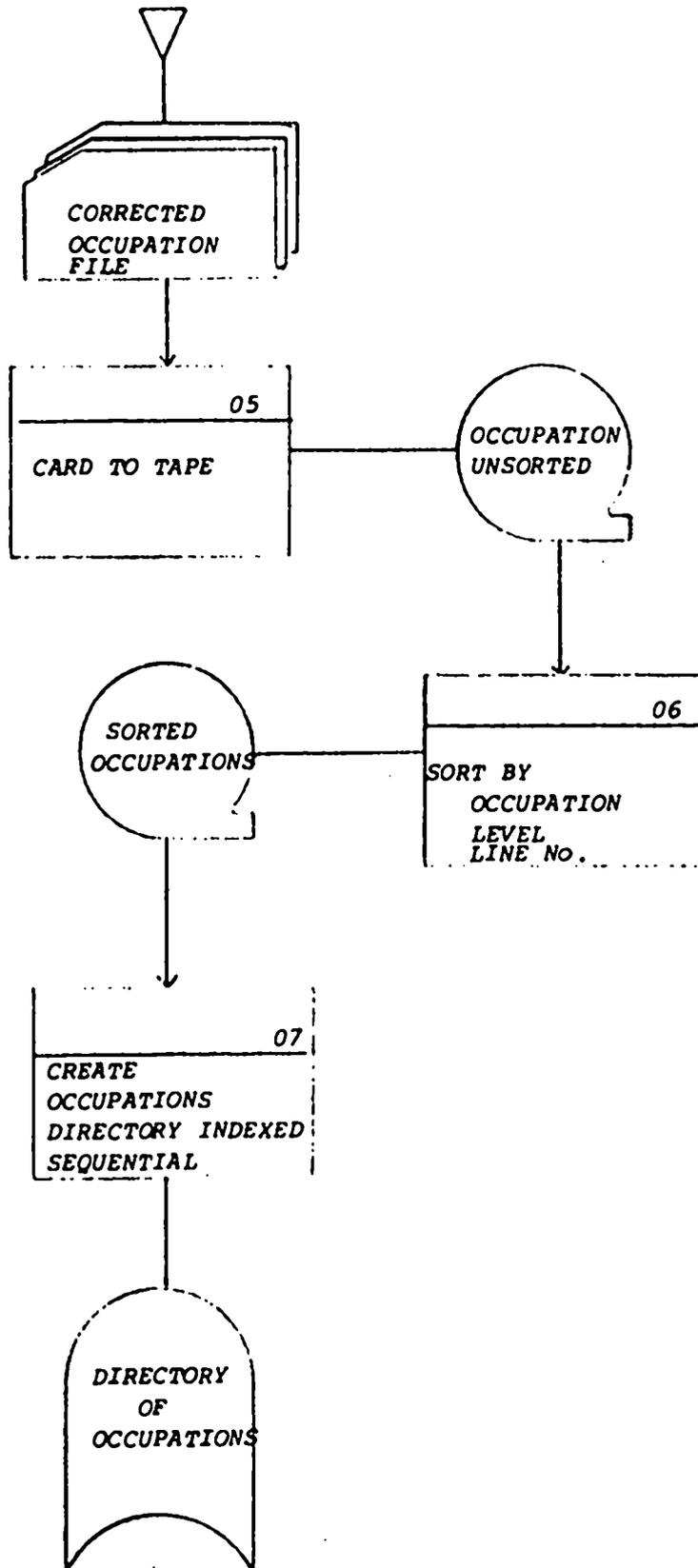
Card to tape

Using the utility card to tape program place cards on tape.

Step No. 6

Create index sequential file on 5445 Disk Pack. Minimize the disk space required by reducing the record size to 44 characters of which five are reserved for future use.

FROM STEP # 04



SECTION 4
SAMPLE SELECTION

Step No. 1 Assignment of Strata

Using the adjusted Establishment Registry, assign a stratum number to all records on the file. The stratification is based on the Major Industry Group and size group. See table 1 in "Sample Design for the Manpower Training Needs Survey". The output record layout to be used is RF 020. Create a control report showing the number of firms in each stratum, by parish.

Step No. 2 Sort Strata File

Sort output of step 1 by stratum and identification code. Maintain record format for sorted file. Use sorted file in step 5.

Step No. 3 Determine sampling Fraction

The methods and design section will use the control report prepared in step no. 1 to determine the sampling proportion for each stratum and to calculate random start numbers. The sampling proportion will be entered as four digits SSPP

where SS - is the number of establishments to be selected, and

PP - is the numbers in the sub-population from which SS is to be selected

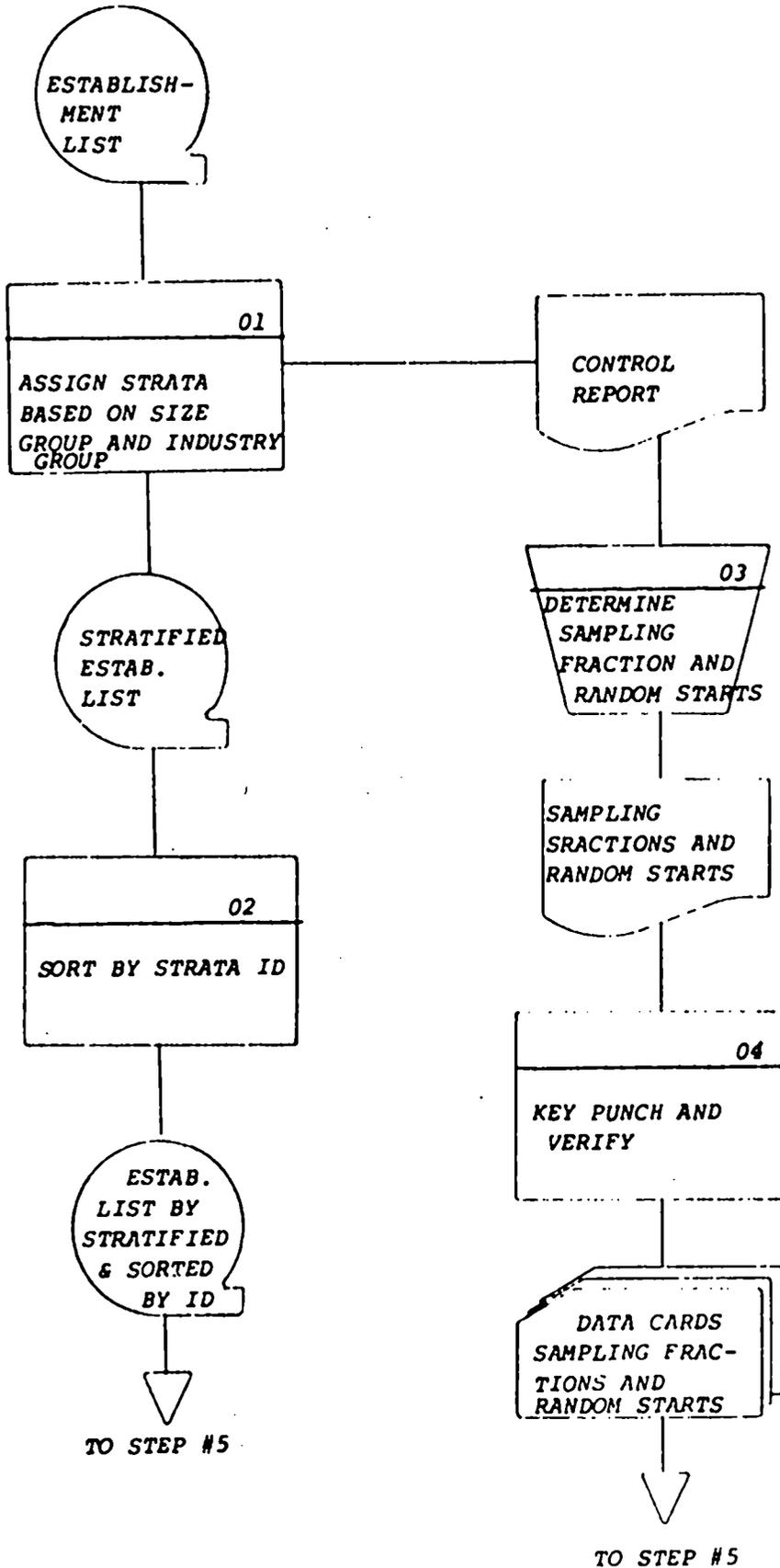
The establishment represented by SS will be indicated by a series of random starts as described in tables 2 and 2 of the sample design write-up. The selection of organizations in the public sector will be administratively chosen, following the decision rule specified in "Addendum to Sample Design for the Manpower Training Needs Survey". In order to select all within a stratum enter SS = 01, PP = 01, First Random Start = 01.

Step No. 4 Punch sample selection information from input sheet prepared in Step 3. The format for punching should be as follows:-

Positions	Data Content
1-3	Strata Number
4-5	SS

MANPOWER TRAINING NEEDS SURVEY

PSU SAMPLE SELECTION

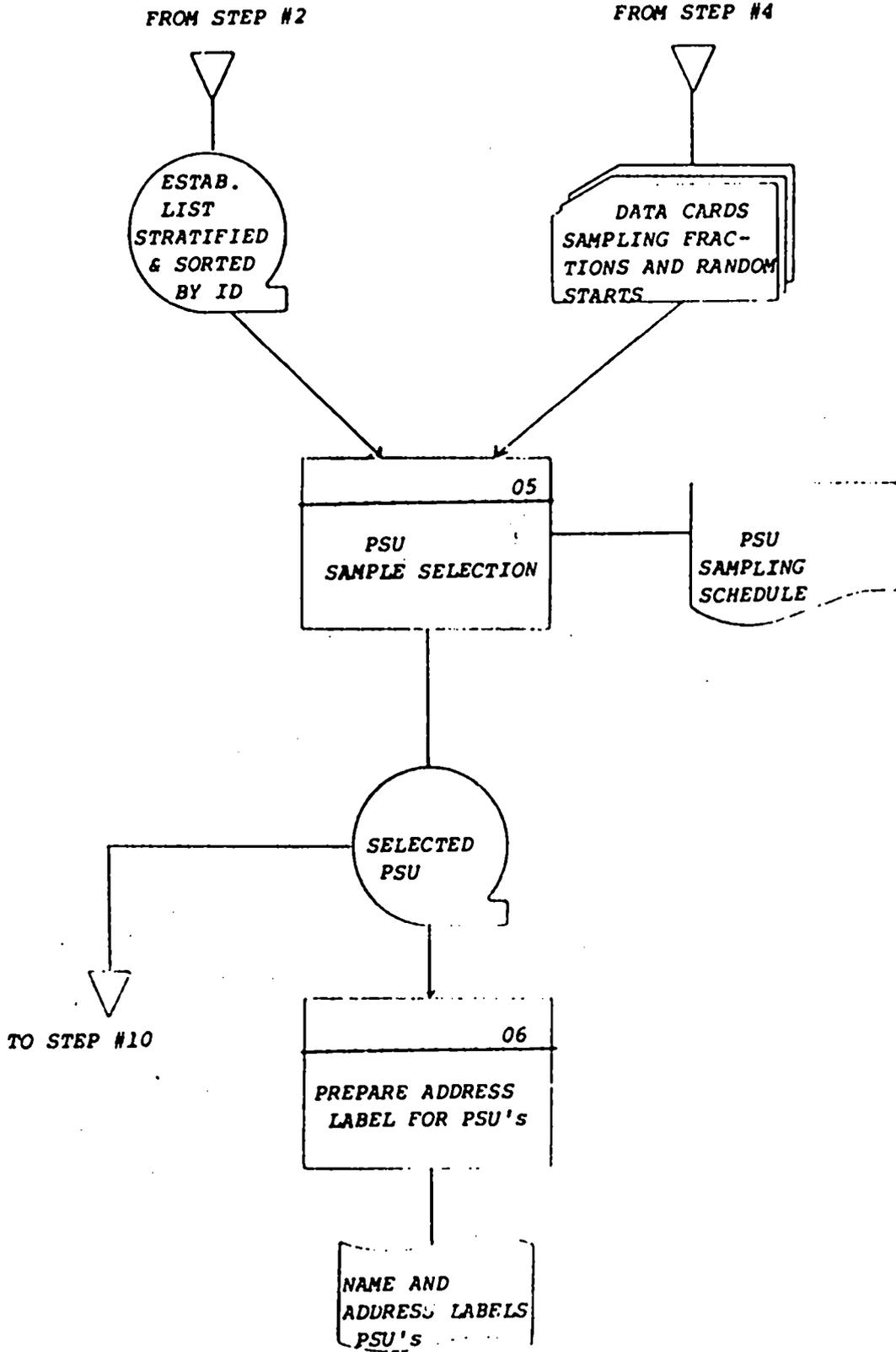


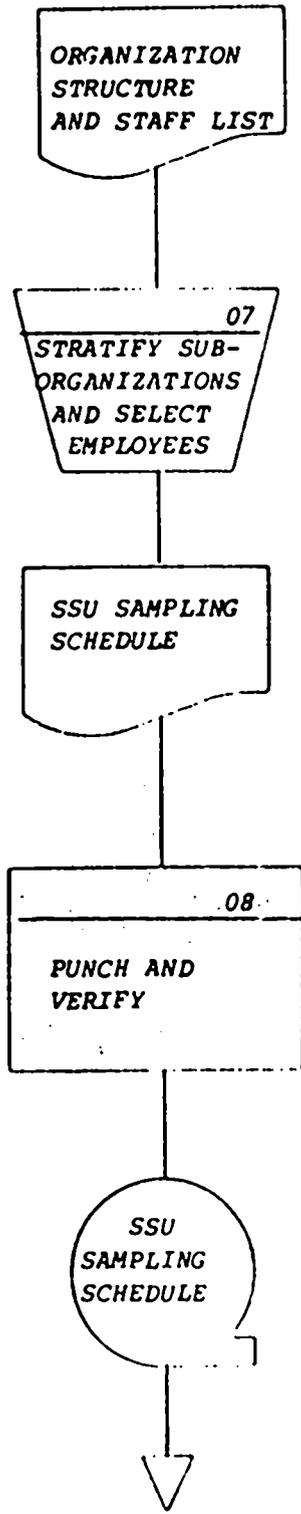
Positions	Data Content
6-7	PP
8-14	Estimator h
21-22	Random Start No. 1
23-24	2
25-26	3
27-28	4
29-30	5
31-32	6
33-34	7
35-36	8
37-38	9
39-40	10
41-42	11
43-44	12
45-46	13
47-48	14
49-50	15
51-52	16
53-54	17
55-56	18
57-58	19
59-60	20

The number of random start numbers given should equal the value of SS. Selection data should be entered onto punched cards, hand sorted and sight checked.

Step No. 5 - First stage sample selection - PSU.

The establishment list sorted by stratum from step 2 forms the universe for selecting the





establishment for the sample. (Public sector PSUs will be administratively determined).

(1) Match the establishment file (File 1) with the Strata control File (Cards). (2) For each stratum read records and count records in file 1. (3) When the count equals any of the random starts indicated on the card file, select the record for output. Maintain a count of records placed on the output by stratum and total file. (4) When the count reached the PP value process that record, and reset then count to 0 before reading the next record.

Even though some strata may require the selection of all establishments, an entry must be submitted in the card file with SS = 01, PP = 01 and First Random start is 01. Any record on either file that does not have a matching entry should be indicated on the printer file, with the proper exception condition indicated. The entries on the selected PSU file should also be listed on the printer showing the following data elements:

Stratum

Identification No.

Size Group

Number of Employees

Name

Address

Location

Parish

Use the output tape in Steps 6 and 10.

Step No. 6 Address Labels

Once the selected list of PSU has been approved by the Survey Co-ordinator, prepare two address labels for each selected entry. The order in which the labels have to be printed will be made prior to the running of this step. If the order is other than stratum and identification number, the file must be sorted in the proper order before this step.

Step No. 7 Stratification of sub-organization

This clerical step must precede any further processing of the sample selection schedule. The

field staff must collect data on the organizational structure of each establishment, the size and staff composition of each unit. Using this data the Systems and Methods Section will stratify sub-organization units and select employees for interview in accordance with the procedures previously defined. The data elements necessary for completing the sample schedule should be entered onto coding sheet for punching. Step No. 8 will outline the data elements and the method of punching.

Step No. 8 Punch verify and convert to tape SSU sampling schedule

ITEM	POSITIONS	ELEMENTS
1	1	Record Type "2"
2	2-4	Strata h (PSU)
3	5-11	ID No.
4	12-14	Sub-Organization Unit No. (SSU)
5	15-46	Name
6	47-78	Address
7	79-96	Location
8	97-100	No. Empl.
9	101-104	No. Empl. Selected
10	105	Strata j (SSU)
11	106-112	Estimator k
12	113-119	Estimator j

Step No. 9 Sort SSU Sampling Schedule punched in Step 8

Sort on: Stratum (h)

PSU No.

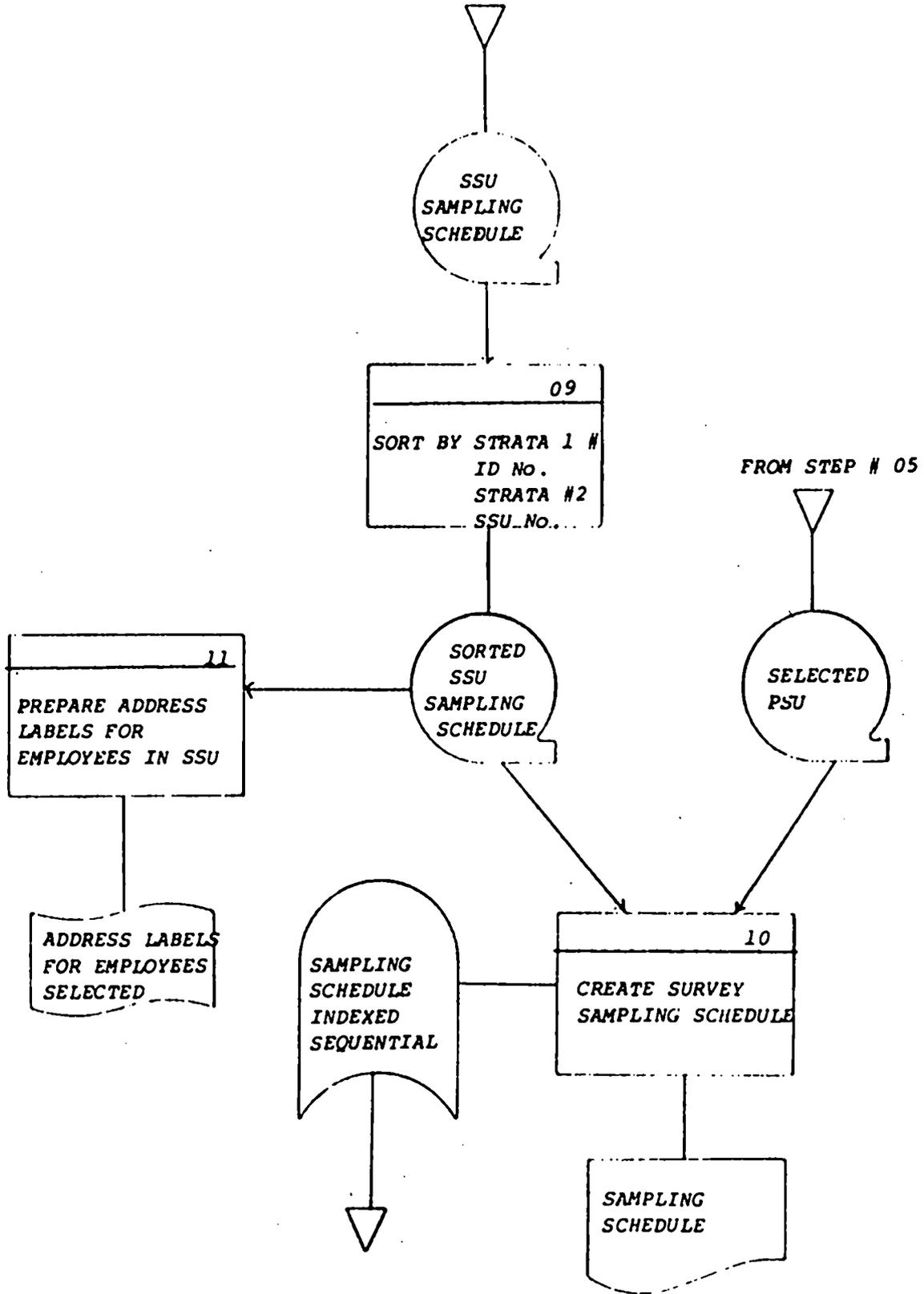
SSU No.

Use output in Step No. 10

Step No. 10 Create Survey Sample Schedule (PSU + SSU)

Use outputs from Steps 5 and 9 create an index sequential file to contain the sampling

FROM STEP # 8



schedule. Merge file while matching on the stratum No., and identification number. The primary file should be the selected PSU's. The indexed key should be:

Stratum No.

ID No.

SSU No.

In placing the PSU record on the file use an SSU number of 000. There should not be an unmatched condition on either file.

Step No. 11 Create Address Labels SSU.

Create on label for each employee selected for interview in each SSU. The label should consist of

IDENTIFICATION NO.	EMPLOYEE INTERVIEW NO.
ESTABLISHMENT NAME	
ADDRESS	
LOCATION	

SECTION 5

QUESTIONNAIRE PROCESSING

At the time that this documentation was being prepared the questionnaires were subject to a pre-test. The basic features of the individual questionnaires are not expected to undergo significant changes. The general procedure recommended here should hold with a moderate degree of modification. There are three record types embodied in the data to be collected, these are spread over two questionnaire formats. The questionnaire (Part I) pertains to the responses of employers, and questionnaire (Part II) deals with responses from employees. A specimen copy of the questionnaire is shown in Section 8 of this outline. In processing these documents the following steps are recommended.

Step No. 1 Batching and Registration of Questionnaire

The purpose of the batching process is to group questionnaires for ease of data management and document retrieval. The questionnaires should be put in batches of 50-60 documents. A four digit batch code has been provided. The first digit should contain a "1" if the data pertains to the private sector survey (From the Department of Statistics) and "2" if from the Public Administrative Sector (National Planning Agency). The batches are to be numbered serially. Place employer and employee returns for the same establishment in the same batch. The establishment will be identified by a 10 digit code S - PPPP - NNN - GG where

S = Sector 1 = Private

2 = Public (Government Owned or Operated)

PPPP = Product group which defines the major product or service

NNN = The serial number of the firm within a product group

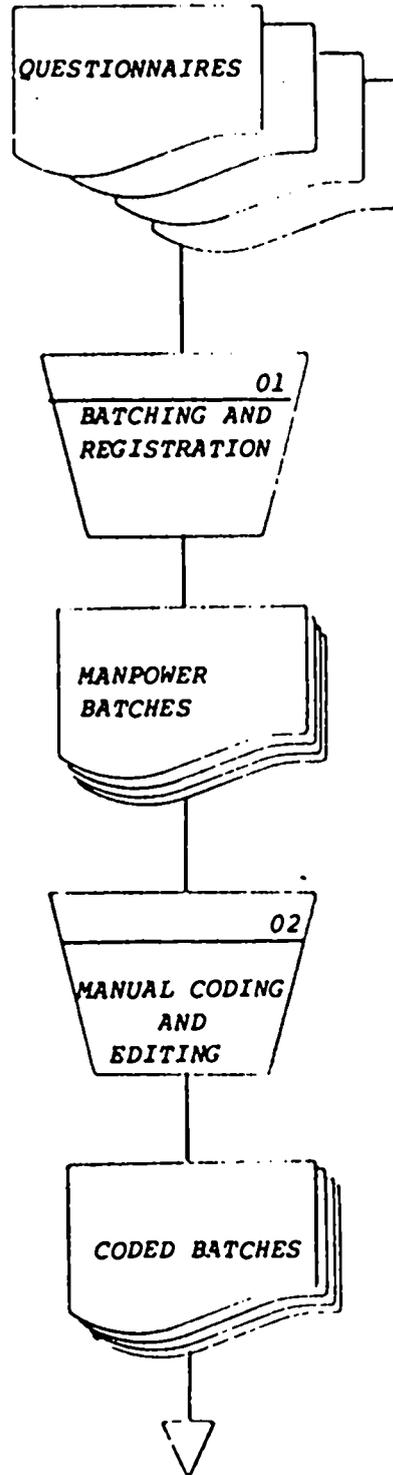
GG = Stratum to which establishment has been assigned

In some cases the number of returns from one organization may exceed the number of documents recommended for one batch, this case the batch can be sub-divided into data sets or sub-batches. A data-set is a sub-division of the data belonging to one establishment. Once batched the proper entry is made in the log book that is to be provided.

MANPOWER TRAINING NEEDS SURVEY

PROCEDURE FLOW

QUESTIONNAIRE PROCESSING



Step No. 2 Manual coding and editing

The questionnaire should be coded and edited according to the instructions provided in the training manual. It is important that the handwriting be legible and that there be no missing responses. As each batch is coded the appropriate entry should be made in the log book provided for coding and editing.

Step No. 3 Data Preparation

The punch format for the three record types are recorded on the relevant document. Record types 1 and 2 pertain to the employer response while record type 3 pertains to the employee questionnaire. Normal key punch procedures for maintaining control of diskett and documents must be maintained. A special diskett control form has been designed. All batches that have been punched and verified should be entered on the form. Once the batches are ready for conversion a cross-reference should be made indicating the computer tapes used in the conversion process.

Step No. 4

Sort tape from step 3 by

Batch No.

Sample Schedule Number

Data Det No.

Record Type

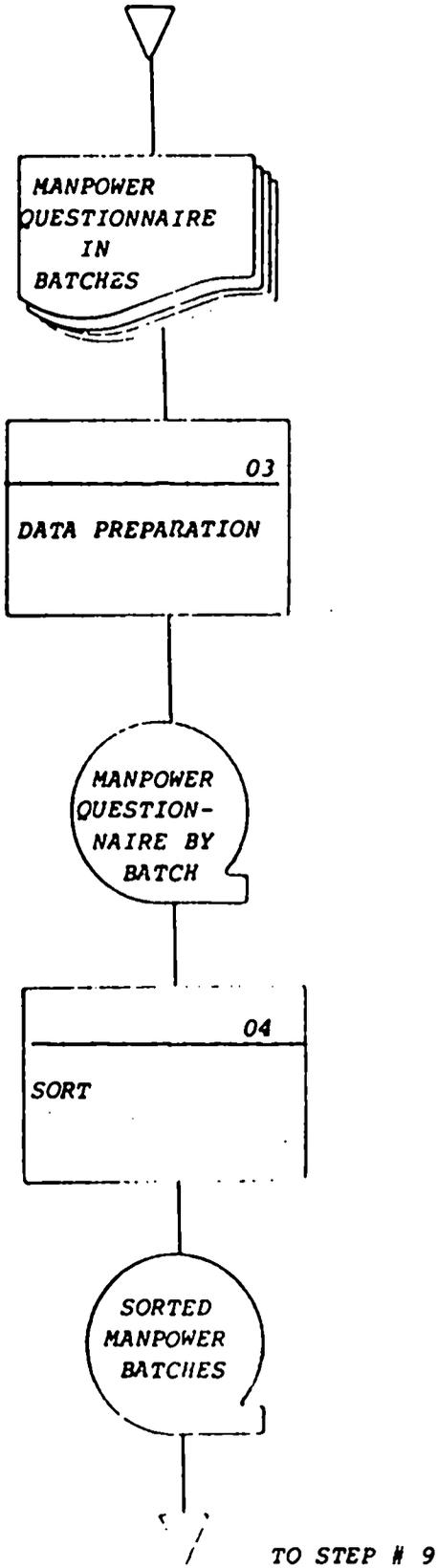
Line Number

Output to be on tape for use in Step No. 9.

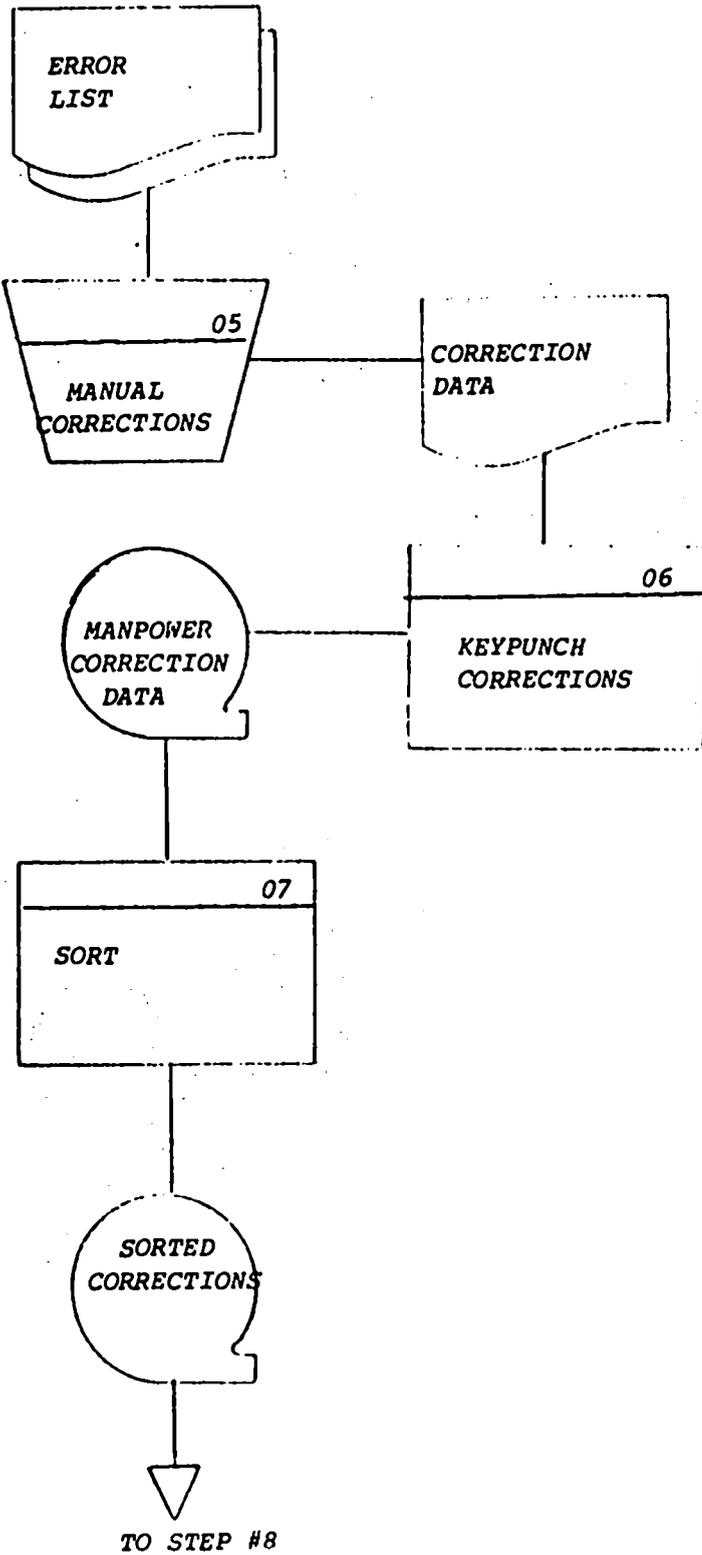
Step No. 5 Manual Corrections

Using error list produced in step 10, determine the cause of the indicated error. Make the appropriate entries on the correction sheet to be provided. The correction sheet will be a long work sheet in which all of the variable for one record type can be entered on one horizontal line. The sheet will allow for the entry of 10 or more corrections. For each entry an associated correction code must be appended. The correction code should be: "A" for the addition of new records to the file, "C" for change to a record that is already on the file, and "D" for the removal

TRAINING NEEDS SURVEY
PUBLIC AND PRIVATE SECTORS



FROM STEP # 10



of a record.

In making "A" entries, insure that all variables are entered. For "C" type, enter the correct information only in those fields that should be changes, otherwise, leave blank. If a field should be changed to zero then enter all zeros in the field. To delete, all that is required on the line is the key field and the correction code of "D".

Step No. 6 Keypunch corrections

The corrections are to be punched according to the positions indicated on the correction sheet. Punch only those fields that are entered. Do not punch zeros in field that are blank on the coding sheet. Convert corrections diskettes to tape when all corrections have been completed, recorded and verified.

Step No. 7 Sort corrections

Sort corrections on the key field. Put output on a tape file. Output to step No. 8.

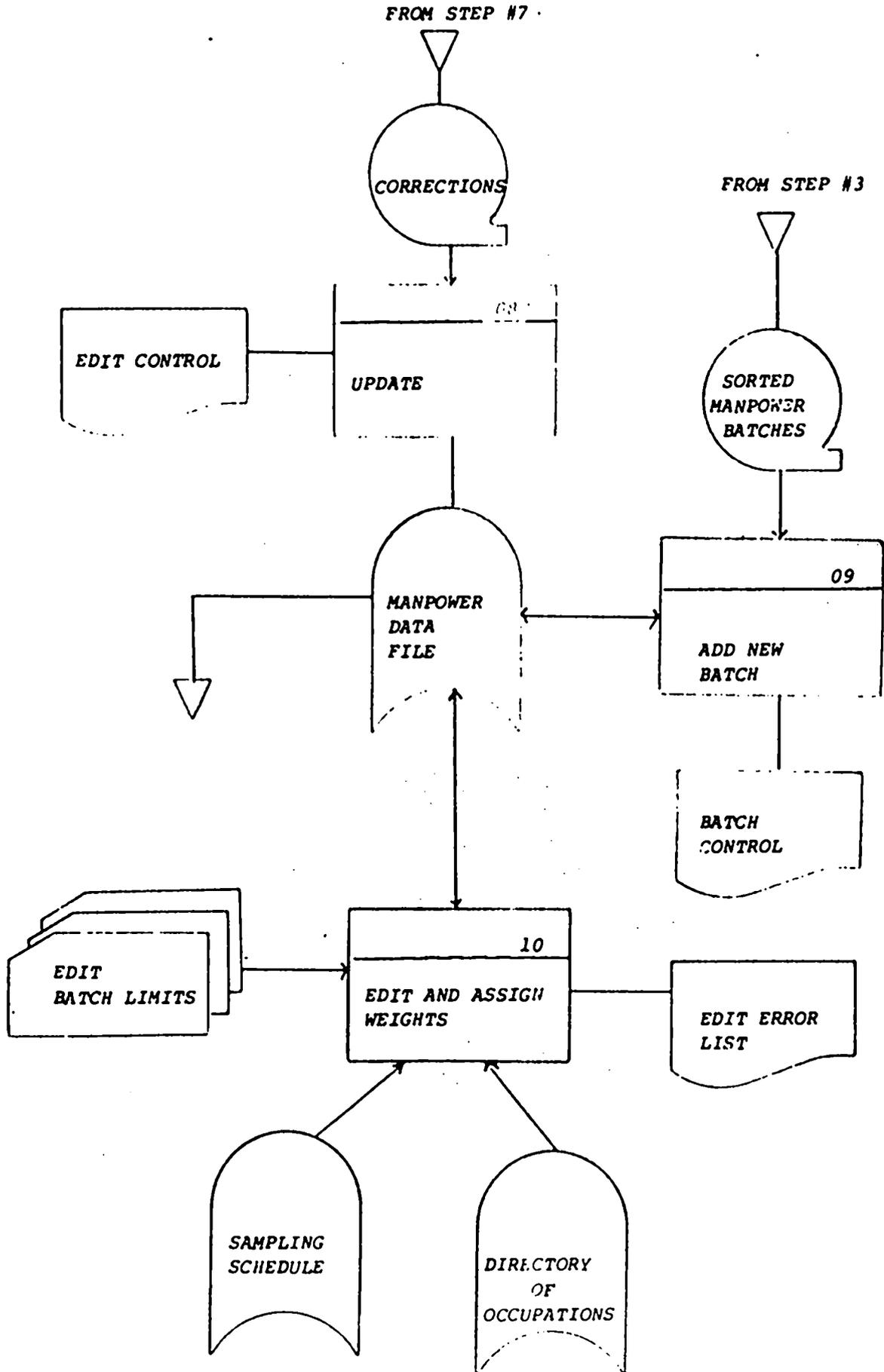
Step No. 8 Update manpower data

This step uses the corrections made as a result of a previous edit, to update the manpower data file. Process the data file in the random access mode. If an entry is an addition insure that the key entry does not already exist. On "C" type change only those fields that are not blank on the correction record. Do not rewrite original entries where the correction code is "D". If this proves to be a difficult proposition, then tag the record with a code that will indicate that it is no longer to be used. Print out all exception conditions.

Step No. 9 Add new Batch

New batches of manpower data should be processed through this program for insertion on the Manpower Data File. The file should be indexed sequential using as the key:

Batch No.	4
Sampling Schedule No.	10
Data Set	2
Record Type	1
Line No./Empl. No.	<u>3</u>
TOTAL KEY LENGTH	20



Print a batch control report showing:

Batch No.
 Sampling Schedule
 Data Set No.
 Number of PSU
 Number of Employee Records

Step No. 10 Edit and Assign weights

This step edits the batches that are on the manpower data file. The edit procedures are shown on the computer edit check list. The list is the same as the manual edit, with slight variation. The occupations code must be validated against the Directory of Occupation. The search key for occupation codes has a five digit code plus the digit 4 (to indicate a detail level). Any occupation not in the directory will be a result of an incomplete directory file or an invalid occupation code. The sample schedule number should equal a corresponding record on the sample schedule file. The key to retrieving records from this file is

No. Sample schedule number
 record type
 SSU No.

When retrieving a sample schedule record for editing a PSU return use a record type "1" or else use record type "2". The edit error report should be as shown on the following pages.

At the end of each batch indicate on edit report:

Batch No.
 Number of PSUs
 Number of Record type 1s in error and total
 Number of Record type 2s in error and total
 Number of Record type 3s in error and total

Place the appropriate estimator on the manpower data during this program, if it can be done without difficulty, if not divide program into two steps.

Step No. 11 Sort edited manpower data file

This step is to be done when all error corrections have been completed. Arrange data in

EDIT SPECIFICATIONS

RECORD TYPE 1

Batch Code	= 1 xxx or 2 xxx
Schedule Number	Must be equal to a number of sampling schedule
Data Set No.	Equal 00
Response 1	Valid Range 1 - 14
2	Do not check
3	Do not check
4	Valid Range 1-5 or 9 (If Batch is 1 xxx)
5	" " 1-4 or 9 (If Batch is 2 xxx)
6	" " 1-3 or 9
7	1 or 2
8	Manual checks only
9	" " "
10	" " "
11	" " "
12	" " "
13	" " "
14	Must equal sum of occupation Totals in Record Type 2
15	Manual checks only

EDIT SPECIFICATIONS

RECORD TYPE 2

Batch Code	= 1 xxx or 2 xxx
Schedule Number	Must be equal to a number on sampling schedule
Data Set	= 00
Line Number	Must be serially sequenced within Employer
Occupation Code	Must be equal to a level 4 entry on the Directory of Occupations
Number of Employees	The sum of all occupations on record Type 2 must equal the number of employees in Record Type 1
Number of Females	Must not be greater than number of employees
Minimum Education Qualification	Valid Range 1-6, or 9
" Training "	1-8
Experience	00-15
Other	Not yet specified
Number of Persons with less Min.	
Education Qualification	Not greater than number employed in this occupation
Training Qualification	Not greater than number employed in this occupation
Vacancies:	
Total	Not greater than 3 times number employed in this occupation
Acting	Not greater than total vacancies
Less than 6 months	Not greater than total vacancies
6-12 months	Not greater than total vacancies
12 months +	Not greater than total vacancies
Recruitment Problems	Valid Range 1-3
New Hires Total	Not greater than 3 times number employed in occupation
Temps.	Not greater than total new hires
Losses Total	Not greater than 3 times number employed in occupation
Temps.	Not greater than total losses
Additional Persons at full capacity	Not greater than 4 times number employed in occupation
Anticipated changes in 12 mos.	-do-

Anticipated changes in 2 years Not greater than 5 times number employed in occupation

Anticipated changes in 5 years Not greater than 6 times number employed in occupation

Persons for Anticipated Changes

Demand for Good or Service 1 or blank

Technology 1 or blank

Level or Capacity Utilization 1 or blank

Rationalization of Organisa-
tion Structure 1 or blank

Requirements of 5 year plan 1 or blank

Other 1 or blank

**Type of Training provided by
Establishment**

None 1 or blank

On the job 1 or blank

Apprenticeship 1 or blank

In-Service 1 or blank

Institutional 1 or blank

Other 1 or blank

If none equals 1 than all other types must equal blank.

If other than none is checked than none must be blank.

EDIT SPECIFICATIONS

RECORD TYPE 3

Batch Code	= 1 xxx or 2 xxx
Schedule Number	Must be equal to a number on sampling schedule
Data Set	
Response 1 (a)	Must be equal to a level 4 entry in Directory of occupations
1 (b)	Not yet determined
2	Not yet determined
3	Valid Range 1-6
4	1-5
5	1-2
6	1-6
7	14-70
8	1-2
9	1-7
10	1-9
11	Must be equal to a level 4 entry in Directory of occupations or "00000" (Note a skip check may be inserted later)
12	Valid Range 1-7 If 11 equal zeros than 12 = blank
13	Valid Range 1-5
14	Can not be less than (1979) - (Age + 14)
15	Equal 1 or 2
16	Must be equal to a level 4 entry in Directory of occupations or 00000 If Question 15 = 2
Response 17	Valid Range 1-2
18	01-14
19	01-14
20	01-15
21 (a)	01-14
(b)	01-14, blank
(c)	01-14, blank
(d)	01-14, blank
(e)	01-14, blank

the order of: Strata h

PSU No.

Record Type

SSU No.

Employee No.

Output to work tape for use in step 12.

Step No. 12 Create Control Report

The suggested format of the control report is shown on the following page, and is titled: "Sample Listing Control." Match the data files on the Stratum and PSU (Sampling Schedule) fields.

Step No. 13 Recalculation of Estimators

This step may not be used. Due to the possibility of receiving a number of non-responses provision is made to readjust the estimators based upon the number of units reporting out of the total population. If there is no further need to adjust estimators notify operation on which tape to use. Use output of step 11 if no adjustments were made, else use output of step 16.

Step No. 14 Punch, verify and convert adjustments to Sampling Schedule. The variables that must be entered are: Strata h

PSU No.

Record Type.

SSU No.

Estimator h

Estimator j

No. Employees selected

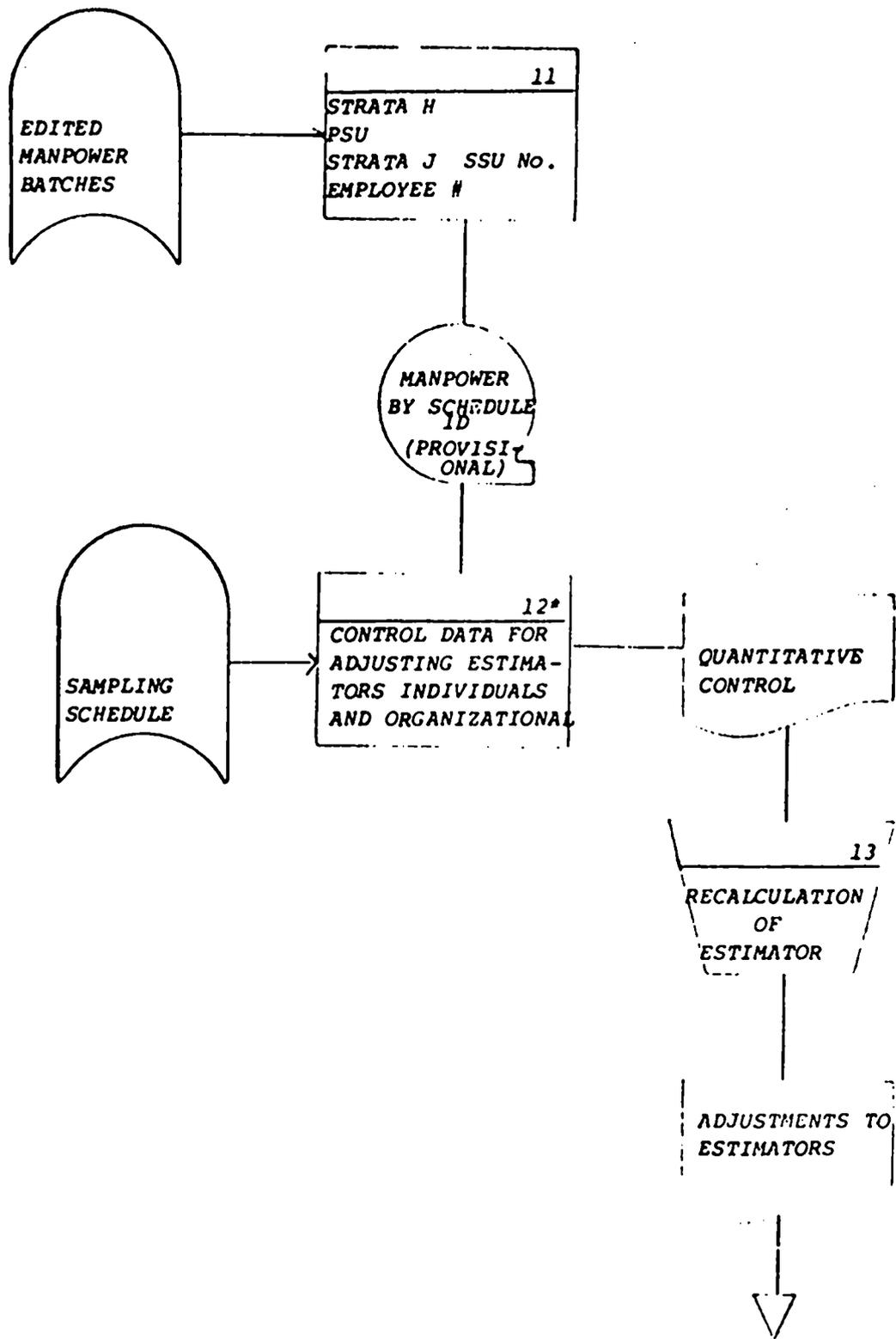
The programmer will supply the exact layout for the punching prior to the correction of the data. If there is a second attempt to make adjustments to Estimator correct the diskettes used during the previous data entry process.

MANPOWER TRAINING NEEDS SURVEY

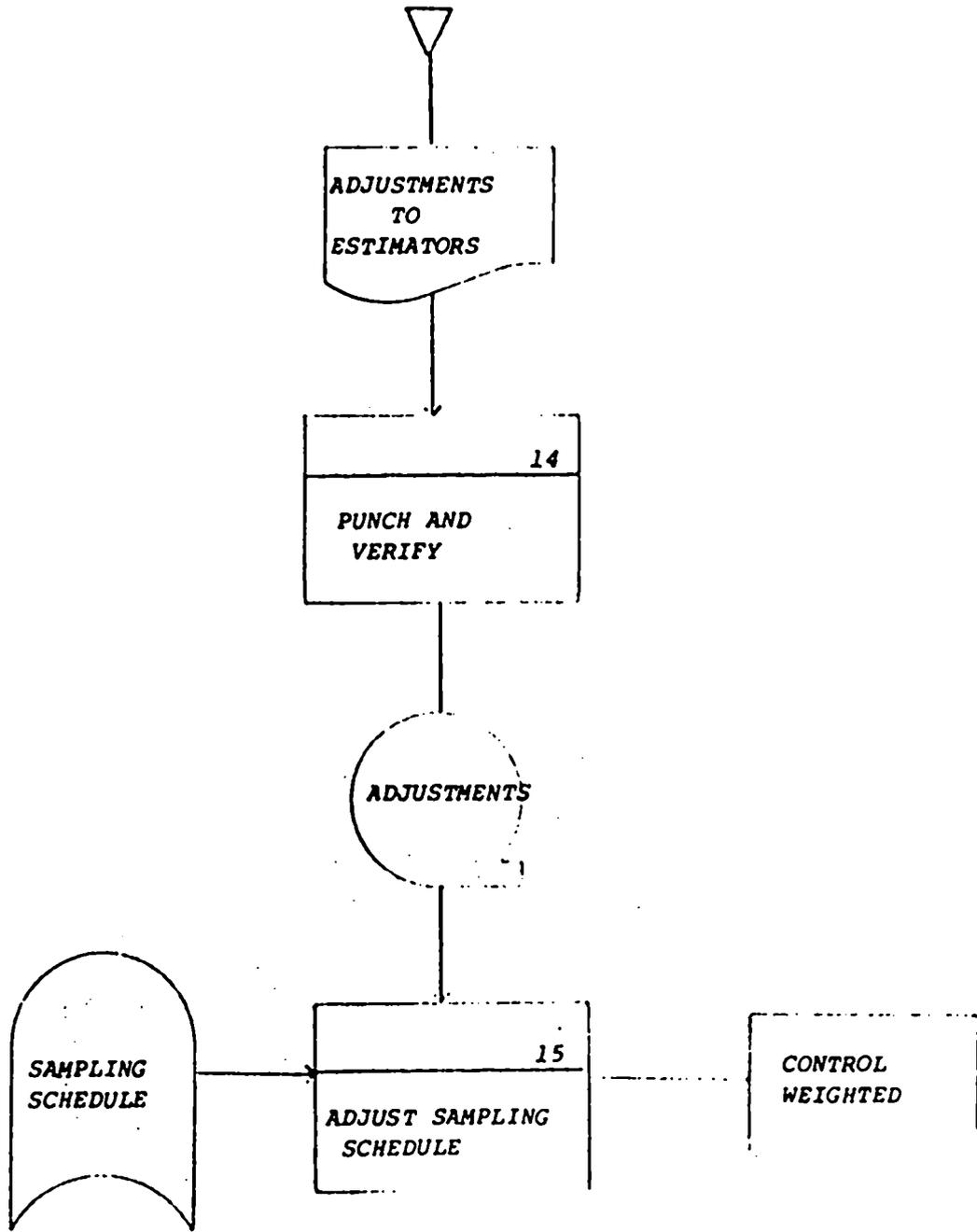
SAMPLE LISTING CONTROL

PRIVATE SECTOR/PUBLIC SECTOR

P.S.U. IDENTIFICATION	NUMBER OF EMPLOYEES		SAMPLE SELECTION		INTERVIEWS		MISSING RESPONSE	
	ESTIMATED	REPORTED	S.S.U's	EMPLOYEE	S.S.U.S	EMPLOYEES	S.S.U's	EMPLOYEE
TOTAL xxxxx PSU's REPORTING								
TOTAL xxxxx PSU's NOT REPORTING								



FROM STEP #13



Step No. 15 Adjust Sampling Schedule

Update the Sampling Schedule with adjustments made in step No. 13. Update in a random access mode. The fields to be updated are those entered on the adjustment file. There should not be any new entries into the Sampling Schedule at this point. Prepare a control report showing the changes made. Print the "before" condition and the "after" condition for each field changed.

Step No. 16 Re-apply Adjusted Estimators

The manpower data file from step 11 is matched against the Sample schedule file On:

Strata h

PSU Schedule No.

SSU Schedule No.

The record type intervenes in the sort sequence between the PSU schedule and SSU Schedule numbers on both files, but this should not affect the matching sequence as the SSU number should be zero on the record type 1 of the Sample Schedule. If a problem exists re-sort the file to eliminate the intervening field. Output tape file to step 12. If there are no further adjustments to the Estimators, this tape is to be used in creating final output report files.

Step No. 17 Select Records for report file

Create two disk files for reporting purposes. The Labour Demand Report File should contain all information from record types 1 and 2. The Labour Supply report file should contain all record type 3's. It is suggested that the selected information from record type 1 be placed on record types 2 and 3. Extract:

Ownership Status

Legal Status

Size Group

Data Operation begin

Parish of Business Operation

Create a new field for intermediate industry group use, the first 2 digits of the establishment number except for "91" public administration group in which case use the 3rd and 4th digits.

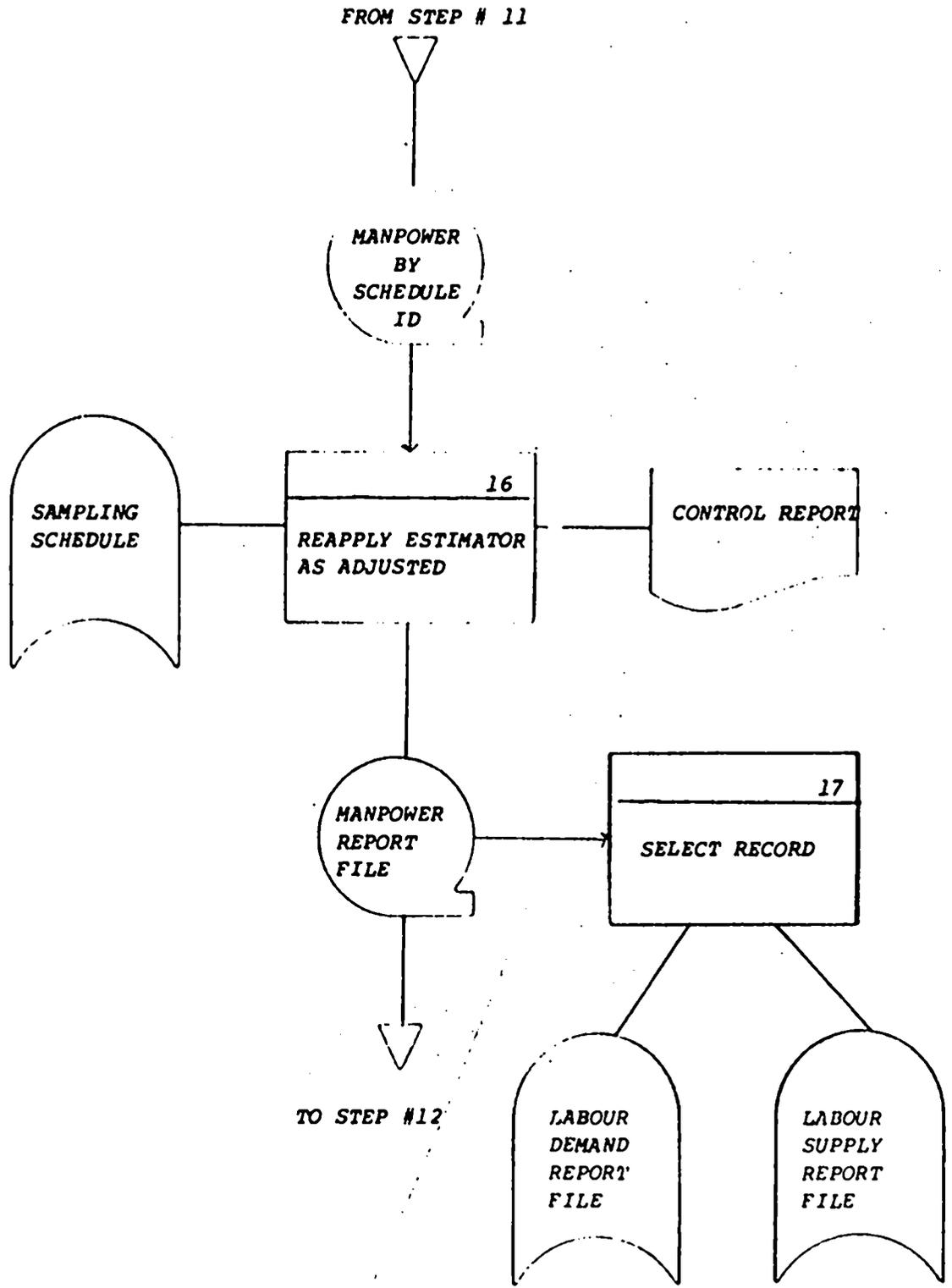
It is also suggested that a single weight be calculated for the Labour Supply. The single weight = Estimator h x Estimator j x Estimator k. The calculation should be verified with the Methods Section before being programmed. There may be a shortage of space on the manpower disk pack, if that is the case, copy the Sample Schedule and the manpower batch data to permanent tape files, and delete from disk. Save input to step 17 as a permanent file. Back-up each saved tape file.

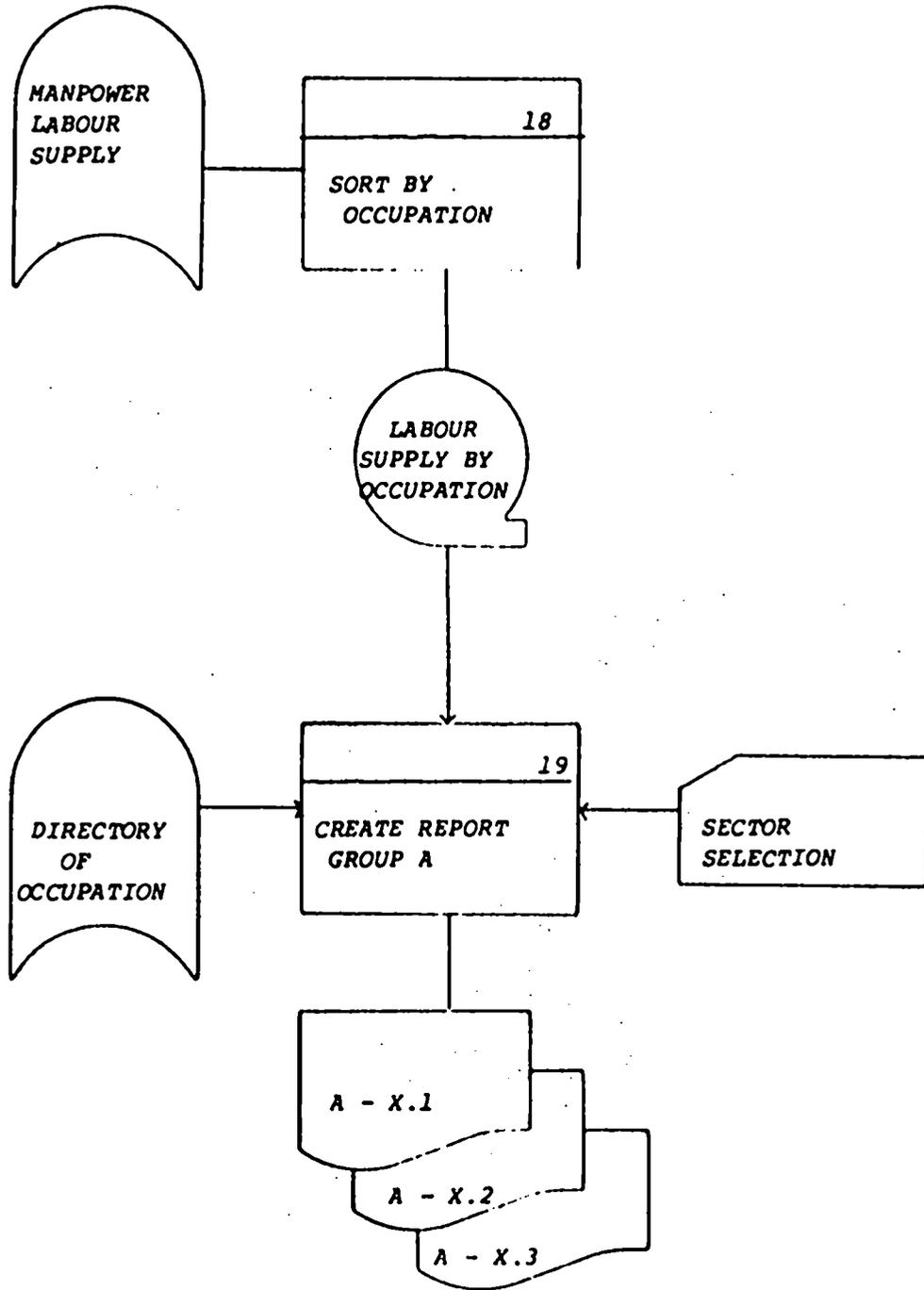
REPORTING PHASE

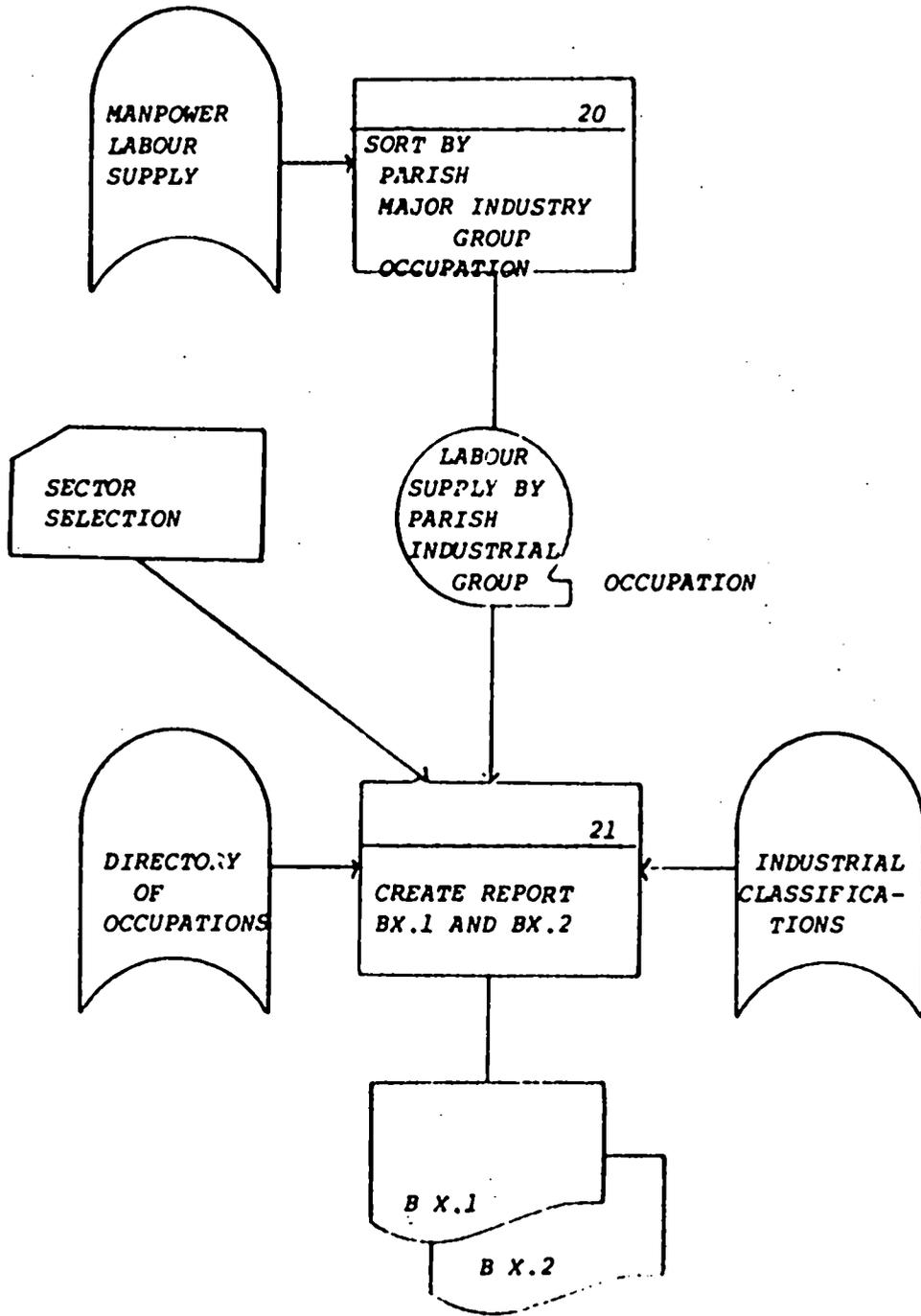
- (1) Note steps related to the preparation of report groups A, B, CX.1 and CX.2 may have to be reconsidered as there is these require the reporting at parish and or the four digit industry level. The survey was not designed for these levels of reporting and may not be statistically meaningful. Consult with the project management before beginning work on these programmes.
- (2) A control card is to be read into each report program. The control card will determine whether the private sector, or public sector or the combined file is being processed. Whatever criteria is defined for the public sector, use that in selecting. The reporting for the intermediate industry group as they relate to the public administrative group may require the 3rd and 4th digits (Ministry code) or the function code as defined by NPA. At the time of this documentation the Systems Analyst was unable to determine the definition of and method of reporting the two sectors. Whenever the definition has been made, use it constantly in all reporting programs.
- (3) When reporting at occupation or occupation group levels use the level code and line number as a suffix to the occupation code in order to retrieve the proper title line. Print the sums on the last title line. Add one to each title line number retrieved and try again until all have been retrieved.
- (4) Some report programs produce more than one table. This is suggested when the sequence required in the same and the only variations that is needed is different tally value or a different column variable. Each report requires one pass of the data file

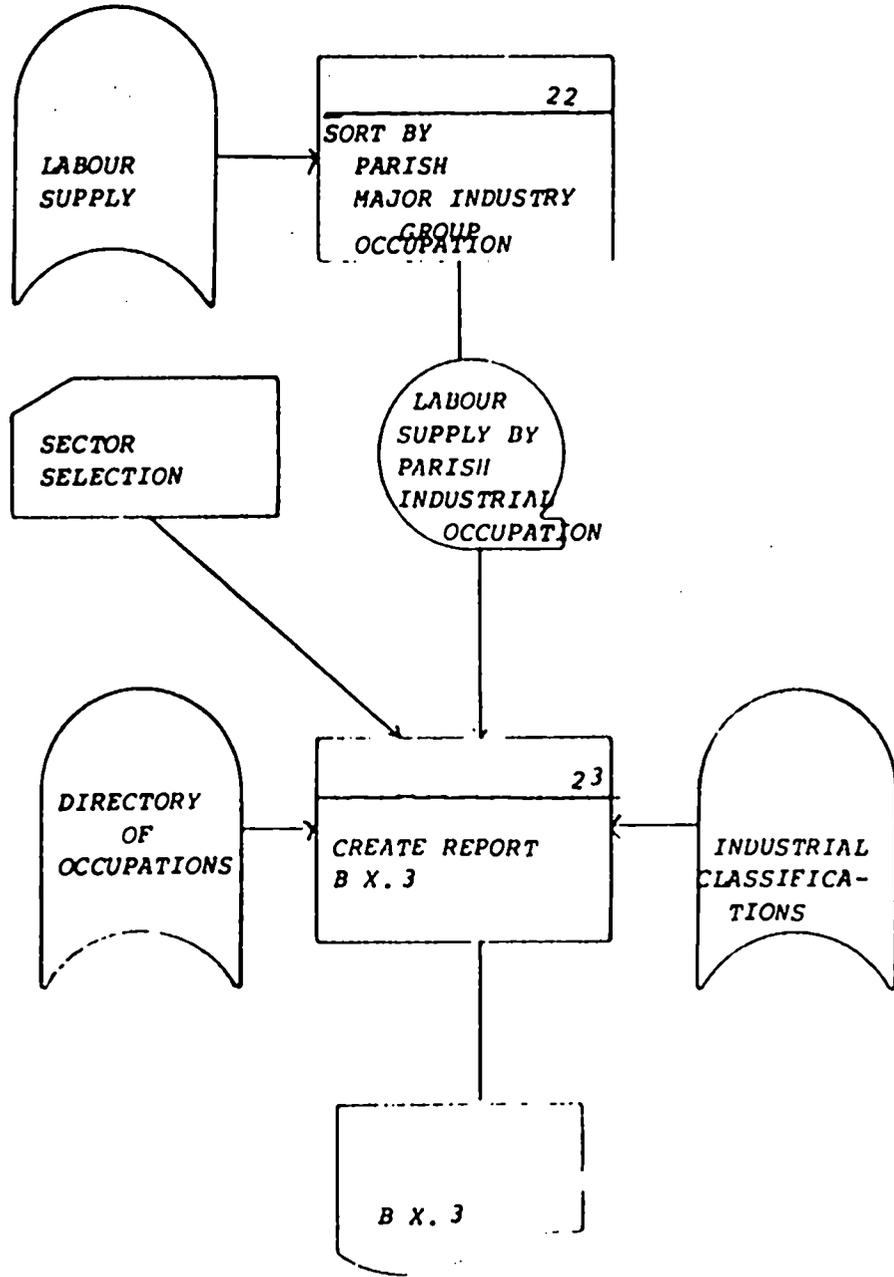
which is opened and closed several times during the program.

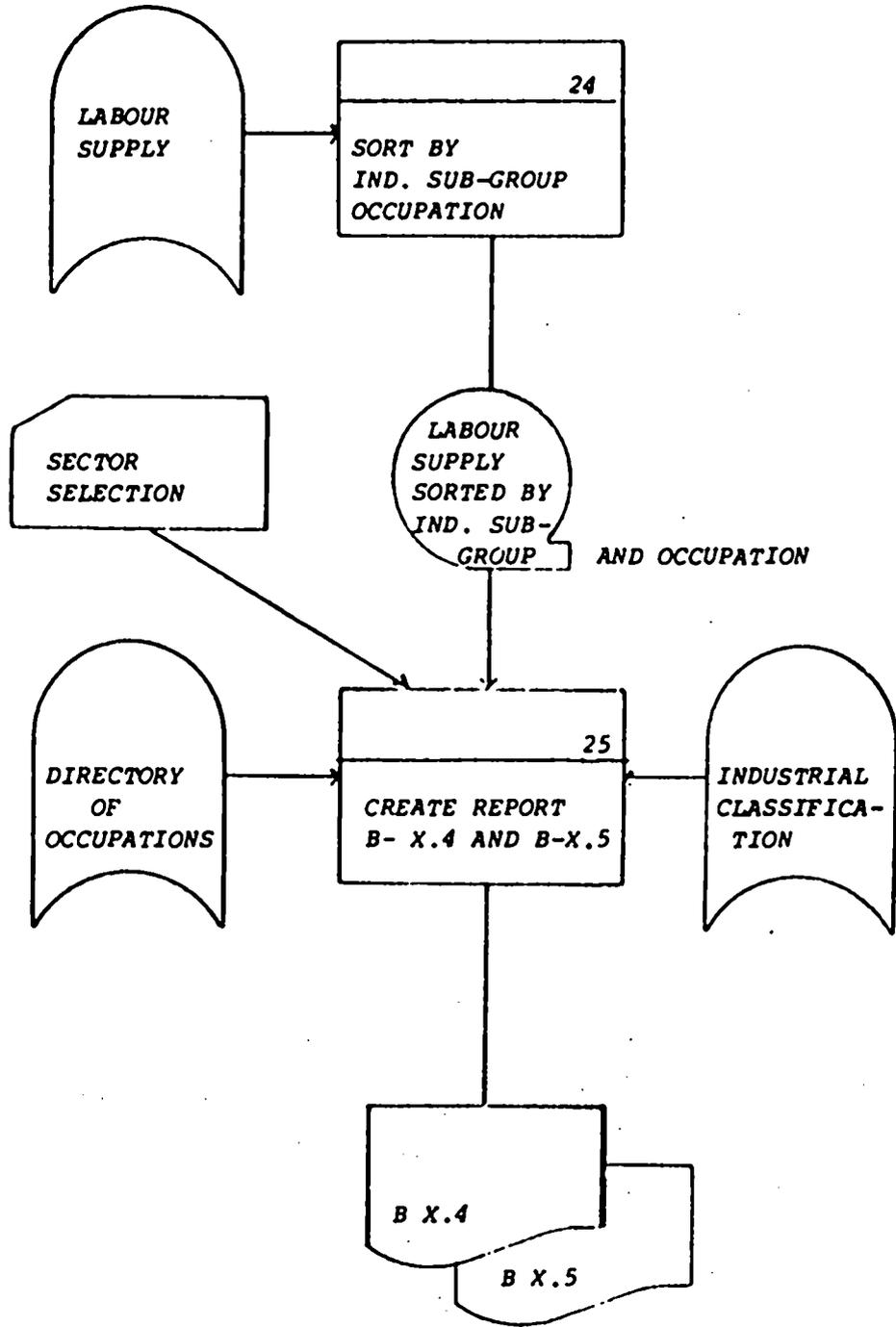
- (5) Note that some of the industrial classifications coding group may be overlapping, that is the group may include more than one code number. The same may apply for the occupation codes. This is particularly true at the one digit level where the first major group comes under codes 0 and 1.
- (6) Programs that produce 3 or more tables should include a restart procedure.
- (7) Effective use should be made of the source program library so that the amount of coding and de-bug time is reduced. The library should include the routines for:
 - Select Statements for commonly used files
 - File Section for commonly used files
 - Work Areas for commonly used variables
 - Read directory
sub-routine etc.
- (8) Detailed procedures are not necessary for the individual program as the systems flow is quite clear about the files to be used and the reports to be produced.

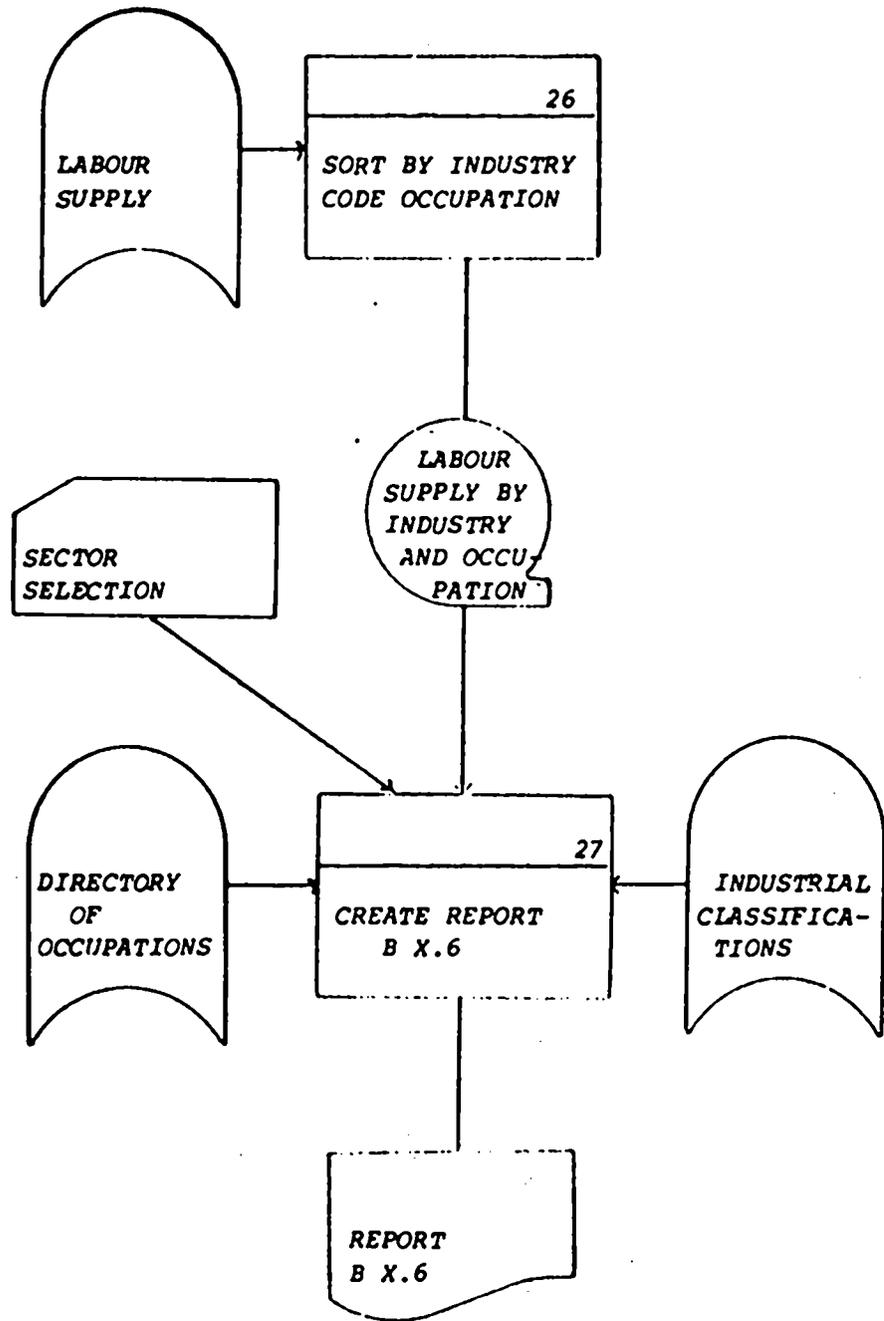


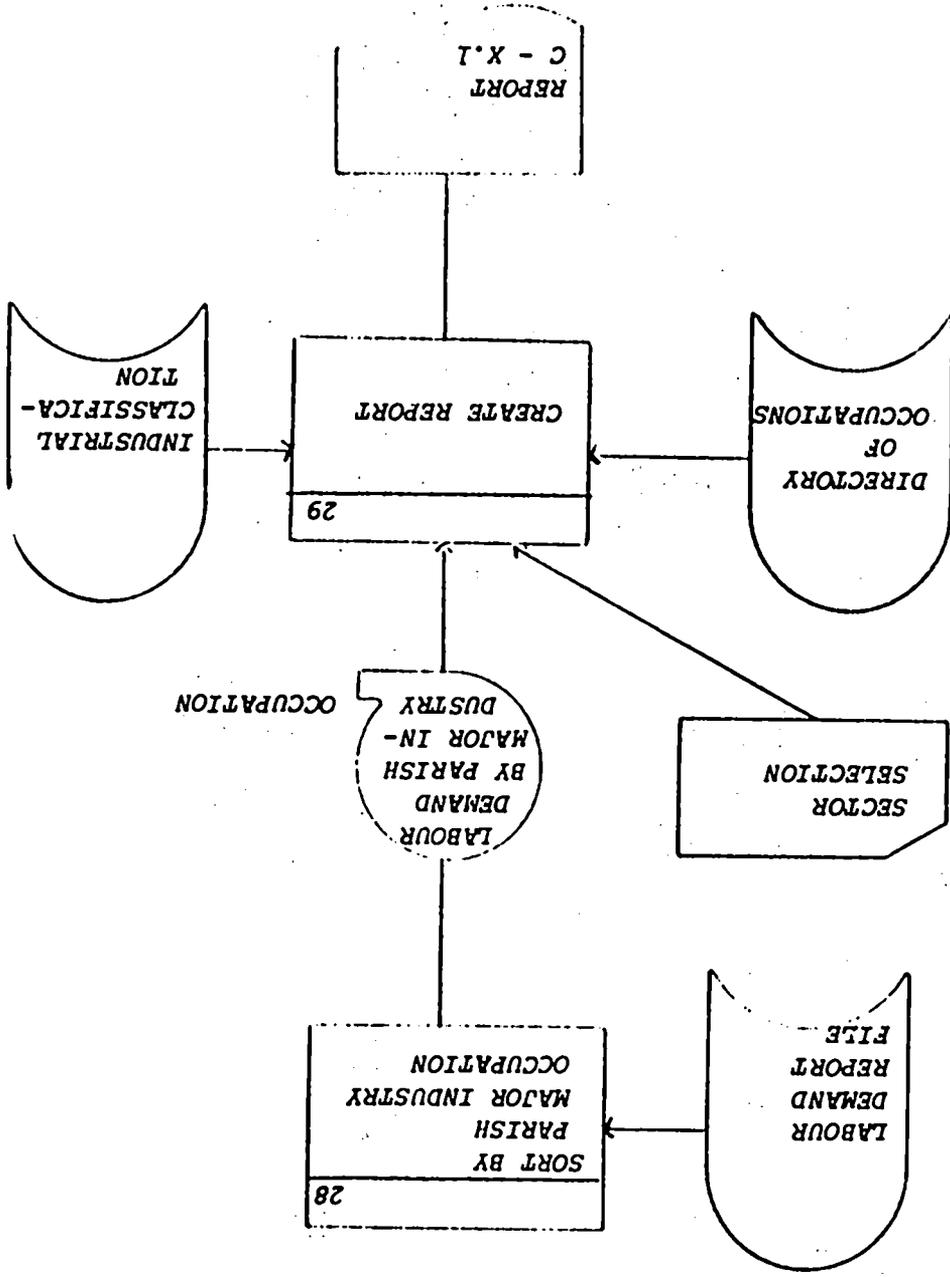


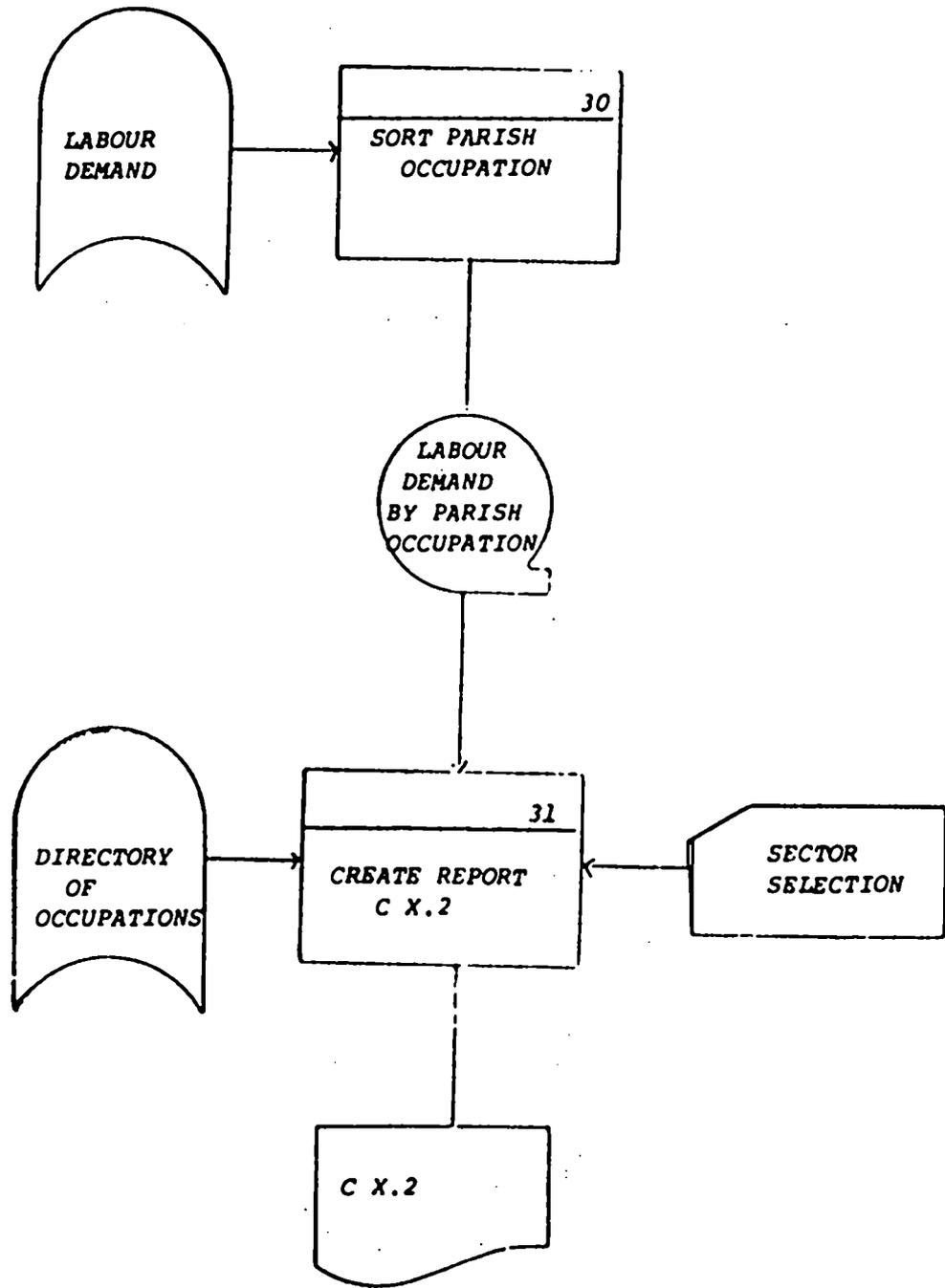


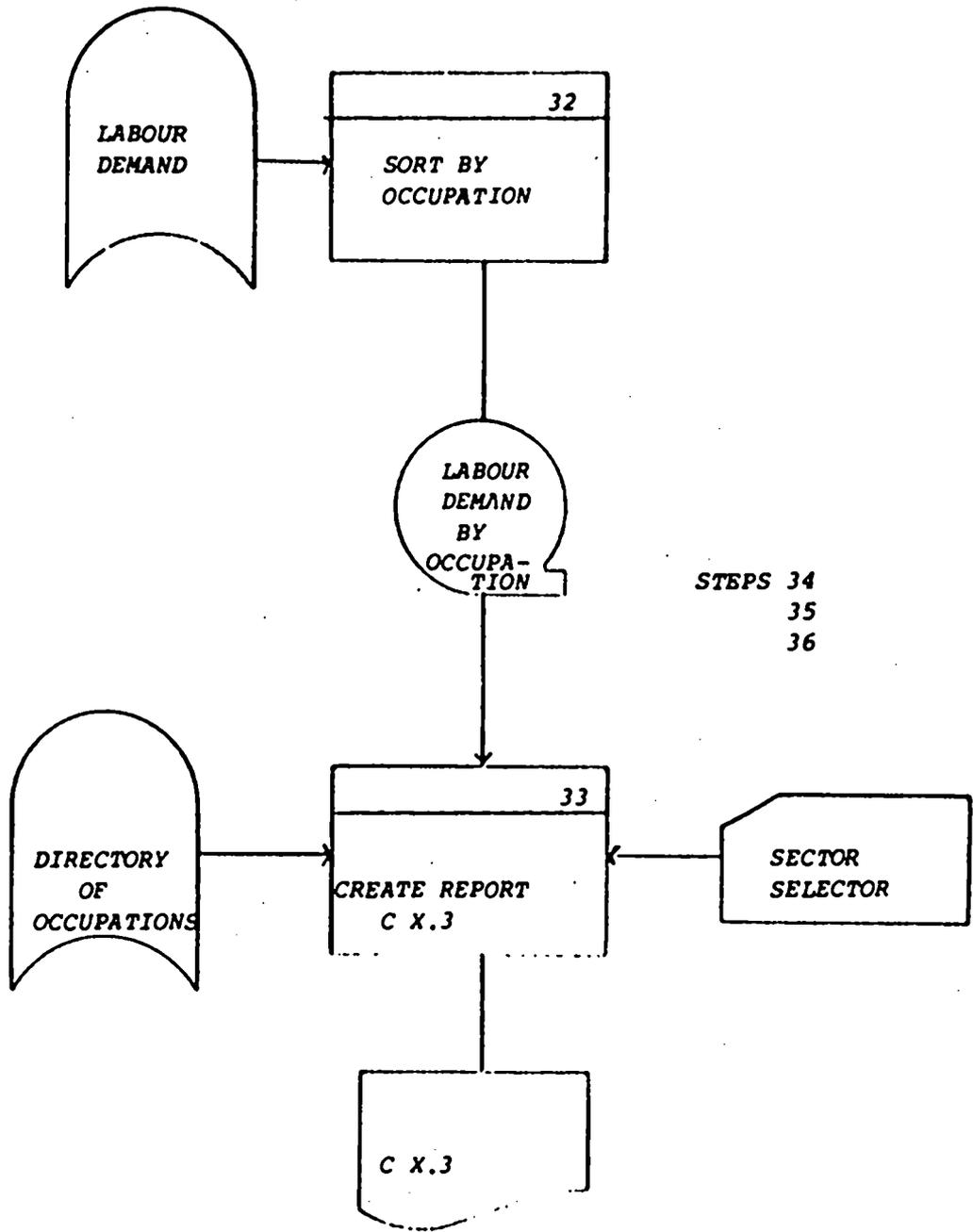


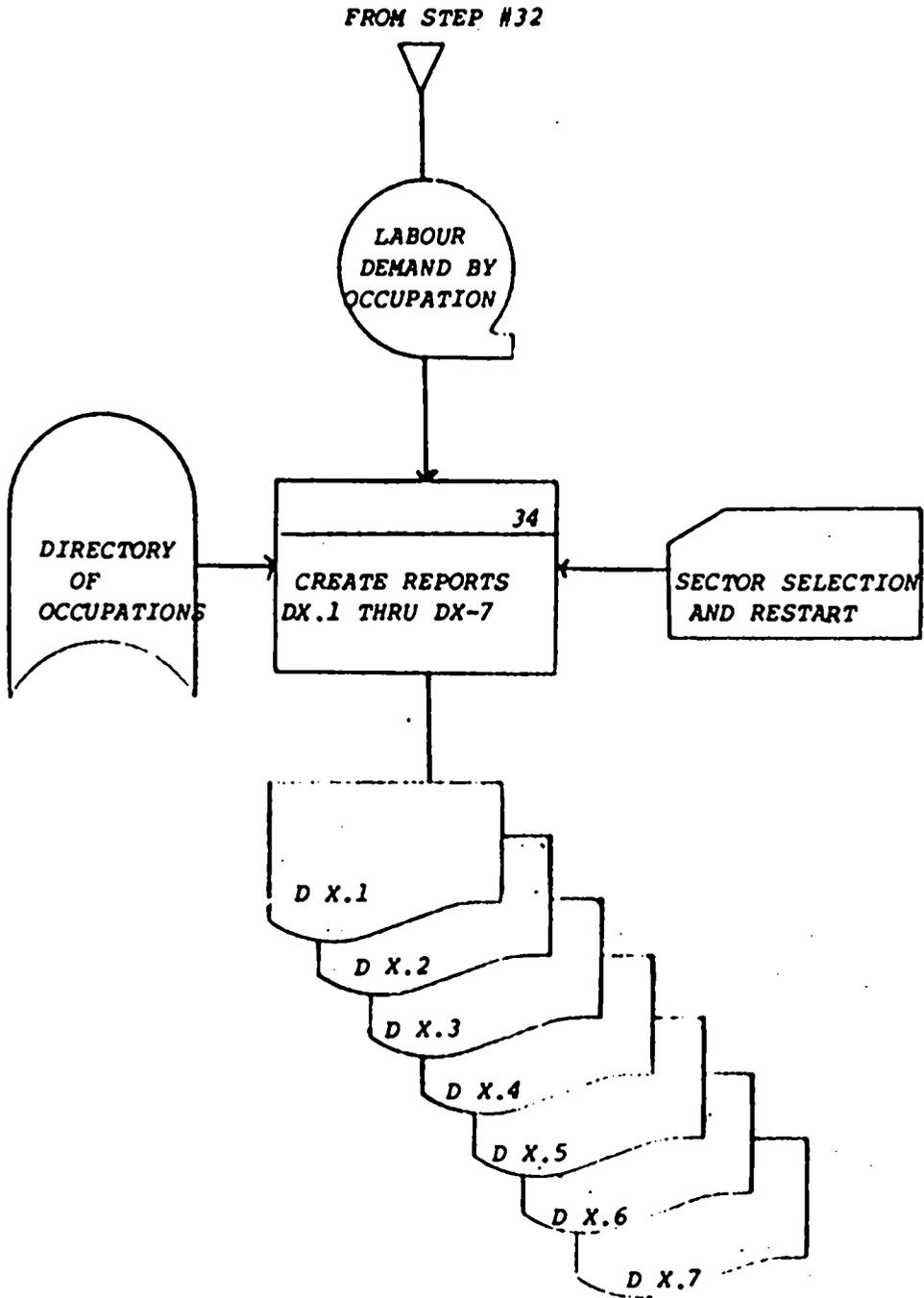


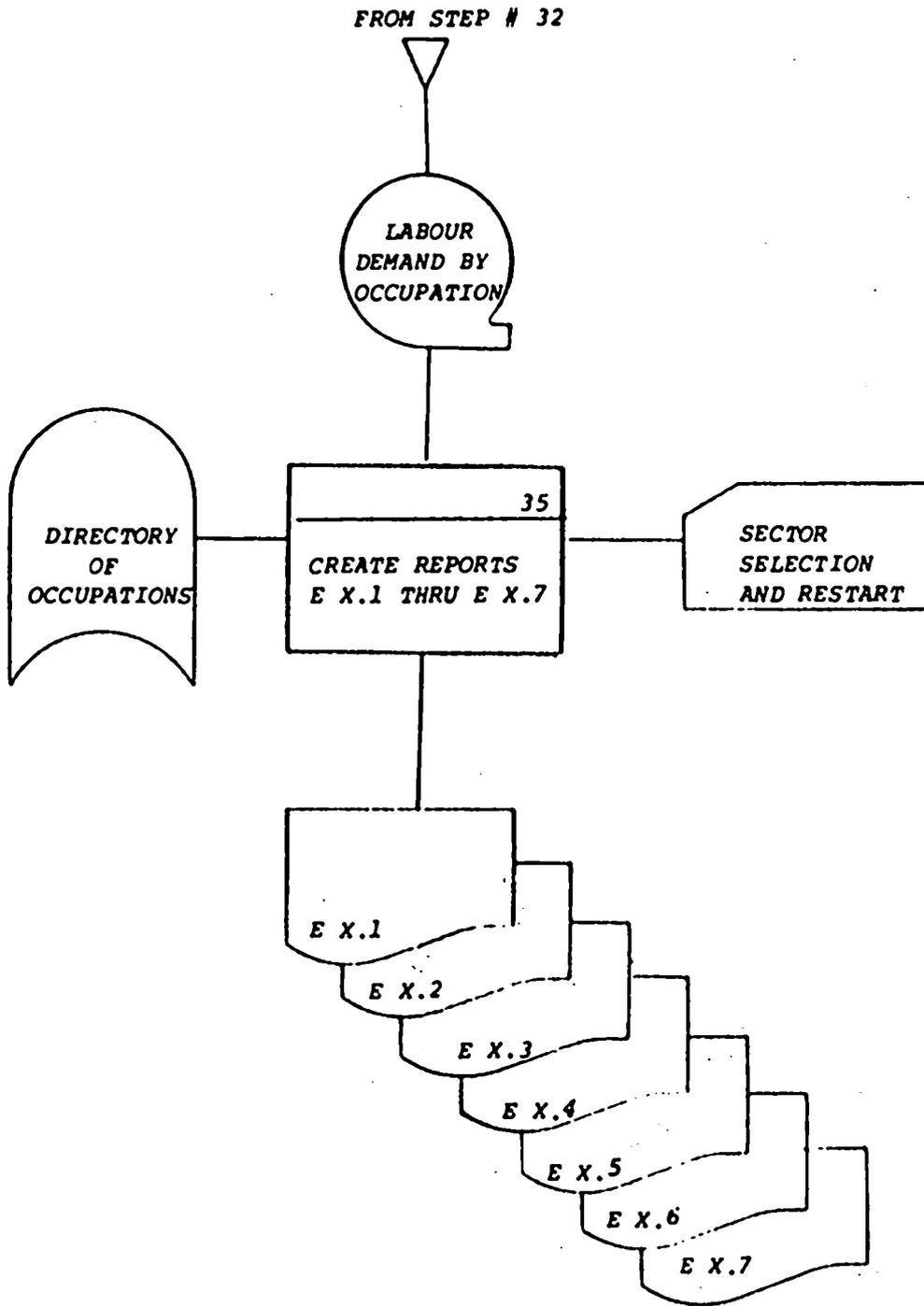


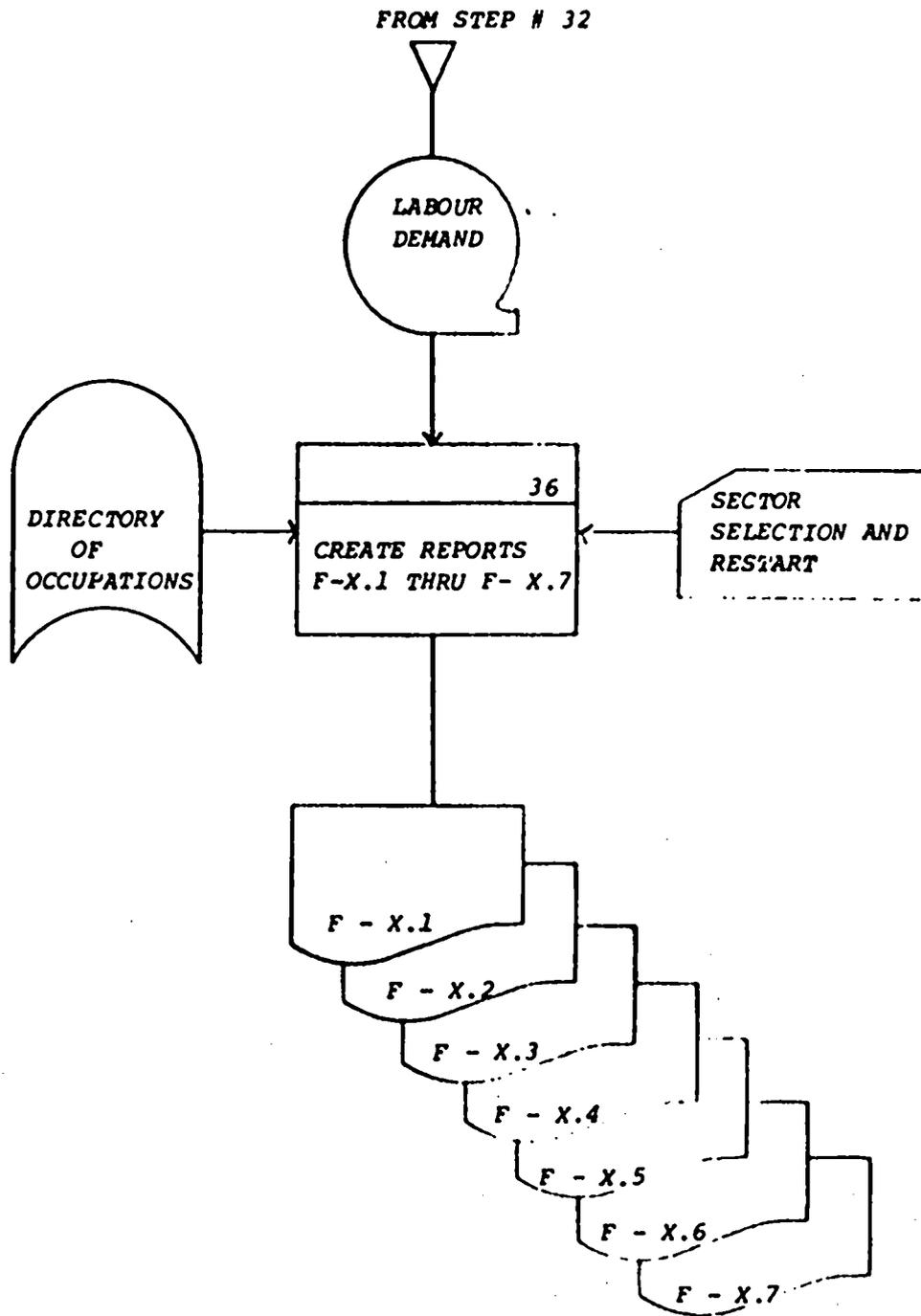




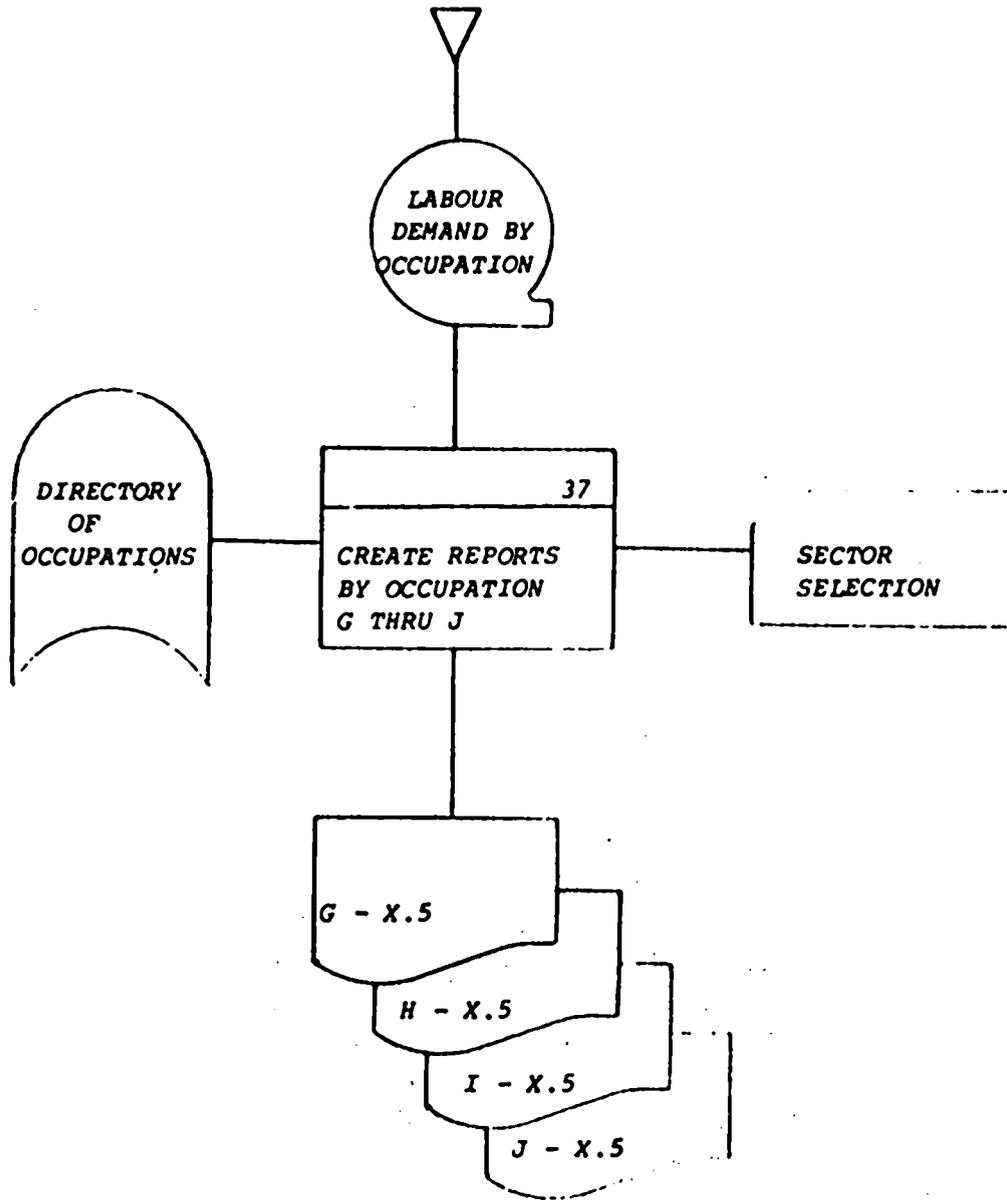


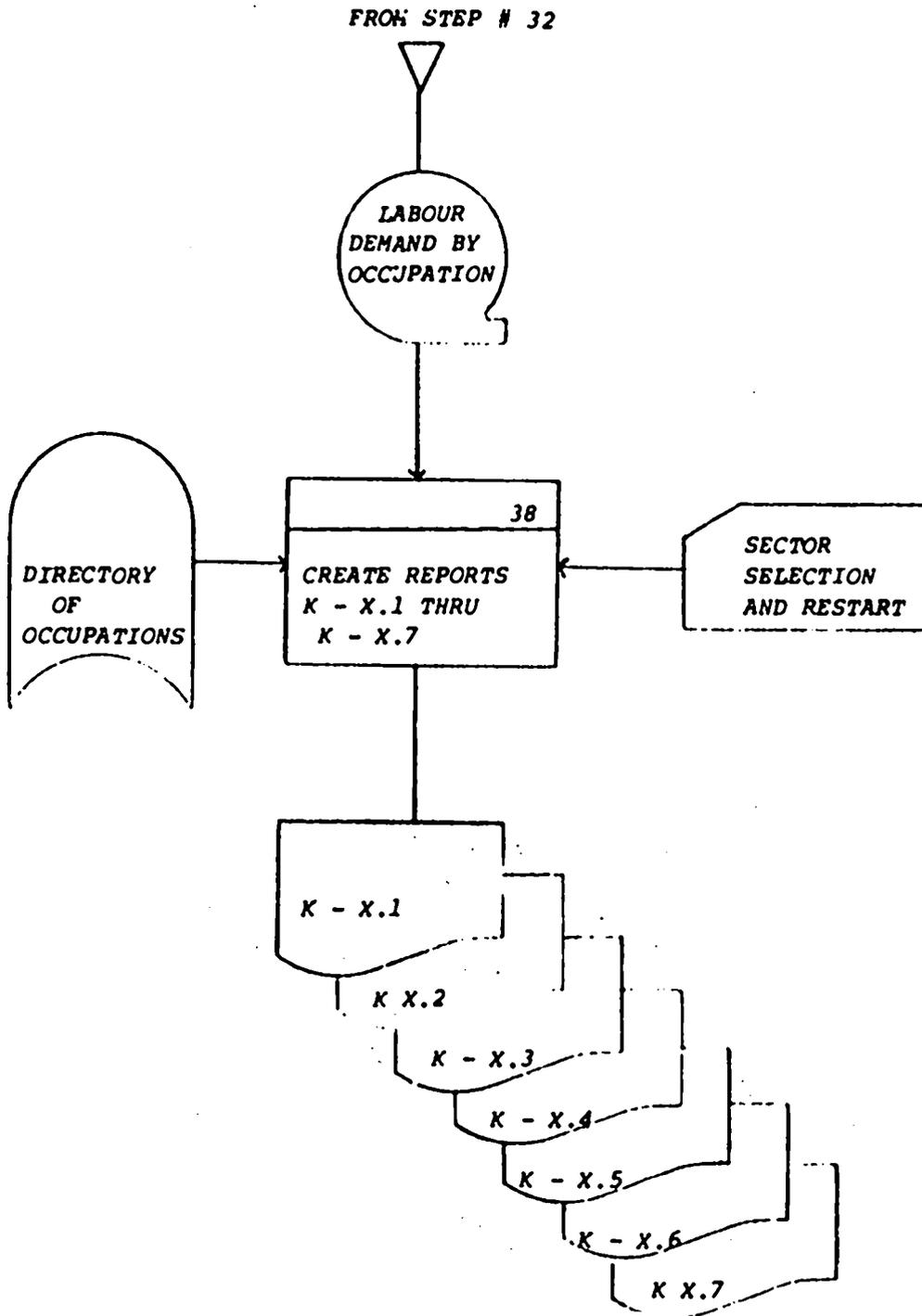


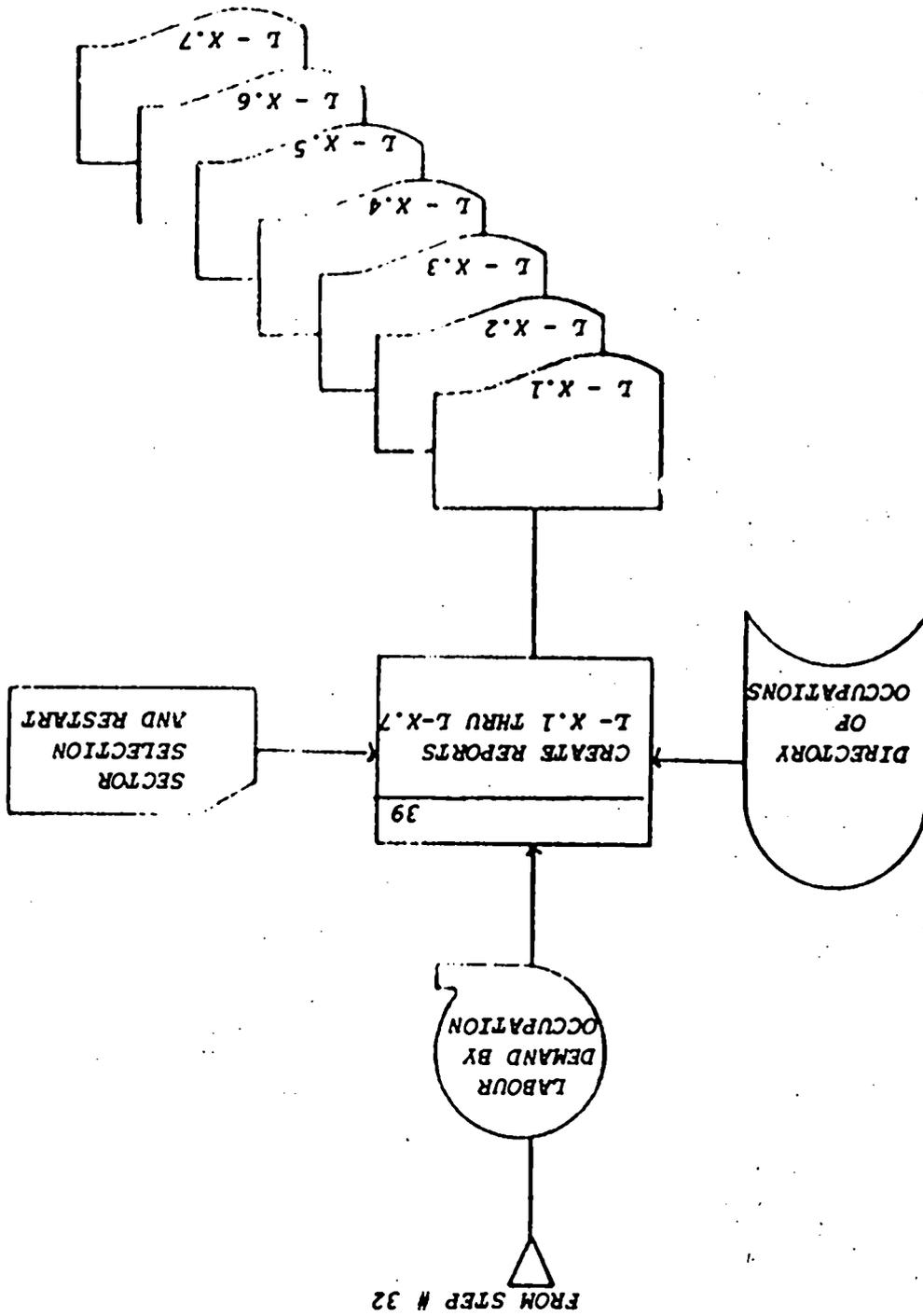


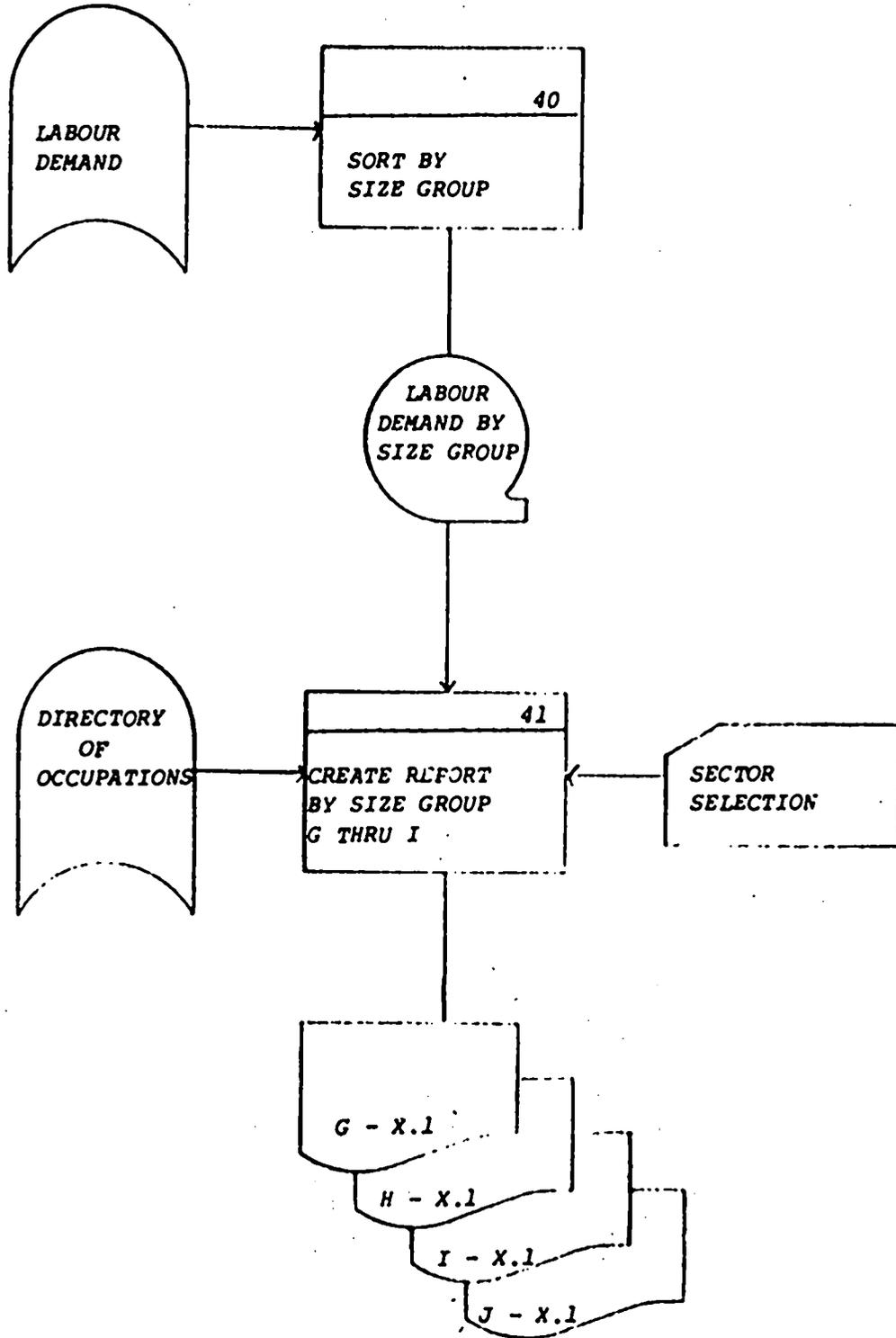


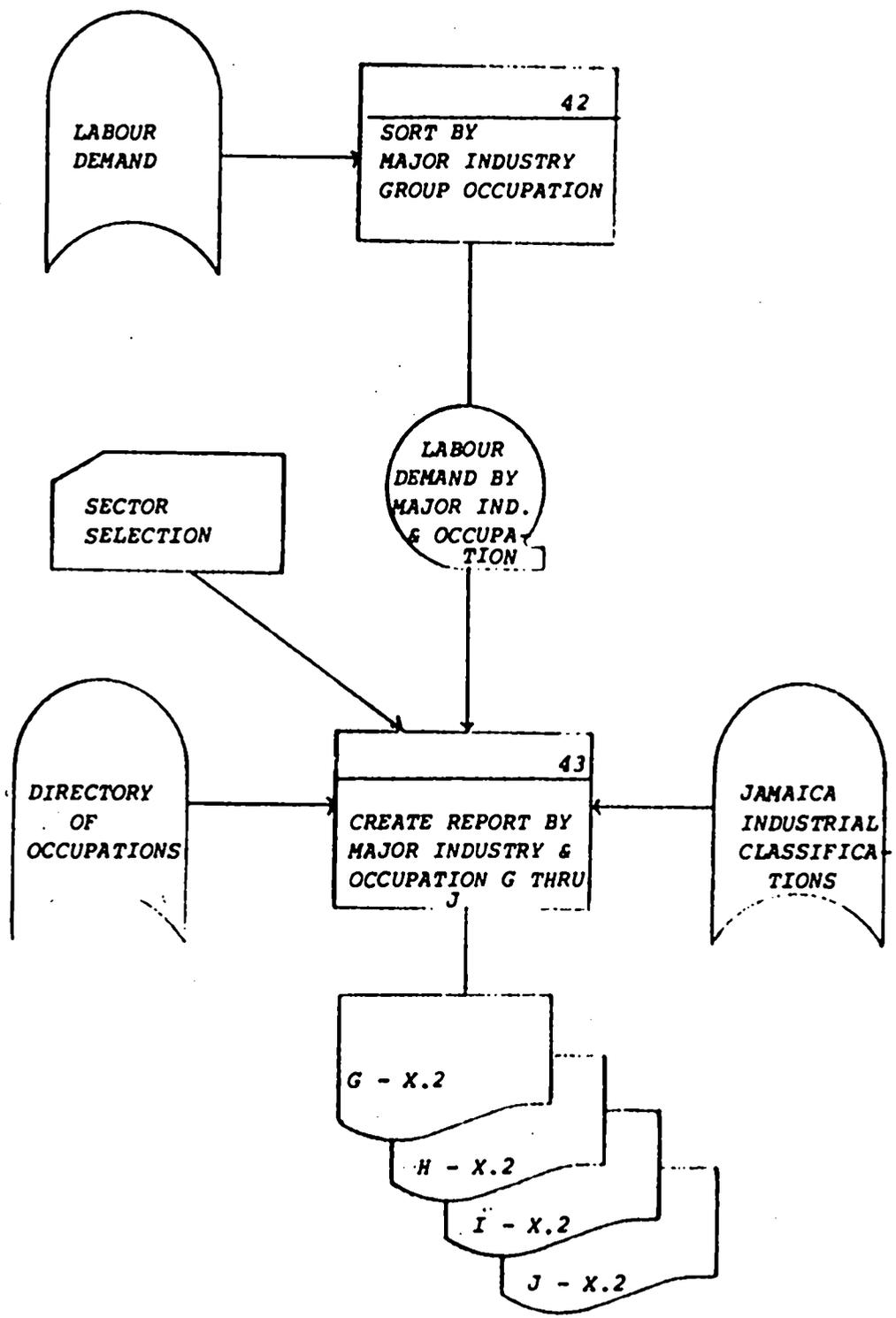
FROM STEP # 32

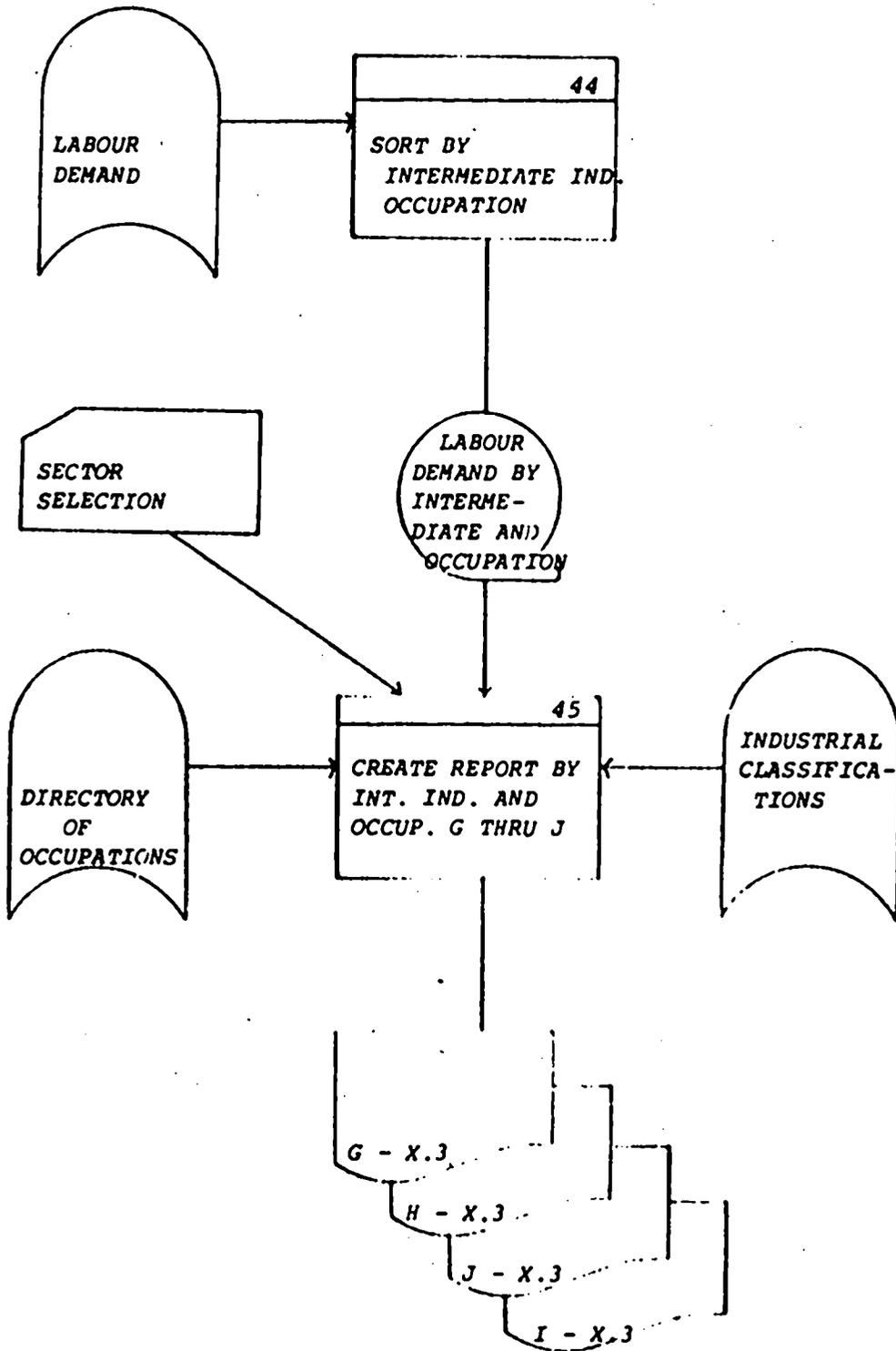


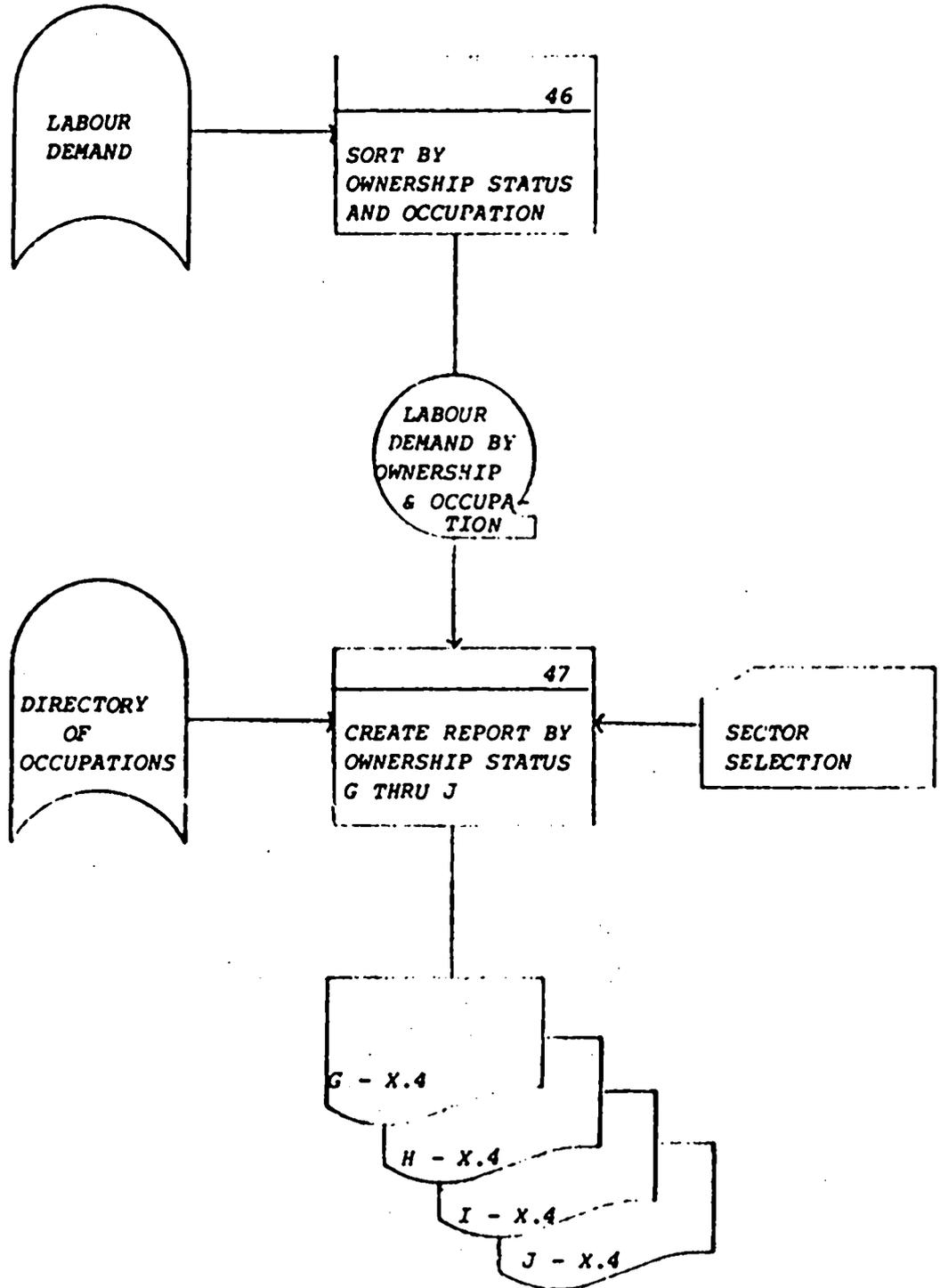












SECTION 6
RECORD LAYOUTS

**ESTABLISHMENT REGISTRY
BASIC DATA ELEMENTS**

	DATA SOURCE*	SIZE	POSITIONS
DOS Establishment ID Number	CD	7	1-7
National Accounts Sub-code	NA	1	8-8
NHT Cross Reference	NHT	7	9-15
Income Tax Cross Reference	NA	6	16-21
Name	NHT	32	22-53
Address	NHT	32	54-85
Town	NHT	22	86-107
Parish	NHT	2	108-109
Telephone Number	CD	7	110-116
Group Classification	CD	1	117-117
Transactor Sector	NA	1	118-118
Institutional Sector	NA	4	119-122
Size Group	Calculates	1	123-123
Number of Employees	NHT/TA	6	124-129
Function Code	NPA/NA	3	130-132
Weight in Universe	Calculates	5	133-137
Weight in Size Group		5	138-142
Parent Organization Code	CD	7	143-149
Data of Last Update	Calculates	6	150-155
Sequence No.	CD	6	156-161

CD = Central Data Co-ordinating Division

NA = National Accounts Section

NHT = National Housing Trust Data Files

TA = Trade Administrator Data Files

Field No.	Card Columns	Field Description
1	1-2	Receipt Record Code
2	3-5	Collectorate Code
3	6-8	Batch Number
4	9-14	Period End Date
5	15-20	Receipt Number
6	21-27	Employer Reference
7	28-53	Name
8	54-59	Date of Payment
9	60-66	Total Wages
10	67-70	Period of Payment - From
11	71-74	Period of Payment - To
12	75-79	Number of Employees
13	80-88	NIS Contribution/Penalty
14	89-97	NHT Employee Contribution
15	98-106	NHT Employer Contribution
16	107-113	NHT Penalty
17	114-122	Total

**MANPOWER TRAINING NEEDS SURVEY
(FOR ESTABLISHMENTS ONLY)
RECORD LAYOUT**

RECORD TYPE 1

ITEM	DESCRIPTION	SIZE	POSITIONS
1	Batch Code	4	1-4
2	Address	10	5-14
3	Data Set	2	15-16
4	Record Type	1	17-17
5	Parish	2	18-19
6	Business of Estab.	4	20-23
7	Commencement of Estab.	4	24-27
8	Legal Status	1	28-28
9	Category of Establishment	1	29-29
10	Ownership Status	1	30-30
11	Single Unit Estab.	1	31-31
12	Holding Company	1	32-32
13	Head Office	1	33-33
14	Type of Establishment	1	34-34
15	Number in Establishment	4	35-38
16	Number of Branches/Subsidiaries	2	39-40
17	No. of Employees	5	41-45
18	Telephone Number	8	46-53

RECORD TYPE 2

1	Batch Code	4	1-4
2	Address	10	5-14
3	Data Set	2	15-16
4	Record Type	1	17-17

RECORD TYPE 2 CONT'D

ITEM	DESCRIPTION	SIZE	POSITIONS
5	Line Number	3	18-20
6	Occupation Code	5	21-25
7	Total No. of Employees	4	26-29
8	Femal Employees	4	30-33
9	Education Code	1	34-34
10	Training Code	1	35-36
11	Experience (in years)	2	36-37
12	Other	2	38-39
13	No. of Persons	4	40-43
14	Total Vacancies	4	44-47
15	Acting Posts	4	48-51
16	Unfilled (L 6 mos.)	4	52-55
17	Unfilled (L 12 mos.)	4	56-59
18	Unfilled (12+ mos.)	4	60-63
19	Recruitment	1	64-64
20	Total New Hires	4	65-68
21	Temp. Empls.	4	69-72
22	Total Losses	4	73-76
23	Temp. Empls.	4	77-80
24	Additional Persons	4	81-84
25	Anticipated Changes (12 months)	4	85-88
26	Anticipated Changes (2 years)	4	89-92
27	Anticipated Changes (5 years)	4	93-96
28	Demand for Goods/Services	1	97-97
29	Technology	1	98-98
30	Level of Capacity	1	99-99

RECORD TYPE 2 CONT'D

ITEM	DESCRIPTION	SIZE	POSITIONS
31	Rationalization of Struct.	1	100-100
32	Requirement	1	101-101
33	Other	1	102-102
34	No Training	1	103-103
35	On the Job	1	104-104
36	Apprenticeship	1	105-105
37	In-Service	1	106-106
38	Institutional	1	107-107
39	Other	1	108-108

**MANPOWER TRAINING NEEDS SURVEY
SAMPLE SELECTION SCHEDULE
RECORD LAYOUT**

ITEM	DESCRIPTION	SOURCE	SIZE	POSITIONS
1	Type (1 PSU, 2 = SSU)		1	1
2	ID No.	EL	7	2-8
3	SSU No.	FIELD	2	9-10
4	Name	EL/FIELD	32	11-42
5	Address	EL/FIELD	32	43-74
6	Location	EL/FIELD	18	75-92
7	Parish	EL/FIELD	2	93-94
8	No. Employees Estimated	EL	5	95-99
9	No. Reported	FIELD	5	100-104
10	Ownership (Public/Private)	EL	1	105
11	Legal Status	FIELD	1	106
12	Function Code (Private Sector)	NPA	4	107-110
13	Strata (h) No.	STAT/NPA	2	111-112
14	Strata (j) No.	STAT/NPA	2	114-115
15*	Estimator k	STAT/NPA	7	116-122
16*	Estimator j	STAT/NPA	7	123-129
17*	Estimator h	STAT/NPA	7	130-136
18	No. Empl. Selected for Sample	STAT/NPA	5	137-141
19	No. Empl. Responding from Sample	FIELD	5	142-146

SOURCE CODE

EL = Establishment List

FIELD = Documents Prepared from Field Staff Interviews

NPA = National Planning Agency Inputs -

STAT = Department of Statistics Inputs -

ITEMS 15 - 17 to be stored in the form of NNNN. NNN

**MANPOWER TRAINING NEEDS SURVEY
(FOR EMPLOYEES ONLY)**

RECORD TYPE 3

ITEM	DESCRIPTION	SIZE	POSITIONS
1	Batch Code	4	1-4
2	Address	10	5-14
3	Data Set	2	15-16
4	Record Type	1	17-17
5	Title of Post	5	18-22
6	Grade of Post	4	23-26
7	Main Duties	2	27-28
8	Relationship to Post	1	29-29
9	Period of Time in Post	1	30-30
10	Type of Employment	1	31-31
11	Citizenship	1	32-32
12	Age	2	33-34
13	Sex	1	35-35
14	Educational Attainment	1	36-36
15	Exams Passed	1	37-37
16	Occupation	5	38-42
17	Training Method	1	43-43
18	Length of Training	1	44-44
19	Completion of Training	4	45-48
20	Career - Related Training	1	49-49
21	Occupation	5	50-54
22	Release Time	1	55-55
23	Parish of Residence	2	56-57
24	Parish of Work	2	58-59
25	Parish of Birth	2	60-61
26	Parishes Worked	10	62-71
27	Interview Completed	1	72-72
28	Interview not Completed	1	73-73

SECTION 7
REPORT FORMATS

A-X.X.

**MANPOWER TRAINING NEEDS SURVEY
NUMBER OF PERSONS EMPLOYED BY SEX AND 5 YEARS AGE GROUP**

_____ * Sector
_____ **

Occupation Group	Total	5 Year Age Group											NS	
		14-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65+		
xxxxxxxxxxxxx Males														
xxxxxxxxxxxxx Females														
xxxxxxxxxxxxx Total														
xxxxxxxxxxxxx Males														
xxxxxxxxxxxxx Females														
xxxxxxxxxxxxx Total														
Total														
	Males													
	Females													
	Total													

- *1 PRIVATE SECTOR
 - **1.1 Major Occupation Group
 - **1.2 Occupational Sub-Group
 - 1.3 Individual Occupations
- *2 PUBLIC SECTOR
 - **2.1 Major Occupation Group
 - **2.2 Occupational Sub-Group
 - **2.3 Individual Occupation

- *3 ALL SECTORS
 - ** 3.1 Major Occupation Group
 - ** 3.2 Occupational Sub-Group
 - ** 3.3 Individual Occupations

B-X.X

**MANPOWER TRAINING NEEDS
NUMBER OF PERSONS EMPLOYED BY SEX AND 10 YEARS AGE GROUP**

_____ * Sector
_____ **

PARISH xxxxxxxxxxxxxxxxxxxxxxx

INDUSTRY xxxxxxxxxxxxxxxxxxxxxxx Occupation/Group	Total	10 Years Age Group					
		14-24	25-34	35-44	45-54	55-64	65+ NS
xxxxxxxxxxxxxxxxxxxxx Males Females Both Sexes							
xxxxxxxxxxxxxxxxxxxxx Males Females Both Sexes							
Industry Total Males Females Both Sexes							
Industry xxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxx Males Females Both Sexes							
xxxxxxxxxxxxxxxxxxxxx Males Females Both Sexes							
Industry Total Males Females Both Sexes							
Industry xxxxxxxxxxxxxxxxxxxxxxx xxxxxxxxxxxxxxxxxxxxx Males Females Both Sexes							

- *1 PRIVATE SECTOR
 - **1.1 Major Industry and Major Occupation Groups within Parish
 - **1.2 Major Industry and Occupational Sub-Group within Parish
 - **1.3 Major Industry Groups and detailed Occupation (omit Parish Levels)
 - **1.4 Industry Sub-Groups by Occupation Sub-Groups (omit Parish Levels)
 - **1.5 Industry Sub-Groups by detailed Occupations " " "
 - **1.6 Detailed Industry by detailed Occupations " " "
- *2 PUBLIC SECTOR
 - **2.1 turn 2.6 same as above
- *3 BOTH SECTORS
 - **3.1 turn 3.6 same as above.

D-X.X

**MANPOWER TRAINING NEEDS SURVEY
LABOUR DEMANDS BY OCCUPATIONS BY MAJOR INDUSTRY GROUP AND**

** _____

Occupations	Total	Major Industry GROUPS
Total		

D. LABOUR DEMANDS BY OCCUPATION AND MAJOR INDUSTRY GROUP

- ** 1. Number Employed
- 2. Number of Vacancies
- 3. Number of Females
- 4. Number below minimum Education Qualification
- 5. Number below minimum Training Qualification
- 6. Staff changes at full Capacity
- 7. Expected change in demand at 5 years

E-X.X

**MANPOWER TRAINING NEEDS SURVEY
LABOUR DEMANDS BY OCCUPATION AND OWNERSHIP STATUS**

** _____

Occupations	Total	Ownership Status
Total		

E. LABOUR DEMANDS BY OCCUPATION AND OWNERSHIP STATUS

- ** 1. Number Employed
- 2. Number of Vacancies
- 3. Number of Females
- 4. Number below minimum Education Qualification
- 5. Number below minimum Training Qualification
- 6. Staff changes at full Capacity
- 7. Expected change in demand at 5 years

F-X.X

**MANPOWER TRAINING NEEDS SURVEY
LABOUR DEMANDS BY OCCUPATION AND SIZE OF ESTABLISHMENT**

** _____

Occupations	Total	Size Group
Total		

F. LABOUR DEMAND BY OCCUPATION AND SIZE OF FIRM

- ** 1. Number Employed
- 2. Number of Vacancies
- 3. Number of Females
- 4. Number below minimum Education Qualification
- 5. Number below minimum Training Qualification
- 6. Staff changes at full Capacity
- 7. Expected change in demand at 5 years

G-X.X

**MANPOWER TRAINING NEEDS SURVEY
NET CHANGES IN STAFFING BY OCCUPATION AND**

Sequence Level*

Occupations	NET CHANGES IN STAFF DURING YEAR END JULY 31, 1979								
	ALL GROUPS			PERMANENT			TEMPORARY		
	Hires	Losses	Net	Hires	Losses	Net	Hires	Losses	Net
Total									

G. NET CHANGE IN STAFFING BY OCCUPATION

- 1. Size Group
- 2. Major Industry Group
- 3. Intermediate Industry Group
- 4. Ownership Status
- 5. All Establishments

H-X.X

**MANPOWER TRAINING NEEDS STUDY
NUMBER OF ESTABLISHMENTS PROVIDING TRAINING BY
OCCUPATION, TYPE OF TRAINING PROVIDED AND**

*Sequence Level

Occupation	Total Number of Estab.	Number of Establishments Providing Training by Types					
		None	On-the-Job	Apprenticeship	In-Service	Institutional	Other
Total							

H. NUMBER OF ESTABLISHMENTS PROVIDING TRAINING BY

- *1. Size Group and Occupation
- *2. Major Industry Group and Occupation
- *3. Intermediate Industry Groups
- *4. Ownership Status and Occupation
- *5. Occupation (No Sequence Levels)

I-X.X

**MANPOWER TRAINING NEEDS SURVEY
NUMBER OF ESTABLISHMENTS EXPECTING STAFF CHANGE OVER
NEXT 5 YEARS BY**

Sequence Level*

* _____
AND REASON FOR EXPECTED CHANGE

Occupation	Total Number Expecting Change	Reasons for Expected Staff Changes				
		Demand for Goods & Services	Technology	Capacity Utilization	Rationalization	5 Year Planning Other
Total						

NUMBER OF ESTABLISHMENTS EXPECTING STAFF CHANGE

- *1. Size Group and Occupation
- *2. Major Industry Group and Occupation
- *3. Intermediate Industry Groups
- *4. Legal Status and Occupation
- *5. Occupation (No Sequence Level)

J-X.X

**MANPOWER TRAINING NEEDS SURVEY
NUMBER OF ESTABLISHMENTS BY RECRUITMENT PROBLEMS**

Sequence Level

BY _____*

Occupation	Total Firms	Recruitment Problems								
		Establishments with Vacancies			Establishments without Vacancies					
		No Problem	Difficult	Very Difficult	No Problem	Difficult	Very Difficult			
Total										

J. RECRUITMENT PROBLEMS

- *1. Size Group and Occupation
- *2. Major Industry Group and Occupation
- *3. Intermediate Industry Groups
- *4. Ownership and Occupation
- *5. Occupation (No Sequence Level)

MANPOWER TRAINING NEEDS SURVEY

K-X.X

• _____
IN OCCUPATIONS BY MINIMUM EDUCATION QUALIFICATION OF POSITION

Occupation	Total	Minimum Education Qualification

- K •**
1. Number Employed
 2. Number of Vacancies
 3. Number of Females
 4. Number below minimum Education Qualification
 5. Number below minimum Training Qualification
 6. Staff change at full Capacity
 7. Expected change in demand at 5 years

MANPOWER TRAINING NEEDS SURVEY

L-X.X

• _____
IN OCCUPATIONS BY MINIMUM TRAINING QUALIFICATION OF POSITION

Occupation	Total	Minimum Training Qualification of Position

- L • 1. Number Employed
- 2. Number of Vacancies
- 3. Number of Females
- 4. Number below minimum Education Qualification
- 5. Number below minimum Training Qualification
- 6. Staff change at full Capacity
- 7. Expected change in demand at 5 years

SECTION 8
QUESTIONNAIRES

ECONOMIC STATUS

<p>7. Is this a single unit establishment?</p> <p style="text-align: center;">Yes <input style="width: 30px; text-align: center;" type="text" value="1"/> No <input style="width: 30px; text-align: center;" type="text" value="2"/></p> <p style="text-align: center;">(Skip to Ques. 15)</p>	31								
<p>8. Is this a holding company?</p> <p style="text-align: center;">Yes <input style="width: 30px; text-align: center;" type="text" value="1"/> No <input style="width: 30px; text-align: center;" type="text" value="2"/></p>	32								
<p>9. Is this the head office?</p> <p style="text-align: center;">Yes <input style="width: 30px; text-align: center;" type="text" value="1"/> (Skip to Ques.13) No <input style="width: 30px; text-align: center;" type="text" value="2"/></p>	33								
<p>10. Is this a -</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center; width: 33%;">Branch</td> <td style="text-align: center; width: 33%;">Subsidiary</td> <td style="text-align: center; width: 33%;">Other (Specify)</td> </tr> <tr> <td style="text-align: center;"><input style="width: 30px; text-align: center;" type="text" value="1"/></td> <td style="text-align: center;"><input style="width: 30px; text-align: center;" type="text" value="2"/></td> <td style="text-align: center;"><input style="width: 30px; text-align: center;" type="text" value="3"/></td> </tr> </table>	Branch	Subsidiary	Other (Specify)	<input style="width: 30px; text-align: center;" type="text" value="1"/>	<input style="width: 30px; text-align: center;" type="text" value="2"/>	<input style="width: 30px; text-align: center;" type="text" value="3"/>	34		
Branch	Subsidiary	Other (Specify)							
<input style="width: 30px; text-align: center;" type="text" value="1"/>	<input style="width: 30px; text-align: center;" type="text" value="2"/>	<input style="width: 30px; text-align: center;" type="text" value="3"/>							
<p>11. What is the name and address of the head office?</p> <p>.....</p> <p>.....</p>									
<p>12. This establishment is one of how many?</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Branches</td> <td style="text-align: center;"><input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></td> <td style="text-align: center;">Subsidiaries</td> <td style="text-align: center;"><input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></td> </tr> <tr> <td></td> <td style="text-align: center;">35 36</td> <td></td> <td style="text-align: center;">37 38</td> </tr> </table>	Branches	<input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/>	Subsidiaries	<input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/>		35 36		37 38	35 - 38
Branches	<input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/>	Subsidiaries	<input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/>						
	35 36		37 38						
<p>13. How many of these branches and/or subsidiaries are covered by this report?</p> <p style="text-align: center;"><input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></p> <p>{ Note: Please list on page 3 the names and addresses of the branches and subsidiaries included at Question 12 and place an asterisk(*) beside those reported on in this Questionnaire. }</p>	39 - 40								
<p>14. What was the total number of employees on this establishment's payroll for week ending 25th August 1979?</p> <p style="text-align: center;">41 42 43 44 45</p> <p style="text-align: center;"><input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></p>	41 - 45								
<p>15. What is the name and telephone number of the person responsible for providing the data?</p> <p style="text-align: center;">46 47 48 49 50 51 52 53</p> <p>..... <input style="width: 30px;" type="text" value="0"/> <input style="width: 30px;" type="text" value="9"/> <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></p> <p>.....</p>	46 - 53								

MANPOWER AND TRAINING NEEDS SURVEY
(FOR ESTABLISHMENTS ONLY)

PART I

Data
Entry
Positions

<p>1. If name and address on printed label is incorrect, please indicate changes here.</p>	<p>Place Address</p>	<p>1 2 3 4</p>	<p>1 4 8</p>
<p>2. What is the primary (or major) business of this establishment?</p>	<p>Label</p>	<p>Data Set 0 0</p>	<p>15 - 16</p>
<p>3. In what year did this establishment commence operation in its present form?</p>	<p>Record Type 1</p>	<p>17</p>	<p>15 - 16</p>
<p>NATURE AND ORIGIN OF ESTABLISHMENT</p> <p>8. In which parish is this establishment located?</p>			
<p>18 - 19</p>			
<p>2. What is the primary (or major) business of this establishment?</p>			
<p>20 - 23</p>			
<p>3. In what year did this establishment commence operation in its present form?</p>			
<p>24 - 27</p>			
<p>LEGAL STATUS</p> <p>4. What is the legal status of this establishment?</p>			
<p>Individual Partnership Corporation Co-operative Government Other</p> <p>1 2 3 4 5 6</p> <p>Proprietorship → Go to Ques. 6 ←</p> <p>Specify</p> <p>Go to Question 6</p>			
<p>28</p>			
<p>5. (For Government Organizations only) To which of the following categories does this establishment belong?</p>			
<p>Ministry Department Statutory Parish Other</p> <p>1 2 3 4 9</p> <p>Body Council Specify</p>			
<p>29</p>			
<p>OWNERSHIP STATUS</p> <p>6. Is this establishment</p>			
<p>Privately owned Government owned Govt./privately owned Other</p> <p>1 2 3 9</p>			
<p>30</p>			

MANPOWER AND TRAINING NEEDS SURVEY
(FOR EMPLOYEES ONLY)
PART II

BATCH CODE

1	2	3	4

If name and address of establishment is incorrect, please indicate changes here

Place Address Label Here

5 - 14

Data Set

15 - 16

Record Type

17

Record Type

EMPLOYMENT DATA

1. What is the title and grade of your present post?

(a) Title

--	--	--	--	--

18 - 22

(b) Grade

--	--	--	--

23 - 26

2. What are your main duties? (Describe briefly.)

.....
.....

--	--

27 - 28

3. In relation to this post, are you?

Permanently assigned

Temporarily appointed

Acting

On Secondment

On Contract

Other (Specify)

29

4. How long have you been in this post (include period of temporary service or acting)

Less than 6 months

6 to 12 months

1 to 3 years

3 to 6 years

Six or more years

30

5. Are you employed?

Full-time

Part-time

31

VITAL STATISTICS

6. Are you a Jamaican citizen? <table style="display: inline-table; margin-left: 20px;"> <tr> <td style="text-align: center; padding: 0 10px;">Yes</td> <td style="text-align: center; padding: 0 10px;">No</td> </tr> <tr> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/></td> </tr> </table>	Yes	No	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	32
Yes	No				
<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>				
7. How old are you (age last birthday) <table style="display: inline-table; margin-left: 20px;"> <tr> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> </tr> </table>			33 - 34		
8. What is your sex <table style="display: inline-table; margin-left: 20px;"> <tr> <td style="text-align: center; padding: 0 10px;">Male</td> <td style="text-align: center; padding: 0 10px;">Female</td> </tr> <tr> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/></td> </tr> </table>	Male	Female	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	35
Male	Female				
<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>				

EDUCATION AND TRAINING

9. What is your highest level of Educational attainment?	36														
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">None</td> <td style="text-align: center; padding: 5px;">1 - 4 years primary</td> <td style="text-align: center; padding: 5px;">5+ years primary</td> <td style="text-align: center; padding: 5px;">Sec- ondary</td> <td style="text-align: center; padding: 5px;">Technical (or Vocational)</td> <td style="text-align: center; padding: 5px;">Univer- sity</td> <td style="text-align: center; padding: 5px;">Other (Specify)</td> </tr> <tr> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/></td> </tr> </table>	None	1 - 4 years primary	5+ years primary	Sec- ondary	Technical (or Vocational)	Univer- sity	Other (Specify)	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/>	
None	1 - 4 years primary	5+ years primary	Sec- ondary	Technical (or Vocational)	Univer- sity	Other (Specify)									
<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/>									

10. What is the highest exam you have passed?	37																				
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">None</td> <td style="text-align: center; padding: 5px;">JSC (or JL)</td> <td style="text-align: center; padding: 5px;">GCE (O) or CXC 4 subjects</td> <td style="text-align: center; padding: 5px;">GCE (O) 5+ subjects</td> <td style="text-align: center; padding: 5px;">GCE (A) 2+ subjects</td> </tr> <tr> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/></td> </tr> <tr> <td style="text-align: center; padding: 5px;">Certifi- cate</td> <td style="text-align: center; padding: 5px;">Diploma</td> <td style="text-align: center; padding: 5px;">Degree</td> <td style="text-align: center; padding: 5px;">Other (Specify)</td> <td></td> </tr> <tr> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="8"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="9"/></td> <td></td> </tr> </table>	None	JSC (or JL)	GCE (O) or CXC 4 subjects	GCE (O) 5+ subjects	GCE (A) 2+ subjects	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>	Certifi- cate	Diploma	Degree	Other (Specify)		<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="8"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="9"/>		
None	JSC (or JL)	GCE (O) or CXC 4 subjects	GCE (O) 5+ subjects	GCE (A) 2+ subjects																	
<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>																	
Certifi- cate	Diploma	Degree	Other (Specify)																		
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11. For what occupation were you trained? (If more than one, give most recent)	38 - 42					
..... <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> </tr> </table>						

12. By what method were you trained?	43														
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">Private</td> <td style="text-align: center; padding: 5px;">In- house</td> <td style="text-align: center; padding: 5px;">In- service</td> <td style="text-align: center; padding: 5px;">Institu- tion</td> <td style="text-align: center; padding: 5px;">On-the- job</td> <td style="text-align: center; padding: 5px;">Apprentice- ship</td> <td style="text-align: center; padding: 5px;">Other (Specify)</td> </tr> <tr> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/></td> </tr> </table>	Private	In- house	In- service	Institu- tion	On-the- job	Apprentice- ship	Other (Specify)	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/>	
Private	In- house	In- service	Institu- tion	On-the- job	Apprentice- ship	Other (Specify)									
<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="6"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="7"/>									

13. Indicate length of training received	44															
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">6 months</td> <td style="text-align: center; padding: 5px;">6 months</td> <td style="text-align: center; padding: 5px;">1 year</td> <td style="text-align: center; padding: 5px;">2 years</td> <td style="text-align: center; padding: 5px;">3 years +</td> </tr> <tr> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/></td> <td style="text-align: center;"><input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/></td> </tr> <tr> <td></td> <td style="text-align: center; padding: 5px;">Less 1 year</td> <td style="text-align: center; padding: 5px;">less 2 years</td> <td style="text-align: center; padding: 5px;">less 3 years</td> <td></td> </tr> </table>	6 months	6 months	1 year	2 years	3 years +	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>		Less 1 year	less 2 years	less 3 years		
6 months	6 months	1 year	2 years	3 years +												
<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="1"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="2"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="3"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="4"/>	<input style="width: 20px; height: 20px; border: 1px solid black;" type="text" value="5"/>												
	Less 1 year	less 2 years	less 3 years													

14. In what year was your training completed?	45 - 48				
<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> <td style="width: 20px; height: 20px; border: 1px solid black;"></td> </tr> </table>					

15. Are you at present receiving any career-related training program?

Yes No
 1 2

49

16. State occupation for which you are being trained

.....

50 - 54

17. Has this establishment provided release time for any of your career-related training?

Yes No
 1 2

55

LABOUR MOBILITY DATA

18. In what parish do you live?

Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann
<input type="checkbox"/> 01	<input type="checkbox"/> 02	<input type="checkbox"/> 03	<input type="checkbox"/> 04	<input type="checkbox"/> 05	<input type="checkbox"/> 06
		Trelawny	St. James		
		<input type="checkbox"/> 07	<input type="checkbox"/> 08		
Hanover	Westmorland	St. Elizabeth	Manchester	Clarendon	St. Catherine
<input type="checkbox"/> 09	<input type="checkbox"/> 10	<input type="checkbox"/> 11	<input type="checkbox"/> 12	<input type="checkbox"/> 13	<input type="checkbox"/> 14

56 - 57

19. In what parish do you work?

Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann
<input type="checkbox"/> 01	<input type="checkbox"/> 02	<input type="checkbox"/> 03	<input type="checkbox"/> 04	<input type="checkbox"/> 05	<input type="checkbox"/> 06
		Trelawny	St. James		
		<input type="checkbox"/> 07	<input type="checkbox"/> 08		
Hanover	Westmorland	St. Elizabeth	Manchester	Clarendon	St. Catherine
<input type="checkbox"/> 09	<input type="checkbox"/> 10	<input type="checkbox"/> 11	<input type="checkbox"/> 12	<input type="checkbox"/> 13	<input type="checkbox"/> 14

58 - 59

20. In what parish were you born?

Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann	
<input type="checkbox"/> 01	<input type="checkbox"/> 02	<input type="checkbox"/> 03	<input type="checkbox"/> 04	<input type="checkbox"/> 05	<input type="checkbox"/> 06	
		Trelawny	St. James			
		<input type="checkbox"/> 07	<input type="checkbox"/> 08			
Hanover	Westmorland	St. Elizabeth	Manchester	Clarendon	St. Catherine	Outside Jamaica
<input type="checkbox"/> 09	<input type="checkbox"/> 10	<input type="checkbox"/> 11	<input type="checkbox"/> 12	<input type="checkbox"/> 13	<input type="checkbox"/> 14	<input type="checkbox"/> 15

60 - 61

21. List in most recent order the parishes in which you have worked during the past 5 years. (Include the parish in which you are now working).

1.	62 - 63	2.	64 - 65
	<input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>
3.	66 - 67	4.	68 - 69
	<input type="text"/> <input type="text"/>		<input type="text"/> <input type="text"/>
5.	70 - 71		
	<input type="text"/> <input type="text"/>		

62 - 71

INTERVIEWER'S REPORT

22. Has interview been completed? Yes No

72

23. Interview was not completed because:

Employee not available	Employee refused	Other (Specify)
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3

73

RECORD OF CALLS		
Date	Time	Comments
	a.m.	
	p.m.	
	a.m.	
	p.m.	
	a.m.	
	p.m.	

MANPOWER AND TRAINING NEEDS SURVEY
(FOR EMPLOYEES ONLY)
PART II - B

CONFIDENTIAL

BATCH CODE

1	2	3	4

If name and address of establishment is incorrect please indicate changes below

Place Address Labels Here

Data Set

Record Type

EMPLOYMENT DATA

1. What is the title and grade of your present post?

(a) Title

--	--	--	--	--

(b) Grade

--	--	--	--

2. What are your main duties? (Describe briefly)

.....
.....

3. In relation to this post, are you?

Permanently assigned

Temporarily appointed

Acting

On Secondment

On Contract

Other (Specify)

VITAL STATISTICS

4. Are you a Jamaican citizen?

Yes 1

No 2

5. How old are you (Age last Birthday)?

--	--

6. What is your sex?

Male 1

Female 2

EDUCATION AND TRAINING

7. What is your highest level of educational attainment?

None

1 - 4 years primary

5+ years primary

Secondary

Tech. (or Vocational)

University

Other (Specify)

 1

 2

 3

 4

 5

 6

 7

8. What is the highest exam you have passed?

None	JSC (or JL)	GCE (O) or CXC 4 subjects	GCE (O) 5+ subjects	GCE (A) 2+ subjects
<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>
Certificate	Diploma	Degree	Other (Specify)	
<input type="text" value="6"/>	<input type="text" value="7"/>	<input type="text" value="8"/>	<input type="text" value="9"/>	

9. For what occupation were you trained?
(If more than one, give most recent)

--	--	--	--	--

10. By what method were you trained?

Private	In-house	In-Service	Institution	On-the-job	Apprenticeship	Other (Specify)
<input type="text" value="1"/>	<input type="text" value="2"/>	<input type="text" value="3"/>	<input type="text" value="4"/>	<input type="text" value="5"/>	<input type="text" value="6"/>	<input type="text" value="7"/>

11. If presently receiving career-related training, state occupation for which you are being trained
(If none enter the word NONE)

LABOUR MOBILITY DATA

12. In what parish do you live?

Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann
<input type="text" value="01"/>	<input type="text" value="02"/>	<input type="text" value="03"/>	<input type="text" value="04"/>	<input type="text" value="05"/>	<input type="text" value="06"/>
		Trelawny	St. James		
		<input type="text" value="07"/>	<input type="text" value="08"/>		
Hanover	Westmorland	St. Elizabeth	Manchester	Clarendon	St. Catherine
<input type="text" value="09"/>	<input type="text" value="10"/>	<input type="text" value="11"/>	<input type="text" value="12"/>	<input type="text" value="13"/>	<input type="text" value="14"/>

13. In what parish were you born?

Kingston	St. Andrew	St. Thomas	Portland	St. Mary	St. Ann
<input type="text" value="01"/>	<input type="text" value="02"/>	<input type="text" value="03"/>	<input type="text" value="04"/>	<input type="text" value="05"/>	<input type="text" value="06"/>
	Trelawny	St. James	Hanover		
	<input type="text" value="07"/>	<input type="text" value="08"/>	<input type="text" value="09"/>		
Westmorland	St. Elizabeth	Manchester	Clarendon	St. Catherine	Outside Jamaica
<input type="text" value="10"/>	<input type="text" value="11"/>	<input type="text" value="12"/>	<input type="text" value="13"/>	<input type="text" value="14"/>	<input type="text" value="15"/>

14. List in most recent order the parishes in which you have worked during the past 5 years
(Include the parish in which you are now working)

1.	50 - 59	2.	60 - 61
	<input type="text" value=""/>		<input type="text" value=""/>
3.	62 - 63	4.	64 - 65
	<input type="text" value=""/>		<input type="text" value=""/>
5.	66 - 67		
	<input type="text" value=""/>		

SECTION 9
SAMPLE DESIGN

SAMPLE DESIGN FOR THE MANPOWER AND TRAINING NEEDS SURVEY

SURVEY OBJECTIVES

The major objectives of this survey are three in number, namely, to obtain estimates of: (1) The current and future demand for labour, by occupation, skill level and type of economic activity; (2) the available supply of labour by occupation, skill level and mobility; and (3) the unmet demand in the critical occupations. Additional objectives are: identification of training needs (i.e., levels and methods of training needs) and what resources are available or can be made available to satisfy those needs.

DATA REQUIREMENTS SPECIFICATIONS

The population for which data is desired is all non-agricultural establishments (whether in the public or private sector) with 10 or more employees and those persons employed by such establishments. The specifications for the data wanted regarding that population are contained in the survey questionnaire and the instructions for completing it.

PRECISION REQUIREMENTS FOR SURVEY RESULTS

At the regional (i.e. North, East, South, West), the 2 - digit industry group, and the 4 size groups levels, the maximum tolerable error in the specified characteristics of the labour force (e.g., the proportion (1) in a critical (or mainline) occupation, (2) attaining a specified level of education or training, (3) trained by a specified method, (4) of employers requiring a specified set of qualifications for an entry level position, etc.) is 10 percent. An acceptable level of risk that the estimates derived from the sample will be within these errors limits is the 2% or 95% level of confidence. That is, in a large number of samples selected from this same universe, in the same manner, containing the same number of sample elements, with the data collected

and processed in the same manner about 5 percent of them would yield estimates at the levels previously specified with errors greater than 10 percent.

SCOPE OF SURVEY

This survey will be based on a stratified multi-stage cluster sample representing approximately 30 percent of the total force. Excluded are the self-employed (30%), the unemployed (26%), and those employed by small establishments (15%). For purposes of this survey a small establishment is one with fewer than 10 employees. Data for the self-employed, unemployed and those employed by small establishments will be obtained via subsequent surveys and secondary sources.

The population of inquiry (i.e., the population with which initial contact will be made) is: all Ministries, Statutory Bodies, Departments and non-agricultural establishments with 10 or more employees.

The population of analysis is: the population of inquiry plus that part of the work force employed by that population. The reason for this somewhat unusual situation is the requirement to construct a profile of the (1) labour requirements of the population of inquiry and (2) labour force currently employed by that population.

It is expected that the survey start date will be on or about November 1, 1979. The probable cut-off date will be February 15, 1980.

The reference (or as of date) of the survey data will be June 30, 1979.

SURVEY CONSTRAINTS

The major administrative restrictions are: (1) the requirement that the survey results be available by the end of March 1980 and (2) the compartmentalization of the data collection activity.

The major design restrictions are: (1) the expected level of non-responses, (2) the literacy level, and (3) the lack of data on unit variances and unit costs.

SAMPLING FRAMES

There will be two sampling frames - - one for the public sector and one for the private sector. The frame for the public sector will consist of all Ministries, Statutory Bodies, and Departments. These Ministries, Statutory Bodies, and Departments will serve dual functions. In some instances they will be sample elements (i.e., the units for which measurements of particular characteristics are required). In others they will be primary sampling units (PSU'S) only. That is, the access route to the sample elements, i.e., employees. Associated with each Ministries, Statutory Body and Department will be its' area of concern (e.g. Mining, Manufacturing, Construction, Services, Commerce, etc.), the number of its posts (or employees), the parish in which it is located, and whether or not it was included in the pre-test. It is anticipated that there will be approximately 130 primary sampling units (PSU'S) and 130,000 sample elements in the frame for the public sector.

The frame for the private sector will consist of all non-agricultural establishments with 10 or more employees. As with the public sector, these establishments will serve dual functions. In some instances they will be sample elements. In others they will be sampling units only. Associated with each establishment will be a two-digit industry group code, the number of employees on its payroll, the parish in which it is located, and whether or not it was included in the pre-test. It is anticipated that there will be approximately 2500 sampling units and 123,000 sample elements in the frame for the private sector.

STRATIFICATION VARIABLES

There will be three stages of sampling; however, stratification will take place at two stages only. At the first stage the stratification variables will be industry group and employment size. This two-way stratification will result in the 36 strata shown in Table 1.

Table 1

Industry Group	E M P L O Y M E N T S I Z E G R O U P			
	10 - 19	20 - 49	50 - 99	100 +
01	Stratum # 1	Stratum # 10	Stratum # 19	Stratum # 28
02				
03				
04		Stratum # 13		
05	Stratum # 5			
06				
07				
08				
09	Stratum # 9	Stratum # 18	Stratum # 27	Stratum # 36

At the second stage of sampling the stratification variable will be occupation. The sampling frame for this stage will consist of all the suborganizational units of the establishment, e.g., sections, departments, teams, groups, etc. The sub-organizational units should be defined so that there will never be more than 20 in any one establishment. Associated with each employee in each sub-organizational unit will be his name (or an identification code) and an occupational title. A determination will be made (in advance) as to which occupational titles are to be regarded as the mainline (or critical) occupations for that establishment. All sub-organizational units in which the mainline (or critical) occupations constitute 65 percent or more of the posts for that unit will be assigned to stratum A. Those with 35/65 percent will be assigned to stratum B. All others will be assigned to stratum C.

DETERMINATION OF SAMPLE SIZE

As previously noted the sample size at the first stage of sampling was administratively determined e.g., all PSUS'S from the public sector and 1000 from the private sector. However, to reduce the contribution to the variance of the first stage of sampling in the private sector, the PSUS'S were stratified by size and industry group. These stratifications are aimed at controlling for variation in cluster size and staffing-patterns. To reduce the contribution of the second stage of sampling to the variance, stratification by occupation was introduced within PSUS'S from both sectors.

After allowance for (1) the speculated increases in the variances for this type of cluster sample over that for simple random sampling (about 40 percent) and (2) the probable sample losses due to non-response (about 35%), the designated sample size is 1,490 PSU'S. The designated average ultimate cluster size is 28. (An ultimate cluster is the total number of sample elements associated with any given PSU.) Thus this design contemplates collecting on the average 28 schedules per establishment from the establishment's employees i.e., a total of 43,210 schedules.

It is anticipated that sample losses due to non-responses will reduce the number of PSU'S to 1130 and the average ultimate cluster size to 21. Consequently, the probable effective size (i.e., the number of respondents returning a usable survey questionnaire) for the public and private sector combined is approximately 25,000 of which 3,900 are for the public sector.

SAMPLING PLAN

The designated sample for the private sector (21,100) was allocated to the previously described strata on the basis of the following criteria: at the first stage the sample was allocated inversely proportional to the number of PSU'S in the stratum, with the further restriction that a minimum of 50 percent of the PSU'S be selected from each industry code group.

This restriction was also imposed for each size group, except the 10-19 size group. Based on currently available data, the sampling fractions () and expected number of sample PSU'S () for each stratum are shown in Table 2.

Table 2

Industry Group Code	EMPLOYMENT SIZE GROUP												2Mini
	10-19			20-49			50-99			100+			
	Mn	fin	min	Mn	fin	min	Mn	fin	min	Mn	fin	min	2Mn i
01	2	All	2	5	All	5	0	-	-	5	All	5	1.00
02	267	1/3	89	287	1/3	96	98	All	98	98	All	98	0.51
03	6	All	6	18	5/6	15	12	All	12	17	All	17	0.94
04	73	5/8	45	47	5/8	30	15	All	15	12	All	12	0.69
05	69	7/10	49	29	5/6	25	8	All	8	10	All	10	0.79
06	422	3/8	159	167	2/3	111	28	All	28	27	All	27	0.50
07	44	1/2	22	35	5/6	30	9	All	9	19	All	19	0.75
08	257	1/3	86	120	5/9	67	41	All	41	31	All	31	0.50
09	51	1/2	26	30	All	30	18	All	18	17	All	17	0.79
2 min i													
2 Mn i	0.41			0.55			1.00			1.00			0.57

To select the first stage sample for the private sector proceed as follows:

- (1) Number the PSU'S sequentially within strata,
- (2) Select from each stratum those PSU'S whose numbers appears in the corresponding stratum of Table 3, and
- (3) Re-number the sample PSU'S sequentially as they are selected, but do not (repeat, do not) erase the number originally assigned the sample PSU. Designate the original number assigned the PSU with an asterisk (*) or other convenient symbol. This last step is of the utmost importance. The order of selection is vital to: sample validation, sample control, adjustment for non-response, and variance calculation.

Table 3

Industry Group Code	EMPLOYMENT SIZE GROUP			
	10-19	20-49	50-99	100+
01	All	All	All	All
02	Select PSU #2 and every 3rd one onward, viz., 5,8,11, 14,17, etc	Select PSU #3 and every 3rd one onward, viz., 6,9,12, 15,18,21,24,27,etc	All	All
03	All	Select PSU'S No:1, 3,4,5,6,7,9,10,11, 12,13,15,16,17,18, etc.	All	All
04	Select PSU'S No: 1, 2,3,4,6,9,10,11,12, 14,17,18,19,20,22, 25,26,27,28,30, etc	Select PSU'S No: 1,3,4,5,8,9,11,12, 13,16,17,19,20,21, 24, etc.	All	All
05	Select PSU'S Nos. 1,2,5,6,7,8,9,11, 12,15,16,17,18,19, 21,22,25,16,17,18, 29, etc.	Select PSU'S No: 1,2,3,5,6,7,8,9, 11,12,13,14,15,17, 18, etc	All	All
06	Select PSU'S No: 2,4,6,10,12,14,18, 20,22,etc.	Select PSU'S No: 2,3,5,6,8,9, etc.	All	All
07	Select PSU #1 and every other one onward,viz., 3,5,7,9, 11, etc.	Select PSU'S No: 1,2,3,4,5,7,8,9, 10,11,13,14,15,16, 17, etc.	All	All
08	Select PSU # 2 and every 3rd one onward viz., 5,8,11, 14,17,20, 23,26,29, 32, etc.	Select PSU'S No: 2,3,5,7,8,11,12, 14,16,17,20,21, 23,25,26, etc.	All	All
09	Select PSU #1 and every other one onward, viz., 3,5,7, 9,11,13,15, etc.	All	All	All

NOTE The first number or set of numbers in a stratum is the the random start or set of random starts. The following number or set of numbers is obtained by adding a constant to the first number or each number in the set of numbers. Illustration: In stratum 2, the random start is 2. The subsequent sample PSU'S are identified by adding the constant 3 successively, beginning with the number 2, until all the PSU'S in the stratum have had a chance for selection.

In stratum 5, there are seven (7) random starts, namely 1,2,5,6,7,8,9. The subsequent sample PSU'S are identified by adding the constant 10 to each of the seven random starts and repeating the procedure using the newly created set of sample numbers until all PSU'S in the stratum have had a chance for selection.

--In the public sector there will be no sub-sampling of PSU'S. All PSU'S will be selected.

Part 1 of the survey questionnaire will be administered to all sample PSU'S whether from the public or private sector. An official of each sample establishment (PSU), likely the personnel officer, will be asked to provide the specified data.

To select the second - stage sample units from both sectors, first stratify the sub-organizational units (e.g., departments, sections, groups, teams, etc.) by occupation characteristic as follows: Stratum A will consist of all sub-organizational units in which the establishment's mainline (or critical) occupations comprise 65 percent or more of the unit's posts (or employees). Stratum B will consist of those units in which critical occupations comprise 35-65 percent. Stratum C will consist of the remaining units. Next, number the units in stratum B and C serially from 1 to N. Select all of the units in stratum A and one-half of those in strata B and C.

Part - 2 of the survey questionnaire will be administered to n employees from each unit from stratum A and to n' employees from each unit selected from strata B and C. For details see, "Instructions for dis-aggregating and sub-sampling." VERY IMPORTANT The PSU sample number must appear on each questionnaire prior to distribution. (This can be accomplished by placing the Reference number on each questionnaire). It is also very important that the order of selection be preserved at each stage of sampling.

SAMPLE VALIDATION SCHEME

To validate the first stage sample, select a sub-sample of 1/6 of the strata used in the first stage of sampling and repeat the sample selection process manually. Compare with original sample PSU'S from those six strata. Check for order of selection and those characteristics that uniquely identify a PSU. To validate the second stage sample, select two sample units each from strata A, B, and C, and repeat the sample selection process. Compare with original sample, including the employees selected and their order of selection.

ADJUSTMENT FOR BIAS FROM SELECTED SOURCES

Because of the anticipated level of non-response and the assumed low level of effectiveness associated with normal follow-up procedures, the following procedures are to be followed in adjusting for PSU non-response: (1) Exclude from consideration sample losses due to: out-of-business, unable to locate, and out-of-scope; (2) Sort and list PSU'S together with their reference numbers by 3 digit industry code (JIC) within size group and industry group, i.e., within strata; (3) Determine from external data or by phone call to what 3-digit industry group the non-respondent belongs; (4) Randomly select a PSU from the same parish and stratum with the same 3-digit industry code as the non-responding PSU and duplicate all of the data provided for the PSU, i.e., in Parts I and II of the questionnaire.

It seems reasonable to assume that non-response will not be a problem for second stage units (i.e., the sub-organizational units). Therefore, they are to be distributed like the respondents.

To adjust for non-response among third stage units (i.e., employees) the following procedures are to be followed: (1) Sort and List sequentially the sample numbers of the returned questionnaires (i.e., Part - II) by sub-organizational units within second-stage stratum within PSU and (2) select the questionnaire completed by the respondent with the sample number preceding that for the non-respondent and duplicate all the data reported for that sample element.

It is assumed that the sampling frames will be "purged" of duplicate prior to sample selection. However, a few duplicates almost always remain. Some or all of these may be selected in the sample. If so, they will (or should) be detected during the interview. Since all sample units should appear on the sample control listing, the interviewer should write on the questionnaire "Duplicate, see Reference Number _____". These, of course, are to be excluded from the out-put tables.

On the assumption that there will be no significant amount of mis-classification of PSU'S at the 2 - digit industry group level, we dismiss this type of mis-classification from further consideration. As regard mis-classifications between size groups, we expect these to be few and mostly at the strata boundaries. We therefore inflate (i.e. raise) by the reciprocal of the mis-classified PSU'S probability of selection the data reported for it and tabulate the result in the appropriate stratum.

PROCEDURES FOR DISAGGREGATION OF PSU'S

1. Obtain during your initial visit the following information:
 - (a) A list of sub-organizational units (e.g., departments, sections, groups, etc., with a supervisor.
 - (b) The name of the supervisor (or person in charge) of each such unit.
 - (c) The name of each employee in each sub-organizational unit.
 - (d) The occupational classification (or Job Title) of each employee in each unit.
 - (e) A list of the main line (or critical) occupations for the establishments.
2. Forward the above information to: Department of Statistics, Attn: _____.

PROCEDURES FOR SUB SAMPLING

Upon receipt of the above described data, the Department of Statistics will select the second and third stage sample units in accordance with the following procedure:

1. Identify those sub-organizational units with (a) 65 percent or more of its posts (employees) in critical occupations (b) those with 35% - 65 percent in such occupations, and (c) those with less than 35 percent in critical occupations.
2. Form three (3) strata as follows: Assign to stratum A all units in which 65 percent or more of its posts are in critical occupations. Assign to stratum B all units in which 35% - 65 percent of its posts are in critical occupations. Assign to stratum C the remaining units (i.e., those with less than 35 percent in critical occupations).

3. All units in stratum A are to be included in the sample.
4. Randomly select one-half ($\frac{1}{2}$) of all units in strata B and C.
5. If the number of second-stage sample units included in the sample is less than 4, randomly select 3 employees from each unit; if 5/— 10, randomly select 2 employees from each unit, and if 10 or more, randomly select 1 employee from each unit.

DEFINITION OF INDUSTRYGROUP CODES

- 01 = JIC Codes 21,22,23,29
- 02 = JIC Codes 31 through 39
- 03 = JIC Code 50
- 04 = JIC Codes 41,42,71,72,92
- 05 = JIC Code 61
- 06 = JIC Code 62
- 07 = JIC Codes 81,82
- 08 = JIC Codes 63,83,95
- 09 = JIC Codes 91,93,94,96

DEFINITION OF QUESTIONNAIRE REFERENCE NO.

The questionnaire reference number consists of 11 positions. Each position or set of positions uniquely identify some characteristic of the first-stage sampling unit, the establishment. The first position specifies whether the establishment belongs to the public or private sector. The second and third positions specify the parish in which the establishment is located. The fourth and fifth positions identify the stratum from which the establishment was selected. The sixth, seventh, and eight positions identify the sample number assigned to this establishment. The ninth position specifies whether this establishment has been designated a tracer unit. The tenth position specifies whether this establishment was included in the pre-test. The eleventh position contains a check digit.

ADDENDUM TO SAMPLE DESIGN FOR THE MANPOWER
AND TRAINING NEEDS SURVEY

In the public sector, each ministry, except as noted, will constitute a stratum with one PSU. Exceptions are: The Ministry of Health, The Ministry of Education, and the Ministry of National Security. For the Ministry of Health, the first stage stratification variable will type of hospital care provided, and the PSU will be the hospital. For the Ministry of Education, the stratification variable will be level (and/or type) of education provided, and the PSU will be the school. For the Ministry of National Security, there will be four (4) strata. They are: Those offices listed on pp. 290 - 292 See "Schedule - Part 1 List of Salary Groups and Grades" down to but not included "Citizens Complaint Board", those offices beginning with "Citizens Complaint Board on p. 292 * through "Jamaica combined Cadet Force" on p. 296,* The Electoral Office,* and the Police Department*. Each of these strata will contain a single PSU. Thus in the public sector, all PSU'S included in the sample with certainty, except those for the Ministry of Health and the Ministry of Education.

To select the first stage-sample of PSU's from those two Ministries (i.e., Health and Education) proceed as follows:-

- (1) Form up to, but do not exceed, 10 strata for each Ministry using the above specified criteria (i.e., the stratification variables),
- (2) Assign each PSU to the appropriate stratum and,
- (3) Select a sample of PSU's from each stratum using the following decision rule: if the number of PSU's in the stratum (M_n) is 10 take all of them into the sample; if $11 \leq M_n \leq 15$ take 4/5 into sample; if $16 \leq M_n \leq 20$ take 3/5 into the sample; if $21 \leq M_n \leq 30$ take 1/3 into the sample; if $31 \leq M_n \leq 50$ take 1/5 into the sample; if $M_n > 50$ take 50 into the sample.

Since the maximum allowable number of second-stage sampling units is 20 per PSU, take all second-stage units into the sample from each of the 3 strata previously defined in the "final" sample design statement. This procedure is to be followed for both the public and private sectors. NOTE This supersedes the previous decision rule for selecting 2nd - stage sample units.

* See " Schedule - Part 1, List of Salary Groups and Grades"

We are also introducing a new decision rule for selecting the 3rd stage sample units in the Public sector. More specifically, we are making the sample size a function of the average number of employees per SSU (\bar{y}_j) in the stratum, where $\bar{y}_j = \frac{Y_j}{N_j}$ the total number of employees in the jth stratum divided by the number of SSU's (suborganizational units) in that same stratum. For example if in stratum A of a given PSU, there are 50 employees and 10 SSU's,

To select the 3rd - stage sample units for the public sector, proceed as follows:

- If $\bar{y}_j \leq 5$, select all employees in each SSU in that stratum
- If $5 < \bar{y}_j \leq 15$, select 2/3 employees from each SSU in that stratum
- If $15 < \bar{y}_j \leq 30$, select 4/9 employees from each SSU in that stratum
- If $30 < \bar{y}_j \leq 45$, select 1/4 employees from each SSU in that stratum
- If $\bar{y}_j > 45$, select 12 employees from each SSU in that stratum

Note: The decision rule for selecting the 3rd - stage sample from the private sector is unchanged.

Finally, it should be noted that in calculating estimates of the population value of a given characteristic from the sample, it is crucial that we specify whether the establishment is the sample element or the access route to the sample elements. When it is the access route and the employee is the sample element, the estimates are obtained as given in the "Preparation of Sample Estimates". When the PSU is itself the sample element the formulation reduces to:

$$\bar{y}_h = \frac{\sum_{i=1}^n X_{hi}}{n}$$
, where X_{hi} is the sample value of a specified characteristic of the ith sample PSU from stratum h.

$$\bar{y}_h = \frac{\sum_{i=1}^n Y_{hi}}{n}$$
, where Y_{hi} is the ith sample PSU from stratum h.
 And $r = \frac{x}{y}$

PREPARATION OF ESTIMATES OF THE REL-VARIANCE

OF THE SAMPLE ESTIMATES

To obtain an estimate of the rel-variance of $r = \frac{X^1}{Y^1}$ from the sample of employees, we make use of the ultimate cluster idea. The idea of the ultimate cluster makes it possible to compute the rel-variance for any number of stages of sampling in the same way as if one had sampled whole clusters. For example: assume that we select an establishment from the public sector and find that this establishment has 5 sub-organizational units in stratum A, 10 in stratum B and 5 in stratum C. If from stratum A we select all 5 second-stage units and one-half of those in strata B and C and, if we select 2 employees from each second-stage sample unit (SSU) from stratum A, 2 from each SSU from stratum B and 3 from each SSU from stratum C we will have a total of $(5 \times 2 + 5 \times 2 + 3 \times 3) = 29$ employees. Thus the size of this ultimate cluster is 29. Further suppose that the number of employees in this ultimate cluster that are in critical occupations is 16. Then the value of X for this cluster is 16. Please note that X in this instance represents the characteristic "critical occupation".

The rel-variance (i.e., the squared relative error of the estimate from the sample) of $r (= \frac{X^1}{Y^1})$ is given by:

$$\hat{V}_r^2 = \hat{V}_{X^1}^2 + \hat{V}_{Y^1}^2 - 2\hat{C}_{X^1 Y^1} \left(\frac{1}{Y^1} \right) \quad \text{where } \hat{V}_{X^1}^2 = (1-f) \frac{\sum (x_i - \bar{x})^2}{m(m-1)\bar{x}^2}$$

$$\bar{x} = \frac{\sum x_i}{n}$$

where x_i = value of the characteristic for the sample element; n = the number of sample elements; ~~for establishment x_i at this~~ and f = the overall sampling fraction, i.e. (1-0.57)

\bar{y} is similarly defined.

$$\hat{C}_{X^1 Y^1} = (1-f) \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{m(m-1) \bar{x} \bar{y}}$$

Please note because of the use of ultimate clusters m is always the number of establishments. However, the values for x and y depend on whether the psu (i.e., the establishment) or the employee is the sample element.