

**PERSEREC** 

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# **Military Applicant Security Screening (MASS):**

## **Systems Development and Evaluation**

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SYSTEMS DEVELOPMENT AND EVALUATION**

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## Foreword

The improvement of screening procedures for personnel into sensitive military occupations is one of PERSEREC's primary goals. The need to ensure that only the most reliable personnel are chosen for high security military occupations has become even more critical as the military reduces its size and budget. Consequently, the process by which individuals are screened must be made more effective and more efficient.

PERSEREC has been engaged in screening research since 1987. To date, we have published several technical reports on screening of enlisted and officer personnel and the granting of moral waivers for personnel entering sensitive occupations. These efforts have focused on the evaluation of current screening procedures and the development of improved instruments where warranted.

Each of the military services, prior to requesting background investigations, prescreens enlisted accessions seeking sensitive jobs. Far greater numbers are rejected during prescreening than as a result of adjudication of a background investigation. An early study by PERSEREC documented the enlisted prescreening procedures used by each of the services and recommended the development of a standardized prescreening questionnaire. A second study evaluated the Army Security Screening Questionnaire (Form 169-R) which is used for prescreening applicants prior to the initiation of a formal Personnel Security Investigation. As an outgrowth of this study PERSEREC conducted research that led to the development and implementation of a revised Form 169-R. Subsequent research has been directed toward security screening procedures for enlisted Navy personnel, military and civil service personnel being nominated for Sensitive Compartmented Information (SCI) access, and contractor personnel being nominated for Special Access Programs (SAP).

The present study couples instruments and procedures developed in previous research with computer technology, to design a computer-administered security screening system entitled Military Applicant Security Screening (MASS). In this report the authors describe the two major components of MASS, the screening questionnaire and the computer structure for questionnaire administration. Also described are the results of a field test of MASS with Navy enlisted personnel. The positive results from this test resulted in a decision by the Navy to implement MASS nationwide at all Military Entrance Processing Stations (MEPS).

The MASS system can be used with minor modifications to screen enlisted personnel from the other services and can be easily adapted to other security screening situations. Adoption of the system described in the report will lead to the significant goal of greater communality in screening questionnaires and procedures across DoD programs.

The development of the MASS system was supported in part by the Director of Accession Policy, Office of the Assistant Secretary of Defense. The Bureau of Naval Personnel provided support for test and evaluation of MASS in the MEPS. We would like to thank the organizations and individuals who assisted us in developing and evaluating the MASS system. In particular the authors would like to acknowledge the assistance of the late Mord Tucker of the Naval Security Group Field Office at the Recruit Training Center at Orlando. He provided invaluable insights on the screening of enlisted personnel and served as the primary reviewer of the MASS questionnaire and procedures.

Roger P. Denk  
Director

## Executive Summary

In April 1990 the Bureau of Naval Personnel (BuPers) requested that the Defense Personnel Security Research Center (PERSEREC) design improved applicant screening procedures for sensitive Navy ratings during the classification of enlisted personnel at the Military Entrance Processing Stations (MEPS). The goal of the research was to identify, at the earliest possible time, individuals who would be later found ineligible for a security clearance or access to sensitive ratings.

A computer-administered security screening questionnaire was constructed for use at the MEPS. The system, called Military Applicant Security Screening (MASS), is designed for administration by Navy classifiers to applicants to eight Sensitive Compartmented Information (SCI), three Top Secret (TS) and 11 Personnel Reliability (PRP) ratings. The MASS system is a stand-alone program that runs on existing PCs that are used by classifiers to make school seat reservations for applicants.

The security questionnaire incorporated within MASS is based on a questionnaire that has been reviewed by a considerable number of DoD agencies, but it also includes other items particularly relevant to a young applicant population. Any disclosure of potentially derogatory information in response to items on the questionnaire activates follow-on questions. For example, if applicants respond that they have committed a criminal offense, they are then required to provide information about the incident, including when and where it occurred, and any convictions or other penalties assessed.

The MASS system includes a decision aid that automatically informs classifiers if information provided by an applicant is potentially disqualifying or requires a waiver to enter the Navy. This decision aid, or flag, is triggered whenever an applicant response meets the criteria specified in the Navy Recruiting Manual for potential disqualification.

The system provides a summary of all potentially derogatory information disclosed during the interview, along with an indication of what actions need to be taken by the classifier. The classifier is able to access this summary during the interview, i.e., a summary of all derogatory information disclosed up to that point in the interview. To assist in deciding whether to continue processing an applicant for one of the sensitive ratings, the classifier is provided access to Navy security personnel for assistance in reviewing the responses to the MASS questionnaire.

MASS was tested and evaluated at nine MEPS from April to November 1993. The study involved all applicants to the sensitive ratings and all individuals who already had been assigned to one of the ratings but were in a delayed entry program (DEP) prior

to officially entering the Navy. The latter group, if they had not taken MASS when they entered the DEP, had to take MASS when they left the DEP.

Three types of information were collected during the field tests: (1) printed summaries of the potentially derogatory information disclosed by the applicant; (2) electronic summaries of all responses made to the computer-administered questions; and (3) feedback from Navy classifiers who administered MASS.

A total of 310 MASS summaries were forwarded to PERSEREC. Each summary contained the potentially derogatory information that had been indicated by an applicant in response to the MASS questions. A significant amount of potentially disqualifying information was disclosed by applicants. This included reported incidents of illegal drug use, law violations and disciplinary actions, alcohol abuse, financial irresponsibility, personal misconduct, and foreign travel and connections.

The data, stored in electronic format, were captured on floppy disks and sent to PERSEREC for analysis. Electronic and printed MASS summaries were matched and 75 additional MASS interviews were found for which printed summaries had not been mailed to PERSEREC. Analysis of the 75 records indicated a very similar pattern of potentially disqualifying data to that found on the printed summaries.

Reactions of Navy classifiers to MASS were uniformly positive. The system was found to be operating effectively and efficiently in screening applicants for sensitive positions with the military. The procedure provided in a timely manner the information required by classifiers to decide whether to continue processing applicants for sensitive ratings. Further, the MASS system is preferred by classifiers to a paper-and-pencil questionnaire for screening applicants.

Based on these findings, it was recommended in November 1993 to Navy Recruiting Command that MASS be approved for implementation at all the MEPS. A decision memorandum with this recommendation was developed by Navy Recruiting Command and approved by RADM Evans, Chief of Navy Recruiting, in March 1994.

The authors expect that such a full-scale implementation of MASS will lower the rate of rejection and reclassification at the Recruit Training Centers (RTCs), as well the rate of unsuitability discharge in the ratings to which it is applied. However, these hypotheses should be carefully studied using data after MASS is implemented. That is, a thorough operational test and evaluation is recommended in conjunction with the Navy-wide implementation of MASS.

Consideration should also be given to installing MASS at Navy RTCs for the reclassification of personnel into Navy ratings. In addition, the applicability of MASS for Army and Air Force prescreening programs should be investigated. The latter is in

keeping with the recommendations of the recent Joint Security Commission (1994, p.43) that "a standardized prescreening form be developed for use throughout the Department of Defense and the Intelligence Community" and that "The Commission supports the development of standardized forms in an electronic format as a way to facilitate reciprocity and reduce costs."





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## **Introduction**

### **Background**

Each of the military services prescreens its enlisted applicants for Sensitive Compartmented Information (SCI) access, Top Secret (TS) clearance or critical nuclear duties under the Personnel Reliability Program (PRP). This prescreening is conducted to determine which individuals should be processed further for occupations involving sensitive duties. Individuals who do not pass this prescreening are generally considered for other occupations where the entry requirements are not as stringent. Successful completion of prescreening is followed by a request for a formal background investigation to determine whether an individual qualifies for a clearance or access.

Crawford and Wiskoff (1988) documented the procedures employed by the services in prescreening enlisted accessions for sensitive military jobs. The study found that far greater numbers of individuals are rejected during prescreening than during the formal background investigation and adjudication process. The report stated that while the prescreening procedures seem to be functioning reasonably well, they have not been systematically evaluated to determine their effectiveness. Given the great expense involved in processing individuals for clearance and in training and assigning individuals to sensitive occupations, improvements in prescreening could result in considerable cost savings. More recently, the Joint Security Commission (1994) found that "prescreening saves a considerable amount of time and money by insuring that only those individuals with a reasonable chance of obtaining a clearance are submitted for processing."

One of the recommendations in the Crawford and Wiskoff report was that there was a need to develop a standardized background questionnaire for use during prescreening as a job aid and guide to security interviewers.

### **Requirement**

The procedures used to prescreen enlisted personnel have developed over the years to fit the unique requirements of the individual military services (Crawford & Wiskoff, 1988). For example, the Army screens all applicants for sensitive occupations prior to induction at the Military Entrance Processing Stations (MEPS), whereas the Air Force conducts security screening during basic training at Lackland Air Force Base.

The Naval Security Group (NSG) Field Offices at the Recruit Training Centers (RTCs) screen all enlisted candidates for two classes of Navy ratings that require SCI access--Cryptologic Technician (CT including CTM, etc.) and Intelligence Specialist (IS). A 1989 report by the NSG Command found that 13-16% of candidates for SCI access shipped to the RTCs are non-selects at the initial security interview conducted by the NSG

Field Office representatives. As a result of this finding, Navy classifiers at the MEPS were directed to use a 24-item prescreening questionnaire that had been designed by NSG personnel, in conjunction with more intensive interviews for applicants to these ratings.

The Navy has not instituted formal procedures for screening applicants to other sensitive ratings--those requiring TS clearance or those within the nuclear field. In 1989 the Navy initiated research to evaluate the screening, selection and evaluation procedures of personnel in sensitive ratings. A working group review of early research findings determined that more informed decision-making regarding suitability of applicants for sensitive ratings was needed. In April 1990 a requirement was generated by the Director of Military Personnel Policy within the Bureau of Naval Personnel (BuPers) to develop improved applicant screening procedures for sensitive ratings during the classification of enlisted personnel at the MEPS. Specifically, a request was made for a prescreening questionnaire, along with decision aids for assisting classifiers in making determinations concerning the acceptance or disqualification of applicants.

### **Development of the Military Applicant Security Screening (MASS) System**

The BuPers request for assistance was addressed to the Director of Accession Policy of the Office of the Assistant Secretary of Defense (who had been sponsoring a program of research into enlisted security screening for some years) with the comment that the prescreening procedures, once developed, could be of benefit to all of the services.

The idea of developing a security screening system for the Navy with applicability to the other services formed a cornerstone of the research documented in this report. The program was named Military Applicant Security Screening (MASS) to reflect its broad applicability.

### **Military Research to Improve Security Screening Instruments**

The BuPers requirement noted that PERSEREC had already developed and was field-testing a security screening questionnaire for the Navy at the Recruit Training Center, Orlando. An earlier effort by PERSEREC had resulted in a revised questionnaire for Army use at the MEPS. This section will detail the work to design and develop paper-and-pencil security screening questionnaires for two communities: (1) enlisted applicants to military service, and (2) civilian and military nominees for SCI access.

### **Army Security Screening Questionnaire**

The Army Security Screening Questionnaire (Form 169-R) is used at the MEPS to screen applicants for high security jobs. Responses to the questionnaire are further explored during a security interview conducted by Army personnel at the MEPS immediately following completion of the questionnaire.

As a follow-on to the Crawford and Wiskoff (1988) review of enlisted security prescreening procedures, Zimmerman, Fitz, Wiskoff and Parker (1990) conducted a preliminary analysis of the Form 169-R on a sample of 281 non-prior service males. Analyses were performed to determine the degree to which the instrument was able to predict subsequent operational screening decisions and the utility of the information provided by the questionnaire. The questionnaire demonstrated moderate validity in predicting decisions such as the prescreening adjudication determination and whether an individual's background investigation required expansion because of the discovery of significant derogatory information. The Form 169-R also demonstrated utility in potentially reducing the unsuitability discharge rate of applicants during first term of service.

One of the recommendations in that report was to conduct further research on the 169-R using a large data sample. An unpublished study on a sample of over 2,500 Army male and female applicants essentially replicated the findings with the smaller sample (Zimmerman & Wiskoff, 1990). A recommendation from both studies was that the item format of the Form 169-R should be revised and more thorough coverage of the content domains should be achieved.

The 169-R was revised in conjunction with personnel from the Deputy Chief of Staff for Personnel and the Total Army Personnel Command. Significant changes were made in the wording and phraseology of existing items, and new items were added to address deficiencies in the previous forms. The new Form 169-R was implemented by the Army in October 1990.

### **Navy Personnel Security Screening Questionnaire**

As an outgrowth of the research into Army prescreening, an experimental Navy Personnel Security Screening Questionnaire (PSSQ) was developed in 1988 and 1989. The PSSQ shared many of the items and format characteristics of the revised 169-R. A field trial of the PSSQ was initiated at the Recruit Training Center (RTC), Orlando, in March 1990 and completed in October 1990.

The PSSQ was administered to those recruits who had been classified into the two SCI access ratings (CT and IS) at the MEPS. These recruits were given the PSSQ during the inprocessing week of recruit training. The completed questionnaires were forwarded

to the NSG Field Office, Orlando, for use in scoping and conducting screening interviews. This trial program, which formed part of the rationale for generating the April 1990 requirements letter from BuPers, became the early vehicle for testing items and procedures that could be incorporated into a MEPS security screening system.

### **SCI Prenomination Interview Protocol**

The Department of Defense Regulation 5200.2-R, *Personnel Security Program Regulation*, specifies that personal interviews are to be conducted to assist in determining the acceptability of an individual for nomination and further processing for a position requiring SCI access. Each of the service components has developed procedures for conducting these interviews, including either recommended sets of questions or topics to be included.

PERSEREC was requested in May 1990 to develop a standardized Prenomination Interview Protocol (PIP) that could be used to screen all uniformed and civil service nominees for SCI access. Items from existing service prenomination interview forms were reviewed, along with items from the Army Form 169-R and the Navy PSSQ.

A draft PIP was designed and reviewed by 16 DoD agencies including the Office of the DoD Legal Counsel. A revised version was developed that contained questions within the following areas of security concern:

- (1) Allegiance
- (2) Foreign connections and travel
- (3) Personal conduct
- (4) Financial responsibility
- (5) Law violations and disciplinary actions
- (6) Illegal drugs and drug abuse
- (7) Alcohol abuse
- (8) Emotional and mental health
- (9) Security violations

The items in the PIP have undergone subsequent revisions, but the structure of the security areas has remained intact. This structure and many of the items within the PIP were used in developing the MASS screening instrument. This is in keeping with the philosophy of the PERSEREC security prescreening research program which is to achieve commonality in questionnaire items across DoD security programs.

## **Issues in MASS Design**

The two major issues that required resolution in designing and implementing a security screening system for use by the Navy at the MEPS were the nature of the screening questionnaire and decision aids and Navy recruiting system considerations. The latter included such considerations as (1) the personnel required to conduct the program; (2) the policies that must be established (e.g., ratings to be covered, responsibilities for adjudicating questionnaire responses); and (3) whether the system would be paper-and-pencil or computer-based.

### **Navy Recruiting System Considerations**

***Classifier-Administered.*** The BuPers requirement for an applicant screening questionnaire stated that it was to be used during classification at the MEPS. An applicant interacts with many individuals at the MEPS during processing for the Navy. However, the primary responsibility for making the match between an applicant's capabilities and the requirements of the Navy is the classifier. Navy classifiers must determine whether the applicant meets citizenship status and does not have any disqualifying moral turpitude offenses. For sensitive ratings the classifier is responsible for investigating the applicant's qualifications in greater depth. For CT and IS ratings the interviewer administers a short questionnaire and reviews responses for potentially disqualifying information. For PRP ratings, special attention is given to ensuring that the individual meets the basic drug abuse screening criteria. Given the classifier's already existing responsibilities, we reaffirmed that the security prescreening function should be conducted by the classifier as a part of the person-job match process.

***Ratings to be Included.*** The Navy ratings which receive special screening for personnel security are listed in Table 1. There are seven SCI, three Top Secret, and 11 PRP ratings. The decision was made by Navy policymakers to include all these ratings in the prototype MASS system.



**TABLE 1**  
**Sensitive Navy Ratings Screened for Personnel Security.**

<i>Rating</i>	<i>Rating Description</i>	<i>Sensitive Compartmented Information</i>	<i>Top Secret</i>	<i>Personnel Reliability Program</i>
CTA	Cryptologic Technician Administrative	✓		
CTI	Cryptologic Technician Interpretive	✓		
CTM	Cryptologic Technician	✓		
CTO	Cryptologic Technician	✓		
CTR	Cryptologic Technician	✓		
CTT	Cryptologic Technician	✓		
IS	Intelligence Specialist	✓		
QMS	Quartermaster		✓	
RM	Radioman		✓	
RMS	Radioman (Submarine)		✓	
FTB	Fire Control Technician (Ballistic Missiles)			✓
FTG	Fire Control Technician Gunfire			✓
GM	Gunner's Mate			✓
GMM	Gunner's Mate Maintenance			✓
GMT	Gunner's Mate Technician			✓
MT	Missile Technician			✓
STG	Sonar Technician (Surface)			✓
STS	Sonar Technician (Submarine)			✓
TM	Torpedoman's Mate			✓
TMS	Torpedoman's Mate (Submarine)			✓
WT	Weapons Technician			✓

***Adjudication of Derogatory Information.*** Navy policy suggests that classifiers at the MEPS contact a NSG Field Office for assistance in adjudicating negative responses to the security questionnaire for CT and IS ratings. Implicit in this policy is the idea that the classifier function in security screening is primarily to gather information of a security nature. Where there is either little or very significant derogatory information, the classifier may feel comfortable making the decision whether to continue processing applicants for sensitive ratings. Where the revealed derogatory information does not lead to an easy decision, trained adjudicators within the NSG Command are available during normal working hours to provide phone guidance in interpreting the data and making a determination. The Crawford and Wiskoff (1988) study concluded that this decision-making system was operating very effectively; accordingly no change was made for adjudicating information for the CT and IS ratings in designing the MASS system.

Table 1 displays, in addition to CT and IS, two other categories of ratings, TS and PRP. Adjudication responsibility for TS ratings belongs to the Department of the Navy Central Adjudication Facility (DONCAF). DONCAF agreed for the period of this study to have adjudicators available for telephonic guidance to classifiers for TS ratings. The PRP program manager, OP09N2, accepted responsibility for assistance to classifiers for the PRP ratings.

***Computer-based System.*** The initial concept was to employ a paper-and-pencil-based system for administering a security screening questionnaire and for using decision aids. Early development within this concept demonstrated many deficiencies, primary among which were a lack of flexibility in questionnaire administration and cumbersome procedures in having to look up tables for decision making.

We decided to design a system that would be computer-based. Navy classifiers at MEPS have Zenith 286 PCs, linked to the Navy school seat reservation system (CLASP/PRIDE), for making applicant assignments into Navy schools and jobs. The MASS system was developed as a stand-alone program to run on the existing PCs. When classifiers determined the potential eligibility of an applicant for a sensitive rating, they would enter into the MASS system, conduct the security interview, and reach a decision (with outside adjudication assistance as needed) whether to continue processing the applicant for that rating.

### **Questionnaire and Decision Aid Design**

***Questionnaire Design.*** The two major considerations in designing a computer-administered questionnaire are the questions to be included and how they are to be presented on the computer screen. As indicated earlier, we had conducted studies to evaluate security screening items that would be valid in predicting security criteria and would be appropriate for use with enlisted populations. Based on these studies, we used the Prenomination Interview Protocol categories and questions from the PIP as a starting

point, since they had passed the scrutiny of a considerable number of DoD agencies. We also reviewed service screening instruments such as the 169-R and the PSSQ to ensure that all items relevant to a young applicant population would be included.

Computer screens were designed to parallel the presentation of items on the PIP, i.e., a stem and several questions. Following is an example of a cluster of questions:

1. The following questions concern security clearances. Have you ever:
  - a. been denied a security clearance?
  - b. had a security clearance revoked or suspended?
  - c. declined clearance eligibility or a request to be nominated for clearance?

The disclosure of potentially derogatory information on all security screening questionnaires necessitates further detail concerning the circumstances surrounding the incident(s). For example, if applicants respond that they have committed a criminal offense, they are then required to provide information about the incident including when and where it occurred, and any convictions or other penalties assessed. On traditional paper-and-pencil questionnaires, because of space restrictions it is not feasible to specify all the follow-on questions; instead space is provided for written descriptions of the details of each incident. Computer administration of a questionnaire allows for a series of follow-on screens to be presented to applicants whenever potentially derogatory information is disclosed. This method for collecting information was programmed into MASS; the specific nature of these screens will be discussed later.

This design feature is extremely important in that it promotes consistency in obtaining data concerning important security concerns rather than allowing for uncontrolled responses by respondents. In addition, access to specific information, such as conviction data, prior drug use, etc., permits the programming of flags on potentially disqualifying information, and the instantaneous provision of this information to the classifier. Details of this system will be provided later.

***Decision Aid Design.*** The BuPers requirement did not specify the type of decision aid desired. Discussions with classifiers determined that their primary source of information concerning disqualification of applicants for security reasons was the Navy Recruiting Manual. When information disclosed by an applicant causes classifiers to have a question whether to continue processing the applicant, they seek guidance from the appropriate sections of the Manual.

Automation of this process of looking up information would greatly assist classifiers, particularly if guidance could be presented to the classifier based on matching applicant disclosures to acceptability criteria from the Manual. It was decided that this matching would be the core of a decision aid.

We designed the system with the following two major features: (1) visual indication on the computer screen during the interview that a disclosure by an applicant is potentially disqualifying and requires further action by the classifier; (2) a summary of all the derogatory information disclosed during the interview along with an indication of what action needs to be taken by the classifier. The classifier is able to access this summary during the interview, i.e., a summary of all derogatory information disclosed up to that point in the interview is provided.

## **Software Development**

### **Design Goals**

Several goals were specified for the software, with respect to ease of use, flexibility for the interview process, and presentation of the information obtained from the interview.

Since the level of computer proficiency varies widely among classifiers, it was essential that the MASS program be easy to use in order to gain acceptance in the field. Specifically, our goal was that the user interface be simple enough to be mastered during a single tutorial lasting 15-20 minutes. The documentation for the tutorial was to be brief (e.g., 20-30 pages, including illustrations) and contain all of the information needed to operate MASS during an actual interview.

In addition to ease of use, we felt that the software should allow the classifier to tailor the security interview, to some degree, to each situation. First, the classifier should be able to determine the order in which the topics are covered during the interview. Second, a summary of derogatory information should be available to the classifier at any point during the interview, so that he or she can have the case adjudicated at any appropriate time. Third, the classifier should be able to terminate an interview if it is determined that the applicant does not qualify for ratings requiring SCI, TS, or PRP. Fourth, if the applicant is not likely to be qualified for one set of ratings (e.g., ratings requiring SCI access), the classifier should be able to match the information from the interview against the criteria for the other sets of ratings (e.g., PRP ratings or ratings requiring a TS clearance). Fifth, in view of the dynamic nature of applicant processing at the MEPS, the MASS software should allow a classifier to interrupt an interview, use the computer for some other purpose, and then resume the interview at a later time.

Our rationale concerning the above requirements for flexibility was based on the fact that the classifier reviews the applicant's application packet prior to discussing the ratings that are available. As a result, the classifier may often be able to identify certain characteristics in an applicant's background that may disqualify him or her for ratings covered under MASS prescreening. In such instances, the interview might want to first

address the topics which are most likely to be disqualifying for the applicant. The software should not force the classifier to ask the questions for every topic if it is determined early in the interview that the applicant does not qualify.

The final set of design goals focused on summarizing and presenting the information from the interview for the classifier. First, a summary of derogatory information should be available to the classifier as soon as one or more sets of questions have been completed. The program should be able to display the information on the screen as well as in printed form. Second, in addition to a detailed summary of derogatory information, the software should highlight derogatory information that is specifically addressed in the Navy Recruiting Manual, relative to possible disqualification for a given set of ratings or to a requirement for a waiver.

### **Programming Language and Tools Used**

Two widely used programming languages were considered for this project. These were Pascal and C. It was determined that Pascal (specifically, Borland Pascal 7.0) was better suited for this effort. The primary reason for choosing Pascal over C was based on the nature of the interview and concurrent data entry processes. When a "yes" response is given to an item such as, "Have you ever used marijuana or hashish?" the program is supposed to present a set of follow-up questions on one or more additional screens. In addition, different follow-on questions may be asked of different applicants, depending on their answers to other follow-on questions. Thus, several separate subroutines<sup>1</sup> must be written to present the follow-on questions and to record the input from the classifier. (For example, 15 separate subroutines were written for the item on marijuana, which has a very simple pattern of follow-on questions.) However, the pattern of questions is often very similar for several items on a given topic. Therefore, we wanted to be able to reuse the source code from similar items, making as few modifications as possible. Since Pascal is a block-structured language (C is not), nested subroutines could be employed, making it easier to reuse code for items with similar patterns of follow-on questions. Also, the use of nested subroutines tended to enhance the readability of the code for this particular project. In addition, the strong typing of Pascal and its lack of case-sensitivity were seen as advantageous for this effort, since these features tend to simplify the tasks of compiling and debugging the source code.

Source code modules for conducting the interview employed data entry subroutines developed specifically for this application. A toolkit named "Topaz" was used for the source code modules which store interview information in dBase files. Also, "Turbojock Object Toolkit" was used in source code modules for: (1) the main menu; (2)

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<sup>1</sup>We use the term subroutine to refer to functions in C and to functions or procedures in Pascal in order to avoid confusion of the latter terms in reference to prescreening and personnel activities.

data entry for identifying information; and (3) on-screen display of the summary of information.

### **Description**

MASS uses pull-down menus, which have become the standard for today's software. Since MASS was structured to reflect the categories of derogatory information contained in the PIP, as described above, the pull-down menu for conducting the interview contains the nine categories that were specified on page 4 of this report.

Classifiers initiate a line of questioning for a particular category by selecting one of the items from this menu. For example, if the classifier wants to ask questions on drug use, then the menu item "Illegal drugs and drug abuse" is selected and the computer presents the appropriate questions. Since each category is accessed via the main menu, the order in which the various topics are addressed during the interview is determined by the classifier.

Questions are presented in clusters, with a common stem. For example, the first cluster for "Illegal drugs and drug use" is as follows:

1. The following questions concern your use of drugs. Have you ever:
  - a. used marijuana or hashish (even one time)?
  - b. used any narcotic or hallucinogen (even one time) EXCEPT AS PRESCRIBED BY A PHYSICIAN?
  - c. used any depressant or stimulant (even one time) EXCEPT AS PRESCRIBED BY A PHYSICIAN?
  - d. abused any prescription or over-the-counter drugs?
  - e. tested positive for use of illegal drugs?
  - f. been referred for or received any medical treatment or counseling as a result of any drug use or abuse?

As is apparent in the above sample, each of the questions is presented in a yes/no format. For each question that is answered "yes" by the applicant, a set of follow-on questions are presented to obtain information such as dates of occurrence, etc., that would be relevant for adjudication. For example, the follow-on questions for use of marijuana or hashish are:

What was the year and month (approximately) that you first used marijuana or hashish?

What was the year and month (approximately) that you last used marijuana or hashish?

What is the total number of times that you used marijuana or hashish during this time period?

After the follow-on questions have been completed, MASS returns to the cluster of questions (e.g., 1a-f above). A check mark appears before the question that was answered "yes" by the applicant. When all of the questions for a given category have been answered, MASS returns to the main menu. A check mark also appears before the menu item for each category that has been covered up to that point in the interview. This allows the classifier to determine at a glance which portions of the interview are yet to be completed. Also, MASS determines whether any of the rejection or waiver flags (discussed below) have been set. If so, a list of the areas, together with symbols indicating which type of flag has been set, appear at the bottom of the screen.

In order for the classifier to access the summary of information, all of the questions must have been covered for at least one category. After that point, it is possible to interrupt the interview in order to examine the summary of potential disqualifiers (i.e., information concerning rejection and waiver flags) and the summary of information.

### **Potential Disqualification and Waiver Flags**

The Navy Recruiting Manual was examined to determine the types of information requested by MASS which would either disqualify an applicant for a particular rating or which would require a waiver. This information was coded as a set of flags in the software. Whenever a response by an applicant sets a waiver or rejection flag, the classifier is notified at the conclusion of the set of questions for the given topic. MASS employs flags to indicate: (1) that there may be grounds for rejecting the applicant (for a given set of ratings), and (2) that a waiver is required.

A possible rejection flag is set if the information from the follow-on questions matches the criteria for exclusion from the rating that is of interest to the applicant. For instance, if the applicant is interested in a CT/IS rating and admits to using narcotics or hallucinogens within the last two years (drug use question 1b), a possible rejection flag is set. For this flag, the following statement is displayed in the summary:

**Narcotics, Hallucinogens, Stimulants or Depressants**

Answers to Drug Use questions 1b and/or 1c indicate that the applicant has used narcotics, hallucinogens, stimulants or depressants within the last 2 years. This may be grounds for rejection for CT/IS ratings. See page 1-I-21 of Recruiting Manual.

Table 2 summarizes the flags which indicate possible rejection.

**TABLE 2**  
**Summary of Potential Disqualifier Flags Used in MASS.**

<i>Ratings</i>	<i>Flag Description</i>	<i>Time Period</i>
All	Drug trafficking	ever
	Narcotics or hallucinogens	within last year
	Depressants or stimulants	within last 6 months
	Convicted of exhibitionism or voyeurism	ever
	Deviant sexual behavior	ever
CTA, CTI, CTO, CTR, CTT, IS	Narcotics, hallucinogens, depressants or stimulants	within last 2 years
	Convicted for drug use offense	ever
	Repossessions	ever
	Canceled or suspended charge accounts	ever
	Non-mortgage indebtedness more than 1/2 annual salary	current
	Indebtedness (including mortgage) more than 2 1/2 annual salary	current
	Felony conviction	ever



**TABLE 2 (continued)**  
**Summary of Potential Disqualifier Flags Used in MASS.**

<i>Ratings</i>	<i>Flag Description</i>	<i>Time Period</i>
CTA, CTI, CTO, CTR, CTT, IS	2 or more misdemeanor convictions	ever
	More than 2 occurrences of difficulties with school officials	ever
	Alcohol dependency	ever
	Parent, sibling, or spouse not a U.S. citizen	current
	Mental illness	ever
	History of bad checks	ever
	Permanently expelled from school	ever
	Marijuana use	within last 6 months
	5 or more traffic violations	within last 2 years
	3 or more convictions for alcohol-related offenses	ever
RM, RMS	Depressants, stimulants, narcotics, hallucinogens	ever
	Felony conviction	ever
	Alcohol dependency	ever
	Convicted for drug use offense	ever
CTM	Repossessions	ever
	Canceled or suspended charge accounts	ever
	Non-mortgage indebtedness more than 1/2 annual salary	current
	Indebtedness (including mortgage) more than 2 1/2 annual salary	current
	Felony conviction	ever
	2 or more convictions for misdemeanors	ever

**TABLE 2 (continued)**  
**Summary of Potential Disqualifier Flags Used in MASS.**

<i>Ratings</i>	<i>Flag Description</i>	<i>Time Period</i>
CTM	More than 2 occurrences of difficulties with school officials	ever
	Alcohol dependency	ever
	Parent, sibling, or spouse not a U.S. citizen	current
	Mental illness	ever
	History of bad checks	ever
	Permanently expelled from school	ever
	Marijuana use	within last 6 months
	5 or more traffic violations	within last 2 years
FTB, FTG, GMM, GMT, MT, STS, TMS, WT, STG, TM, GM	3 or more convictions for alcohol-related offenses	ever
	Depressants, stimulants, narcotics, hallucinogens	ever
	More than experimental use of marijuana	ever
	Narcotics, stimulants, depressants, hallucinogens	ever
	Alcohol dependency	ever
	Mental illness	ever
	Convicted of non-minor misdemeanor or felony	ever

A waiver flag is set if the information from the follow-on questions for a given item indicates that a waiver is required for enlistment or for entry into the particular type of rating. An example for CT/IS ratings is the use of marijuana over 6 months prior to enlistment. For this flag, the following statement is displayed in the summary:

**Marijuana Use**

Answers to Drug Use question 1a indicate use of marijuana over 6 months ago. A CT/IS waiver is required. See page 1-I-21 of Recruiting Manual.

Table 3 summarizes the flags which indicate that a waiver is required.

**TABLE 3**  
**Summary of Waiver Flags Used in MASS.**

<i>Rating</i>	<i>Flag Description</i>	<i>Time Period</i>
All	Convicted of drug use offense	ever
	Convicted of any alcohol-related offense	ever
	Drug or alcohol dependency	ever
	Use of narcotics or hallucinogens	more than 12 months ago
	Use of depressants or stimulants	within last 12 months
	6 or more minor traffic offenses	within any 12 month period in last 3 years
	10 or more minor traffic offenses	within last 3 years
	3 or more minor non-traffic offenses and/or convictions for minor misdemeanors	ever
	Convicted of any non-minor misdemeanor or felony offense	ever
CTA, CTI, CTO, CTR, CTT, IS	Marijuana use	more than 6 months ago
	Use of narcotics, hallucinogens, stimulants, or depressants	more than 2 years ago
	Convicted of any alcohol-related offense	ever
RM, RMS	Marijuana use	ever
	1 or 2 convictions for any alcohol-related offense	ever
	5 or more traffic violations	within last 2 years
	Convicted of any minor non-traffic offenses, minor misdemeanors or non-minor misdemeanors	ever

**TABLE 3 (continued)**  
**Summary of Waiver Flags Used in MASS.**

<i>Rating</i>	<i>Flag Description</i>	<i>Time Period</i>
CTM	Marijuana use	ever
CTM	1 or 2 convictions for any alcohol-related offense	ever
	Convicted of any minor non-traffic offense, minor misdemeanor or non-minor misdemeanor	ever

In addition to the flags for possible disqualification and waivers, MASS provides a facility for summarizing all of the derogatory information provided up to that point in the interview. The information is presented for each of the categories for which derogatory information was given. The order of presentation within each category is the same order used in presenting the questions to the applicant. For each question that is answered "yes" by the applicant, answers to the follow-on questions are included in the summary.

### **Summary Information**

As noted above, the summary of rejection and waiver flags, as well as the summary of all derogatory information, is available for review by the classifier at each stage of the interview. The main menu for MASS presents options for reviewing this information on the computer display or for printing out a copy on an attached printer. The printout contains the same information that is available for viewing on the computer screen, plus (1) identifying information relating to the applicant, the classifier who conducted the interview, and where the interview was conducted; (2) an advisory statement that is to be read by the applicant; (3) a signature line for the applicant's signature; and (4) a block (to be completed by the classifier) to indicate the outcome of the interview.

The information from the interview is currently saved in two forms when the interview is ended and the classifier exits from MASS. The first form is a set of temporary files that contain all of the information from the just-completed interview. The next time that MASS is started, the classifier can retrieve this information, using the "Retrieve Interview Data" option from the main menu. This feature allows for the situation in which an interview must be interrupted and resumed at a later time. The second form of data storage consists of a database stored in dBase file format. This database consists of 50 separate files and is designed to capture all of the information from interviews conducted during the test and evaluation. With the completion of the test and evaluation, a revised version of MASS will be implemented which will not store interview data in a database. However, the revised version will continue to save information in temporary files (i.e., the option to retrieve data from the most recent interview will still be available).

## **MASS Test and Evaluation**

The MASS program described above has been subjected to a series of reviews by headquarter and field personnel within the Navy Recruiting Command and the Naval Security Group. These reviews have assisted the development of the program and the introduction of modifications based on expert knowledge concerning the recruiting and security systems. There have also been two field evaluations of the system which are described below.

### **Preliminary Evaluation of System Operability**

In January 1992 an early version of the program was installed on Navy classifier PCs at the Los Angeles MEPS to evaluate system operating characteristics. This version, which did not contain the decision aid component, was also installed during CY92 on existing computer systems at MEPS in Oakland, Albuquerque, Dallas and Denver. Classifiers at these MEPS were asked to substitute the MASS program for the paper-and-pencil questionnaire they had been using with applicants to SCI ratings (CT and IS). Classifiers were also asked to continue the procedure of contacting representatives of the NSG to assist in decisions whether to continue processing applicants after they reviewed the questionnaire responses.

Classifiers indicated that MASS was easy to use and provided them with a greater amount of information than did the paper-and-pencil questionnaire. The system functioned smoothly on the classifiers' personal computers and was preferred by classifiers as a means of obtaining needed information.

Classifiers made a number of comments for improving the utility of the program, most of them involving the incorporation of a decision aid (which was already under development). On the basis of these comments, and those received from Navy Recruiting Command and NSG personnel, the program was revised and the decision aid module completed.

### **Evaluation of Full System Capability**

#### **Procedure**

On 1 April 1993 a test and evaluation of the full MASS System was initiated at nine MEPS, to include the five that had been using the earlier version of MASS plus Baltimore, Fresno, Tampa and Jacksonville. The Los Angeles MEPS, on their own, sent the program to recruiting stations in Hawaii and Guam for their use. In addition to the CT and IS ratings, the test and evaluation included TS and PRP ratings, as indicated in

Table 1. Classifiers were told to contact DONCAF for assistance with TS ratings and the PRP program manager for PRP rating assistance.

The study involved all applicants to these ratings and all individuals who already had been assigned to one of the ratings but were in a delayed entry program (DEP) prior to officially entering the Navy. If the latter group had not taken MASS when they entered the DEP, they had to take it when they left the DEP.

Classifiers were sent instructions for installing MASS on a hard drive; they were also sent a tutorial for running the program. They were instructed to print copies of all MASS summaries, place one in the applicant's service record and forward to PERSEREC a copy of all MASS summaries by the 5th of the month for all transactions conducted the previous month.

All nine MEPS were contacted to ensure receipt of the package and successful installation of the MASS program. Within the first two months several classifiers suggested minor changes to the program that would enhance its utility; other needed changes were discovered by the authors. In June 1993 revised disks, installation instructions and tutorials for using MASS were sent to each of the MEPS. A copy of the tutorial is included in the Appendix.

#### **Analysis of Printed MASS Summaries**

For the period 1 January to early November 1993 a total of 310 MASS summaries were forwarded to PERSEREC. Table 4 displays the number of summaries received from each MEPS. The Denver, Los Angeles and Oakland MEPS provided the greatest number of MASS summaries, together contributing almost two-thirds of those received.

**TABLE 4**  
**MASS Test and Evaluation Data by Location**  
**and Month that Interview was Conducted.**

<i>MEPS</i>	<i>Month</i>											<i>Total</i>
	<i>J</i>	<i>F</i>	<i>M</i>	<i>A</i>	<i>M</i>	<i>J</i>	<i>J</i>	<i>A</i>	<i>S</i>	<i>O</i>	<i>N</i>	
Albuquerque				0	0	0	0	0	0	0	0	0
Baltimore				5	4	2	9	6	4	2	0	32
Dallas				0	4	5	5	3	3	4	2	26
Denver	1	1	2	4	9	18	11	9	10	13	0	78
Fresno				0	0	0	0	0	0	0	0	0
Guam				0	0	0	2	1	0	0	0	3
Honolulu				0	0	1	1	3	0	0	0	5
Jacksonville				0	3	0	0	3	0	5	0	11
Los Angeles		1		5	7	10	9	13	9	7	0	61
Oakland				0	19	8	4	9	7	12	1	60
Tampa				2	7	4	9	4	3	5	0	34
Total	1	2	2	16	53	48	50	51	36	48	3	310

Note: As described above, earlier versions of MASS were used at the Denver and Los Angeles MEPS prior to the evaluation of full system capability. Thus, five MASS summaries were received before April.

Each MASS summary contained the potentially derogatory information that had been indicated by an applicant in response to the MASS questions. Table 5 displays the frequencies of reported cases with one or more incidents of potentially derogatory information and the percentage this represents of the 310 cases. None of the applicants gave affirmative responses to questions concerning security violations or allegiance. These categories are therefore not represented in the table. It should be noted that the data in Table 5 should not be considered representative of a total population of applicants to sensitive ratings because the purpose of the study did not include obtaining a random or stratified sample of applicants.

**TABLE 5**  
**MASS Test and Evaluation Cases with Potentially Derogatory Information.**

<i>Category</i>	<i>Question Number</i>	<i>Item Description</i>	<i>n</i>	<i>%</i>
Illegal drugs and drug abuse	1a	Marijuana	60	19.4
	1b	Narcotics or hallucinogens	1	0.3
	2a	Detained, etc. for use and/or possession	2	0.6
Law violations and disciplinary actions	1a	Improperly licensed or unregistered vehicle	10	3.2
	1b	Unsafe vehicle	5	1.6
	1c	Driving without a license	9	2.9
	1d	Driving under the influence	4	1.3
	1e	Open container	2	0.6
	1f	Moving violations not related to alcohol or drugs	171	55.2
	2a	Vandalism	3	1.0
	2b	Trespassing	11	3.5
	3a	Noise violations	2	0.6
	3d	Fighting in a public place	2	0.6
	4a	Shoplifting	12	3.9
	4b	Passing bad checks	2	0.6
	4f	Breaking and entering	1	0.3
	5a	Indecent exposure	2	0.6
	6a	Assault and battery	1	0.3
	7	Other	25	8.1
Emotional and mental health	1a	Institutionalized	1	0.3
	1b	Counseling or psychotherapy	23	7.4
Alcohol abuse	3a	Been intoxicated	60	19.4
	3c	Offense involving alcohol	21	6.8
Financial responsibility	2a	Collections	16	5.2
	2b	Defaulted on loan	1	0.3
	2c	Credit card canceled	5	1.6
	2d	Bad debts written off	2	0.6
	2e	Left residence owing money	1	0.3



**TABLE 5 (continued)**  
**MASS Test and Evaluation Cases with Potentially Derogatory Information.**

<i>Category</i>	<i>Question Number</i>	<i>Item Description</i>	<i>n</i>	<i>%</i>
Financial responsibility	3a	Current bills delinquent	6	1.9
	3b	Previous bills delinquent	14	4.5
	3c	Bounced checks	39	12.6
	4b	Trouble with tax agencies	1	0.3
Personal conduct	1a	Fired from a job	30	9.7
	1b	Warning or disciplinary action	18	5.8
	1c	Quit job to avoid being fired	1	0.3
	1d	Quit job without giving notice	48	15.5
	1e	Suspended or expelled from school	47	15.2
	1f	Disciplined by school administrator	86	27.7
	2c	Ran away from home (as a minor)	4	1.3
Foreign travel and connections	1a	Dual citizenship	1	0.3
	1b	Close relatives or associates are citizens of another country	17	5.5
	2a	Lived outside of U.S. with parent or guardian	28	9.0
	2b	Lived outside of U.S. without parent or guardian	2	0.6
	2c	Traveled to Canada or Mexico	122	39.4
	2d	Traveled outside of U.S. (excluding Canada and Mexico)	67	21.6
	3d	Worked for foreign government	1	0.3
	3e	Contact with foreign government	5	1.6
	3f	Money from foreign national or foreign government	1	0.3
	4a	Friendship with a citizen of a another country	28	9.0
	4c	Dated a citizen of a another country	9	2.9
	4d	Roommates who are citizens of a another country	5	1.6

**TABLE 5 (continued)**  
**MASS Test and Evaluation Cases with Potentially Derogatory Information.**

<i>Category</i>	<i>Question Number</i>	<i>Item Description</i>	<i>n</i>	<i>%</i>
Foreign Travel and Connections	5a	Close relatives or associates lived outside U.S.	46	14.8
	5b	Close relatives or associates had financial interests in foreign country	2	0.6
	5c	Close relatives or associates served in armed forces of another country	2	0.6

The Law Violations and Disciplinary Actions category contains numerous cases of potentially derogatory information. Four cases of driving under the influence of alcohol (DUI), 12 for shoplifting, one for breaking and entering, and one for assault and battery constitute the most serious violations for security purposes. In addition, 171 applicants (55%) had received moving violations not related to alcohol or drugs.

The item labeled "Other", under Law Violations and Disciplinary Actions, gives the applicant an opportunity to indicate involvement, or suspected involvement, in violations that were not specifically addressed by the questions in MASS. This question contains a large number of cases (35). Upon closer examination of the data it was found that some classifiers included information here which should have been included elsewhere. This may be due to their inexperience with the software. There were 13 cases of moving violations, 7 cases of offenses involving alcohol, 2 of shoplifting, and 2 runaways. To more accurately represent the data collected, these corrections were made on Table 5. Most of the remaining 25 cases listed in *other* are of lesser significance for security. Examples include parking violations (12), loitering (1), littering (1), and jay-walking (2). One case reported in this item that has greater significance for security involved failure to appear in court.

In the category of Emotional and Mental Health, 23 applicants had received counseling or psychotherapy and one had been institutionalized.

A large number of applicants reported alcohol abuse. Sixty reported intoxication (19%) and 21 had been investigated, detained, arrested or convicted for an offense related to their use of alcoholic beverages.

In terms of financial responsibility, the MASS program uncovered a large number of cases with potentially derogatory information. The most notable included one applicant

with a history of problems with Federal (IRS) or State income tax agencies. Others had considerable debt problems: five applicants had credit cards recalled or cancelled because they failed to live up to the contract, one had defaulted on a loan, 16 had debts turned over to a collection agency, 39 had checks returned for insufficient funds within the last 3 years (13%), and 20 applicants reported either current or previous delinquent bills.

A considerable number of cases with potentially disqualifying information were reported in the category of Personal Conduct. Many applicants reported disciplinary problems at an educational institution. Eighty-six had been sent to a school administrator's office for disciplinary reasons (28%) and 47 had been suspended or expelled from an educational institutional (15%). In addition, many applicants reported leaving a job under unfavorable circumstances. Thirty had been fired from a job, 48 had quit a job without giving at least 2 weeks prior notice (16%), and one quit a job to avoid being fired or being given a reprimand or other disciplinary action.

The category of Foreign Travel and Connections contains a large number of cases with potentially disqualifying information. Many applicants have foreign connections through close relatives or associates who have lived outside the U.S. (46), are citizens of other countries (17), or served in the armed forces of another country (2). Likewise, many applicants reported other types of relationships with foreign nationals, including correspondence, friendship or obligation (28), roommates (5), or dating (9). Many applicants have traveled outside of the U.S. One hundred and twenty-two applicants have traveled to Canada or Mexico and 67 have traveled to other foreign countries. A total of 30 applicants have lived in foreign countries either with (28) or without (2) a parent or guardian. In addition, one applicant reported dual citizenship and another worked for a foreign government.

It is important to note that not all of the information that comes out of the MASS interview is derogatory. For example, seeking counseling during a personal hardship may indicate a positive approach to dealing with life crises rather than long-term personal instability which is unsuitable for a sensitive position with the military. Other information gathered through MASS is clearly derogatory and mandates consideration for disqualification. The use of narcotics within the last 6 months, for example, explicitly disqualifies applicants from CTA ratings.

Directions for completing the summaries were not always followed by classifiers. Therefore in only 69 of the 310 summaries (23%) was information provided whether the applicant was approved or disapproved. Five of these 69 applicants were rejected from further consideration for the specified rating. In the remaining 241 forms (77%) classifiers failed to indicate whether the applicant was accepted or dropped from further processing in that rating.

### **Analysis of Electronic MASS Summaries**

The second method of capturing all of the information from the interviews was to collect the MASS summary data in a dBase file format onto the hard drives used for MASS interviews. In February 1994 the MEPS were sent instructions for transferring this information from their computers onto floppy disks and for forwarding them to PERSEREC.

Electronic and printed MASS summaries were matched and 75 additional MASS interviews were found for which there were no printed summaries. Analysis of the 75 records indicated a very similar pattern of potentially disqualifying data to that found on the printed summaries and reported in Table 5.

### **Feedback from Navy Classifiers**

To determine the reactions of Navy classifiers to the MASS system, informal telephonic interviews were conducted by the authors and representatives of NRC with classifiers from the MEPS. Overall, the feedback was very positive. Classifiers reported a preference for the MASS interview over the current paper-and-pencil questionnaire for CT/IS ratings. They found MASS to be easy to use and did not report any difficulties with the most recent version of the software. In fact, even those classifiers who are computer illiterate did not have any trouble using it.

Feedback from classifiers using MASS indicated that it is an effective tool in processing applicants for the specified ratings. It generally requires 20-45 minutes to complete, depending on the amount of potentially derogatory information collected, and provides a standardized approach to obtaining detailed information from the applicant. The structured format and in-depth questions were particularly helpful in getting the information needed to make a screening decision in a timely manner.

To further save time, classifiers explained that they tend to conduct a short discussion with applicants before beginning the MASS program to determine any areas of potentially derogatory information. If such an area is identified, some classifiers move directly to that area as the starting point for the MASS-assisted interview. Classifiers reported that, as a rule, they only contact an adjudication office for assistance with adjudicating negative responses in cases where MASS indicates that the applicant may be disqualified.

Classifiers also indicated that prior to administering the program they tend to "weed out" applicants who would receive a mandatory rejection. They explained that sometimes an applicant reports information on the Record for Military Processing (DD Form 1966) or the National Agency Questionnaire (DD Form 398-2) or during an introductory discussion that would automatically disqualify him or her from further

consideration for a rating that requires a MASS-assisted interview. In these cases, the classifier may decide not to even suggest these ratings as possibilities for the applicant. This process of "pre-prescreening" applicants undoubtedly eliminated individuals with the greatest amount of potential derogatory information and therefore resulted in lower percentages of reported derogatory information (as presented in Table 5).

## **Conclusions and Recommendations**

The test and evaluation was conducted to examine the effectiveness of the MASS system and the feasibility of full-scale implementation by the Navy. In considering the results of this test and evaluation, one must be mindful that the data from the summary forms for the interviews may not be representative of the applicant population as a whole. This is because the selection of MEPS was based on practical rather than statistical sampling considerations. In addition, summary forms were only sent for completed interviews. They do not provide data for instances in which interviews were halted (e.g., because of too much derogatory information) or in which the classifier chose not to present one of the sensitive ratings to the applicant because the applicant's file showed a considerable amount of potentially derogatory information.

With these caveats in mind, several conclusions may be drawn from the data. First, applicants are providing potentially derogatory information about themselves during the MASS-assisted security interview. Affirmative responses were given for items in each of the categories except Allegiance and Security Violations. For many of the items (e.g., use of marijuana, moving violations, alcohol intoxication), the response rate was fairly high.

Second, the use of MASS appears to be effective in security screening for applicants, even though the actual disapproval rate for MASS interviews is uncertain. Some classifiers indicated that they do not offer ratings that would require a MASS interview if there appears to be too much potentially derogatory information in the individual's DD Form 1966 and DD Form 398-2. Thus, they avoid the extra effort of conducting a MASS-assisted security interview with applicants who are unlikely to qualify. It may be that this has become the de-facto procedure.

The MASS procedure appears to be operating effectively and efficiently in screening applicants. It eliminates (either directly or indirectly), at the earliest point in the processing cycle, those individuals who are likely to be rejected from a rating, thus saving reclassification and training resources. Although some questions had been raised as to the amount of time required to conduct the MASS-assisted interview in some cases, it is clearly more efficient, from the standpoint of the Navy personnel system as a whole, to spend 20 to 45 minutes of a classifier's time than to expend a far greater amount of resources on in-depth interviews, investigations, and lost training seats (due to reclassification).

MASS provides, in a timely manner, the information required by classifiers to obtain a decision as to whether to continue processing applicants for sensitive ratings. It provides a clear indication of the incidents or behaviors in an applicant's past which may be disqualifying or which may require a waiver. MASS also references the portions of the Navy Recruiting Manual which relate to these potentially disqualifying factors or

necessary waivers. In addition, it provides a detailed summary of all of the potentially derogatory information given during the interview.

Classifiers have indicated that they prefer MASS to a paper-and-pencil questionnaire for security screening of applicants. MASS provides a standardized approach to obtaining detailed information concerning incidents or behaviors that may be disqualifying for an applicant. This is not the case for the paper-and-pencil questionnaire that is currently in use for CT and IS ratings. In addition to the assistance it provides to the classifier, the standardized procedures provided by MASS make the decision-making process more equitable, from the standpoint of the applicant.

In conclusion, evidence from the initial test and evaluation indicates that MASS is an effective tool in prescreening applicants for Navy ratings that require a top secret clearance, SCI access, or are part of the PRP program. Moreover, previous studies have demonstrated the utility of the types of items contained in MASS in reducing unsuitability discharge by military personnel. Based on these findings it was recommended in November 1993 to Navy Recruiting Command that MASS be implemented by the Navy in all MEPS. A decision memorandum with this recommendation was developed by Navy Recruiting Command and approved by RADM Evans, Chief of Navy Recruiting in March 1994.

The authors expect that such a full-scale implementation of MASS will lower the rate of rejection and reclassification at the RTCs, as well as the rate of unsuitability discharge, in the ratings to which it is applied. However, these hypotheses should be carefully studied by tracking individuals who enter the Navy after having been screened by MASS and comparing them to a base rate population. In addition a thorough operational test and evaluation is recommended in conjunction with the Navy-wide implementation of MASS.

Consideration also should be given to installing MASS at Navy RTCs for the reclassification of personnel into Navy ratings. This would ensure that all individuals being considered for sensitive occupations as applicants or recruits are screened in a standardized manner.

In addition, the applicability of MASS for Army and Air Force prescreening programs should be investigated. The latter is in keeping with the recommendations of the recent Joint Security Commission (1994, p.43) that "a standardized prescreening form be developed for use throughout the Department of Defense and the Intelligence Community" and that "The Commission supports the development of standardized forms in an electronic format as a way to facilitate reciprocity and reduce costs." The investigation should also explore the appropriateness of replacing security interviewers with automated prescreening procedures such as MASS. This evaluation should focus on comparing the security risks attending such a change against the benefits of using automation to reduce personnel and costs.

## References

- Crawford, K.S., & Wiskoff, M.F. (1988). *Screening enlisted accessions for sensitive military jobs*. (PERSEREC-TR-89-001). Monterey, CA: Defense Personnel Security Research and Education Center.
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## **Appendix A**



## Installing MASS

To install MASS, you must first exit from any software that you are currently using. The computer will display a prompt similar to the following:

C:\>

Now follow these steps:

1. Insert the MASS diskette labeled "Disk 1 of 2" in drive A and close the drive door.

2. Type "A:" and press

← ENTER

3. Type "INSTALL" and press

← ENTER

The installation program will install several files on your hard drive. Then it will prompt you to place Disk 2 in drive A. Now follow these steps:

1. Insert the MASS diskette labeled "Disk 2 of 2" in drive A and close the drive door.

2. Press

← ENTER

The installation program will install more files on your hard drive and unpack them. When the installation is completed, you will again see a prompt similar to the following:

C:\MASS:

## A Brief Tutorial

### Starting Mass

To start MASS, you must first exit from any software that you are currently using. The computer will display a prompt similar to the following:

C:\>

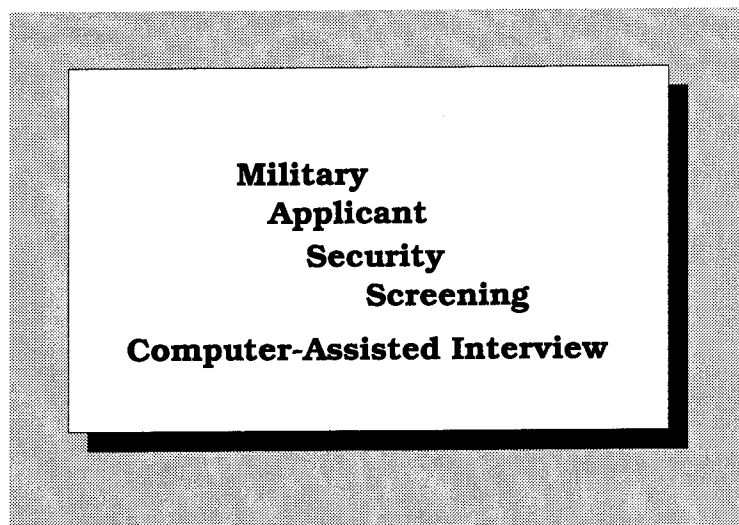
Now type "CD \MASS" and press



Next, type "MASS" and press



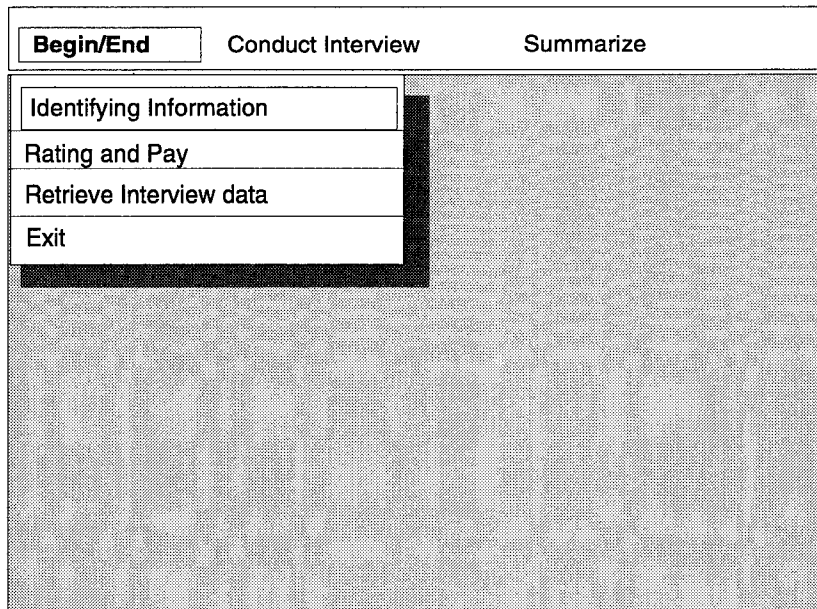
MASS will display the following startup screen:



Again, press



The main menu for MASS will appear on your screen, as shown on the following page:



Notice that 3 main menu items are presented across the top:

**Begin/End,**  
**Conduct Interview, and**  
**Summarize.**

Also, you will see that the submenu for "Begin/End" presents 4 options:

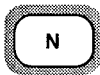
**Identifying Information,**  
**Rating and Pay,**  
**Retrieve Interview Data**  
**Exit.**

The submenus for "Conduct Interview" and "Summarize" appear in a medium gray color. This means that they are not available at this point. However, they will be available later in the interview.

## **Collecting Preliminary Information**

### **1. Completing the "Identifying Information" Module**

The first step in the interview is to complete the "Identifying Information" module of MASS. To


start this module, press . Screen 1 of the Advisement Statement will appear, as shown on the following page.

**READ THE FOLLOWING STATEMENT TO THE APPLICANT**

**DEPARTMENT OF THE NAVY  
PERSONNEL SECURITY SCREENING QUESTIONNAIRE  
PRIVACY ACT OF 1974 (ADVISEMENT STATEMENT):**

The authority for requesting the following information is 10 U.S.C. 3013 and Executive Orders 10450 and 12356. The information is requested for the purpose of making security determinations for membership in the Armed Forces of the United States and for access to classified information. Routine uses include evaluation for security clearance or access to sensitive compartmented information, determining the scope and coverage of personnel security investigations, providing evaluators of adjudicators with detailed personal history information relevant to security and suitability determinations, and for making and reviewing enlistment eligibility decisions. The information may be disclosed to other government agencies and administrative personnel involved in processing actions that evolve during the course of these determinations.

Press PAGE DOWN to continue

Follow the instructions on the top bar and read the statement to the applicant. When you have read screen 1 of the statement, go to the next screen by pressing .

Screen 2 of the advisory statement will be displayed, as shown below.

**READ THE FOLLOWING STATEMENT TO THE APPLICANT**


**COMPLETION OF THIS INTERVIEW IS VOLUNTARY:**

However, failure on your part to furnish all or part of the information requested may result in your not being accepted for your chosen enlistment option.

**GENERAL INFORMATION CONCERNING THIS INTERVIEW:**

Completion of this processing interview represents an initial security screening. If the interview results are reviewed favorably and you are classified into a sensitive program, a detailed background investigation conducted by the Defense Investigative Service will follow. This investigation may encompass extensive checks with appropriate law enforcement agencies, credit and financial institutions, school teachers and administrators, friends, neighbors, employers, and other persons who may know and be willing to provide information concerning you.

Press PAGE DOWN to continue

If you should need to refer to screen 1 again, just press .

After reading screen 2 of the advisory statement to the applicant, go to screen 3 by pressing

**PgDn**

Screen 3 will appear, as shown below.

**READ THE FOLLOWING STATEMENT TO THE APPLICANT**

Upon completion of all screening and investigations, a determination will be made concerning your eligibility for access to sensitive intelligence information and/or the enlistment option which you have chosen. You are advised that any false statement made by yourself during this interview may result in the loss of your enlistment option, denial of a security clearance or access to sensitive information, denial of enlistment, reassignment or possible separation from military service.

ANY ADVICE YOU MAY HAVE RECEIVED CONCERNING THE WITHHOLDING OF REQUESTED OR APPLICABLE INFORMATION SHOULD BE DISREGARDED. It will be in your best interest to respond honestly and accurately to all questions asked.

Press PAGE DOWN begin Interview process

Read screen 3 of the advisory statement to the applicant, then press

**PgDn**

MASS will now ask you to verify the date of the interview by displaying the following screen:

**VERIFY COMPUTER DATE INFORMATION**

Today's Date is: 1/22/93

Is this correct?

If the date shown on the screen is correct, type  for "Yes", then press .

If the date shown is incorrect, type  for "No", then press .

If you typed "N", a new screen will appear for entering the correct date. The cursor will be positioned in the month "field" (the blue rectangle next to the word "Month:"). Simply type in the number for the correct month in the month field and press . Then type in the number of the correct day in the day field and press .

Finally, type in the number of the correct year and press .

After you verify (or correct) the date, MASS will ask you to verify the time of day for the interview with the following screen.

**VERIFY COMPUTER DATE INFORMATION**

The current time is: 15:45:4

Is this correct?

If the time of day shown on the screen is correct, type  for "Yes", then press .

If the time of day shown is incorrect, type  for "No", then press  to change the time shown on the screen.

After you verify (or correct) the time of day, MASS will display the following screen, but none of the information (last name, first name, etc.) will have been filled in.



PII Redacted

**ENTER THE FOLLOWING INFORMATION:**

Applicant's Last Name:	First Name:	M.I.	
<input type="text" value="Smith"/>	<input type="text" value="James"/>	<input type="text" value="E"/>	<input type="text" value=""/>
U.S. Citizen?	<input type="text" value="y"/>	Served in Peace Corps?	<input type="text" value="n"/>
		Any dependents?	<input type="text" value="n"/>
<input type="text" value=""/>		Place of Birth:	<input type="text" value="St. Louis, MO"/>
Interview Location:	<input type="text" value="Oakland, CA"/>		
	(City, State)		
Interviewer's Last Name:	First Name:	M.I.	
<input type="text" value="Jackson"/>	<input type="text" value="William"/>	<input type="text" value="K"/>	<input type="text" value=""/>

Press ENTER to move to next field. Press UP ARROW to move to previous field. Each field must be completed.  
When finished, press PAGE DOWN to continue.

The cursor will be positioned on the field (the blue rectangle) for the applicant's last name. Type

in the last name of the interviewee. If you make a typing mistake, press  one or more times to erase characters, then type in your correction. When you finish typing the last name,

press . The cursor will move to the field for the applicant's first name. Type in the

first name and press .

Type in the middle initial and press .

Type in the 9 digit social security number and press .




Enter  or  for each of the next three fields (U.S. Citizen, Peace Corps service, and Dependents).


After these three field have been entered, the next field is for the applicant's date of birth. The format for this field is MM/DD/YY. The month, day, and year sections of this field require 2 digits each. For instance, if interviewee's birthdate is 20 May 1973, enter 05/20/73. Type in the

date of birth and press .

Now type in the remaining information for the applicants place of birth, the interview location, and the interviewer's last name, first name, middle initial and social security number. As you

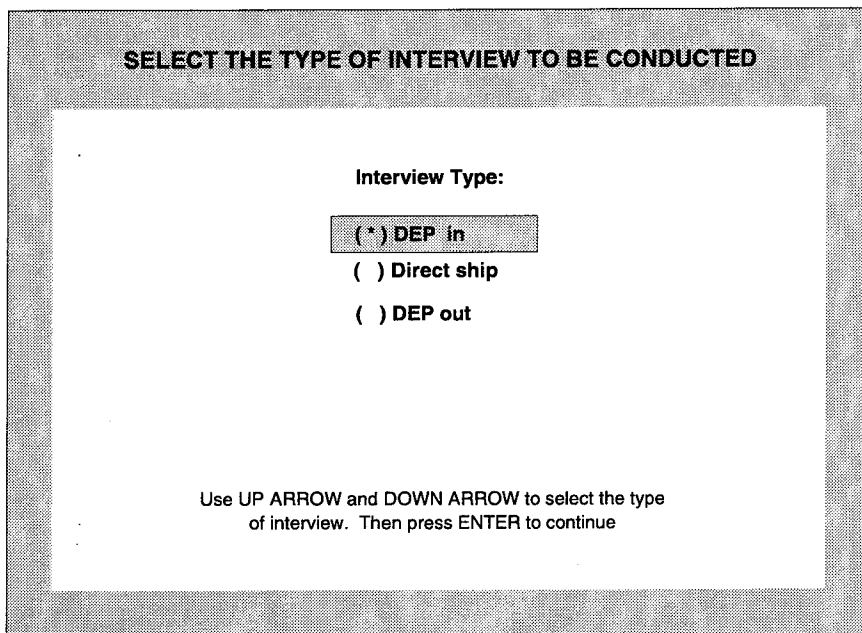
complete each field, press  to move to the next field.

If you have made any typing mistakes in any of the fields on this screen, press  one or more times to move the cursor to the field you want to edit. Pressing  moves the cursor to the previous field. Pressing  moves the cursor to the next field on the screen.

Check to make sure that you have entered all information correctly, then press .

If Mass does not advance to a new screen, check to make sure that you have entered information in each field (only the middle initial fields are optional). Also, check to make sure that you have entered 9 digits in the social security number fields and that you typed a valid date in the date of birth field.

The final screen for the "Identifying Information" module asks for the type of interview to be conducted. This screen is shown below.



**SELECT THE TYPE OF INTERVIEW TO BE CONDUCTED**

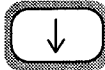


Interview Type:

☒ ( \* ) DEP in

☐ ( ) Direct ship

☐ ( ) DEP out

Use UP ARROW and DOWN ARROW to select the type of interview. Then press ENTER to continue

If you are not conducting a "DEP-in" interview, press  or  to select the type of interview. Then press .

You have now completed the "Identifying Information" module. MASS returns to the main menu, as shown on the next page.


<b>Begin/End</b>	Conduct Interview	Summarize
------------------	-------------------	-----------

<b>Identifying Information</b>
Rating and Pay
Retrieve Interview data
Exit

## 2. Completing the "Rating and Pay" Module

The next step in collecting preliminary information is to complete the "Rating and Pay" module.

To start this module, type .

The following screen will appear.

**SELECT THE RATING GROUP THAT IS  
OF INTEREST TO THE APPLICANT**

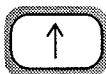
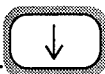
  

Rating:

CTA	
CTI	
CTM	▲
CTO	
CTR	
CTT	
IS	
RM	
RMS	
FTB	
FTG	


  

Press UP ARROW or DOWN ARROW to scroll through  
selections. Press ENTER when finished.

Press  or  keys to select the rating group of interest to the applicant.

Then press



After selecting the rating , the computer will display information about the screening criteria for the rating. When you have read the information, press  and the following screen will appear:

A rectangular screen with a grey border. At the top, it says "ENTER THE FOLLOWING INFORMATION CONCERNING THE APPLICANT". Below this, there is a label "Expected monthly pay:" followed by a small rectangular input box. At the bottom of the screen, it says "Type in the amount and press ENTER to continue".

ENTER THE FOLLOWING INFORMATION  
CONCERNING THE APPLICANT

Expected monthly pay:

Type in the amount and press ENTER to continue

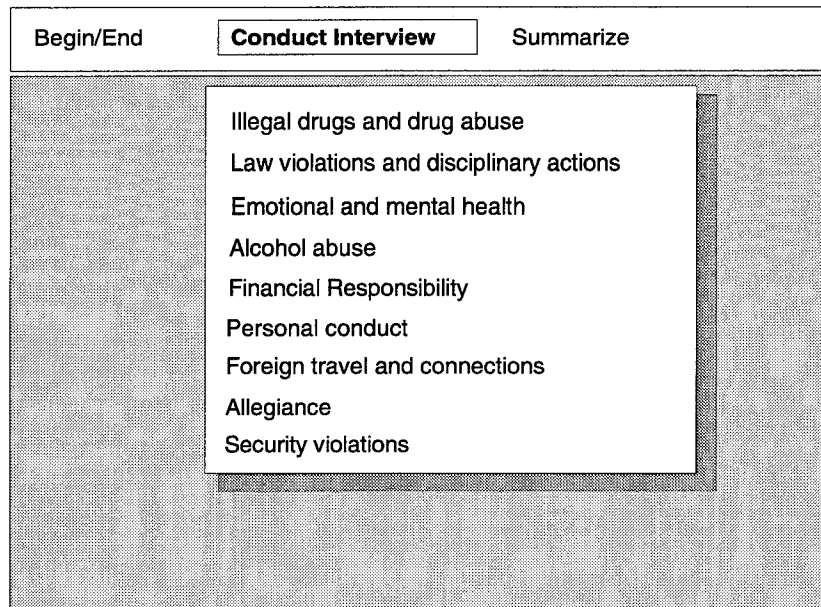
Type in the expected monthly Navy pay for the interviewee and press




You have now completed the "Rating and Pay" module.

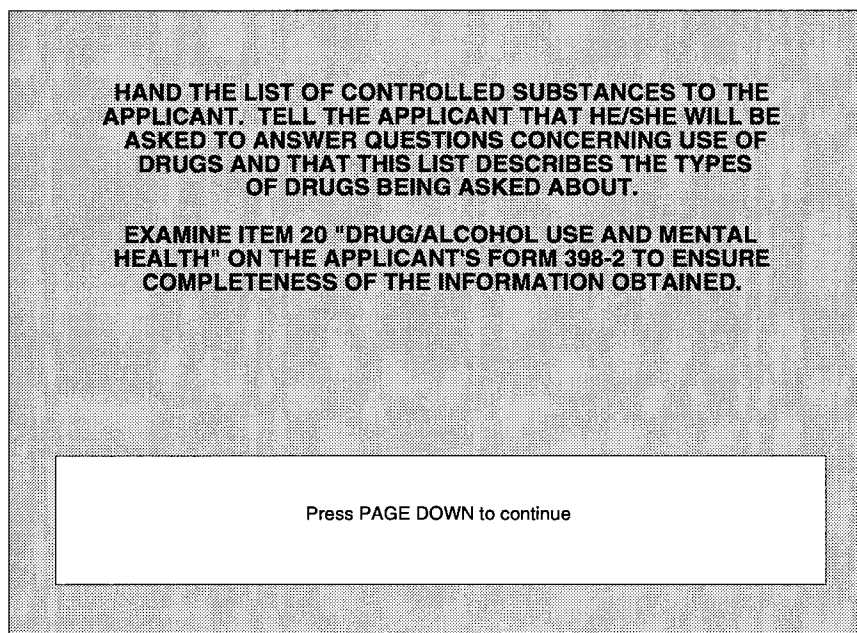
## Conducting the Interview

After completing the "Identifying Information" and "Rating and Pay" modules, the "Conduct Interview" submenu will be enabled, as on the following page:



This submenu presents the 9 interview modules. These modules may be completed in any order, at your discretion. Each of the modules has the same user interface; it is only necessary to work through 1 module to learn how to use this portion of the program. For this tutorial, you will practice with the "Illegal Drugs and Drug Abuse" module.

Type  to initiate the module for "Illegal Drugs and Drug Abuse." The following screen will appear.



This screen instructs you to:

- 1) inform the applicant of the nature of questions in this module and
- 2) examine item 20 of the applicant's 398-2 as preparation for the questions in this module.



When ready to begin questioning, press

The screen on the next page shows question 1 and its subquestions.

**ASK THE FOLLOWING QUESTION:**

1. The following questions concern your use of drugs. Have you ever:


- a. used marijuana or hashish (even one time)?
- b. used any narcotic or hallucinogen (even one time)  
EXCEPT AS PRESCRIBED BY A PHYSICIAN?
- c. used any depressant or stimulant (even one time)  
EXCEPT AS PRESCRIBED BY A PHYSICIAN?
- d. abused any prescription or over the-counter drugs?
- e. tested positive for use of illegal drugs?
- f. been referred for or received any medical treatment or counseling as a result of any drug use or abuse?

If the applicant has responded "yes" to one or more of the items, type the letter of the first "yes" response.  
If there are no "yes" responses, press PAGE DOWN.

Each of the subquestions should be asked in turn. For each subquestion that the applicant answers with "Yes," you would type the letter next to the subquestion (e.g., a, b, c...) and then ask the follow-up questions presented by MASS.

As an example, suppose the applicant says he has used marijuana. In this case, you would type

the letter .

Type  now to see the follow-up questions. The following screen will appear.

**ASK THE FOLLOWING QUESTION:**

What was the year and month (approximately) that you first used marijuana or hashish?    Year: 19     Month:  (1-12)

What was the year and month (approximately) that you last used marijuana or hashish?    Year: 19     Month:  (1-12)

What is the total number of times that you used marijuana or hashish during this time period?

You would now ask the first follow-up question, "What was the year and month (approximately) that you first used marijuana or hashish?" Let's assume that the applicant tells you that he first smoked marijuana in August 1990. The cursor is on the field for the year that marijuana was **first**

used. Type "90" in this field and press .

Next, type "8" in the month field and press .

The cursor is now on the field for the year that marijuana was **last** used. Type "91" in this field and press . Next, type "1" in the month field and press .

The cursor is now on the field for the **number of times** that marijuana was used. Type "2" in this field.

With the information filled in, the screen should look like the figure on the next page.


**ASK THE FOLLOWING QUESTION:**

What was the year and month (approximately) that you first used marijuana or hashish? Year: 19  Month:  (1-12)

What was the year and month (approximately) that you last used marijuana or hashish? Year: 19  Month:  (1-12)

What is the total number of times that you used marijuana or hashish during this time period?



Now that all of the information has been filled in for this screen, press  to continue with the interview. MASS returns to the screen for question 1, but notice that there is now a checkmark beside subquestion a, as shown below:

**ASK THE FOLLOWING QUESTION:**

1. The following questions concern your use of drugs. Have you ever:

- ☒ a. used marijuana or hashish (even one time)?
- b. used any narcotic or hallucinogen (even one time)  
EXCEPT AS PRESCRIBED BY A PHYSICIAN?
- c. used any depressant or stimulant (even one time)  
EXCEPT AS PRESCRIBED BY A PHYSICIAN?
- d. abused any prescription or over the-counter drugs?
- e. tested positive for use of illegal drugs?
- f. been referred for or received any medical treatment or counseling as a result of any drug use or abuse?

If the applicant has responded "yes" to items in addition to those marked above, type the next letter.

If there are no additional "yes" responses, press PAGE DOWN.

The check mark is used to show which subquestions have been answered "yes" and that the follow-up questions have been completed. In a real interview, your next step would be to ask subquestion b, and any follow-up questions, if necessary. Then you would proceed to



subquestion c, and so on. For this example, let's assume that all of the remaining subquestions on this screen have been answered "No." Go to question 2 of this module by pressing **PgDn**.

The following screen will appear.

**ASK THE FOLLOWING QUESTION:**

2. Have you ever been detained, investigated, arrested, cited, convicted or charged by civilian or military law enforcement officials for:

- a. use or possession of illegal drugs?
- b. production, sale, or transfer of illegal drugs for monetary profit or gain?

(Note: Do not include sharing drugs with friends in a social setting.)

If the applicant has responded "yes" to one or more of the items, type the letter or the first "yes" response.  
If there are no "yes" responses, press ESC.

For our example, assume that the applicant answers "No" to both of the sub questions on this screen. You have now completed the "Illegal Drugs and Drug Abuse" module. Press **Esc**.

The main menu will now appear as below:

Begin/End	<b>Conduct Interview</b>	Summarize
<div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"><p>✓ <b>Illegal drugs and drug abuse</b></p><p>Law violations and disciplinary actions</p><p>Emotional and mental health</p><p>Alcohol abuse</p><p>Financial responsibility</p><p>Personal conduct</p><p>Foreign travel and connections</p><p>Allegiance</p><p>Security violations</p></div>		
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"><p style="text-align: center; font-weight: bold;">Key</p><p>▼ Mandatory Rejection</p><p>? Possible Rejection</p><p>!! Waiver Required</p></div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"><p style="text-align: center; font-weight: bold;">Potential Disqualifiers</p><p>!! Illegal drugs and drug abuse</p><p>Law violations and disciplinary actions</p><p>Emotional and mental health</p><p>Alcohol abuse</p><p>Financial Responsibility</p><p>Personal Conduct</p><p>Foreign travel and connections</p></div>	

There are several things to notice about this screen:

1. There is a check mark next to "Illegal drugs and drug abuse". This shows that the module has been completed.

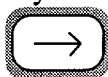
2. The menu item "Summarize" has changed color. This means that the "Summarize" module is now enabled.

3. A list of "Potential Disqualifiers" is shown at the bottom of the screen. The symbol "!!" appears next to "Illegal drugs and drug abuse". This indicates that a waiver is required.

## Consulting an Adjudicator

Suppose that you had obtained enough derogatory information at this point in the interview and wanted to consult an adjudicator. MASS provides the "Display Summary" module to make all of the derogatory information available to you when you call the adjudicator. To initiate the

"Display Summary" module now, press



The menu will appear as shown below:

Begin/End	Conduct Interview	<b>Summarize</b>
-----------	-------------------	------------------

<b>Display summary</b>	
Print summary	

Key	Potential Disqualifiers
▼ Mandatory Rejection	!! Illegal drugs and drug abuse
? Possible Rejection	Law violations and disciplinary actions
!! Waiver Required	Emotional and mental health
	Alcohol abuse
	Financial Responsibility
	Personal Conduct
	Foreign travel and connections

Now type



The following introductory screen will appear.





**SUMMARY**

**INTERVIEW SUMMARY**

The results of this interview must be reviewed prior to making a rating reservation. The following pages(s) summarize information from the interview.

Press PAGE DOWN to continue

You may scroll through the summary information using the following keys:

-  or  -- scroll down or up 1 line
-  or  -- scroll down or up 1 page.

Press  once and the following screen will appear.

**SUMMARY**

**ONE OR MORE WAIVERS REQUIRED**

**Marijuana Use**

Answers to Drug Use question 1a indicate use of marijuana over 6 months ago. A CT/IS waiver is required. See page 1-I-21 of Recruiting Manual.

**SUMMARY OF INFORMATION**

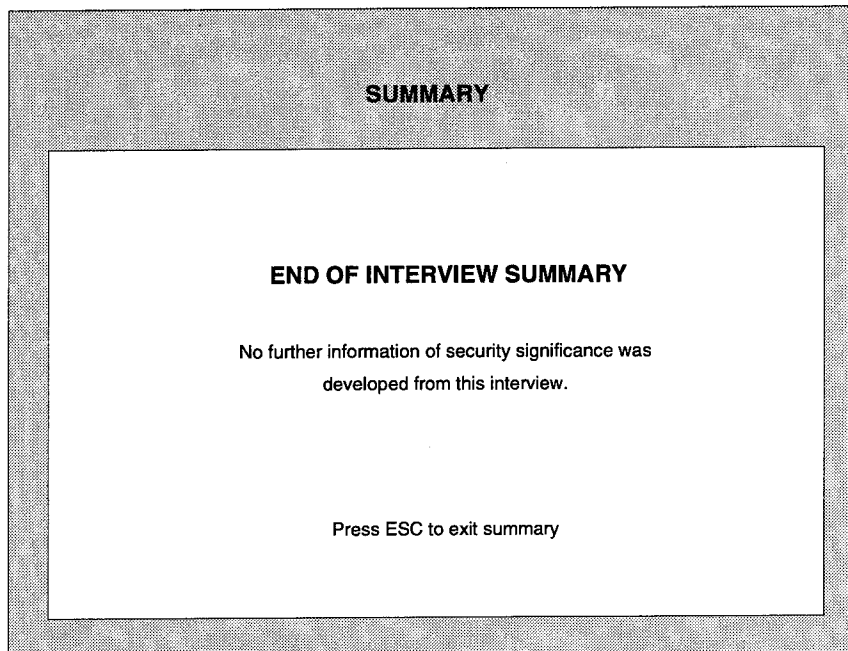
**ILLEGAL DRUGS AND DRUG ABUSE**

**Use of Marijuana or Hashish**

First used marijuana or hashish in 8/90 (approximately)  
 Last used marijuana or hashish in 1/91 (approximately)  
 Used marijuana or hashish a total of 2 times, during this period

Take a minute to read through the information and see how MASS summarizes the information.

Now press **PgDn** again. The following screen will appear, showing that there is no further information to summarize.



To exit the "Display Summary" module and return to the menu, press

**Esc**

## Printing the Summary of Derogatory Information

When you have completed the interview, you will need a printout of the summary to be included in both the applicant's service record and residual file. First, make sure that your printer is ready

to print. Next, press **→** to bring up the "Summarize" submenu, as shown on the following page:

Begin/End	Conduct Interview	<b>Summarize</b>
-----------	-------------------	------------------

Display summary

Print summary

Key
▼ Mandatory Rejection
? Possible Rejection
!! Waiver Required

Potential Disqualifiers
!! Illegal drugs and drug abuse
Law violations and disciplinary actions
Emotional and mental health
Alcohol abuse
Financial Responsibility
Personal Conduct
Foreign travel and connections

Now type P and MASS will print out the summary, including all of the identifying information.

## Exiting from the program

Now that you have completed all of the phases of an interview, you may exit the program. Press

← one time to move to the "Begin/End" submenu. The menu will appear as in the following:

<b>Begin/End</b>	Conduct Interview	Summarize
------------------	-------------------	-----------

Identifying Information
Rating and Pay
Retrieve Interview data
<b>Exit</b>

Next, type  to exit the program. MASS will display the following screen.

**YOU ARE ABOUT TO EXIT FROM THE MASS PROGRAM**

Are you sure you want to exit now?

Type "Y" (Yes) or "N" (No) and Press Enter

Type  and MASS will exit.