Chapter One
Review of Current Information Sources and Displays

1.1 Summary

The Flight Standards Service (AFS) is interested in the efficient collection, analysis, and dissemination of data among operators, manufacturers, and the government in its effort to maintain aviation safety. New research and development efforts like the Performance Enhancement System (PENS) have demonstrated that the use of new technologies with refined software can improve the manner in which the AFS manages safety related data.

The following is a description of a detailed study of several AFS database systems to determine the state of the existing information systems. The study consisted of several meetings with information managers and Aviation Safety Inspectors (ASIs) from various Flight Standards District Offices (FSDOs) across the country. These meetings focused on the usage, strengths and weaknesses of the AFS database systems.

The study resulted in a number of significant findings:

- An initial survey identified the Flight Standard Automation System (FSAS) as the most heavily used system by the ASIs and their managers; therefore, this study focused primarily on FSAS because of its wide use.
- Many of the other database systems are rarely used.
- During the discussions with the ASIs, the only strength that was identified was that the database systems contained a wealth of data. This was quickly followed by a complaint about how difficult it was to access this data and some concerns about the integrity of the data.
- While there are many weaknesses in these systems, there are some common weaknesses across the systems.

1.2 Purpose

This document identifies and briefly explains the functionality of the systems that are most frequently used by ASIs. The report details the weaknesses of these systems and highlights the new systems' enhancements identified during the study.

There are three major systems being used by AFS personnel. These systems are the Flight Standards Information System (FSIS), the Logistics and Inventory System (LIS) and the Integrated Personnel and Payroll System (IPPS). Each of these major systems contains a number of subsystems. The focus of this study was on the subsystems in FSIS, since these subsystems are widely used by the ASIs. The LIS and IPPS systems were beyond the scope of this study.

1.3 Systems Description and Weaknesses

FSIS was formerly known as the Aviation Safety Analysis System (ASAS). However, the ASAS subsystems were reorganized under the current title in 1991.

FSIS is a nationally distributed information network designed to collect, store, and organize aviation safety data under a single system. It consists of a number of separate subsystems designed to improve the AFS' ability to gather and analyze aviation safety data within all AFS offices nationwide. Through improved computer operations, information management and administration, FSIS provides data support to identify present and potential safety issues, supplies management with the information necessary to use its resources more effectively, and gives each office the ability to respond to internal and external requests for information.

The majority of the FSIS subsystems reside on an IBM mainframe computer, while a smaller number of these subsystems reside on Data General computers and on personal computers (PC) running on local area networks (LAN). Each FSDO has PCs running on a LAN. Each Regional Office has PC and a Data General computer. The main computing center in Plano, Texas has an IBM mainframe, PCs, and a Data General computer.

The systems on the Data General computers are currently being moved to the client/server environment. In this environment a powerful PC functions as a database server which services the requests of applications running on client PC workstations.

The following is a brief description and a list of weaknesses of the subsystems that constitutes FSIS. FSAS and its related subsystems are covered first, because they are the largest component. All other systems are covered in alphabetical order after FSAS.

1.3.1 Flight Standards Automation Subsystem (FSAS)

FSAS is a set of subsystems used in Flight Standards field offices to store and organize inspection and safety data, ranging from certifications to routine inspections. It consists of the following subsystems:

- Program Tracking and Reporting Subsystem (PTRS)
- Operations Specification Subsystem (OPSS)
- Vital Information Subsystem (VIS)
- Job Aids Subsystem
- Key Manager Subsystem
- Planning Subsystem
- Operational Training Needs Assessment (OPNA)

FSAS is a PC-based system that operates locally on a Novell Netware 3.11 local area network. It uses the Paradox database system. Data entered locally into the system at a Flight Standard District Office (FSDO) are uploaded daily to the mainframe in Plano, Texas. The data are then verified and redistributed to the appropriate field offices on the following day. Data residing on the mainframe are stored in the national database. Therefore, field offices can exchange information through the national database. Data transfer between the mainframe and the LAN is semi-automated. The network administrator has to initiate this process on a daily basis.

Program Tracking and Reporting Subsystem (PTRS)

PTRS was designed to enable the FSDOs to compile and track information gathered by PTRS datasheets. These datasheets are data entry forms used by ASIs to document their work before they enter it into PTRS. PTRS allows AFS personnel to efficiently forecast, plan, monitor inspector activities, monitor work program accomplishments, and monitor trends affecting aviation safety. It is the most frequently used system in FSAS.

Operations Specification Subsystem (OPSS)

OPSS was designed to automate the process of Operations Specifications document preparation for commercial air carriers and other air operators. It standardizes the document format across AFS regions and FSDOs and it provides inspectors with up-to-date documents for more accurate inspections for Federal Aviation Regulations (FAR) Part 121 and Part 135 Air Operators. The OPSS system works in conjunction with the VIS system.

Vital Information Subsystem (VIS)

VIS was designed to enable FSDOs to maintain and analyze information about air operators, air agencies, designated airmen, check airman, facilities, and organizations engaged in non-certificated activities. This system interacts with the OPSS system by way of providing an air operator record. OPSS then attaches an Operations Specification document to the air operator record.

Job Aids Subsystem

The Job Aids Subsystem was designed to enable FSDOs to print job aids (similar to checklists) for the PTRS, OPSS and VIS Subsystems. These job aids help the inspector in gathering information and performing inspection activities.

Key Manager Subsystem

The Key Manager Subsystem was designed to enable FSDOs to generate a list of key personnel associated with air operators who lost their certification as a result of an emergency revocation.

Planning Subsystem

The Planning Subsystem was designed to enable FSDOs to develop a surveillance work plan for the fiscal year. The Planning Subsystem builds a unique surveillance work plan for each FSDO based on the data stored locally in VIS. The Planning Subsystem examines the contents of VIS, and assembles a set of records that identifies the activities that a FSDO will perform over the course of the next fiscal year. The surveillance work plan identifies the number of air operator, air agency, and airman inspections that a FSDO expects to conduct over the course of the fiscal year. The Planning Subsystem allows FSDOs to maintain both required surveillance activities and planned activities. Required surveillance activities are assigned by each regional office and represent the minimum number of inspections that a FSDO must do under the National Program Guidelines (NPG). Planned activities represent the number of inspections that FSDOs can do over and above the inspections required by national guidelines. The Planning Subsystem generates a work program for inspectors. This system then updates the PTRS system with these work programs.

Operational Training Needs Assessment (OPNA)

OPNA was designed to allow district offices to use data in the FSAS databases to determine the training needs of its ASIs. The subsystem is accessed on a yearly basis. It uses the information in the PTRS and the VIS files to determine if additional ASI training is required over the course of the next fiscal year.

1.4 FSAS Weaknesses

The following is a list of weaknesses that were identified by ASIs and information managers during the analysis of FSAS. In general, most users feel that the subsystem is outdated and that it is often difficult to use.

- **Poor Data Quality:** The quality of the data in the FSAS database is very poor. It is often difficult to produce reports on a particular topic because the required data for the report is often not a required entry. This is directly related to the data entry constraints of the subsystem. FSAS needs to provide more data entry guidance to its users. To alleviate this problem some FSDOs create customized data entry forms that guide the local ASIs in terms of required data entry fields. For example, the Harrisburg FSDO has generated several of these customized data entry forms. Examples of these forms are shown in Appendix A. The form illustrating data entry into PTRS for a complaint requires the fields Activity Number, Call Up Date, Designator and Investigation Number. PTRS does not require the fields Call Up Date and Investigation Number. Without these fields, reports generated from the PTRS database on how quickly complaints are being addressed by a FSDO are useless because the date of the complaint (Call Up Date field) is unknown. Similarly, the data entry form for an incident (shown in Appendix A) requires the fields Activity Number, Call Up Date, Designator, LOC/Departure Point and Investigation Number. PTRS does not require Call Up Date, LOC/Departure Point or Investigation Number. Again, generating an incident report on the date and location of an incident without data in these fields is of little value. In order to support their reporting needs, FSDOs sometimes use certain data entry fields for purposes that were not intended. Hence, the data from one FSDO to another could be very different which defeats the AFS primary goal of having homogeneous data across FSDOs.
- **Lack of Integration of Subsystems:** FSAS in general needs to be more tightly integrated. An area in the system where this problem is evident is in the VIS and OPSS Subsystems. If a user removes an air operator from VIS, the user must also perform a second task to remove the related operational specification document from OPSS. Another example is, if a user adds a new aircraft to OPSS, the user must also add the information for that aircraft to VIS. Because FSAS is not well integrated users occasionally forget to add or delete the data in all the required areas of the system. This problem leads to data integrity problems which add to the poor state of the FSAS data.

Even within a subsystem database duplicate data entry is a prevalent problem. An example of duplicate data entry is in VIS, where identical inspector related data are required both in the Air Operator and Environment files. Again, this often leads to data integrity problems, because users sometimes forget to enter this data in all the appropriate places.

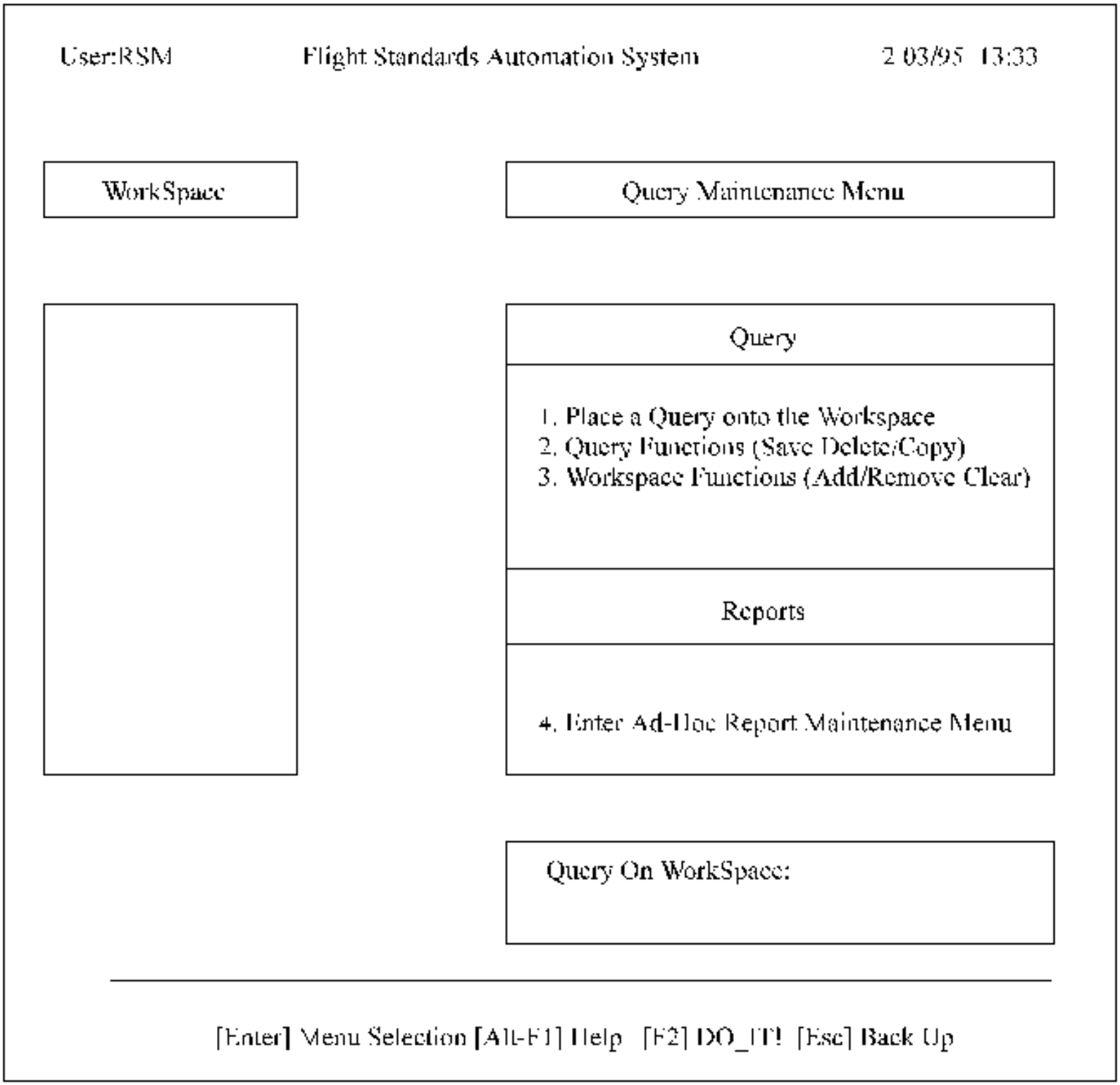
The ASIs and other AFS users often use Windows software packages such as Microsoft Word and Excel along with FSAS on a daily basis. In order to access FSAS while the Windows software is running, the user must exit Windows, then start FSAS. Both systems cannot run simultaneously. A clear need exists to have all AFS systems running under a single integrated environment; this will cut down on the time and effort it takes to access important safety related systems.

- **Poor User Interface:** The data entry screens for comments are too difficult to access. In order to access these screens, a user is required to step through several intermediate screens. This is often inconvenient because frequently data entry is required only on the first screens and on the comment screens.

A spell checker would be a tremendous benefit for all comment sections in FSAS. This will eliminate the chance of ASIs inadvertently saving unreadable comments to the system. This functionality will aid in improving the quality of data in the FSAS databases.

The Ad-hoc reporting function within the FSAS System is too difficult to use. In order to use the Ad-hoc function, knowledge of the Paradox Database System is required. Due to its complexity, many ASIs do not use this feature. If an ad-hoc report is needed, the network administrator typically is asked to generate this report. Because of the delay and inconvenience involved, many ASIs do not request these reports. Several ASI's indicated that if this feature were easier to use, they would use it.

An example of the existing FSAS Query system is shown in Figures 1 through 3 (these figures use simplified representations of the actual screens to facilitate paper reproduction). Figure 1.1 illustrates the first screen that a user sees when the Query function is selected from the main FSAS menu. Figure 1.2 shows the Ad-Hoc Report Maintenance screen. On this screen, if a new report is to be created, the user would first select the change function, select an existing report then modify that report to create the new report. The user would then design a query that meets the criteria for the report. Screen 3, which is represented by Figure 1.3 would then be accessed. On screen 3, the user would select the fields of interest to be printed on the report and the position in relation to other fields. As the diagrams illustrate, the ad-hoc reporting system is time consuming and extremely difficult to use. To use the system, an in-depth knowledge of the Paradox Database System and the structure of the FSAS databases are required.



[Enter] Menu Selection [Alt-F1] Help [F2] DO_IT! [Esc] Back Up

Figure 1.1 Ad-hoc Report Screen #1

User:RSM Flight Standards Automation System 2 03/95 13:33

Ad-Hoc Report Maintenance Menu - Local Reports

Reports

1. Report Functions (Change/Design/Run)
2. Delete a Report
3. Copy Report to Network

Report#	Report Name	Query
Report:		

[F2] Change Report [Enter] Menu Selection [Alt-F1] Help [Esc] Back Up

Figure 1.3 Ad-hoc Report Screen #3

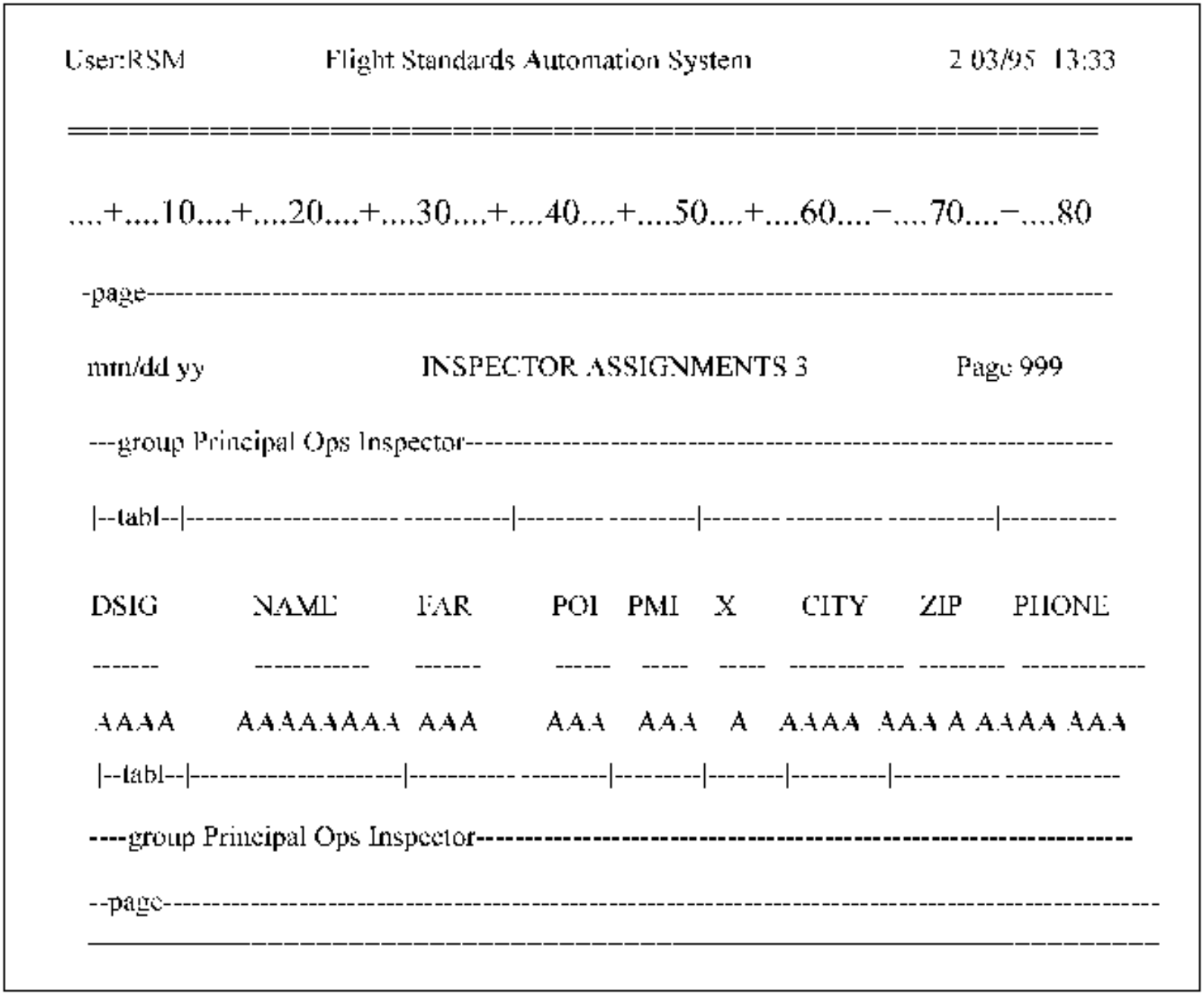


Figure 1.2 Ad-hoc Report Screen #2

• **Limited Search Capabilities:** The searching capabilities in FSAS are very limited. For example, searching can only be done by Record ID in PTRS. If a record needs to be retrieved for update and the Record ID is not known, it will be very difficult for an ASI to find the appropriate record. In this situation a special query will have to be run against the database to identify the record. An example of the current search capabilities is shown in Figure 1.4. This example illustrates the search function in the PTRS system. Future upgrades to FSAS should include a generic search function that will allow a search on any field within the subsystem.

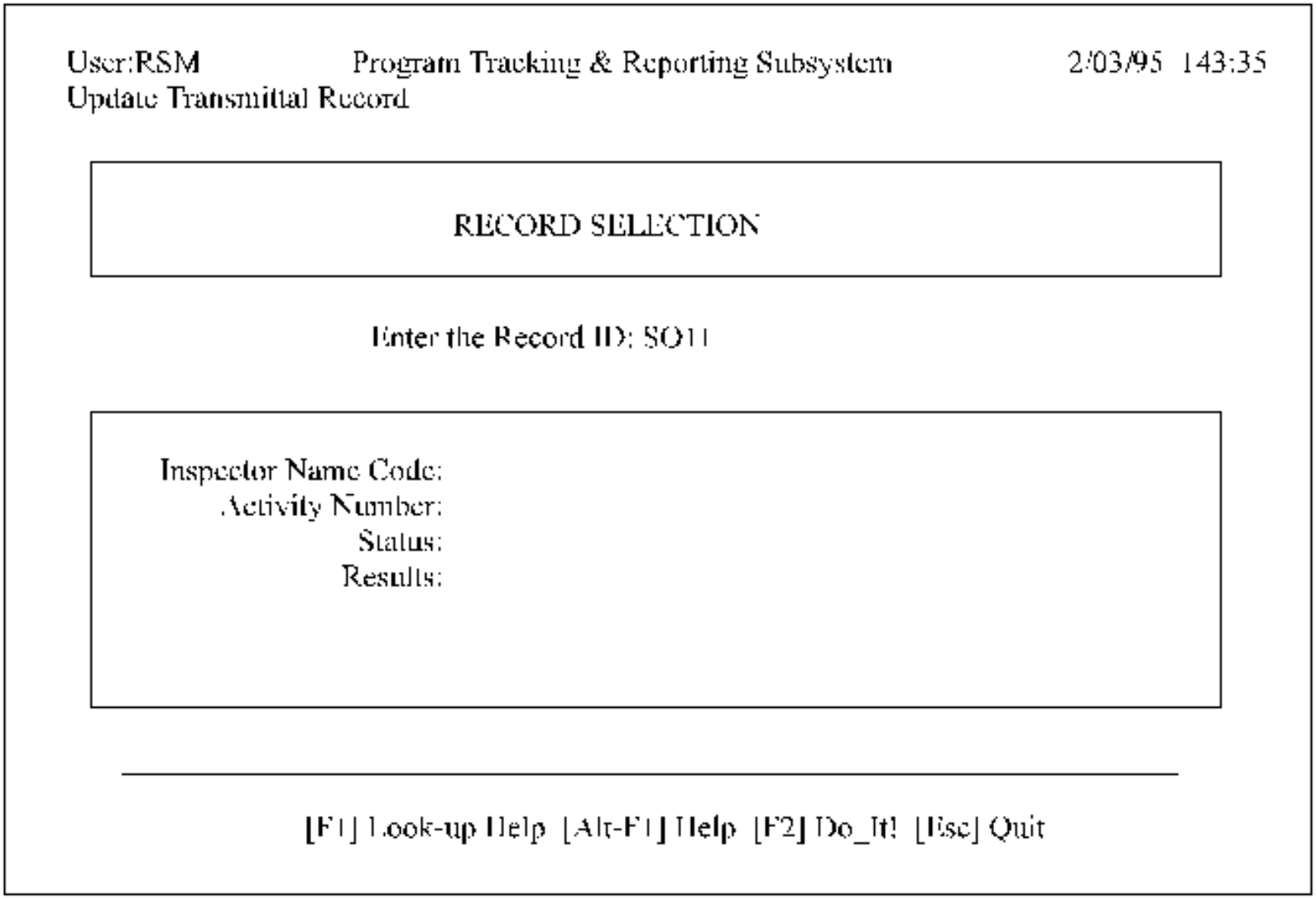


Figure 1.4 PTRS Search Screen

- **Poor Communication Facility:** A FSDO does not have an efficient method of responding to another FSDO's comments in FSAS. For example, suppose a FSDO does an inspection on an aircraft that has its Certificated Holding District Office (CHDO) elsewhere. If the FSDO that did the inspection indicates in the PTRS Subsystem that a problem exists with the aircraft, there is no direct way for the CHDO to communicate back to the FSDO that the particular problem was corrected. To add to the problem, the CHDO does not readily know that a response is required. Many FSDOs generate a report that lists all the records that need responses. However, this list usually consists of several records. A great deal of time is required to go through this report. Many ASIs currently handle this problem by placing a telephone call to the CHDO to inform the responsible party of the problem. Some form of automated two-way communication system between FSDOs is needed.
- **More Help Facility:** Although FSAS provides help in relation to valid entries for some fields, it needs to provide more field related help.
- **Job Aids Subsystem:** The Job Aids subsystem needs to be updated. In addition to needing more job aids, existing job aids need to be updated. An example of this would be adding fax numbers on forms generated by the Job Aids Subsystem. Although the Job Aids Subsystem is not being used much by experienced ASIs, it is often used by new ASIs in order to guide them through entering data in FSAS.

- **OPSS Issues:** OPSS is too rigid. Adding or updating operating specifications cannot be done by a user. The software itself has to be modified in order to add or update additional specifications. An example of this problem would be adding de-icing specifications to the operations specification document for an air carrier. There is no way for a user to add this additional specification to OPSS. FSDOs currently handle this problem by manually typing the additional specification and appending it to the printed document. This is an obvious inconvenience because each time the same specification is needed it will have to be retyped.

  The Text Editor, used for entering comments in the subsystem, is extremely difficult to use. One obvious inconvenience with this editor is that it splits lines *within* words instead of *between* words.

  When entering data into the system, the cursor (focus) does not automatically move to the next field if the current field is fully populated. The user has to use the "enter" key to get to the next field.

- **OPNA Functional Issue:** The entire FSAS system is inhibited when the Operational Training Needs Assessment (OPNA) runs. Before OPNA runs all users are required to exit the FSAS system. OPNA requires exclusive use of the FSAS databases to generate its reports.
- **Key Manager Subsystem:** is not used by most FSDOs, if at all.

1.5 Summary of Remaining FSIS Subsystems

A formal and complete review of the following subsystems would be beyond the level of support provided for this subtask. Therefore, a brief review of each available subsystem is provided with a few comments given to us by the ASIs who had exposure to these subsystems.

1.5.1 National Flight Standard Automation Subsystem (NFSAS)

NFSAS is a read only mainframe subsystem which retains the FSAS data uploaded from all FSDOs. It is functionally equivalent to FSAS. However, NFSAS contains data from all the national field offices. National users can access this subsystem to view this information and produce reports. On-line manipulation of data at the national level (on the mainframe) is not allowed. NFSAS consists of the following subsystems:

- National Program Tracking and Reporting Subsystem (NPTRS)
- National Vital Information Subsystem (NVIS)
- National Operations Specifications Subsystem (NOPSS)
- Regional Automated Mainframe Planning System (RAMPS)

National Program Tracking and Reporting Subsystem (NPTRS)

NPTRS contains the latest available PTRS data from all Flight Standards offices. This subsystem allows users to view or print all reports that show inspection and surveillance activities. In addition, reports concerning total work program accomplishments and National Program Guideline data can be easily accessed.

National Vital Information Subsystem (NVIS)

NVIS contains the latest available VIS data from all Flight Standards offices. This subsystem allows users to view or print all records and reports concerning reference data on air operators, air agencies, airmen, aircraft, and facilities.

National Operations Specifications Subsystem (NOPSS)

NOPSS contains the latest available OPSS data from all local Flight Standards offices. This subsystem allows users to view or print all records and reports concerning operations specifications.

Regional Automated Planning System (RAMPS)

RAMPS is a mainframe system which uses NVIS and NOPSS to create a required surveillance plan for each FSDO. This surveillance plan represents the minimum number of inspections that a FSDO must do under the NPG. RAMPS examines NVIS and NOPSS files, generates the required items and sends this information to each FSDO. This occurs at a date late in the fiscal year to ensure that all FSDOs have the opportunity to review the information they store on the local level.

1.5.2 Automated Federal Aviation Regulations Subsystem (AFARS)

AFARS is a mainframe subsystem which provides users with the capability to access the latest available full text of all Federal Aviation Regulations (FARs) as well as all FARs which were in effect during the past two years. The system also allows users to view or print a particular section of a FAR, search for all FAR references on a particular topic or word, and find citations and cross references within the regulations. AFARS is a read only system, therefore, users do not have the capability to add, update, or delete data. This system resides on the IBM mainframe.

1.5.3 Airworthiness Directives Subsystem (ADS)

ADS is a mainframe system which contains the full text of all the current and the historical Airworthiness Directives (AD). An AD is a document issued by the Federal Aviation Administration that specifies a required safety-related maintenance procedure or set of procedures for a specific aircraft or aircraft component. An inspector can expediently research the Airworthiness Directives applicable to the particular aircraft that is about to be examined and have that information presented on-line. The inspector can then view or print the researched information. This system resides on the IBM mainframe and replaces the slower microfiche and hard copy filing methods.

1.5.4 Automated Exemption Subsystem (AES)

AES is a mainframe system which provides users with access to information about completed exemption projects required by District, Regional, and Headquarters offices. This system makes it possible for users to centrally record and maintain current, expired, and denied exemptions. It also allows them to query and correlate information about petitions and exemptions. The system is mainly used by aviation safety inspectors and regulators to obtain access to exemption information relating to a specific FAR. The system is used by regulators to study trends. The regulators use it to identify cases where an exceedingly large number of exemptions are requested for a particular regulation, which would suggest that the regulation needs to be modified. The AES system resides on the IBM mainframe.

1.5.5 Accident/Incident Data Subsystem (AIDS)

AIDS is a mainframe system which provides automated support for the collection and analysis of data related to aircraft accident and incident occurrences. The information supports FAA certification and rule making activities. AIDS contains specific information relevant to each accident or incident including data on the aircraft, the crew, the type of flying, the weather conditions, the location of the accident or incident, facilities, injuries and causal factors. The system allows users to produce reports on specific aircraft accidents and incidents as well as summary reports. This system resides mainly on the national Data General computer in Plano, Texas. AFS personnel access AIDS by dialing up the Data General computer in their regional office, which in turn will automatically connect them to the system on the national Data General computer. AIDS summary information is also available on the IBM mainframe. This summary information is copied twice per week from the national Data General computer to the IBM mainframe.

1.5.6 Enforcement Information Subsystem (EIS)

EIS is a mainframe system which allows field and regional offices to monitor pilots and air operators violations. The subsystem provides automated support for violation and enforcement actions. EIS allows users to add, update, or change enforcement data, to access data regarding the violator or the violation, and to track events and people involved in an investigation. The subsystem resides on all nine regional Data General computers. It also resides on the national Data General and IBM computers in the form of summary files. The subsystem at the national level does not contain the full data for each region.

1.5.7 Integrated Safety Information Subsystem (ISIS)

ISIS is a mainframe interactive querying system which provides fast and easy access to much of the information in other FSIS subsystems regarding air operators, aircraft, and airmen. ISIS can be reached from most screens by pressing the F6 function key. The subsystem accesses live data from 12 AFS systems. Some common systems accessed by ISIS are Airworthiness Directives, Comprehensive Airmen Information, Accident/Incident Data, and Enforcement Information. In fact, EIS summary information is accessed through ISIS. This subsystem resides on the IBM mainframe.

1.5.8 Master Minimum Equipment List Subsystem (MMELS)

MMELS is a mainframe system which automates the process of creating, revising, approving, and distributing the text of aircraft Master Minimum Equipment Lists. MMELS are documents that specify under what conditions a given make and model of aircraft may be permitted to operate temporarily with specified items of equipment inoperative. These MMELs serve as the basis for approving related operator-specific minimum equipment lists. This subsystem resides on the IBM mainframe.

1.5.9 National Aircraft Registration Information Subsystem (NARIS)

NARIS is a read only mainframe subsystem which allows users to access aircraft registration information and related historical data at the National Aircraft Registry and to then display or print the information. This subsystem also provides users with the capability to review aircraft registration data, request copies of microfiche aircraft records, and query the subsystem to identify aircraft for which complete identification is not available.

1.5.10 Policy Subsystem (PS)

The Policy Subsystem is a mainframe subsystem which provides users with rapid access to the full text of Orders and Notices, Handbooks, Handbook Bulletins, Flight Standards Information Bulletins, Advisory Circulars, Policy Memoranda, Preambles, Legal Interpretations, Air Carrier Operations, Bulletins, and Medical Guidelines. It allows documents to be selected, viewed or printed by document number or according to user-specified criteria. PS also allows the text of rules associated with a document to be viewed by directly accessing the Automated Federal Aviation Regulations Subsystem. This subsystem resides on the IBM mainframe.

1.6 Subsystems Weaknesses

When MMELS are updated for a particular aircraft, the FSDOs often do not get the documentation specifying what section of the document was updated. An ASI can spend hours comparing the newly acquired MMEL with the local MEL to find the discrepancy

Each subsystem, including FSAS, requires a different User Id and password for access. Some inspectors and managers have up to six different User Ids and passwords. They often write these User Ids and passwords down on paper for reference. This defeats the purpose of having system security.

Although these mainframe subsystems contain a tremendous amount of data, many users of these system do not know how to access the data and they often do not know that the information exists.

Access to the mainframe subsystems needs to be more reliable and efficient. Access is currently made via modem and often the connection to the mainframe is denied because all of the available ports are busy. Under the current configuration, only a certain amount of concurrent connections are allowed on the mainframe. Therefore, if all connections are busy, access is denied until a connection is released.

1.7 Miscellaneous Systems

The following is a list of systems that are commonly used by FSDOs. Each FSDO is unique in the way it uses these systems and in the number of systems it uses.

1.7.1 Automated Correspondence Express (ACE)

ACE Documentation is a Windows based program which provides AFS personnel with the capability to use a standardize letterhead for correspondence. It works in conjunction with Microsoft Word. This program is a customized package which was specifically designed for use at the FSDOs.

1.7.2 CUFF

CUFF is a Windows-based budgeting program which allows AFS personnel to efficiently manage their yearly budget.

1.7.3 Travel Manager Plus

Travel Manager Plus is a commercial Windows-based product which combines travel regulation automation, electronic document processing and government forms generation into one easy-to-use software package. It allows AFS employees who travel to accurately fill out their travel paperwork on their PCs in a fraction of the time it takes to do it manually. This enables them to get their reimbursements in a more timely fashion.

1.7.4 South West Regional Data Tracking System (SWRDTS)

SWRDTS is a Windows-based product which allows AFS personnel to use a standardized letterhead for correspondence. Like the ACE product, this system works in conjunction with Microsoft Word and it was designed for use at the FSDOs. Several FSDOs use SWRDTS instead of ACE.

1.8 Known Systems Enhancements

During this evaluation several efforts to improve the AFS database systems were identified. The following items were at different stages of completion. These items could have an impact on any future system enhancements plans. Recommendations were added to these efforts based on the information pointed out to us by the ASIs and their managers.

- **Client/Server Environment:** CACI is presently building a database infrastructure for AFS. This infrastructure will allow all AFS systems to eventually migrate to the client/server environment with the consent of the owners of these systems. Great care will have to be taken to make sure that all related systems are migrated together and that all essential AFS hardware and software contractors are well briefed on any migration efforts.

  This migration effort will place the AFS data into three separate database systems (Mainframe, Paradox and Oracle). The migration effort will most likely be handled by multiple contractors. Therefore, some design standards need to be established to ensure that the user interface from one application to another will have a similar look and feel.

- **Two-Way Communication:** The two-way communication system between FSDOs that was mentioned earlier in this document is currently being worked on. Therefore, any effort to enhance FSAS will have to take this work into consideration.
- **Redesign of** EIS**:** The EIS system is presently being redesigned. The subsystem is being moved from the Data General computers to the client/server environment.
- **Redesign of AIDS:** AIDS is presently being redesigned. It is being down-sized to the client/server environment. It will run on Microsoft SQL Server using the Windows NT operating system. AIDS will then be referred to as the Improved Accident/Incident Database System (IAIDS).
- **FSAS Subsystems:** Two FSAS subsystems have been moved to the Microsoft Windows and client/server environments. VIS and OPSS have been converted to run on the Microsoft SQL Server platform. The subsystems are written in Microsoft Access. They are still being beta tested and they have not yet been released. The SQL-based VIS and OPSS are functionally equivalent to the existing DOS-based systems. They do not address the weaknesses identified by this study.

1.9 Conclusion

While the AFS systems contain a vast amount of data, many systems, especially FSAS, have become just a large repository of data. The data in these systems are difficult to access because the tools to access them are not user friendly and the quality of the data is poor. Therefore, ASIs very rarely use these data for analysis purposes. One ASI summarizes the problems with FSAS with the following statement: "We are currently working for FSAS; we need to get FSAS to work for us." FSAS was designed over 10 years ago and it no longer accurately reflects the functions of the AFS. Data entry fields that were not required years ago, are now required. Ready-made reports that were useful some time ago are no longer used. In addition, the subsystems in FSAS do not function as one integrated unit. Therefore, maintaining data integrity across subsystems has become a massive effort. Many FSDOs have come up with a temporary solution to help improve the quality of the data at the local level, while other FSDOs do not have the time or the resources to address this problem.

This study, while keeping the overall informational goals of the AFS in mind, focused heavily on the user's perspective. A wide cross section of AFS users were interviewed and were observed as they used the systems. The majority of the identified weaknesses are unique to FSAS since it is the most frequently used system. These weaknesses negatively impact the way AFS personnel perform their work. Therefore, by enhancing FSAS and by accurately addressing these weaknesses, a number of important benefits will be realized:

1. Users will be required to spend less time interacting with the system and will have more time to address other safety related issues,
2. Data stored in FSAS will be easily accessed to assist the ASIs in conducting inspections or planning efforts,
3. ASIs will take more initiative in using the system because they were directly involved in the analysis and will be directly involved in the design,
4. And the quality of the data in the FSAS databases will be vastly improved by having standardized data entry requirements.