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# **LESSONS LEARNED REPORT ON IMPLEMENTATION OF PASS V2.0 AND THE PADB**

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## INTRODUCTION

The purpose of this "lessons learned" report for the implementation of PASS V2.0 and the PADB is:

1. To inform the NRC HLW staff of the Center's experience in using PASS, the type of concerns that have arisen, and the solutions implemented for them.
2. To identify concerns that have not been resolved at this time and for which action is planned that the NRC can benefit from being aware of, and in some cases helping to resolve these concerns.

This document presents a summary of the major concerns and solutions or planned actions in the categories defined in the report. It does not include all of the detailed revisions made to the system or procedures during the implementation process. Therefore it is not all exhaustive and should not be used for any purpose other than to become aware of the experience in the areas of concern that are covered and be informed of the solutions to date and actions planned for the future.

## 1. ORGANIZATION

### **CONCERN 1:**

In the course of planning SRA milestones related to the PADB, voluminous, hard copy deliverables have been scheduled without allowing for sufficient time to provide proper control and review of data as it is being prepared, loaded in the database, changed or corrected and printed out as a report.

### **SOLUTION OR PLANNED ACTION:**

A move away from the PARC process to the normal technical review and final approval process employed on other Center documents will encourage more continuous input and less peaking of the database loading and reporting process for major deliverables. The NRC/Center group work approach will also foster more day-to-day progress on issues, as the work is accomplished through group effort.

## 2. PROCEDURES

### CONCERN 1:

Procedures for providing input and requesting output in the PADB are slow and unwieldy. The user must typically carry out procedural operations which could be automatically executed by the program.

### SOLUTION OR PLANNED ACTION:

As a result of feedback from system users, many procedures have been simplified and optimized. More improvements are possible, and continued feedback from system users within the Center and the NRC will be vital to proper performance. Users will be encouraged to provide this feedback. Increasing the number of users is also important for this purpose.

### 3. COST

#### **CONCERN 1:**

Computer costs are high relative to use of the system and will continue to rise as the database and the number of users grow.

#### **SOLUTION OR PLANNED ACTION:**

The following are aspects of a plan to mitigate this concern: (1) continue efforts at optimizing the computer program, (2) make maximum use of off-hours interface with the mainframe by utilizing automated "batch load" and other similar options, (3) move toward an interactive interface with the mainframe through a PC-based system which allows the majority of a user's input time to be spent off-line from the mainframe, and (4) implementation of the multitasking PC Version 3.0 to save mainframe costs on output in addition to further input enhancements, plus making the entire operation more efficient and user friendly. Results of work done on items 1 and 2 are already evident, work on item 3 has begun. Item 4 is being planned.

## 4. SCHEDULES

### CONCERN 1:

Tasks associated with PADB development and SRA have been shown to be manpower and other resource intensive. Furthermore, it is difficult to estimate the resource needs attendant to this first-of-a-kind effort.

### SOLUTION OR PLANNED ACTION:

A more conservative pragmatic approach must be taken to scheduling and budgeting these tasks. The first-time nature of much of this work must be considered, and significant allowances must be made for the learning curve and the occurrence of unforeseen problems.

## 5. TRAINING OF USERS

### CONCERN 1:

Most of the users requiring training are applications oriented with very little familiarity with computer systems. Additionally, they are faced with a complex SRA application that is very much driven in its process of input/output by the diverse HLW program subject matter and contents of the PADB. This problem has been accentuated by rapid changes to procedures which have occurred as a result of increased experience with the process and system and a lag at the NRC in being fully equipped with properly configured workstations.

### SOLUTION OR PLANNED ACTION:

The growth of the PADB and increased demand for access by the NRC will prompt user familiarity and training. Likewise, expanded Center staff involvement in SRA will have the same effect. Development of a means of keeping users informed on program changes will also promote user awareness. Formal training sessions will be scheduled with the NRC as they gain adequate workstation configurations for access to the database.

### CONCERN 2:

Classroom training and computer system demonstrations are required initially, but are not always able to be scheduled for the right users at the appropriate time.

### SOLUTION OR PLANNED ACTION:

More extensive on-the-job training of specific Center staff on a daily basis as they perform PASS/PADB functions is planned to prepare them to train their NRC counterparts in working groups. The same approach will be used to train NRC staff on exchange at the Center. Additionally, developmental/working prototypes designed for user feedback will be made available to both Center and NRC staff in designing new systems and subsystems.

### CONCERN 3:

The hard copy system documentation is not always up-to-date or convenient to use to answer specific questions while operating the system.

### SOLUTION OR PLANNED ACTION:

Extensive documentation is accessible by using the PF1 Help Key. This facilitates the immediate updating of the Help Key information for any system change and keeping the online documentation current for all users.

## 6. INPUT PROCESS

### CONCERN 1:

Loading of data has been the pacing action in updating the database.

### SOLUTION OR PLANNED ACTION:

An automated batch load procedure was implemented to enable data to be loaded over night with queuing of data during the day. For future operations, several analysts or clerical staff will be able to input to this queue during normal working hours. There will also be allowance for immediate loading of data which is required to meet a high priority. Use of the interactive input subsystem through a PC will enable data to be prepared for loading offline from the mainframe and totally eliminate the loading of data as the pacing action.

### CONCERN 2:

The existing procedures for preparing, loading, and verifying data require nine steps. These steps consume time, and many of them require manual input which result in errors.

### SOLUTION OR PLANNED ACTION:

Development of a direct analyst interface through a PC will reduce the number of steps to two. This capability must be pursued as quickly as possible.

### CONCERN 3:

As the Center and the NRC utilize group efforts to build the PADB, and as actual data development is done from information stored in the mainframe, it will be necessary to control access to and alteration of that data.

### SOLUTION OR PLANNED ACTION:

Individuals will be assigned specific responsibility for development of data. Software controls implemented to control access to and modification of database records.

## 7. DATABASE MAINTENANCE

### CONCERN 1:

As TOP-001-003 (PARC procedure) is superseded, the use of the terms "PARC" and "PARC'd data" will become confusing, as well as inaccurate.

### SOLUTION OR PLANNED ACTION:

Information which has been entered into the database, but which has not been approved through formal NRC/Center document review procedures will be referred to as "developmental" information. Information which has been approved through NRC/Center formal document review procedures, has been verified by Center QA, and has been placed under configuration and change control in the PADB will be referred to as "approved" information. The term "PARC" is appropriate for previously entered information and will remain until that information is superseded.

### CONCERN 2:

In order to develop methods to control authorities for database use, it is necessary to specify the types of access which will be available under each authority. Associated with this concern is the recognition of the need to pursue mutual CNWRA/NRC development of the SRA structure from this point forward. Mutual development implies the need for mutual access during the development process. This then implies that both Center and NRC group development members will have access to developmental and approved information pertinent to their assignments. The resultant concern is whether or not it is any longer useful to restrict access to developmental information.

### SOLUTION OR PLANNED ACTION:

NRC/Center personnel with user IDs will have access to all approved information. Additionally, personnel will have "read-only" access to developmental information which is pertinent to their assignments. This access to developmental information will be based on specific Regulatory Requirements (RRs). For all information associated with a specific RR, only one person will be given user ID authority to actually enter information during development (approved information may not be altered, and revisions to approved information will be controlled by formal NRC/Center document review procedure and TOP-001).

### CONCERN 3:

In order to more clearly understand the status of development of information, it is necessary that users of the database be able to designate that they wish to view developmental or approved information. Maintenance procedures need to clearly distinguish these different states to the user. Also, to help database users understand the full chronology of the development of the

information for a particular requirement, the maintenance procedures must allow the user to enter a date in time (the "as-of" date) for which the last approved version of the data should be displayed (the default will be "time now"). This allows users to understand the state of development of information at any requested point in time.

**SOLUTION OR PLANNED ACTION:**

Maintenance procedures that maintain multiple generations of information for each regulatory requirement are being implemented. All currently and previously approved versions will be retained, as well as the most current developmental version, if any. Procedures to allow the user to select a development/approved mode and an "as-of" date for information retrieval and display are also being implemented. Training procedures and documentation must adequately explain the methods to access discrete views of the regulatory requirement.

## 8. OUTPUT PROCESS

### CONCERN 1:

Data retrieval response time is longer than desired when queries are made using the graphical interface. Users in the Washington, D. C. area are especially restricted by the limitations of the 9.6 kB rate on the leased line provided by the NRC to San Antonio.

### SOLUTION OR PLANNED ACTION:

Work to optimize the program will continue. Additional menus for direct access of text will be available for the experienced user to bypass time-consuming graphical displays as desired. The PC-based interface will be useful in reducing data retrieval times. Hardware improvements by the NRC, including increasing the baud rate of the leased line to 56 kB and higher, are being defined in the most cost-effective approach to keep response times sufficiently short that users may efficiently conduct their work.

### CONCERN 2:

Printed database products will become more limited in their use. They will quickly become outdated as the database is modified. Some products are generally unusable, for example, the plots of REOP hierarchies which are so large that REOP topics cannot be discerned unless very large plots are prepared.

### SOLUTION OR PLANNED ACTION:

Controls or practices must be established so that no action is taken based on a printed database product without checking the database to ensure that it is the most current version. Methods of producing logic structure plots in more readable formats will be examined. As the database structure grows, however, the best solution may be to optimize the ability to examine the logic structures on the computer.

### CONCERN 3:

The database file saving and data downloading operations to support the users in preparing new input (cloning) and creating their own reports on their PC by combining PADB information with other information not in the PADB may be tedious for the beginning user.

### SOLUTION OR PLANNED ACTION:

Version 2.0 of PASS does not support "cutting and pasting" from the mainframe to the PC. Instead, a number of steps using menus and specific mainframe commands are employed to do the downloading followed by a few steps on the PC to import the file into WordPerfect, etc. In true "cutting and pasting" operations such as are planned for Version 3.0 of PASS, only the

portion of text of interest (sentence, paragraph, page) instead of the entire file would be transferred immediately to the target PC Wordperfect file, etc. This is also true for downloading data from NUDOCS or any other database that may be used with input/output data from PASS. However, the capability available in Version 2.0, if used, is still the most effective way today to clone or import text available electronically. Meanwhile, the downloading procedure from the PADB mainframe and access of other systems, such as NUDOCS, for downloading, should be streamlined as much as possible. Cut and paste operations from mainframe host files (PASS V3.0/PADB) and NUDOCS files should be implemented at the earliest opportunity.