



RESOURCE AND PATIENT MANAGEMENT SYSTEM

IHS Patient Merge

(BPM)

User Manual

Version 1.0
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Preface

The purpose of this manual is to provide user information about the IHS Patient Merge software version 1.0, a component of the VA Duplicate Record Merge application. Included in this manual is instructional guidance to Health Information Management (HIM) staff on tools available to identify and merge duplicate patient records.

Table of Contents

1.0	Introduction.....	1
2.0	Orientation	2
2.1	How to Use this Manual.....	2
2.2	Online Help.....	2
3.0	Merge Process Overview	3
3.1	Search for Potential Duplicate Record Pairs.....	3
3.2	Review and Verify Potential Duplicates	4
3.3	The Merge Process Itself.....	4
3.4	Menu Design	6
3.4.1	IHS Patient Merge Menu	6
3.4.2	Find Potential Duplicates Menu (S1)	6
3.4.3	Review/Verify Duplicates (S2)	7
3.4.4	Merge Verified Duplicates (S3).....	7
3.4.5	Patient Merge Reports (PMR)	8
3.4.6	Duplicate Manager Utilities Menu (DMU)	8
4.0	Step 1 - Searching for Potential Duplicates	9
4.1	Start/Halt Duplicate Search (SRCH).....	10
4.2	Display Search Status (DSS).....	11
4.3	Find Potential Duplicates for an Entry in a File (FIND)	13
4.4	Check Pair of Records to See if Duplicates (CHCK).....	13
4.5	Print List of File Duplicates (PRNT)	15
4.6	View Duplicate Record Entries (VIEW).....	16
5.0	Step 2 - Reviewing & Verifying Duplicates	17
5.1	Verify Potential Duplicates (VPD)	17
5.1.1	Health Summary to View Duplicate Record Pair	20
5.1.2	Verifying Duplicates.....	21
5.1.2.1	Selecting Merge Direction	21
5.1.2.2	Determining Data Overwrites.....	22
5.2	Add Verified Duplicate Pair (ADD)	23
5.3	Display Verified Pair (DVP).....	25
5.4	Check for Data Conflicts (CDC)	26
5.5	Identify Potential Merge Problems (PMP).....	28
5.6	Edit the Status Field of a Duplicate Record (EDIT).....	29
6.0	Step 3 - Merge Process Itself	30
6.1	Approve Verified Duplicates for Merging (AVD).....	30
6.2	Schedule Process to Merge Verified Duplicates (SCH)	31
6.2.1	Patient Data Validated before Merge.....	32
6.2.2	Merging Multiple Record Pairs.....	34
6.3	Check Merge Process Status (CMP)	35

6.3.1	Processing VA Patient File (step 3)	37
6.4	STOP an Active Merge Process (SMP)	38
6.5	Restart a Merge Process (RMP)	39
6.6	Health Summaries for Verified or Merged Pairs	39
7.0	Additional Reports	41
7.1	List RPMS Data for a Patient (LDAT)	41
7.2	Print List of File Duplicates (PLD)	42
7.3	Print List of Merged Patients (PLM)	43
7.4	Tally STATUS and MERGE STATUS Fields (TSM)	44
8.0	Manager Functions.....	45
8.1	Purge Duplicate Record File (PDUP).....	45
8.2	Purge Merge Process File (PMRG)	45
8.3	Reset Lost Merge Process (RLMP)	45
8.4	Patient Merge Site Parameters (SITE)	45
9.0	RPMS Exports & the Data Warehouse.....	48
10.0	Rules of Behavior	49
10.1	All RPMS Users	49
10.1.1	Access	49
10.1.2	Information Accessibility	50
10.1.3	Accountability	50
10.1.4	Confidentiality	51
10.1.5	Integrity.....	51
10.1.6	System Logon.....	52
10.1.7	Passwords.....	52
10.1.8	Backups.....	53
10.1.9	Reporting.....	53
10.1.10	Session Timeouts	53
10.1.11	Hardware	53
10.1.12	Awareness.....	54
10.1.13	Remote Access	54
10.2	RPMS Developers	55
10.3	Privileged Users.....	56
11.0	Glossary	58
12.0	Contact Information	60

1.0 Introduction

This software has been developed to assist local facility HIM staff in identifying and merging duplicate records found in RPMS Registration files. Record pairs are identified as potential duplicates through comparisons that are conducted during a search of the database. These potential duplicates are then validated through a review process to verify that they are duplicates, and then merged. This software is intended to provide a reliable approach to correctly identify and merge duplicate records.

Other related documents are:

- *IHS Patient Merge Process Manual*, which describes the recommended process to use the Patient Merge application
- *IHS Patient Merge Technical Manual*, which provides the site manager guidance in the maintenance of the software and details of the Indian Health Service (IHS) modifications made to the VA module
- *IHS Patient Merge Installation Guide and Release Notes*, which provides assistance in installation of the package and descriptions of changes to this release of the software

2.0 Orientation

2.1 How to Use this Manual

This user manual is provided in Adobe Acrobat PDF (portable document format) files. The Acrobat Reader is used to view the documents. If you do not have the Acrobat Reader loaded, it is available at the Adobe web site:

<http://www.adobe.com>

Once you open the PDF file, you can click on the entry name in the table of contents on the left side of the screen to go to that entry in the document. You can print any or all pages of the file. Click on the Print icon and select the pages you need, then click OK.

2.2 Online Help

When the format of a response is specific, there is usually a HELP message provided for that prompt. HELP messages provide lists of acceptable responses or format requirements that provide instruction on how to respond.

A HELP message can be requested by typing ? or ??. The HELP message will be displayed under the prompt, then the prompt will be repeated. For example:

```
Sort by TREATING SPECIALTY: ? <Enter>
CHOOSE FROM:
01 SURGERY
1 CARDIOLOGY
12 PSYCHIATRY
Sort by TREATING SPECIALTY:
```

Figure 2-1: Help message example

For some prompts, the system will list the possible answers from which you can select. Any time choices are displayed with numbers, the system will usually accept the number or the name.

A HELP message may not be available for every prompt. If you type ? or ?? at a prompt that does not have a HELP message, the system will repeat the prompt.

3.0 Merge Process Overview

Patient Merge provides an automated method to eliminate duplicate patient records within an RPMS database. It is an operational implementation of the VA Duplicate Resolution Utilities, which were released to the field with Kernel Toolkit.

The overall process consists of three major steps:

1. Search for potential duplicate record pairs
2. Review and verification of those pairs
3. The merge itself

3.1 Search for Potential Duplicate Record Pairs

- The search process can be lengthy and is recommended for off-peak hours.
- Utilities are available for pausing and restarting the search process.
- The Patient Merge application performs comparisons on key fields in the VA PATIENT (#2) and the PATIENT (#9000001) files.
- A Basic search initiates a search on a file for the first time. A New search just checks all patients added by Patient Registration since the last search.
- The software contains preset specifications for duplicate tests.
- Each test uses its corresponding field and file numbers to assist in identifying potential duplicate records. A value is ascribed to the field based upon similarity in the data present. Those fields are:
 - Name
 - Social Security
 - Sex
 - Mother's Maiden Name
 - Date of Birth
 - Date of Death
 - Tribe
- All field values are tabulated to form a single value, which is compared against the Threshold Percentage (a site parameter). When record pair scores evaluate above the Threshold, they are considered potential duplicates and are stored for further processing.

3.2 Review and Verify Potential Duplicates

- Once a potential duplicate pair has been found, the process of reviewing and verifying record pairs begins.
- The review and verification process may begin while the search is running, as soon as at least one pair has been identified.
- The HIM reviewer performs a review of patient demographic and health summary information to determine if the pair represents a duplicate record. This review may include a review of medical records or other documentation outside of RPMS.
- Reviewers determine whether the record pair is a duplicate, not a duplicate (so that subsequent processing need not occur), or that they are unable to determine the status.
- If the pair does represent a duplicate record, the reviewer selects the merge direction (identifies the FROM and TO patient).
- Where appropriate, reviewers may mark selected data to be overwritten. This means the FROM patient has better data in a specific demographic field.
- Those record pairs that are determined to be verified duplicates are marked as such and are then available for approval to be merged.

3.3 The Merge Process Itself

- Before verified pairs can be merged, they must be approved for the next merge batch. The intent of the approval step is to ensure that a conscious decision be made as to which verified duplicate record pairs your system can handle during an off-peak hours merge. This approval marks their status as “Ready.”
- All verified record pairs, or selected pairs, can be approved. Only select the number of pairs your system can handle during off-peak hours. You will have the ability to pause the merge if your system slows down too much.
- The approval step follows a site-defined waiting period, which can be set to zero.
- Each merge batch should contain only a single merge pair. Following this process will allow for easier debugging and help to ensure that the system is not overwhelmed by the merge process.
- Only users holding the BPMZMERG key may mark pairs as ready to merge and start the merge batch.
- All approved, marked as “ready” pairs are included in a merge process when scheduled.
- The merge process is lengthy and is recommended for off-peak hours. It can vary in length of time depending upon the number of parallel jobs (threads) selected (a site parameter).

- Utilities are available for pausing and restarting the merge process.
- A process known as the “validator” examines data in the designated pairs to find potential data errors. If problems are found, these records will not be merged. Users can run this validation ahead of time to identify problems that can be fixed before attempting a merge.
- Notification will be sent to the mail group defined in the site parameters.
- The merge process merges verified duplicate records in the following order: first, files that require special handling, then the primary file, and then the resolution of pointers.
- Several special processing routines have been written to handle those database entries that point to the Patient files in an unusual manner.
- A stub record is maintained for the FROM patient in order to disallow reuse of the Patient files Internal Entry Numbers (IEN).
- The merge process is a background job that involves moving data and re-pointing information. Be aware that it should not be running when changes are being made to Data Dictionaries (such as installing patches) or when data conversions are taking place.
- Concurrent with the merge, entries are made in a new global for each record making up the pair. The entries are intended to provide a "before-merge" image. The establishment of a separate global facilitates the ability to remove it from the active system and save it off as an archive.
- Please note that the merge is a ***non-reversible process***! Once the pair of records is merged, there is no automated way of undoing the process.

Training Note: This application is very difficult to teach on scrambled training systems. The scrambling process changes data enough so that there are no longer any duplicates on the system. If your site has a training system that is not scrambled, you can use it to train your HIM staff, but ensure that they are aware of the security issues involved.

3.4 Menu Design

3.4.1 IHS Patient Merge Menu

This **IHS Patient Merge** menu reflects the 3 step process used in merging duplicate patient records.

```

*****
-----> INDIAN HEALTH SERVICE
          IHS PATIENT MERGE ----->
----->   VERSION 1.0
*****

          YOUR FACILITY'S NAME

S1      Find Potential Duplicates ...
S2      Review/Verify Duplicates ...
S3      Merge Verified Duplicates ...
PMR     Patient Merge Reports ...
DMU     Duplicate Manager Utilities ...

Select IHS Patient Merge Option:

```

Figure 3-1: IHS Patient Merge menu

3.4.2 Find Potential Duplicates Menu (S1)

The menu for “Step 1 - Searching for Potential Duplicates,” **Find Potential Duplicates**, contains options to run the automated search for duplicates and display the results.

```

          Find Potential Duplicates
          (Your facility's name)

SRCH    Start/Halt Duplicate Search
DSS     Display Search Status
FIND    Find Potential Duplicates for an Entry in a File
CHCK    Check Pair of Records to see if Duplicates
PRNT    Print List of File Duplicates
VIEW    View Duplicate Record Entries

Select Find Potential Duplicates Option:

```

Figure 3-2: Find Potential Duplicates menu

3.4.3 Review/Verify Duplicates (S2)

The menu for “Step 2 - Review & Verify Duplicates,” **Review/Verify Duplicates**, contains options to review the list of potential duplicates, decide which ones can be verified as duplicates, and set the merge direction (which is the FROM patient, which is the TO patient).

```

Review/Verify Duplicates
  (Your facility's name)

VPD   Verify Potential Duplicates
ADD   Add Verified Duplicate Pair
DVP   Display Verified Pair
CDC   Check For Data Conflicts
PMP   Identify Potential Merge Problems
EDIT  Edit the Status Field of a Duplicate Record

Select Review/Verify Duplicates Option:

```

Figure 3-3: Review & Verify Duplicates menu

3.4.4 Merge Verified Duplicates (S3)

The menu for “Step 3 - The Merge Process Itself,” **Merge Verified Duplicates**, contains options to mark pairs as ready to merge, schedule the merge batch, and monitor the merge process as it is running.

```

Merge Verified Duplicates
  (Your facility's name)

AVD   Approve verified duplicates for merging
SCH   Schedule Process to Merge Verified Duplicates
CMP   Check Merge Process Status (reverse order)
SMP   STOP an Active Merge Process
RMP   Restart a Merge Process
      Health Summaries for Verified or Merged Pairs

Select Merge Verified Duplicates Option:

```

Figure 3-4: Merge Verified Duplicates menu

3.4.5 Patient Merge Reports (PMR)

The **Patient Merge Reports** menu includes miscellaneous reports lists patients, statistics, and data (at the IT level of understanding).

```
                Patient Merge Reports
                (Your facility's name)

LDAT  List RPMS Data for a Patient
PLD   Print List of File Duplicates
PLM   Print List of Merged Patients
TSM   Tally STATUS and MERGE STATUS Fields

Select Patient Merge Reports Option:
```

Figure 3-5: Patient merge reports menu

3.4.6 Duplicate Manager Utilities Menu (DMU)

The **Duplicate Manager Utilities** menu contains the option to edit site parameters and options for purging merge batch information and purging potential duplicates.

```
                Duplicate Manager Utilities
                (Your facility's name)

PDUP  Purge Duplicate Record File
PMRG  Purge Merge Process File
RLMP  Reset Lost Merge Process
SITE  Patient Merge Site Parameters

Select Duplicate Manager Utilities Option:
```

Figure 3-6: Duplicate manager utilities menu

4.0 Step 1 - Searching for Potential Duplicates

Step 1 in the process of removing duplicates in your patient system is to search for and identify potential duplicate pairs.

Applying comparisons (duplicate tests) to records as they are encountered in the search identifies potential duplicates. These comparisons result in a computed value based on the similarity of one record to others. Both records must have data in the field being tested for a duplicate test score to be obtained.

The fields from the Patient files that are used in comparing both entries are:

- Name
- Social Security Number
- Sex
- Date of Birth
- Date of Death
- Mother's Maiden Name
- Tribe of Membership

Positive values are assigned to record pairs that meet the test (scaled on how well they match). Negative values are assigned to record pairs that do not meet the test. The resulting value is measured against the Potential Duplicate Threshold Percentage parameter. This value is exported with the Patient Merge application set as a default of 60%. When record pair scores evaluate equal to or above this percentage, they are considered to be potential duplicates and are added to the DUPLICATE RECORD file (#15). For details of this process, see the *Patient Merge Technical Manual*.

The search process may be halted at any point, using the Start/Halt Duplicate Search option. When restarted, the search starts where it stopped. It does not return to the beginning of the file, recycling through records that have already been searched. This enables a site to control their system resources. Should the decision be made to stop the search process mid-search, the user can halt the search, indicate the search as complete, change criteria (e.g., Potential Duplicate Threshold Percentage), and re-initialize the search.

Note: Be advised that searching the database for duplicate record pairs can take a long time to run to completion. Actual time for a search has been known to exceed 100 hours at large VA sites.

4.1 Start/Halt Duplicate Search (SRCH)

Use the **Start/Halt Duplicate Search** option to initiate a search of the database. This option provides two methods for searching the primary patient file:

- 1) A **Basic** search checks all records in a file from beginning to end. This search can be halted and restarted, beginning with the *next available record* after the last record that was processed. If you are running a search for potential duplicate records on a file for the first time, you will probably want to run a Basic search.
- 2) A **New** search checks only those records that have been added or edited since the last search was run. It begins with the *next record number* after the last one that was processed. The New search, like the Basic, can also be halted and restarted, beginning with the next available record after the last record that was processed.

Note: If you Halt a search and immediately go back to the Start/Halt option to verify that the search has been halted, you may experience some lag time. It takes a moment for Task Manager to react to the command and halt the search.

The Start/Halt Duplicate Search option is a tasked job that can be started and halted until the entire file has been checked. Initially, you will want to perform the Basic search of the database. Once this search is started, its progress can be monitored with the Display Search Status option.

In the following example, we are going to start a Basic search . To begin the search select the option Start/Halt Duplicate Search located on the Find Potential Duplicates menu.

```

Duplicate VA PATIENT Search
Search Type   Date Completed       Status           hours:min       # Records Checked
-----
BASIC        DEC 28, 2006@16:08   COMPLETED       3:02           26133/26133 100.0%

216 Potential Duplicate pairs added to the DUPLICATE RECORD FILE (#15)

Do You wish to RUN a search (Y/N)? YES <Enter>
Which type of Search do you wish to run ? (BASIC/NEW) BASIC// BASIC <Enter>

This process will take a **LONG** time (known to exceed 100 hours),
but you CAN stop and restart the process when you want using
the options OK? YES <Enter>

Requested Start Time: NOW//           <can also schedule for later time>

```

Figure 4-1: Sample Basic Search screen

You can start the search NOW, or queue it for a different date and time. This is a tasked job that can be started and halted until the entire file has been checked for potential duplicates.

Notice that Figure 4-1 displays the previous search, which

- Was completed on December 28, 2006 at 4:08 PM,
- Was completed,
- Took 3 hours and 2 minutes,
- Searched through 26,133 records in the patient file,
- Searched through 100% of the file, and
- The search found 216 potential duplicate pairs.

When a user starts a search, that search may be monitored by the Display Search Status option on the Utilities menu.

4.2 Display Search Status (DSS)

Use the **Display Search Status** option to display the status of potential duplicates found from searching the Patient file. In this example, the search has begun and is still running.

Duplicate VA PATIENT Search				
Search Type	Date Started	Status	hours:min	# Records Checked
-----	-----	-----	-----	-----
BASIC	JAN 4, 2007@08:17	RUNNING	0:12	545/26133 2.0%
6 Potential Duplicate pairs found				

Figure 4-2: Display Search Status screen

To stop a search in process, go back to the Start/Halt Duplicate Search option. It will ask you if you want to halt. Although it asks for “Start Time,” Task Manager is asking when you want to start the process that will actually “Halt” the search.

Once a search is started, you cannot start another search. You can only halt a search in progress. The search can then be restarted now or it can be queued for a later date and time.

You may come across errors while running a search. When an error is encountered, the duplicate record search stops and informs you of the type of error found. Once that error is fixed, you can restart the search and it will continue from where it stopped. You do not have to go back to the beginning of the file and start from the first entry again.

Duplicate VA PATIENT Search				
Search Type	Date Started	Status	hours:min	# Records Checked
-----	-----	-----	-----	-----
BASIC	JAN 4, 2007@08:17	RUNNING	0:12	545/26133 2.0%
6 Potential Duplicate pairs found				
Do You wish to HALT this search (Y/N)? YES <Enter>				
Requested Start Time: NOW// <Enter>				

Figure 4-3: Example of halting a search

Then the Display Search Status will look like this:

Duplicate VA PATIENT Search				
Search Type	Date Started	Status	hours:min	# Records Checked
-----	-----	-----	-----	-----
BASIC	JAN 4, 2007@08:17	HALTED	0:13	553/26133 2.1%
7 Potential Duplicate pairs found				

Figure 4-4: Basic Search screen after a search has been halted

4.3 Find Potential Duplicates for an Entry in a File (FIND)

Use the **Find Potential Duplicates for an Entry in a File** option to search for potential duplicates against a single patient record. Any potential duplicate record pairs resulting from this search are added automatically to the DUPLICATE RECORD file (#15) as unverified potential duplicates. A match found (of one or more records) from this query indicates that the record pair met or exceeded the Potential Duplicate Threshold Percentage.

```

This option will collect all Potential Duplicates for an entry in a file.
It will then add any pairs found to the Duplicate Record file.

Find Potential Duplicates for VA PATIENT: PATIENT,ONE <Enter>
  1 PATIENT,ONE A F 02-17-1900 000371317 THC 101598
  2 PATIENT,ONE B F 12-25-1900 000719246 THC 101024
CHOOSE 1-2: 2 <Enter>
PATIENT,ONE B F 12-25-1900 000719246 THC 101024

Hold On... This may take a little while...

The following PATIENT entry(ies) are now in the Duplicate
Record file as Potential Duplicates to PATIENT: PATIENT,ONE B
PATIENT,ONE A

```

Figure 4-5: Searching for potential duplicates for an entry in a file

4.4 Check Pair of Records to See if Duplicates (CHCK)

Use the **Check Pair of Records to See if Duplicates** option to check two discrete records to see if they are duplicates. Do this by entering two records when prompted. The records are run through the duplicate test software to determine their duplicate match percentile. This option **does not** add records to the DUPLICATE RECORD file.

Note: This option does not allow you to compare the same record.

After the two records have been selected, a Review screen displays the comparisons (Figure 4-6), and the duplicate match percentile score is displayed at the end of the comparisons.

*****Security Warning*****

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

COMPARE VA PATIENT: PATIENT,ABC		F 11-28-1900	THC 105509
WITH VA PATIENT: PATIENT,DEF		F 02-17-1900 000371317	THC 101598
DEVICE: HOME// <Enter>			
	RECORD1 [#10846]	RECORD2 [#6926]	
	PATIENT,ABC	PATIENT,DEF	
	CMOR SCORE = NULL	CMOR SCORE = NULL	

****	NAME	"PATIENT,ABC"	"PATIENT,DEF"
	SEX	FEMALE	FEMALE
****	DATE OF BIRTH	11/28/1900	02/17/1900
	MARITAL STATUS		NEVER MARRIED
	RACE		AMERICAN INDIAN OR ALASKA NATIVE
	RELIGIOUS PREFERENCE		CATHOLIC
	CHECK FOR DUPLICATE	YES	YES
	SOCIAL SECURITY NUMBER		"000371317"
	PLACE OF BIRTH [CITY]	"ANY TOWN"	"ANY TOWN"
	PLACE OF BIRTH [STATE]	NEW MEXICO	NEW MEXICO
****	STREET ADDRESS [LINE1]	"P.O. BOX 00"	"POB 0000"
****	CITY	"ANY TOWN"	"ANY TOWN"
	STATE	NEW MEXICO	NEW MEXICO
****	ZIP CODE	"00093"	"00071"
****	ADDRESS CHANGE DT/TM	8/14/06 08:14:27	8/14/06 08:02:59
. . .	<i>(shortened for display purposes)</i>		
	ENROLLMENT CLINIC	1 entry	10 entries
	APPOINTMENT	1 entry	47 entries
NAME	VALUE = -60	MAX POSSIBLE = 100	
TRIBE OF MEMBERSHIP	VALUE = -5	MAX POSSIBLE = 5	
SEX	VALUE = 20	MAX POSSIBLE = 20	
DATE OF BIRTH	VALUE = -40	MAX POSSIBLE = 60	
MOTHER'S MAIDEN NAME	VALUE = 10	MAX POSSIBLE = 50	
		DUPLICATE THRESHOLD % 65	
		DUPLICATE SCORE % 0	

Figure 4-6: Review screen comparing two records to see if they are duplicates

4.5 Print List of File Duplicates (PRNT)

Use the **Print List of File Duplicates** to print a selected list of duplicate patient records from the DUPLICATE RECORD file (#15). You can print:

- Unverified Potential Duplicates
- Not Ready to Merge Verified Duplicates
- Ready To Merge Verified Duplicates
- Merged Verified Duplicates

You can also print a Brief or Captioned listing. The list is sorted in descending order by the duplicate match percentile and the date the record was found from the search of the primary file.

*****Security Warning*****

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

In the following example, the display of unverified potential duplicate patient records is requested in a Brief format.

```
Select one of the following:

      1 BRIEF
      2 CAPTIONED

Choose type of list: 1 <Enter>  BRIEF

This utility provides reports on verified and unverified potential
duplicates.

Select one of the following:

      1 UNVERIFIED potential duplicates
      2 NOT READY TO MERGE VERIFIED duplicates
      3 READY TO MERGE VERIFIED duplicates
      4 MERGED VERIFIED duplicates

report: 1 <Enter>  UNVERIFIED potential duplicates

DEVICE: <Type printer name> RIGHT MARGIN: 80// <Enter>
...EXCUSE ME, LET ME THINK ABOUT THAT A MOMENT...
```

Figure 4-7: Selecting a report to display unverified potential duplicate patient records in brief format

Here is an example of the report in the Brief format:

```

Unverified Potential Duplicates          NOV 12,2006 16:01          PAGE 1
-----
IEN: 99
RECORD 1: PATIENT,TWO A  [IEN: 1111]   SSN: 000012111   HRCN: 1234
RECORD 2: PATIENT,TWO B  [IEN: 555555] SSN: 000012119   HRCN: 3456 (I)
STATUS: POTENTIAL DUPLICATE, UNVERIFIED
SCORE %: 100

IEN: 121
RECORD 1: PATIENT,THREE C [IEN: 987]   SSN: 000012317   HRCN: 6678
RECORD 2: PATIENT,THREE CC [IEN: 654321] SSN: 000012317   HRCN: 45663
STATUS: POTENTIAL DUPLICATE, UNVERIFIED
SCORE %: 100

IEN: 777
RECORD 1: PATIENT,ONE    [IEN: 666]   SSN: 000012646   HRCN: 4561 (I)
RECORD 2: PATIENT,ONE Z  [IEN: 999999] SSN: 000025771   HRCN: 99999
STATUS: POTENTIAL DUPLICATE, UNVERIFIED
SCORE %: 99

```

Figure 4-8: Sample brief report of unverified potential duplicates

4.6 View Duplicate Record Entries (VIEW)

Use the **View Duplicate Record Entries** option to view a specified duplicate record pair in a captioned format. This option displays the individual test scores (e.g., scores for NAME, DOB, SSN, SEX, etc.).

```

DUPLICATE RECORD LIST SEP 27,1997 12:55 PAGE 1
-----
-
RECORD1: PATIENT,TWO   RECORD2: PATIENT,TWO A
STATUS: POTENTIAL DUPLICATE, UNVERIFIED
  DATE FOUND: AUG 11, 1997          WHO CREATED: USER,TOM
  DC TOTAL POSSIBLE SCORE: 260      DC POTENTIAL DUPE THRESHOLD %: 60
  DC DUPE MATCH SCORE: 180         DC DUPE MATCH PERCENTILE: 69

DUPLICATE TEST: NAME                DUPLICATE SCORE: 80
DUPLICATE TEST: SSN                 DUPLICATE SCORE: 40
DUPLICATE TEST: SEX                 DUPLICATE SCORE: 0
DUPLICATE TEST: DATE OF BIRTH       DUPLICATE SCORE: 60
DUPLICATE TEST: DATE OF DEATH       DUPLICATE SCORE: 0
DUPLICATE TEST: MOTHER'S MAIDEN NAME DUPLICATE SCORE: 0

```

Figure 4-9: Sample view of duplicate record entries screen

5.0 Step 2 - Reviewing & Verifying Duplicates

The HIM staff members, who act as reviewers, perform a review of patient demographic information to initially determine if the pair represents a duplicate record. If so, the reviewer selects the merge direction.

Reviewers determine whether the record pair is a duplicate, not a duplicate (so that subsequent processing need not occur), or that they are unable to determine the status. Reviews may be started as soon as any potential duplicates are identified. There is no need to wait for the search process to reach completion.

Those record pairs that are determined to be verified duplicates are marked as such and are then available for approval to be ready for merging. Where appropriate, reviewers may mark data to be overwritten. This occurs when the FROM patient has better demographic data in certain fields than the TO patient.

Potential duplicate record pairs can be selected from a list produced by the search process. The primary reviewer can browse the list, or enter a selected record pair by name. Comparative data from the primary file is displayed for reviewers to determine the status of potential duplicate record pairs. Printing of “Merge” type health summaries is encouraged to help reviewers further verify the status of potential duplicate record pairs.

5.1 Verify Potential Duplicates (VPD)

Once reviewers have identified potential duplicate record pairs by running the automatic search, the next step is to verify that the records are duplicates. To begin this process, select the **Verify Potential Duplicates** option.

*****Security Warning*****

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

You can either select patients by name or chart number from your printed list, or choose from a list of potential duplicates from which to select.

At the “Select a Potential Duplicate Entry” prompt, do one of the following:

- Enter the patient’s name or chart number. If it exists as a potential duplicate, the patient’s record is displayed; for example,

```
Select VA PATIENT NAME: PATIENT,A B <Enter>
Searching for a PATIENT PATIENT,A B      M  06-29-00 000060969 ABC1234
...OK? Yes// <Enter> (Yes) PATIENT,A B MARK POTENTIAL DUPLICATE, UNVERIFIED
```

Figure 5-1: Enter patient’s name to see if it exists as a potential duplicate

- Press Enter, and at the “Do you want to select from a list of potential duplicates?” prompt, press enter to accept the default, Yes.

The system displays a list of cryptic data for each patient currently unverified in your file (i.e., the zero node for each potential duplicate record pair).

```
Select VA PATIENT NAME: <Enter>
Do you want to select from a list of potential duplicates? YES// <Enter>

1.  PATIENT,DEMO A^M^2000712^^8^^^000043577^^CHEROKEE^34
    PATIENT,DEMO B^M^2000712^^8^2^^000943666^^CHEROKEE^34

2.  PATIENT,ONE Z^M^2001108^^^^^000942180^^CHEROKEE^34^^^^^^1
    PATIENT,ONE^M^2001108^^^^^^^^^^^^^^^^^1

Enter Return to continue listing or
Select the desired entry by number: (1-4): 1 <Enter>
```

Figure 5-2: Select from a list of potential duplicates screen

Once you have selected your patient record from the list, the Patient Name, Date of Birth, Social Security Number, and other Patient file identifiers are displayed. This gives you an “at a glance” look at the kind of data these records contain.

Note: Be very cautious of merging a deceased patient to a living patient. If either patient in the merge pair is deceased, pay extra attention to the verification process. Data access for deceased patients may be limited at your facility following the merge process.

Following the review of the medical record, reviewers are asked to determine if a record pair is a verified duplicate, not a duplicate, or duplicate status cannot be determined.

The following example displays a duplicate record pair for a fictitious patient. This lists all of the data at the top level of the file (subfile data, such as multiple communities or multiple chart numbers, are not displayed). After you have examined the data, comparing the potential duplicate record pair(s), you are presented with five options.

Note: The size of the screen capture in the following figure has been reduced for the sake of brevity.

```

RECORD1 contains fewer data elements, usually this would indicate
that this record would be merged INTO the other.

Determine if these patients ARE or ARE NOT duplicates.

                RECORD1 [#1212]                RECORD2 [#888]
                PATIENT,FOUR                    PATIENT,FOUR A
                CMOR SCORE=NULL                 CMOR SCORE=NULL
-----
**** NAME                "PATIENT,FOUR"                "PATIENT,FOUR A"
   SEX                   MALE                          MALE
**** DATE OF BIRTH      06/29/00                    06/29/00
   MARITAL STATUS       DIVORCED                      DIVORCED
   RACE                  AMERICAN INDIAN OR A
                        LASKA NATIVE

Enter RETURN to continue or '^' to exit: ^ (Notice that by entering an up-
arrow(^) at this prompt, we've jumped past the remainder of the record to
the selection of the duplicate record status.)

    Select one of the following:

        V                VERIFIED DUPLICATE
        N                VERIFIED, NOT A DUPLICATE
        U                UNABLE TO DETERMINE
        H                HEALTH SUMMARY
        R                REVIEW DATA AGAIN

Select Action: HEALTH SUMMARY//

```

Figure 5-3: Sample duplicate record pair

Select one of the following:

- **Verified Duplicate** option, if you have determined that the records are duplicates.
- **Verified, Not A Duplicate** option, if you have determined that the records are not duplicates. Selecting this option ends processing.

- **Unable To Determine** option, if you cannot determine if the records are duplicates. When this option is selected, the record pair is put back into the DUPLICATE RECORD file and processing ends.

To process these entries again, you must use the Edit the Status Field of a Duplicate Record option to change their status back to potential duplicates.

- **Health Summary** option to view additional patient data via the health summaries. This is the default action, which reminds you to review all data on these patients *before* making the decision to verify them.
- **Review Data Again** option to redisplay the data for the record pair you have just viewed.

5.1.1 Health Summary to View Duplicate Record Pair

Additional patient data can be examined by viewing selected Health Summary reports prior to verifying the duplicate record status.

The default Health Summary Type is BPM MERGE. This health summary type was installed with the IHS Patient Merge software to give you a type that tries to show all RPMS data on a patient. The health summary software used is *not* the IHS Health Summaries, but rather the VA Health Summaries. Using the VA software allows us to display more RPMS data.

!WARNING!

The BPM MERGE health summaries can be very, long, especially for the long-time TO patient. You will be asked separately for a printer device for each patient. You may choose to print either patient to the screen, where you can stop it after a few screens. You can also select another VA health summary, like the EHR HS. To print an IHS Health Summary, you must access that option separately. Just remember that it does not show all data in RPMS. Checking both patients' paper charts is also recommended in deciding if they are truly duplicates.

You can send your selected Health Summary to the VA FileMan Browser or to any device found in your local DEVICE file (#3.5). Type YES at the "Would you like to use the FM Browser to view the record pair?" prompt, for the health summary to be displayed in browse mode.

To send your selected Health Summary to a printer or your screen (not using the browser), press Enter at the "Would you like to use the FM Browser to view the record pair?" prompt, to accept the default response, No. You can send it to a local printer, your terminal screen, or you can queue it to run at a specified date and time. Notice that you are prompted to enter a device name for both patient records.

5.1.2 Verifying Duplicates

Once the primary reviewer is fully satisfied that a record pair is a duplicate, the next step is to select the option Verified Duplicate. This is a two-step process.

- First, determine the merge direction - which is the FROM patient and which is the TO patient.
- Second, review demographic data to see if the FROM patient has better information in certain fields than the TO patient. You can select those fields to overwrite the TO patient's data.

5.1.2.1 Selecting Merge Direction

The most likely direction of the overall merge is offered as a default to the primary reviewer. The Patient Merge application automatically determines the default direction the merge should take, based on which record contains more data. The overall direction can, however, be changed.

Important: Although a default direction for the merge is provided, it may not always be the best choice. You should not assume that the record containing the most data is the record to be merged into. It is important, therefore, that the data in both records are thoroughly checked before selecting a merge direction.

```
Select Action: HEALTH SUMMARY // V <Enter> VERIFIED DUPLICATE
                RECORD1 [#1212]                RECORD2 [#888]
                PATIENT,ONE                      PATIENT,ONE A
Select one of the following:
1 RECORD1 INTO RECORD2
2 RECORD2 INTO RECORD1
Which record (1 or 2) should be MERGED INTO the other record:
RECORD1 INTO RECORD2//
```

Figure 5-4: Selecting merge direction screen

Notice, above, that the merge direction is automatically selected for you as the default value. The record being merged into (Record 2) contains more data than the record merging into it (Record 1). The Patient Merge application automatically determines the default direction the merge should take depending on which records contain more data. You, as the reviewer can reverse this direction. As you can see from this example, you have the choice of which direction to merge the records, regardless of the default merge direction.

Note: Remember, this is an example of the reviewer selecting the merge direction for a duplicate record pair. The actual merging of the records has *not* taken place yet. The actual merging of the duplicate records will not take place until the pair are marked as “Ready” for merge and a merge process batch has been queued to run.

5.1.2.2 Determining Data Overwrites

Should the reviewer determine that a particular record pair is a duplicate, he or she has the option to select fields to be overwritten, regardless of the merge direction for that record pair.

During the actual merge, if data exists in the merge FROM patient but not in the corresponding merge TO patient, that data is copied to the TO patient. However, if data exists in both the merge FROM and merge TO fields, the merge TO field is not overwritten unless you specify otherwise using this overwrite feature.

After selecting the merge direction, the system will display only those fields that contain dissimilar data for both records. Notice in the next figure that the fields Name, Date Of Birth, Social Security Number, and Zip Code are preceded by four asterisks (****). The asterisks indicate that these particular fields have data in both Record 1 and Record 2. However, in both records the data is different.

Notice the “OVERWRITE data for selected fields” prompt at the bottom of the screen. You are presented with the choice of selecting 1 through 4, representing each field respectively. By selecting numbers 1 and 3 you are choosing to overwrite the fields Name and Social Security Number in Record 2 with the corresponding fields in Record 1.

Important: If data exists in the merge FROM field (Record 1) but not in the corresponding merge TO field (Record 2), the data is merged to the merge TO field. If you do not want to merge data from a particular merge FROM field (Record 1) to the corresponding merge TO field (Record 2), you must delete the merge FROM data independently from this software.

Another quirk of the overwrite process deals with fields that must match up. For instance, you cannot set an overwrite on Tribe Quantum and Indian Blood Quantum fields. They both must match, and to change them Indian Blood Quantum must change first. However, the merge process goes in order by field number and it tries to change Tribe Quantum first. In those cases, you must manually change the data in the TO patient before you attempt a merge.

	PATIENT, ONE	PATIENT, ONE A
-----	-----	-----
**** NAME	"PATIENT, ONE "	"PATIENT, ONE A "
**** DATE OF BIRTH	06/29/00	06/29/00
**** SOCIAL SECURITY NUMBER	"000060969"	"000060996"
**** ZIP CODE	"00093"	"00044"
1 NAME		
2 DATE OF BIRTH		
3 SOCIAL SECURITY NUMBER		
4 ZIP CODE		
OVERWRITE data for selected fields: (1-4):1,3 <Enter>		
	<i>(Select these two fields from RECORD1 to overwrite the same fields in RECORD2.)</i>	

Figure 5-5: Selecting data for overwrite screen

You may have multiple screens of overwrite decisions. Once done, the software will drop you back to select a new potential duplicate pair.

Once a pair is verified, it cannot be seen again in this option. To see your overwrite choices, select the "Display Verified Pair" option. Any overwrites will have the asterisks (****) replaced with bars (| | | |). The bars indicate that the fields in Record 1 will overwrite the fields in Record 2.

Important: To change your mind on the overwrites, you must reset the pair back to Unverified, using the Edit the Status Field of a Duplicate Record option. Resetting a pair back to Unverified status will delete *all* overwrite decisions, so you can start over.

5.2 Add Verified Duplicate Pair (ADD)

Use the **Add Verified Duplicate Pair** option to add a pair of records to the DUPLICATE RECORD file that are not already identified as being there. The designated record pair will be evaluated by the same duplicate tests used to search for duplicate records in the initial search. The duplicate tests result in a computed value based on a comparison of one record to the other. The resulting value, the duplicate match percentile, is measured against the Potential Duplicate Threshold Percentage. When this computed percentage evaluates equal to or above percentage set in your parameters, the record pair is considered to be a potential duplicate and is stored as a Potential Duplicate, Not Verified.

Note: Personnel authorized to hold the XDRMGR key can bypass the potential duplicate threshold percentage and add records directly to the DUPLICATE RECORD file, no matter their threshold percentage.

The following figure illustrates the computer dialogue you will see when a record pair meets the Potential Duplicate Threshold Percentage:

```
Select Review/Verify Duplicates Option: ADD <Enter> Add Verified Duplicate
Pair

Do you want to bypass the potential duplicate threshold % check (Y/N)?
N <Enter> (No)

Potential duplicate threshold % will NOT be bypassed!

Select PATIENT: PATIENT,TWO <Enter> M 12-12-00 000056789 ABC1234
Another PATIENT: PATIENT,TWO B <Enter> M 12-12-00 000056798 ABC3456

You will be adding the following pair of records to the duplicate record
file:
                RECORD1: PATIENT,TWO
                RECORD2: PATIENT,TWO B
Enter RETURN to continue or '^' to exit: <Enter> Ok, continuing, hold on
...
```

Figure 5-6: Example of a record pair meeting potential duplicate threshold percentage

Notice in the following figure that the record pair resulted in having a Potential Duplicate Threshold of 30%. This is less than the 60% parameter setting. The score of 30% indicates that this record pair is probably not a duplicate and will not be added to the DUPLICATE RECORD file.

```
Select Review/Verify Duplicates Option: ADD <Enter> Add Verified Duplicate
Pair

Do you want to bypass the potential duplicate threshold % check (Y/N)?
N <Enter> (No)

Potential duplicate threshold % will NOT be bypassed!

Select PATIENT: PATIENT,FOUR <Enter>   M 12-12-00 000056789 ABC1234
Another PATIENT: PATIENT,FOURTEEN <Enter>   M 12-12-00 000056798 ABC3456

You will be adding the following pair of records to the duplicate record
file:

                RECORD1: PATIENT,FOUR
                RECORD2: PATIENT,FOURTEEN

Enter RETURN to continue or '^' to exit: <Enter> Ok, continuing, hold on
...
This pair of patients has a duplicate percentage of only 30% which
is less than the minimal percentage for potential duplicates (60%).

                Patients not added!!!
```

Figure 5-7: Screen sample of a record pair that has a percentage smaller than the parameter setting

5.3 Display Verified Pair (DVP)

Use the **Display Verified Pair** option to display overwrite decisions for a patient pair already defined as a verified duplicate. Any overwrites will have the asterisks (****) replaced with bars (| | | |). The bars indicate that the fields in Record 1 will overwrite the fields in Record 2.

*****Security Warning*****

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

If you want to print out BPM MERGE health summaries for the verified pair, use the Health Summaries for Verified or Merged Pairs option on the Merge Verified Duplicates Menu.

```
Select Review/Verify Duplicates Option: DVP <Enter> Display Verified Pair
Select VERIFIED Pair: PATIENT,ONE <Enter>
Do you wish to review demographic data? YES// <Enter>
```

Figure 5-8: Screen 1 of displaying a verified pair

```

                                RECORD1 [#1212]  RECORD2 [#888]
                                PATIENT,ONE      PATIENT,ONE A
-----
**** NAME                        "PATIENT,ONE"      "PATIENT,ONE A"
   SEX                           MALE                 MALE
**** DATE OF BIRTH              06/29/00           06/29/00
   MARITAL STATUS                DIVORCED            DIVORCED
||| SOCIAL SECURITY NUMBER      "000060969"        "000060996"
   RACE AMERICAN INDIAN OR ALASKA NATIVE
Enter RETURN to continue or '^' to exit:
```

Figure 5-9: Screen 2 of displaying a verified pair

In this example (Figure 5-9), the Record 1 (FROM) patient has the correct SSN so it will overwrite the Record 2 (TO) patient's SSN when the merge is performed.

5.4 Check for Data Conflicts (CDC)

The **Check for Data Conflicts** option enables HIM staff to review data throughout RPMS where conflicts may exist. If the FROM patient has better data in certain fields, the staff can set the merge to use the FROM patient's data to overwrite that in the TO patient's file. If not set to overwrite, then the TO patient's data takes precedent and the FROM patient's data is simply deleted.

Important: Like the demographic data, if you make a mistake and need to remove the overwrite flag, you must reset the pair back to Unverified Duplicates and go through the whole process again. This includes marking both demographic overwrites (marked during verification process) and those for other files (marked here).

Security Warning

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

In the following example, both patients have a Case Manager defined in the Immunization application. Since the correct case manager is Patricia Manager, who is defined under the FROM patient, you would enter a 2 to select that field for overwrite.

```
Select VERIFIED Pair:      DEMO,SHAUN      VERIFIED DUPLICATE

SEARCHING, please wait . . .
RPMS Application:  IMMUNIZATION
                    MERGE FROM [#10859]      MERGE TO [#10861]
                    10859                      10861
-----
****  NAME           MERGING INTO `10861      DEMO,SHAUN
                    USE THAT ENTRY (DEMO
                    ,SEAN)

****  CASE MANAGER   MANAGER,PATRICIA      MANAGER,ISABEL

1  NAME
2  CASE MANAGER
OVERWRITE data for selected fields:  (1-2): 2 <ENTER>
```

Figure 5-10: Overwriting data conflicts example

If you want to double check, go into the option again and you will see that the **** have been changed to |||, indicating an overwrite using the FROM patient data.

```
Select VERIFIED Pair:      DEMO,SHAUN      VERIFIED DUPLICATE

SEARCHING, please wait . . .
RPMS Application:  IMMUNIZATION
                    MERGE FROM [#10859]      MERGE TO [#10861]
                    10859                      10861
-----
****  NAME           MERGING INTO `10861      DEMO,SHAUN
                    USE THAT ENTRY (DEMO
                    ,SEAN)

|||   CASE MANAGER   MANAGER,PATRICIA      MANAGER,ISABEL

1  NAME
2  CASE MANAGER
OVERWRITE data for selected fields:  (1-2): 2 <ENTER>
```

Figure 5-11: Example of successful overwrite using the from patient data

Note: Names will always be listed with the FROM patient name being that long phrase “MERGING INTO `12345 USE THAT ENTRY (old name).” Although they are choices, do not choose them for overwrites.

If you are not certain which data is correct, check with staff in the appropriate department.

5.5 Identify Potential Merge Problems (PMP)

The optional **Identify Potential Merge Problems** option has been designed to display any data errors that might exist in a patient's record. It is optional because the merge process itself will perform this test on all duplicate pairs in a merge batch. If any problems are found, that pair will be skipped. Many of the “broken database/bad data” events that would have upset an actual merge can be detected through this option. The intent is to give the site the opportunity to make any necessary edits prior to merging duplicate record pairs.

Note: The DG ELIGIBILITY security key is required to provide valid error checking results with this option.

Data is checked in the various fields of the patient's record as though it were being filed in the record for the first time. The information is checked against any input transforms or edit routines, as controlled by the custodian of the data.

You can check a patient's record for errors by entering either the patient's name, or chart number; for example,

```
Select Patient: PATIENT,ONE <Enter> M 06-29-00 000060969 ABC1234
.... WORKING HARD (may take a while)...
DFN=1111 PATIENT,ONE [000060969]
No Problems Found....
```

Figure 5-12: Checking a patient's record for errors

This option notifies you that your query is being processed, when the following message is displayed:

```
.... WORKING HARD (may take a while)...
```

Checks are made against your entry while you wait. The amount of time that is required to process your entry is dependent upon how much data is in the patient's record and how much other activity is occurring on the system. A wait of less than a minute is to be expected for an average size record.

5.6 Edit the Status Field of a Duplicate Record (EDIT)

Use the **Edit the Status Field of a Duplicate Record** option to edit the status field of a duplicate record pair in the DUPLICATE RECORD file. Use it at any time for any record pair prior to merging when you want to *change the status back* to Potential Duplicate, Unverified. After the status of the record entry has been changed back to Potential Duplicate, Unverified, the pair is ready to go through the review process again.

```
Select Review/Verify Duplicates Option: EDIT <Enter>
Select an Entry to RESET TO POTENTIAL DUPLICATES: DOE,J.M. <Enter>
    Searching for a PATIENT PATIENT,ONE A    M  6/29/00 000060969 ABC1234
    ...OK? Yes// <Enter> (Yes) PAITENT,ONE A VERIFIED DUPLICATE
Duplicate Record File Entry 948 for the VA PATIENT FILE
    1212 PATIENT,ONE
    888  PATIENT,ONE A
    Currently listed as VERIFIED DUPLICATE
Do you really want to RESET to POTENTIAL DUPLICATE? NO// YES <Enter>
Status RESET to POTENTIAL DUPLICATE RECORD.
```

Figure 5-13: Editing the status field of a duplicate record

Note: Once a record has been merged the status cannot be reset.

6.0 Step 3 - Merge Process Itself

This chapter documents in detail the operations involved in completing the merge process. The following is a brief outline of the options available to run a successful merge job. Each option is documented in expanded detail on the following pages.

To begin a merge process:

- Use Approve verified duplicates for merging to mark which pairs will be included in the next merge batch.
- Use Schedule Process to Merge Verified Duplicates to queue a batch of merges to run and merge all approved verified duplicate record pairs.

The following options are available to further assist you with the merge process:

- Use Tally STATUS and MERGE STATUS fields to produce a tally report of verified duplicate records that are ready to be merged.
- Use Check Merge Process Status to track the status of a selected merge process.
- Use STOP an Active Merge Process to stop a currently running merge process and any associated threads.
- Use Restart a Merge Process to schedule the restart of a merge process at the current time, or at some point in the future.

The merge process can take a long time to run to completion. Actual time for merging duplicate record pairs has been known to exceed 15 hours.

Note: Although distributed by the PIMS package, the person initiating the merge process must hold both the DG ELIGIBILITY and the BPMZMERG security keys.

6.1 Approve Verified Duplicates for Merging (AVD)

Before verified record pairs can be included in the next merge process, they must be marked as approved. This will change the pair's Merge Status from "Not Ready" to "Ready." Verified duplicate record pairs must have elapsed the site specified waiting period (i.e., the time between when they were verified as duplicates, and the time they are ready to be merged) to appear on the list. The default waiting time installed with the application is zero, but you can change it using the Patient Merge Site Parameters option.

Depending on the number of entries verified, the system could take several minutes to display the list. The three columns of numbers after each name represent SSN, internal number, and IHS chart number.

```

4 Entries are awaiting approval for merging Return to continue... <Enter>

1 PATIENT,FIVE          000-02-7082      [121212]      #23457
  PATIENT,FIVE Z       000-02-7082      [6543]        #7881

2 PATIENT,SIX A        000-02-8495      [123456]      #11445
  PATIENT,SIX B        000-02-4895      [787878]      #12234

3 PATIENT,THREE Z     000-04-5972      [999699]      #113441
  PATIENT,THREE X     000-04-5972      [098765]      #112777

4 PATIENT,DEMO         000-04-6995      [123234]      #109003
  PATIENT DEMO JR.    000-04-6995      [232323]      #100871

Select entries to approve them for merging: (1-4): 1 <Enter>

```

Figure 6-1: Approving verified duplicates for merging

As each screen lists the records for approval, shown in the previous figure, enter the number corresponding to the record(s) that you are approving for merging. You can enter your selection in any one of the following formats:

- A range of numbers, for example, 1-4
- Individual numbers, for example, 3
- Random selection of numbers, for example, 1,3,4

Once you have approved a duplicate record pair to be merged, that pair will no longer appear on the list of entries waiting for approval to be merged. The approval process checks the record pair as it is being selected for approval to be merged to ensure that both records still exist. The record pair cannot be approved, if one of the pair no longer exists or has been merged into another record.

Note: To assist in debugging and to conserve system resources, we recommend that each merge batch contains only a single merge pair. To do this, approve merge pairs one at a time.

6.2 Schedule Process to Merge Verified Duplicates (SCH)

After you have approved verified duplicates for merging, the next step is to schedule the date and time for the merge process to run, shown in the next figure. To do this, select the option Schedule Process to Merge Verified Duplicates.

Note: A listing of duplicate records ready to be merged is displayed on a tally report accessed through the option Tally STATUS and MERGE STATUS fields found on the PMR - Patient Merge Reports Menu.

```

4 Entries Ready to be included in merge

This process will take a **LONG** time (usually over 15 hours, and sometimes
considerably longer), but you CAN stop and restart the process when you want
using the options. OK? YES <Enter>

Name for Merge Process: TEST3 <Enter>

START DATE/TIME: NOW <Enter>   (Entering the VA FileMan command NOW begins
the merge process immediately.
You can also enter a later time, preferably
during off-peak hours.)

Merge process 'TEST3' for Verified Duplicates in File 2 scheduled.

```

Figure 6-2: Schedule process to merge verified duplicates screen

Notice in the previous figure that you are prompted to give the merge process a name. Each merge process must have a unique name. Each merge process will include automatically all approved duplicate record pairs that have met the site-specified waiting period (i.e., the time between when they were approved as duplicate records ready to be merged and the time they are actually merged).

More than one merge process can be running concurrently, providing each process has a unique name.

Note: A merge process will never include a duplicate record pair that was in another merge process.

The “START DATE/TIME” prompt, shown in Figure 6-2, is a Task Manager field. You can either queue the job to run at a later date and time, or you can begin the merge process immediately by typing NOW. For more information, enter a question mark (?) at this prompt.

Advisory Note: The merge process is a background job. Be aware that it should not be running, when changes are being made to Data Dictionaries (new RPMS software or patches installed) or when data conversions are taking place.

6.2.1 Patient Data Validated before Merge

Many of the “broken database/bad data” events that would have upset an actual merge can be detected at the beginning of the merge process. Checks are made on the various fields of the patient’s record as though the data were being filed in the record for the first time. The information is checked against any input transforms or edit routines as controlled by the custodian of the data. All verified duplicate record pairs that have been approved to be merged are checked first, before the actual merge begins.

Records found that have data errors are excluded from the actual merge. The record pair's STATUS is then reset to Verified Duplicate. A MailMan message is sent to the mail group that has been defined in the MERGE MAIL GROUP field under the Patient Merge Site Parameters option. The subject of the MailMan message is "MERGE PAIRS EXCLUDED DUE TO PROBLEMS," and is shown in Figure 6-3.

The intent of receiving this error report in a MailMan message is to give the site the opportunity to make any necessary edits prior to merging duplicate record pairs. Errors that are not resolved prior to the merge process result in a pair not being merged.

*****Security Warning*****

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

The following figure displays a sample MailMan message containing data errors for one record pair. Notice that the patient identification information for both FROM and TO records, shown below, is displayed prior to the actual data errors in the MailMan message:

```

Subj: MERGE PAIRS EXCLUDED DUE TO PROBLEMS [#2224123] 22 Mar 06 20:17 37
Lines
From: POSTMASTER (Sender: USER,ABC) in 'IN' basket. Page 1 **NEW**
-----
FROM: DFN=14 PATIENT,TEN [000110014]
TO: DFN=16 PATIENT,TEN A [000110016]

File 2 [PATIENT file]
Field .333 [E-STREET ADDRESS [LINE 1]] IENS=16,
value: 1234 39TH AVE SE
'EMERGENCY CONTACT' name must be specified to enter/edit this field
Field .338 [E-ZIP CODE] IENS=16,
value: 00056
'EMERGENCY CONTACT' name must be specified to enter/edit this field
Select MESSAGE Action: DELETE (from IN basket)//

```

Figure 6-3: Sample MailMan message containing data errors for one record pair

Data errors found prior to being merged are reported in a detailed list immediately following the patient identification information. These errors are displayed in the following format:

File - RPMS file number and name

Field - Field number and name and internal entry number (IEN)

Value - Current value in patient's record

Error Message - Why this value may not move correctly.

In the example (Figure 6-3), somehow the Emergency Contact's address and zip code are in the file, but the Emergency Contact's name is missing. Someone would have to go into Patient Registration and fix the entry before this pair can be merged.

Note: Several special processing routines have been written to handle those database entries that point to the Patient files in an unusual manner. This portion of the merge process will not examine files that are involved in the special processing routines. If, however, data errors are encountered during special processing, they are written to the ^XTMP("XDRTESTK" global in the merge process. The information is not lost, it is just not handled in advance of the merge. It is recommended that this global location be checked for any other problems by your IT staff. Hopefully, there will be nothing there other than the zero node.

6.2.2 Merging Multiple Record Pairs

Given any one verified record pair, if any subsequent record pairs have either member of the given pair as a component, then the subsequent pair(s) will be excluded from the merge process. Thus, any record may be involved in only one merge in a given merge process batch.

This does not imply that there are data errors in the record pairs being excluded. Only that they are excluded from the current merge, available for review and consideration in a subsequent merge process.

If two record pairs have the same TO record, one of them will be excluded from the current merge process. The record pair with the lowest IEN value compared to the other multiples is included in the current merge process. For example, if Patient A and Patient B are both duplicates of Patient C, and both duplicate pairs are approved for the next merge batch, only Patient A can be merged into Patient C in that batch. In the next merge batch, Patient B can be merged into Patient C.

The STATUS for record pairs excluded from the merge is reset differently, based on the following conditions:

- The status is reset to Potential Duplicate, Unverified for record pairs excluded from the merge because the accepted pair's FROM record is part of the excluded pair. This is because the FROM record will have been merged and will not be available for selection.
- The status is reset to Verified Duplicate for record pairs excluded from the merge because the accepted pair's TO record is part of the excluded pair.

Records excluded from the merge are written to a MailMan message and sent to the mail group that has been defined in the MERGE MAIL GROUP field under the Patient Merge Site Parameters option. The subject of the MailMan message is “PAIRS EXCLUDED FROM MERGE DUE TO MULTIPLE REFERENCES;” for example,

```
Subj: PAIRS EXCLUDED FROM MERGE DUE TO MULTIPLE REFERENCES [#2224183]
                                           06 Apr 98 10:53 4
Lines
From: POSTMASTER (Sender: DOE,JANE) in 'IN' basket. Page 1 **NEW**
-----
FROM: DFN=135054 PATIENT,FIVE A [111160581] FILE 15 IEN: 1465
TO: DFN=128031 PATIENT,FIVE B [111153563]
    Excluded as a multiple TO entry for ien=128031
Select MESSAGE Action: DELETE (from IN basket)/
```

Figure 6-4: Sample MailMan message about excluded pairs

6.3 Check Merge Process Status (CMP)

Data maintained on each part of the merge can be displayed using the **Check Merge Process Status** option. This option allows you to check the status of all merge processes, including the current process. It is a valuable tool for charting the progress of a merge process to its completion.

The merge process keeps track of itself by making checkpoints in 5-second intervals and updates the “Last Chk” column with the date and time of each inquiry.

This report allows your IT department and HIM reviewers to follow the merge process, ensuring its completion. The values displayed in Figure 6-5 illustrate the chronological order of events that occur during the various phases of the merge process. It is a reassuring indication to the reviewer that the job is still running.

The range of information found on this report shows the:

- Merge progress for data validation, special processing, and primary files by phases
- Start and completion times
- Current file being processed
- Entry in the current file that was last processed

Merge Set	Start	Stat	Last Chk	Phase	Current File	Current Entry
MERGE 1	09/30 17:21	C	09/30 22:14	<< "C" in the Stat field		
DATA CHECKING	09/30 17:21	C	09/30 17:21			
IHS PATIENT MER	09/30 17:21	C	09/30 17:21			
VA PATIENT FILE	09/30 17:21	C	09/30 21:50			
THREAD 2		C	09/30 22:14			
THREAD 3		C	09/30 21:12			
THREAD 4		C	09/30 20:19			
THREAD 5		C	09/30 19:07			
MERGE 2	03/25 11:07	A	03/25 11:16	<< "A" in the Stat field		
DATA CHECKING	03/25 11:04	C	03/25 11:04			
IHS PATIENT MER	03/25 11:16	C	03/25 11:16			
VA PATIENT FILE	03/25 11:16	A	03/25 14:57	3	44	8
THREAD 2	03/25 11:18	A	03/25 14:57	3	52	879268
THREAD 3	03/25 11:18	A	03/25 14:57	3	2	1364

Figure 6-5: Sample check merge process status report

Step 1 in any merge batch is “Data Checking.” This is where any excluded pairs will be deleted from the batch.

Step 2 processes special merges written, because the files involved cannot be merged using the generic process. It is listed as “IHS Patient Merge” on the report.

Step 3 is the “VA Patient File.” It involves three phases and uses threads (see Section 6.3.1).

Here is an explanation of the report columns:

1. **Merge Set** is the user-defined name for a merge process.
2. **Start** represents the date and time the merge process started corresponding to the merge set name.
3. **Stat** (status codes) The following status codes are used to track the current status of the merge process:

S (SCHEDULED) - This status code indicates that the merge process has been scheduled, or queued, for some later time based on your entry at the START DATE/TIME prompt. If you had entered NOW, the code S (SCHEDULED) is bypassed and the job begins with the code A (ACTIVE).

A (ACTIVE) - As soon as the job starts running, it sets the time it actually started and sets the Stat to A for ACTIVE. The process is currently running and is actively updating the CURRENT TIME value in the Last Chk column.

C (COMPLETED) - This indicates that the job has run through all the file entries to normal completion.

H (HALT) - If something happens to interrupt the job (for instance, if the Task Manager is notified to interrupt the process) Stat would display an H for HALT.

U (UNKNOWN-LOST) - This is an abnormal status and is set when an active job is no longer updating the current time value for the process (and has not for over 30 minutes).

R (RESCHEDULED) - This indicates that the process has been scheduled to restart and will continue from its last check-pointed location.

E (ERROR EXIT) - This status indicates that the merge process has recorded an error and is no longer running. The error message appears on the next line.

4. **Last Chk** (Last Check) This value indicates the most recent date/time checkpoint of the active merge process. It displays the last date and time as recorded by the checkpoint process. This value is used to determine whether or not the process is still active.
5. **Phase** Phases one, two, and three of the merge process are explained in detail in a following section titled "Step 3: Processing VA Patient File."
6. **Current File** This is the file being processed currently, as indicated at the last checkpoint of the active merge process. During a merge process, there is the merge of the primary file. There may also be merges of related files which require special processing. This entry indicates which file the associated data is related to. The entry is a file number for which a merge is being run.
7. **Current Entry** This value indicates the most recent Internal Entry Number as check pointed within the current file being processed by the active merge process. This value (in conjunction with the other checkpoint data) is intended for use in tracking the progress of the merge process and, if necessary, to permit the merge process to be restarted in the vicinity where it was last processing.

6.3.1 Processing VA Patient File (step 3)

Phase one The first phase of the merge process is the merging of verified duplicate records in the VA PATIENT file. After the merge completes the FROM record is deleted. A stub record containing only the .01 field and a -9 node is then inserted in the VA PATIENT file (#2) as well as the PATIENT file (#9000001). The -9 node has a value equal to the Internal Entry Number of the TO entry. If anyone tries to access the FROM entry while the merge is in progress, or any time after that, the expected value will be returned without an undefined error. Additionally, the Name and the SSN fields originally contained in the FROM record are moved into the ALIAS subfile in the TO record.

Phase two The second phase includes the processing of all pointers to the main file which are DINUM'ed .01 fields, or fields which can be accessed by cross-references. DINUM'ed and cross-referenced pointers facilitate rapid identification. As files containing DINUM'ed pointers to the main file are identified, any pointers to these files are also identified and included in the processing.

Phase three The third phase is the processing of all other pointers (those not DINUM'ed or cross-referenced). Therefore, each entry in a file must be searched for any possible pointer values. Any file containing one or more pointer fields which fall into this third phase must be searched record by record (and in some cases subfile by subfile) for possible pointers. This phase requires a longer processing time to successfully complete re-pointing affected files to the PATIENT file.

Threads The site parameter NUMBER OF THREADS is used to indicate the number of threads (multiple parallel jobs) that should be used during the longest phase of the merge process (Phase 3). A value of 1 indicates that only the main process would run. A value of 2 to 5 indicates that the main process as well as 1 to 4 other threads would be used during this phase. The greater the number of threads, the more parallel processing occurs. Each thread is used to process one of the more time-consuming files, which reduces the amount of time the overall process takes, at the expense of increased system utilization. Your site can set the number of threads (jobs) according to your system resources.

When you see the message, NO PAIRS LEFT, on the merge process status screen, it means that either due to data errors or multiple pair processing that the merge job has completed. There are no pairs left in the merge job to process. Hence, the job has run to completion.

Merge Set	Start	Stat	Last Chk	Phase	Current File	Current Entry
MERGE 2	04/08 09:20	C	04/08 09:21			
DATA CHECKING	04/08 09:20	C	04/08 09:21			
NO PAIRS LEFT		C	04/08 09:21			

Figure 6-6: Sample job completion screen

6.4 STOP an Active Merge Process (SMP)

Once a merge has been started you can stop it using the **STOP an Active Merge Process** option. After waiting a couple of minutes, run the Check Merge Process Status option to make sure the status has been changed. If it is still set to A for Active, an error may have occurred. Have your IT staff look into it. After fixing the error, they can reset the merge batch (using the Reset Lost Merge Process option), so you can use the Restart A Merge Process option.

6.5 Restart a Merge Process (RMP)

If the merge process has been stopped, either manually or as a result of the system being stopped, it may be restarted again using the **Restart a Merge Process** option. This will begin the merge process again at the phase and location (file and IEN) where processing had stopped. You can use the Check Merge Process Status option to ensure that processing has been completed.

6.6 Health Summaries for Verified or Merged Pairs

The **Health Summaries for Verified or Merged Pairs** option enables HIM staff to easily print health summaries both before and after merges for a duplicate pair. This allows you to double-check that all the information under the FROM patient was transferred over to the TO patient's record. Once a pair is verified as duplicates, you can no longer print health summaries from the Verify Potential Duplicates option. This option was added to print health summaries for verified and merged patients.

*****Security Warning*****

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

```

Select Merge Verified Duplicates Option: HSV <Enter> Health Summaries for
Verified or Merged Pairs

    Select one of the following:

        1          VERIFIED, NOT READY TO MERGE
        2          VERIFIED, READY TO MERGE
        3          MERGED

Select TYPE OF PAIRS:  2 <Enter>
Select PATIENT:  DEMO,S

    Searching for a PATIENT, (pointed-to by RECORD1)

1 DEMO,SEAN  MERGING INTO `10861 USE THAT ENTRY (DEMO,SEAN)
                                M 12-17-1900 000887777   THC 44455
    <Unresolved potential duplicate>
2 DEMO,SHAUN                                M 12-17-1900           THC 3456
CHOOSE 1-2: 1 <Enter>

MERGING INTO `10861 USE THAT ENTRY (DEMO,SEAN)
                                M 12-17-1900 000887777   THC 44455
    <Unresolved potential duplicate>
The patient you have selected is a 'verified duplicate' of
    DEMO,SHAUN                                M 12-17-1900           THC 3456
If you are adding data for this patient please reselect!
...OK? Yes// <Enter> (Yes)          DEMO,SHAUN       VERIFIED DUPLICATE

DEVICE: HOME// <type Printer name> <Enter>

```

Figure 6-7: Print health summaries option example

7.0 Additional Reports

This chapter details the additional reports available on the Patient Merge Reports menu. These are mostly patient listings and statistical reports.

7.1 List RPMS Data for a Patient (LDAT)

The **List RPMS Data for a Patient** report is designed for use by your local site manager and national support staff to look for any pointers that were not changed by the merge process. HIM Staff can run this report, but may be confused as to the data it presents unless properly trained. Use this option to print a list of all pointers for a particular entry. It can be used with any file but is intended as a check that a merge completed correctly.

There is first a warning that the report can take a long time to run and may use many sheets of paper. For checking that merges completed successfully, you need to run this report twice, once for file 2 (VA Patient) and again for file 9000001 (Patient). By entering the Internal Entry Number (IEN) of the FROM patient, a user hopes to have a “blank” report. An example of this report is given below. The report will list every file pointing to the file you select. If a pointer for this patient is found, it will be listed as a line of numbers below the file name.

```
Select Patient Merge Reports Option: LDAT <Enter>

List RPMS Data for a Patient
THIS ROUTINE SEARCHES THE RPMS DATABASE FOR ALL POINTERS POINTING TO
THE SPECIFIED ENTRY IN THE SPECIFIED FILE.  A REPORT OF THESE
POINTERS IS PRINTED.  THIS ROUTINE CAN TAKE A LONG TIME TO RUN AND
USE A LOT OF PAPER.

Reading the output from right to left, the right-most column is
the IEN or pointer value, the next column to the left is the DA,
the next one to the left is the DA(1), next is DA(2)...  In some
cases, the left-most column will be the DUZ(2).

Select 'POINTED TO' file: VA PATIENT// 9000001 <Enter> PATIENT
Select INTERNAL POINTER VALUE to find: 12345 <Enter>
```

Figure 7-1: Sample List RPMS Data for a Patient report

For FROM patients the only data left after a merge should be as follows:

```

4.   RECORD2 field (#.02) of the DUPLICATE RECORD File (#15)
      21      10860;DPT(

6.   MERGED FROM field (#.01) of the MERGE IMAGES File (#15.4)
      1      10860;DPT(

. . .
141. NAME field (#.01) of the PATIENT File (#9000001)
      10860      10860

```

Figure 7-2: FROM patient data left after a merge

7.2 Print List of File Duplicates (PLD)

The **Print List of File Duplicates** report displays a selected list of duplicate patient records from the DUPLICATE RECORD file (#15). You can print:

- Unverified Potential Duplicates
- Not Ready to Merge Verified Duplicates
- Ready To Merge Verified Duplicates
- Merged Verified Duplicates

You can also print a Brief or Captioned listing. This report is sorted in descending order by the duplicate match percentile and the date the record was found from the search of the primary file.

This option is also available under the Find Potential Duplicates Menu. For more details, see Section 4.5.

```

Unverified Potential Duplicates                MAY 20,2009  14:16  PAGE 1
-----
      IEN: 27
RECORD 1: PATIENT,DEMO  [IEN: 3700]  SSN: 200351234  HRCN: 8462
RECORD 2: PATIENT,DEMO A [IEN: 3501]  SSN:      HRCN:
      STATUS: POTENTIAL DUPLICATE, UNVERIFIED
      SCORE %: 100

      IEN: 37
RECORD 1: PATIENT,TWO [IEN: 4400]  SSN:      HRCN:
RECORD 2: PATIENT,TWO [IEN: 7910]  SSN: 591230000  HRCN: 12718
      STATUS: POTENTIAL DUPLICATE, UNVERIFIED
      SCORE %: 100

      IEN: 44
RECORD 1: PATIENT,THREE B [IEN: 51660]  SSN: 231221111  HRCN: 8656
RECORD 2: PATIENT,THREE [IEN: 661]  SSN:      HRCN: 8656 (I)
      STATUS: POTENTIAL DUPLICATE, UNVERIFIED
      SCORE %: 100

```

Figure 7-3: Sample Print List of File Duplicates report

7.3 Print List of Merged Patients (PLM)

Although the Print List of File Duplicates report includes the option to list merged patients, the **Print List of Merged Patients** report is in columnar format, displaying the original DOB and SSN for both patients along with the date they were merged.

*****Security Warning*****

This report will contain patient data which is covered by the Privacy Act and must be secured from unauthorized access.

MERGED PATIENTS			MAR 7, 2007 16:07		PAGE 1
DFN	PATIENT NAME	DOB	SSN	DATE	
MERGED					
FROM: 1111	PATIENT, TWO A	07/15/00	000045555	02/09/07	
TO: 8317	PATIENT, TWO B	07/15/00			
FROM: 222	PATIENT, THREE B	08/06/00	000557777	01/26/07	
TO: 23630	PATINET, THREE C	08/06/00			
FROM: 8167	PATIENT, FOUR X	09/10/00		01/19/07	
TO: 419	PATIENT, FOUR Y	09/10/00	000657878		

Figure 7-4: Printed list of merged patients displayed in columnar format

7.4 Tally STATUS and MERGE STATUS Fields (TSM)

The **Tally Status and Merge Status Fields** report is a summary report of how many records are verified duplicates or verified not duplicates or potential duplicates unverified. The total number of records merged and ready to be merged is displayed.

TEST INDIAN HOSPITAL		MAR 07, 2007	Page 1
TALLY OF DUPLICATE RECORDS' STATUS/MERGE STATUS FIELDS			
FILE: VA PATIENT			

Total Number of Duplicate Records for File VA PATIENT:			216
STATUS field:	VERIFIED, NOT A DUPLICATE		1
	POTENTIAL DUPLICATE, UNVERIFIED		212
	REQUIRES RESOLUTION		0
	VERIFIED DUPLICATE		3
	VERIFICATION IN PROCESS		0
MERGE STATUS field:	NOT READY		0
	READY		0
	MERGED		3
	IN PROGRESS		0
End of Report. Press return to exit			

Figure 7-5: Report tallying STATUS and MERGE STATUS fields

8.0 Manager Functions

This chapter details functions used only occasionally by your site manager in consultation with your HIM Director. These include setting up site parameters and resetting and purging old merge processes.

8.1 Purge Duplicate Record File (PDUP)

The **Purge Duplicate Record File** option is used to purge entries in the Duplicate Record File and is designed to be used only by the Site Manager. Potential Duplicates, the Verified Non-Duplicates, or both can be purged; however, Verified Duplicates cannot be purged.

8.2 Purge Merge Process File (PMRG)

The **Purge Merge Process File** option deletes selected merge batches after they are completed and is designed to be used only by the Site Manager. Data to be deleted includes name of the merge job, name of the primary file for which this merge process is being run, date and time the process began or was scheduled to start, date and time the merge job was halted and restarted, date and time of successful completion, task number associated with the merge process, and the Internal Entry Numbers of each TO and FROM pair.

Purging old merge batches shortens the listing under the Check Merge Process Status option, which lists all batches.

8.3 Reset Lost Merge Process (RLMP)

The **Reset Lost Merge Process** option is used when a merge batch process stops due to an error, and cannot be reset using the STOP An Active Merge Process option on the Merge Verified Duplicates menu.

This option resets the status to UNKNOWN and the Halt Flag to HALT, The HIM staff can then restart the merge process.

Advisory Note: Do *not* reset until you have corrected the problem that caused the error, or it could error out again.

8.4 Patient Merge Site Parameters (SITE)

Several parameters are involved in the operation of this application. They are related to how potential duplicates are identified (matching threshold), defining mail groups to be notified when merges are complete or bypassed due to data problems, and defining the length of waiting periods applied in the process.

Note: Only holders of the XDRMGR key will have access to the Patient Merge Site Parameters option.

The Patient Merge Site Parameters option first asks for a file name:

```
Select DUPLICATE RESOLUTION FILE TO BE CHECKED: VA PATIENT <Enter>
...OK? YES <Enter>
```

Type VA PATIENT, as we are only using these Duplicate Resolution Utilities for merging patients at this time. The main patient demographic file is VA PATIENT. (The PATIENT file contains IHS only fields, such as tribe of membership and chart number).

The following screen is displayed. Notice that several fields contain data. These are the default parameters exported with this application.

```

                                DUPLICATE RESOLUTION FILE
FILE TO BE CHECKED: VA PATIENT

-----

                MERGE MAIL GROUP: MY MAIL GROUP <Enter
DUPLICATE MANAGER MAIL GROUP: MY MAIL GROUP <Enter

POTENTIAL DUPLICATE THRESHOLD%: 60 <Enter

    DAYS BETWEEN VERIFY AND MERGE: 0 <Enter
                NUMBER OF THREADS: 3 <Enter

                REPOINT DELETED VISITS?: YES <Enter>

-----

COMMAND:                                     Press <PF1>H for help      Insert
```

Figure 8-1: Sample duplicate resolution file report

These are the Patient Merge site parameters:

- **MERGE MAIL GROUP**

Enter the mail group to receive bulletins when merges have completed. The mail group must have been created and members added *before* you specify it here.

- **DUPLICATE MANAGER MAIL GROUP**

Enter the mail group to receive bulletins when any known problems occur during the duplicate checking or merging process. This can be the same group as defined above.

- **POTENTIAL DUPLICATE THRESHOLD**

This is the percentage of the total possible score that needs to be obtained before a duplicate record pair is placed in the Duplicate Record file as a Potential Non-Verified Duplicate pair. Set at 60% during installation. The value cannot be changed when a search for potential duplicates is running.

- **DAYS BETWEEN VERIFY AND MERGE**

Enter the number of days (0 to 30) which must pass after a patient pair is marked as a verified duplicate pair before the pair may be merged.

This time period is included to provide for outstanding tests which might have been ordered for the entry which is to be merged into the other one to be completed prior to the merge. This is to prevent data from being entered for the merged entry after the merge has been completed. Set to zero at installation.

- **NUMBER OF THREADS**

Enter the maximum number of threads you want running during Phase 3. This field is used to indicate the number of threads that should be used during the longest phase of the merge process. Entry of 1 would indicate that only the main process (the same as null) would be running. Entry of 2 to 5 indicates that the main process along with 1 to 4 other threads should be used during this phase. Each additional thread will be used to process one of the most time consuming files, which will reduce the amount of time that the main process takes. Set to 3 at installation.

- **REPOINT DELETED VISITS?**

Answer YES, if you want Merge to spend the extra time to find deleted visits. Deleted visits are just leftover stub records and cannot be accessed by RPMS software. Since they do not have any indexes (cross-references) attached to them, the merge software must loop through the *whole* Visit file to find them. Depending on the size of your file, this could slow down your merges.

9.0 RPMS Exports & the Data Warehouse

At the end of merging a patient pair, the software exports Registration data to the IHS Data Warehouse. Flags are set for each patient, where

- The TO patient is set as an EDIT, and all PCC visits with new patient pointers are marked for export.
- The FROM patient is set as a MERGE/DELETE ,which will be handled as such by the Data Warehouse.

10.0 Rules of Behavior

The Resource and Patient Management (RPMS) system is a United States Department of Health and Human Services (HHS), Indian Health Service (IHS) information system that is **FOR OFFICIAL USE ONLY**. The RPMS system is subject to monitoring; therefore, no expectation of privacy shall be assumed. Individuals found performing unauthorized activities are subject to disciplinary action including criminal prosecution.

All users (Contractors and IHS Employees) of RPMS will be provided a copy of the Rules of Behavior (RoB) and must acknowledge that they have received and read them prior to being granted access to a RPMS system, in accordance IHS policy.

- For a listing of general Rules of Behavior for all users, see the most recent edition of *IHS General User Security Handbook* (SOP 06-11a).
- For a listing of system administrators/managers rules, see the most recent edition of the *IHS Technical and Managerial Handbook* (SOP 06-11b).

Both documents are available at this IHS web site,

<http://security.ihs.gov/>

The Rules of Behavior listed in the following sections are specific to RPMS.

10.1 All RPMS Users

In addition to these rules, each application may include additional RoBs that may be defined within the documentation of that application (e.g., PCC, Dental, Pharmacy).

10.1.1 Access

RPMS Users Shall

- Only use data for which you have been granted authorization.
- Only give information to personnel who have access authority and have a need to know.
- Always verify a caller's identification and job purpose with your supervisor or the entity provided as employer before providing any type of information system access, sensitive information, or non-public agency information.
- Be aware that personal use of information resources is authorized on a limited basis within the provisions *Indian Health Manual* Part 8, "Information Resources Management," Chapter 6, "Limited Personal Use of Information Technology Resources."

RPMS Users Shall NOT

- Retrieve information for someone who does not have authority to access the information.
- Access, research, or change any user account, file, directory, table, or record not required to perform your OFFICIAL duties.
- Store sensitive files on a PC hard drive, or portable devices or media, if access to the PC or files cannot be physically or technically limited.
- Exceed their authorized access limits in RPMS by changing information or searching databases beyond the responsibilities of their job or by divulging information to anyone not authorized to know that information.

10.1.2 Information Accessibility

RPMS shall restrict access to information based on the type and identity of the user. However, regardless of the type of user, access shall be restricted to the minimum level necessary to perform the job.

RPMS Users Shall

- Access only those documents they created and those other documents to which they have a valid need-to-know and to which they have specifically granted access through an RPMS application based on their menus (job roles), keys, and FileMan access codes. Some users may be afforded additional privileges based on the function they perform such as system administrator or application administrator.
- Acquire a written preauthorization in accordance with IHS policies and procedures prior to interconnection to or transferring data from RPMS.

10.1.3 Accountability**RPMS Users Shall**

- Behave in an ethical, technically proficient, informed, and trustworthy manner.
- Logout of the system whenever they leave the vicinity of their PC.
- Be alert to threats and vulnerabilities in the security of the system.
- Report all security incidents to their local Information System Security Officer (ISSO)
- Differentiate tasks and functions to ensure that no one person has sole access to or control over important resources.

- Protect all sensitive data entrusted to them as part of their government employment.
- Shall abide by all Department and Agency policies and procedures and guidelines related to ethics, conduct, behavior, and IT information processes.

10.1.4 Confidentiality

RPMS Users Shall

- Be aware of the sensitivity of electronic and hardcopy information, and protect it accordingly.
- Store hardcopy reports/storage media containing confidential information in a locked room or cabinet.
- Erase sensitive data on storage media, prior to reusing or disposing of the media.
- Protect all RPMS terminals from public viewing at all times.
- Abide by all HIPAA regulations to ensure patient confidentiality.

RPMS Users Shall NOT

- Allow confidential information to remain on the PC screen when someone who is not authorized to that data is in the vicinity.
- Store sensitive files on a portable device or media without encrypting.

10.1.5 Integrity

RPMS Users Shall

- Protect your system against viruses and similar malicious programs.
- Observe all software license agreements.
- Follow industry standard procedures for maintaining and managing RPMS hardware, operating system software, application software, and/or database software and database tables.
- Comply with all copyright regulations and license agreements associated with RPMS software.

RPMS Users Shall NOT

- Violate Federal copyright laws.
- Install or use unauthorized software within the system libraries or folders
- Use freeware, shareware, or public domain software on/with the system without your manager's written permission and without scanning it for viruses first.

10.1.6 System Logon

RPMS Users Shall

- Have a unique User Identification/Account name and password.
- Be granted access based on authenticating the account name and password entered.
- Be locked out of an account after 5 successive failed login attempts within a specified time period (e.g., one hour).

10.1.7 Passwords

RPMS Users Shall

- Change passwords a minimum of every 90 days.
- Create passwords with a minimum of eight characters.
- If the system allows, use a combination of alpha, numeric characters for passwords, with at least one uppercase letter, one lower case letter, and one number. It is recommended, if possible, that a special character also be used in the password.
- Change vendor-supplied passwords immediately.
- Protect passwords by committing them to memory or store them in a safe place (do not store passwords in login scripts, or batch files.
- Change password immediately if password has been seen, guessed, or otherwise compromised; and report the compromise or suspected compromise to your ISSO.
- Keep user identifications (ID) and passwords confidential.

RPMS Users Shall NOT

- Use common words found in any dictionary as a password.
- Use obvious readable passwords or passwords that incorporate personal data elements (e.g., user's name, date of birth, address, telephone number, or social security number; names of children or spouses; favorite band, sports team, or automobile; or other personal attributes).
- Share passwords/IDs with anyone or accept the use of another's password/ID, even if offered.
- Reuse passwords. A new password must contain no more than five characters per 8 characters from the previous password.
- Post passwords.
- Keep a password list in an obvious place, such as under keyboards, in desk drawers, or in any other location where it might be disclosed.

- Give a password out over the phone.

10.1.8 Backups

RPMS Users Shall

- Plan for contingencies such as physical disasters, loss of processing, and disclosure of information by preparing alternate work strategies and system recovery mechanisms.
- Make backups of systems and files on a regular, defined basis.
- If possible, store backups away from the system in a secure environment.

10.1.9 Reporting

RPMS Users Shall

- Contact and inform your ISSO that you have identified an IT security incident and you will begin the reporting process by providing an IT Incident Reporting Form regarding this incident.
- Report security incidents as detailed in the *IHS Incident Handling Guide* (SOP 05-03).

RPMS Users Shall NOT

- Assume that someone else has already reported an incident. The risk of an incident going unreported far outweighs the possibility that an incident gets reported more than once

10.1.10 Session Timeouts

RPMS system implements system-based timeouts that back users out of a prompt after no more than 5 minutes of inactivity.

RPMS Users Shall

- Utilize a screen saver with password protection set to suspend operations at no greater than 10-minutes of inactivity. This will prevent inappropriate access and viewing of any material displayed on your screen after some period of inactivity.

10.1.11 Hardware

RPMS Users Shall

- Avoid placing system equipment near obvious environmental hazards (e.g., water pipes).
- Keep an inventory of all system equipment.
- Keep records of maintenance/repairs performed on system equipment.

RPMS Users Shall NOT

- Eat or drink near system equipment

10.1.12 Awareness**RPMS Users Shall:**

- Participate in organization-wide security training as required.
- Read and adhere to security information pertaining to system hardware and software.
- Take the annual information security awareness.
- Read all applicable RPMS Manuals for the applications used in their jobs.

10.1.13 Remote Access

Each subscriber organization establishes its own policies for determining which employees may work at home or in other remote workplace locations. Any remote work arrangement should include policies that

- Are in writing.
- Provide authentication of the remote user through the use of ID and password or other acceptable technical means.
- Outline the work requirements and the security safeguards and procedures the employee is expected to follow.
- Ensure adequate storage of files, removal, and non-recovery of temporary files created in processing sensitive data, virus protection, intrusion detection, and provides physical security for government equipment and sensitive data.
- Establish mechanisms to back up data created and/or stored at alternate work locations.

Remote RPMS Users Shall

- Remotely access RPMS through a virtual private network (VPN) when ever possible. Use of direct dial in access must be justified and approved in writing and its use secured in accordance with industry best practices or government procedures.

Remote RPMS Users Shall NOT

- Disable any encryption established for network, internet, and web browser communications.

10.2 RPMS Developers

RPMS Developers Users Shall

- Always be mindful of protecting the confidentiality, availability, and integrity of RPMS when writing or revising code.
- Always follow the IHS RPMS Programming Standards and Conventions (SAC) when developing for RPMS.
- Only access information or code within the namespaces for which they have been assigned as part of their duties.
- Remember that all RPMS code is the property of the U.S. Government, not the developer.
- Shall not access live production systems without obtaining appropriate written access, shall only retain that access for the shortest period possible to accomplish the task that requires the access.
- Shall observe separation of duties policies and procedures to the fullest extent possible.
- Shall document or comment all changes to any RPMS software at the time the change or update is made. Documentation shall include the programmer's initials, date of change and reason for the change.
- Shall use checksums or other integrity mechanism when releasing their certified applications to assure the integrity of the routines within their RPMS applications.
- Shall follow industry best standards for systems they are assigned to develop or maintain; abide by all Department and Agency policies and procedures.
- Shall document and implement security processes whenever available.

RPMS Developers Shall NOT

- Write any code that adversely impacts RPMS, such as backdoor access, "Easter eggs," time bombs, or any other malicious code or make inappropriate comments within the code, manuals, or help frames.
- Grant any user or system administrator access to RPMS unless proper documentation is provided.
- Not release any sensitive agency or patient information.

10.3 Privileged Users

Personnel who have significant access to processes and data in RPMS, such as, system security administrators, systems administrators, and database administrators have added responsibilities to ensure the secure operation of RPMS.

Privileged RPMS Users Shall

- Verify that any user requesting access to any RPMS system has completed the appropriate access request forms.
- Ensure that government personnel and contractor personnel understand and comply with license requirements. End users, supervisors, and functional managers are ultimately responsible for this compliance.
- Advise the system owner on matters concerning information technology security.
- Assist the system owner in developing security plans, risk assessments, and supporting documentation for the certification and accreditation process.
- Ensure that any changes to RPMS that affect contingency and disaster recovery plans are conveyed to the person responsible for maintaining continuity of operations plans.
- Ensure that adequate physical and administrative safeguards are operational within their areas of responsibility and that access to information and data is restricted to authorized personnel on a need to know basis.
- Verify that users have received appropriate security training before allowing access to RPMS.
- Implement applicable security access procedures and mechanisms, incorporate appropriate levels of system auditing, and review audit logs.
- Document and investigate known or suspected security incidents or violations and report them to the ISSO, CISO, and systems owner.
- Protect the supervisor, superuser, or system administrator passwords.
- Avoid instances where the same individual has responsibility for several functions (i.e., transaction entry and transaction approval).
- Watch for unscheduled, unusual, and unauthorized programs.
- Help train system users on the appropriate use and security of the system.
- Establish protective controls to ensure the accountability, integrity, confidentiality, and availability of the system.
- Replace passwords when a compromise is suspected. Delete user accounts as quickly as possible from the time that the user is no longer authorized system. Passwords forgotten by their owner should be replaced, not reissued.

- Terminate user accounts when a user transfers or has been terminated. If the user has authority to grant authorizations to others, review these other authorizations. Retrieve any devices used to gain access to the system or equipment. Cancel logon IDs and passwords, and delete or reassign related active and back up files.
- Use a suspend program to prevent an unauthorized user from logging on with the current user's ID if the system is left on and unattended.
- Verify the identity of the user when resetting passwords. This can be done either in person or having the user answer a question that can be compared to one in the administrator's database.
- Shall follow industry best standards for systems they are assigned to; abide by all Department and Agency policies and procedures.

Privileged RPMS Users Shall NOT

- Access any files, records, systems, etc., that are not explicitly needed to perform their duties
- Grant any user or system administrator access to RPMS unless proper documentation is provided.
- Not release any sensitive agency or patient information.

11.0 Glossary

Browser

An interactive application that displays ASCII text on a terminal that supports a scroll region. The text can be in the form of a word-processing field or sequential local or global array. The user is allowed to navigate freely within the document.

Cross-reference

An indexing method whereby files can include pre-sorted lists of entries as part of the stored database. Cross-references (x-refs) facilitate look-up and reporting.

File

A set of related records or entries treated as a single unit.

FileMan

The database management system for RPMS.

Global

In MUMPS, global refers to a variable stored on disk (global variable) or the array to which the global variable may belong (global array).

Internal Entry Number (IEN)

The number used to identify an entry within a file. Every record has a unique Internal Entry Number.

Kernel

The set of MUMPS software utilities that function as an intermediary between the host operating system and application packages, such as Laboratory and Pharmacy. The Kernel provides a standard and consistent user and programmer interface between application packages and the underlying MUMPS implementation. These utilities provide the foundation for RPMS.

Menu

A list of choices for computing activity. A menu is a type of option designed to identify a series of items (other options) for presentation to the user for selection. When displayed, menu-type options are preceded by the word "Select" and followed by the word "option" as in Select Menu Management option: (the menu's select prompt).

Namespace

A unique set of 2 to 4 alpha characters that are assigned by the database administrator to a software application.

Option

An entry in the Option file. As an item on a menu, an option provides an opportunity for users to select it, thereby invoking the associated computing activity. Options may also be scheduled to run in the background, non-interactively, by TaskMan.

Routine

A program or sequence of instructions called by a program that may have some general or frequent use. MUMPS routines are groups of program lines that are saved, loaded, and called as a single unit via a specific name.

12.0 Contact Information

If you have any questions or comments regarding this distribution, please contact the OIT Help Desk (IHS).

Phone: (505) 248-4371 or (888) 830-7280 (toll free)

Fax: (505) 248-4363

Web: <http://www.ihs.gov/GeneralWeb/HelpCenter/Helpdesk/index.cfm>

Email: support@ihs.gov