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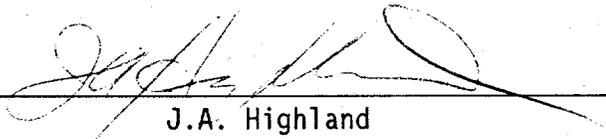
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7. Abstract

The K Basins Mass Balance (MBA) database system user guide describes the user features and functions, and the document is structured like the database menus.

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# K BASINS

## DATABASE SYSTEMS

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M B A

### Mass BALance Program

User Guide

Software Version 1.3

Vern K. Russell

WESTINGHOUSE HANFORD COMPANY  
INFORMATION RESOURCE MANAGEMENT

September 22, 1994

i

**MASTER**

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## **1.0 INTRODUCTION**

### **1.1 Purpose**

This document presents the Mass Balance (MBA) database system user instructions which explain how to record the encapsulation activity from the K Basin as it is being performed on the computer, activity associated with keeping the work area safe from going critical, and administrative functions associated with the system.

### **1.2 Scope**

This document includes the user instructions, which also serve as the software requirements specification for the system implemented on the microcomputer. This includes suggested user keystrokes, examples of screens displayed by the system, and reports generated by the system. It shows how the system is organized, via menus and screens. It does not explain system design nor provide programmer instructions.

### **1.3 Classification**

The microcomputer version of the MBA and the MBA data are unclassified.

### **1.4 Background**

The Mass Balance Program (MBA) is an adjunct to the Material Accounting (MAC) database system, Version 3.0 (References 1 through 5).

The MAC system is being used for tracking of storage in the K-East and K-West basins, including packaging and encapsulation processing.

MBA was written to equip the personnel performing K-Basin encapsulation tasks with a conservative estimate of accumulated mass during the processing of canisters into and out of the chute, primarily in the K-East basin.

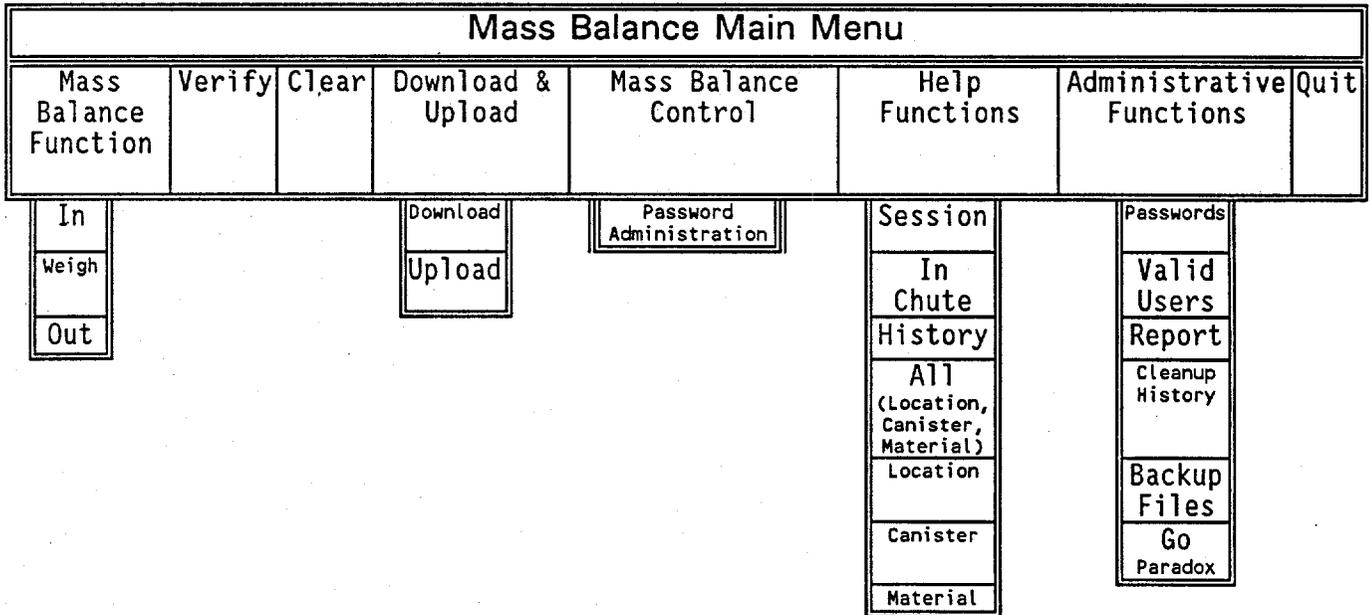
MBA accesses the MAC data in a "read-only" mode, in order to compute the factor weight of a canister.

1.5 Overview

This user guide is structured similarly to the Database menus. That is, the information is presented in terms of the keywords presented to the user as he /she moves through the various database options.

For example, when you select Help / UserGuide from the MBA system, a prompt at the top of the screen suggests methods of perusing this document, using standard DBMS browsing techniques.

The flow of the menus within the system are shown below:



1.6 Disaster Recovery and Problem Reporting

Disaster recovery procedures and problem reporting procedures for the MAC system are discussed in WHC-SD-NR-CM-001 K Basins Database System Software Configuration Management Plan. If there are any other problems that require immediate attention please contact the SNM Specialist or the Software Engineer, as specified in the desk procedure.

## 2.0 System Startup

### 2.1 From DOS prompt

To start MBA from a DOS prompt, type "MBA", then press <Enter>.

### 2.2 From user menu

To start MBA from a user menu, highlight the keyword 'Mass Balance', then press <Enter>.

After a greeting welcoming the user the following screen usually appears upon startup of the program.

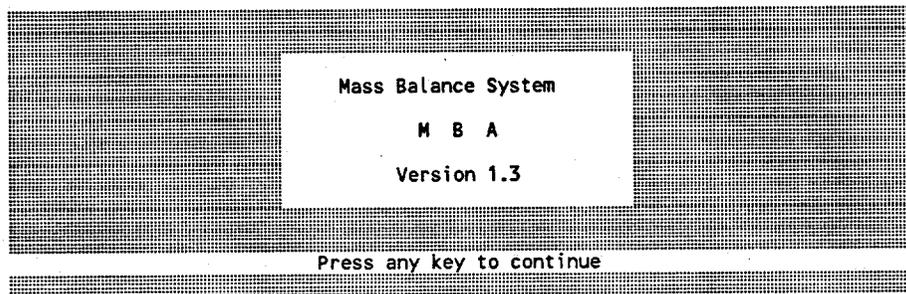


Figure 1 MBA Logo Screen

Alternatively, if the system is started up when in an alarm condition, the screen will fill up with an alarm message. See section 3.1.1.1.4 for an example of the screen display. The alarm logo screen will immediately follow.

After pressing a key, a message stating that menu information is being loaded in is displayed. A summary of Chute activity next appears on the screen as follows:

Press <Esc> to proceed

S U M M A R Y

Session Entries	Canisters In Chute	Mass Balance	History Entries	History Cycles
44	10	3582.77	114	3

Note: Session entries include IN, WEIGH, and OUT

History entries include the above plus VERIFY, CLEAR

History cycles are a count of Verify & Clear processes

Warning: If History Cycles exceeds 100, call Database Administrator

Figure 2 Summary Information

If all appears fine, then press the <Esc> key to resume.

If the program is run from the Network, then the message "Non-production run -- No automatic Down/Up loading" will appear on the screen.

If the program is run on a standalone system (the normal cases) a download of MAC master files will occur.

Finally, in either case the MBA main menu will appear on the screen.

### 3.0 Mass Balance Main Menu

The Mass Balance main menu appears on the screen as follows:

To select, Press first character or <Enter>. To see explanation, highlight the appropriate selection using the cursor movement keys.

CHOOSE:	Menu: mbmain	Directory: c:\mba\
MassBal	Perform mass balance processing	
Verify	Verify material removal (requires two operators)	
Clear	Remove all material from chute (two operators)	
Download	Move data from HLAN to local directory c:\mba	
Upload	Move data from c:\mba to the HLAN production system	
Help	View mass balance History, Material, etc. files	
Admin	Database Administrative Functions	
Quit	Terminate mass balance processing	

Current Mass Balance is 3582.77 Pounds

Figure 3 Mass Balance Main Menu

The system is menu driven, actuated by user-selected keywords. The keywords to be described in the following sections are delimited by braces [keyword] for clarity in this document. In actual usage, the keywords are highlighted at the top of the screen and selected by moving the cursor to the keyword, then pressing <Enter>. A quicker selection may be made by simply pressing the first character of the keyword. Upper case or lower case is accepted.

The Mass Balance system is menu-driven. Upon entry, the user is presented with a "popup" menu, with instructions at the top of the screen. Most of the time, the instructions are simply:

To select, Press first character or <Enter>. To see explanation, highlight the appropriate selection, using the cursor movement keys.

For example, refer to the main menu, Figure 3. If one chooses MassBal, then the next menu seen will be Figure 4, which presents all of the MassBal options.

In some of the options, the user is led to view and/or modify a table, in which case the instructions at the top of the screen will be specifically tailored to the option at hand.

In this document, the symbol:



will signify pressing the <Enter> key.

### 3.1 Mass Balance Function

The Mass Balance Function menu (Figure 4) appears on the screen as follows:

To select, Press first character or <Enter>. To see explanation, highlight the appropriate selection using the cursor movement keys.

Menu: mbmass      Directory: F:\MBA\	
CHOOSE:	
In	Bring a canister or chip can into the chute
Weigh	Enter net weight for a canister or chip can in chute
Out	Move a canister or chip can out of the chute
Return	Return to MBA main menu
Leave	Leave Paradox and return to DOS

Figure 4 Mass Balance Function Menu

It is used to track the movement of canisters into a cleanup chute, process it, and transfer it to an empty canister, which is then capped. During the process the material is weighed also. Sometimes some material gets stuck in the canister, so the canister just has to be capped and returned to its original position. The rest of the contents are then put in another canister, called a chip can. In the process of doing all of this, material ends up staying in the chute. As a result it is very important to keep track of the radioactive material weight within the chute. When it gets too high, the chute needs to be cleaned out. Functions in this system involve moving a canister in the chute, weighing the contents, and moving the canister, out of the chute. Each menu selection will be described in a separate sub-section below.

#### NOTES:

- (1) It would be helpful to have a copy of a recent Compact Map or Empty report in hand to know the current state of any cubicles involved.
- (2) Most of the Mass Balance operations are set up so that, upon completion, an <F2> entry will cause the same type of operation to continue. Thus you can bring "In" several canisters, or "Weigh" several, or move "Out" several with a minimum of keystrokes.

3.1.1 In

PRESS I to select In -or-  
Move the cursor Up or Down along the Update Operations Menu until the In line is selected. Then PRESS Enter (or ↵).

OBSERVE the beginning of the Canister Entering Chute input screen.

3.1.1.1 By canister or Location

NOTE a blank entry or pressing the "Esc" key for either prompt will cause the Update Operations Menu to reappear on the screen.

3.1.1.1.1 Select by Canister

FILL By canister C Note: Do NOT press ↵

The canister entry version of this screen appears.

FILL Enter canister number \_\_\_\_\_ ↵

Example 0087

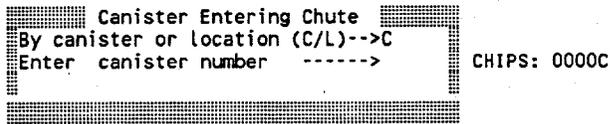


Figure 5 Canister Entering Chute Screen

3.1.1.1.2 Select by Location

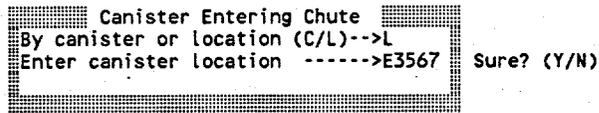
FILL By location L Note: Do NOT press ↵

FILL Enter canister location \_\_\_\_\_ ↵

The location entry version of this screen appears.

Figure 5A

Example E3567



3.1.1.1.3 Rest of Canister/Location Entry

FILL Sure? (Y/N) Y

NOTE A N reply will erase your entry and prompt you to re-enter the above information.

OBSERVE "OK!" signal or "Error Empty" message. If all goes well both the canister and location are checked and are OK'ed.

Figure 5B

Example E3567

```
Canister Entering Chute
By canister or location (C/L)-->L
Enter canister location ----->E3567 OK!
Canister: 3567E Checking Canister
```

Finally, after all the checks are completed, the following message appears on the bottom of the screen indicating all of the checks have passed successfully called a "VALID Entry" message.

OK, Canister 3567E is VALID for the current session ... please wait

NOTE: If you enter a canister which has already been brought "In" during the current chute session, the system will refuse the input.



3.1.1.1.5 Normal Response

OBSERVE display of the "In Chute" table and cumulative mass balance.

In Chute			Cumulative	
Can Number	Factor Weight	Net Weight	Mass Balance	
0830E	658.16	500	3582.77	
0831E	646.48	500		
0840E	722.4	501		
1809E	613	503		
1810E	682.1	500		
5111E	687.32	0		
5112E	694.5	505		
0014C	0	0		
3567E	633.27	0		

Press <F2> to continue input of data to the MB system or <Esc> to Return

Figure 6 Mass Balance Continue Input Screen

OBSERVE that the mass balance has been updated to reflect the addition of the factor weight of the canister just brought "In" to the chute.

PRESS <F2>.

OBSERVE that the system is ready to bring in another canister.

Return to step 2.1.1.1 and proceed.

-or- PRESS <Esc>

OBSERVE return to the main menu.

## 3.1.1.2 Chip Canisters

Chip can processing is basically the same as any other canister in the sense that the same logical moves ("In", "Weigh", and "Out") are invoked. The difference is that the computer assigns a temporary canister number to a "Chip" canister.

Please refer to the Figure 5 in section 3.1.1.1.

FILL By canister or location (C/L) C

FILL Enter canister location (or can #) 0000C ↵

FILL Sure? (Y/N) Y

NOTE A N reply will erase your entry and prompt you to re-enter the above information.

OBSERVE message "Sequential number for chips can is 00..nC". This is a temporary chip canister number issued by the computer. It will be tracked by MAC database personnel and assigned a permanent number by them.

OBSERVE the Mass Balance Main Menu appear on the screen.

PERFORM the "Weigh" and "Out" operations for the chip can as outlined for regular canisters in sections 3.1.2 and 3.1.3.

Starting from the main menu, Press H, then select S from the help menu.

OBSERVE that the "Session" table records the chip can entries in the same manner as a regular canister, except that the canister serial number is computer-issued. Note that the net weight entry is subtracted from the Cumulative Mass Balance at the "Out" operation.

3.1.2 Weigh

PRESS W to select Weigh -or-  
 Move the cursor Up or Down along the Update Operations Menu until the Weigh line is selected. Then PRESS Enter (or ↵).

OBSERVE the "In Chute" table with instructions (Figure 7).

<p>SELECT CAN TO WEIGH</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"> <p>Use arrows to move to selected can #, then press F2</p> </div>	<p>In Chute</p> <table border="1" style="border-collapse: collapse; width: 100%;"> <thead> <tr> <th>Can Number</th> <th>Factor Weight</th> <th>Net Weight</th> </tr> </thead> <tbody> <tr><td>0011C</td><td>0</td><td>101</td></tr> <tr><td>0830E</td><td>658.16</td><td>500</td></tr> <tr><td>0840E</td><td>722.4</td><td>501</td></tr> <tr><td>1809E</td><td>613</td><td>503</td></tr> <tr><td>5111E</td><td>687.32</td><td>0</td></tr> <tr><td>5112E</td><td>694.5</td><td>505</td></tr> <tr><td>0014C</td><td>0</td><td>0</td></tr> </tbody> </table>	Can Number	Factor Weight	Net Weight	0011C	0	101	0830E	658.16	500	0840E	722.4	501	1809E	613	503	5111E	687.32	0	5112E	694.5	505	0014C	0	0	<p>Cumulative</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"> <p>Mass Balance 3582.77</p> </div>
Can Number	Factor Weight	Net Weight																								
0011C	0	101																								
0830E	658.16	500																								
0840E	722.4	501																								
1809E	613	503																								
5111E	687.32	0																								
5112E	694.5	505																								
0014C	0	0																								

Move to line with canister to be weighed, Press <F2> or <Esc> to Return

Figure 7 Mass Balance Weigh Screen

NOTE: Usually the cursor will move to the first line where the net weight of a canister is zero. This is for the users's convenience.

MOVE cursor to a line to the canister desired is to be weighed. The net weight of this canister should be zero. PRESS <F2>.

CAUTION!! Please be absolutely sure that the canister selected is the canister you are processing and that the weight being entered is reasonable. If a weight is accepted for a canister it cannot be changed!!

If the weight that you think is to be entered is unreasonable, please STOP the process, reweigh the canister if necessary, and get it right the first time. This software has no means to correct an error at this point except to perhaps enter a compensating weight on another canister to accurately depict how much sludge is in the chute.

NOTE: Pressing <F2> here will not force the canister to have to have a weight entered.

A message appearing above the In Chute Table asking for the net weight:

Figure 7A

```

Net Weight Entry
Enter net weight ----->
    
```

and also at the bottom of the screen the following appears:

Selected canister 5111E

FILL net weight \_\_\_\_\_ ↵.

NOTE: If you realize that the wrong canister has been selected, please do not enter a number, but press the Return key (↵) or the "Esc" key. This will terminate the weigh process [Perhaps it should not, because this will confuse or sidetrack the user in this situation] and cause the Mass Balance Main menu to appear on the screen.

FILL Sure? (Y/N) Y

CAUTION!! Please take a minute to make absolutely sure the value entered is correct. If a Y reply is entered, the value entered here cannot be changed.

NOTE: If you believe the value that has been entered is in error, a N reply will erase your entry and prompt you to re-enter the above information. Pressing the Return key (↵) or the "Esc" key will also allow reentry of the value. Pressing the key twice will terminate the weigh process and cause the Mass Balance Main menu to appear on the screen.

OBSERVE revised "In Chute" and Cumulative Mass Balance below on the screen.

VERIFY that the revisions are correct, i.e. the target canister received the net weight and that amount was NOT YET subtracted from previous mass balance total.

NOTE: Weight will be subtracted when the canister is moved "Out".

PRESS <Esc> to terminate the Weigh process and return to the Mass Balance Main Menu, repeat this step to weigh another canister.

3.1.3 Out

PRESS 0 to select Out -or-  
Move the cursor Up or Down along the Update Operations Menu until the Out line is selected. Then PRESS Enter (or ↵).

OBSERVE the "In Chute" table with instructions (Figure 8).

			In Chute		
T A K E	C A N		Can	Factor	Net
			Number	Weight	Weight
			0011C	0	101
			0830E	658.16	500
			0840E	722.4	501
			1809E	613	503
			5111E	687.32	0
			5112E	694.5	505
			0014C	0	0

Cumulative	
Mass Balance	3582.77

Move to line with canister to be moved out, Press <F2> or <Esc> to Return

Figure 8 Mass Balance Canister Out Screen

Following the screen instructions, SELECT a canister which has been weighed.

CAUTION!! Please take a minute to be absolutely sure the cursor is selecting the correct canister to be moved out. You cannot reselect the canister to be moved back in once it is moved out.

OBSERVE revised "In Chute" and Cumulative Mass Balance. See Figure 8 above.

OBSERVE The change in Cumulative Mass Balance, and notice that the selected canister is no longer in the "In Chute" table.

PRESS <Esc> to terminate the Out process and return to the Mass Balance Main Menu, repeat this step to move another canister out.

### 3.2 Verify

This is done when enough sludge ends up in the chute so that the ALARM screen appears, and the system refuses to do further Mass Balance Operations.

PRESS V to select Verify -or-  
Move the cursor Up or Down along the Update Operations Menu until the Verify line is selected. Then PRESS Enter (or ↵).

OBSERVE the Mass Balance Alias Password Selection menu (Figure 9).

To select, Press first character or <Enter>. To see explanation, highlight the appropriate selection using the cursor movement keys.

```

Menu: mbver          Directory: c:\mba\
CHOOSE:
Gen. Halftrack      Any mail from the Pentagon?
Zero                Duhhhhhh
Sgt. Lugg           Aw come on, Sarge.
Killer              My kingdom for a pass.
Plato               No one understands me.
Beetle Bailey      ZZZZZZZZZZZZZzzzzzzzzzzzzzzzz
Lt. Flapp           This place needs some life!
Miss Buxley         Work is so hard on my finger nails.
Lt. Fuzz            Where is my teddy bear?
Sarge               ~!a#$%!!!!^%&*(+%
Return              Return to Micro-MAC main menu
Leave                Leave Paradox and return to DOS
    
```

Figure 9 Alias password selection menu

At this point, two authorized persons should be available to perform the verification of sludge removal.

Each verifier will need to do the following:

SELECT your alias by following directions on screen. FILL your password. OBSERVE that password typed in does not appear on the screen.

CAUTION! Do not press Enter (or ↵) after the password is typed, just wait. If Enter is pressed, the next menu selection will be redone.

OBSERVE that upon successful password entry, you are given a message to the effect that you have verified sludge removal.

NOTE: The system will not permit the mass balance operations to proceed until a second verifier has performed the "Verify" operation. The second verifier must use a different alias and password than the first verifier.

OBSERVE a message to the effect that mass balance operations may proceed after the second verifier is successful.

OBSERVE the Mass Balance Main Menu.

Use the Help / Session, Help / InChute, and Help / History features to VERIFY that the "Verify" function has (logically) cleared the chute.

Repeat the MassBal / In operation (Section 4.5.1) to VERIFY that ongoing mass balance operations will begin with a clean slate. Enter a canister into the chute, using the procedures described in section 4.5.1.

VERIFY that a new session has begun, by using the Help / Session option.

### 3.3 Clear

At any time it is determined that it would be best to clear the chute, the Clear function is used.

PRESS C to select Clear -or-  
Move the cursor Up or Down along the Update Operations Menu until the Clear line is selected. Then PRESS Enter (or  $\leftarrow$ ↓).

OBSERVE the Mass Balance Alias Password Selection menu, which is shown in the verify section.

From this point on in the Clear operation, the steps are basically the same as those given above for the Verify function.

NOTE: If there are one or more canisters in the chute which have not been weighed, the system will issue a warning to that effect. In answer to the question "still want to clear?", Fill N. Then use the procedures of section 4.5.2 to provide net weights for all canisters.

COMPLETE the clear function.

### 3.4 Download and Upload

The **Download** function downloads master files from the **MAC** database. This function is automatically invoked whenever the production Mass Balance program is started. The user will normally not need to use the **Download** option unless there is a need to update the Location, Canister, and Material tables due to activity on the **MAC** database system.

The **Upload** function copies the mass balance production tables to the same directory where **MAC** data reside. This permits the **MAC** Database Administrator to monitor basin mass balance and encapsulation operations remotely. **Upload** copies the following tables:

<u>Table</u>	<u>Description</u>
Inchute	Current chute contents
MassBal	Current session details
MbalHist	Mass balance history
Sludge	Current accumulated sludge tally
Summary	Summary of the above mass balance tables

#### 3.4.1 Download Process

PRESS **D** to select **Down Load** -or-  
 Move the cursor Up or Down along the **Update Operations Menu** until the **Download** line is selected. Then PRESS Enter (or **↵**).

OBSERVE messages indicating the progression of the downloading process.

#### 3.4.2 Upload Process

PRESS **U** to select **Up Load** -or-  
 Move the cursor Up or Down along the **Update Operations Menu** until the **Upload** line is selected. Then PRESS Enter (or **↵**).

OBSERVE messages indicating the progression of the uploading process.

CHECK the results by asking the Database Administrator to access and confirm the above listed tables using the **Help** commands (section 4.4) and / or standard Paradox table viewing methods.

NOTE: After completion of the Upload, the IRM analyst will empty the mass balance tables on the "g" drive.

### 3.5 Mass Balance Control

A conservative estimate of sludge buildup during encapsulation operations is obtained by adding the factor weight of each canister to the mass balance (MB) each time a canister is brought "In" to the chute. When a "Weigh" event occurs, the canister net weight is noted in the "In Chute" table. This weight is not subtracted from the MB until the canister is moved "Out" of the chute. Whenever a "Chip" can entry is made, the chip can net weight is subtracted from the mass balance accumulator.

The MBA program invokes an ALARM module whenever the MB equals or exceeds 3750 lbs.

Once this event occurs, the system will not proceed with mass balance operations until two (2) authorized persons verify that sludge has been removed from the chute and that all the canisters involved in that session have been removed from the chute. They accomplish the needed verification by invoking the "Verify" option from the main menu.

In the event that the encapsulation supervisor deems it advisable to clear out the chute even before the 3750 lb. limit has been reached, this can be accomplished by invoking the "Clear" option from the main menu. Once the "Clear" option has been set, the system will not proceed with mass balance operations until two (2) authorized persons perform "Verify" or "Clear" options.

#### 3.5.1 Password Administration

The system will permit only authorized Database Administrators to assign passwords. They do this by accessing a table which contains Alias, Verifier Name, and Password.

The alias table can be expanded beyond the current 10 fictional names by the IRM analyst if such expansion is needed. Meanwhile, the 10 aliases remain constant and serve as a key for the Database Administrators to use in re-assigning / modifying passwords for "Verify" and "Clear" functions.

Details of this and other administrative functions are given in section 3.7 of this guide.

### 3.6 Help Functions

These functions do not modify the data. They simply display various views of the data. The format and contents of the screen displays are somewhat different than in previous versions of the MAC system, due to changes in the data structure and addition of the encapsulation functions.

To select, Press first character or <Enter>. To see explanation, highlight the appropriate selection using the cursor movement keys.

CHOOSE:	
Session	Display current mass balance session details
InChute	Display current canisters in the chute
History	Display total mass balance history (past sessions)
All	Display Location, Canister, & Material Tables
Location	Display Locations of Canisters
Canister	Canister Parameters: Gross Wt, Net Wt, Packaging Flag
Material	Display Canister Contents
Return	Return to Micro-MAC main menu
Leave	Leave Paradox and return to DOS

Menu: mbhelp

Directory: c:\mba\

Figure 10 Help menu

3.6.1 Display Session Tables

PRESS **S** to select **Session Display** -or-  
 Move the cursor **Up** or **Down** along the **Help Menu** until the  
**Session** line is selected. Then PRESS **Enter** (or **↵**).

This function displays the **Mass Balance Current Session Screen**  
 (Figure 11) table which records near-real-time encapsulation operations.  
 Daily encapsulation reports may be generated from this table.

F1 (Search), Note: To search, use F1, but move to field, using arrows  
 Enter (Return), Esc (Abort), PgUp, PgDn, Home(Top), End(Bottom)

Mass Balance Accounting

Canister Number	Factor Weight	Net Weight	Action	Date	Cumulative Mass Bal.
3567E	0	600	Out	6/22/93	2982.77
0831E	0	500	Out	6/22/93	2482.77
1810E	0	500	Out	6/22/93	1982.77
0840E	0	501	Out	6/22/93	1481.77
0088	722.4	0	In	6/22/93	2204.17
0101	722.4	0	In	6/22/93	2926.57
0103	514.08	0	In	6/22/93	3440.65
0110	722.4	0	Reject	6/22/93	3440.65

Figure 11 Mass Balance Current Session

OBSERVE that the most recent moves ("In", "Out", "Weigh", "Clear") and  
 the resultant weights are displayed.

PRESS the up arrow key enough times to OBSERVE that the screen scrolls  
 to earlier events.

PRESS the <End> and <Home> keys and OBSERVE the beginning and end of the  
 "MassBal" table.

PRESS <Esc> key to return to the Main Menu.

3.6.2 Display In Chute Tables

PRESS I to select In Chute Display -or-  
 Move the cursor Up or Down along the Help Menu until the  
 InChute line is selected. Then PRESS Enter (or ↵).

This function displays the Mass Balance In Chute Screen (Figure 12),  
 which shows the canisters currently in the chute, with their respective  
 factor weights and net weights, if weighing has taken place.

The purpose of this Help display is to permit the user to appraise the  
 chute contents without having to perform an actual process such as "In",  
 "Out", or "Weigh".

F1 (Search), Note: To search, use F1, but move to field, using arrows  
 Enter (Return), Esc (Abort), PgUp, PgDn, Home(Top), End(Bottom)

In Chute			
Can Number	Factor Weight	Net Weight	
0830E	658.16	500	Cumulative  Mass Balance 3582.77
0831E	646.48	500	
0840E	722.4	501	
1809E	613	503	
1810E	682.1	500	
5111E	687.32	0	
5112E	694.5	505	
0014C	0	0	
3567E	633.27	0	
T A K E C A N			
O U T O F			
C H U T E			

Figure 12 Mass Balance In Chute

PRESS the <End> and <Home> keys and OBSERVE the beginning and end of the  
 "InChute" table.

PRESS <Esc> key to return

3.6.3 Display History Tables.

PRESS H to select History Display -or-  
Move the cursor Up or Down along the Help Menu until the History line is selected. Then PRESS Enter (or ↵).

This function displays the Mass Balance History screen (Figure 13), which records not only the current encapsulation session, but also previous sessions which terminated in a sludge removal or "Clear" operations.

F1 (Search), Note: To search, use F1, but move to field, using arrows  
Enter (Return), Esc (Abort), PgUp, PgDn, Home(Top), End(Bottom)

Mass Balance History

Canister Number	Factor Weight	Net Weight	Action	Date	Cumulative Mass Bal.
5762E	722.4	0	In	1/13/93	2167.2
5772E	722.4	0	In	1/13/93	2167.2
5810E	0	500	Weigh	1/04/93	1839.3
5810E	722.4	0	In	12/18/92	722.4
5811E	0	490	Weigh	1/04/93	1839.3
5811E	722.4	0	In	12/18/92	1444.8
5812E	0	501	Weigh	1/04/93	1839.3
5812E	694.5	0	In	12/18/92	2139.3

Figure 13 Mass Balance History

OBSERVE that the present session (if any) is not yet recorded as "History". The full session will be added to "History" after a "Verify" or "Clear" operation.

OBSERVE that the most recent moves ("In", "Out", "Weigh", "Clear") and the resultant weights are displayed.

PRESS the up arrow key enough times to OBSERVE that the screen scrolls to earlier events.

PRESS the <End> and <Home> keys and OBSERVE the beginning and end of the "MassBal" table.

PRESS <Esc> key to return

3.6.4 Display All (Location, Canister, and Material) Tables

PRESS A to select Location, Canister, and Material Display -or- Move the cursor Up or Down along the Help Menu until the All line is selected. Then PRESS Enter (or ↵).

OBSERVE that the All (Location, Canister, Material) Tables screen (Figure 14) is displayed. OBSERVE that the cursor is positioned in the Location table.

F1 (Search), F3(Up Table), F4(Down Table) PgUp, PgDn, Home(Top), End(Bottom)  
 Esc (Return) Note: To search, use F1, but move to field, using F3, F4, arrows

L O C A T I O N		C A N I S T E R			
Can #	Location	Purged Wt	Net Wt	Pkg	
9170	W5839	725	0	P	

Key	FMT	M A T E R I A L				
		MWD's	Assemblies	Outers	Inners	Pieces
3524	BC	25.82	1	0	0	0
3524	BE	797.43	13	0	0	0

Figure 14 All (Location, Canister, Material) Tables Screen

NOTE: The three tables are linked by canister number. The canister number which is shown for the Location table also pertains to the other two tables, even though the number is not shown beside the canister or material tables.

Move the cursor to the appropriate field(s) on any current screen and view the data as required for your needs. Follow the instructions on the top of the screen to do other major functions as follows:

PRESS PgDn to move the display to the next page of a multi-page record or to the next record. Press PgUp to move the display to the previous page or previous record. PRESS the F4 and F3 keys to move between the tables displayed on the screen.

PRESS the <Home> and <End> keys and OBSERVE that the beginning and the end of the three tables (linked by canister number) are displayed.

SEARCH for a canister number or location by following the instructions at the top of the screen. Remember to position the cursor in the desired target field before pressing the F1 key for a search.

PRESS <Esc> key when finished.

### 3.6.5 Display Location Table

PRESS **L** to select **Location Display** -or-  
 Move the cursor Up or Down along the **Help Menu** until the  
**Location** line is selected. Then PRESS Enter (or ↵).

The Location Table screen (Figure 15) will be displayed as follows:

F1 (Search), Note: To search, use F1, but move to field, using arrows  
 Enter (Return), Esc (Abort), PgUp, PgDn, Home(Top), End(Bottom)

Location Table	
Can #	Location
9170	W5839

Figure 15 Location Table Screen

PRESS <Esc> key to return.

### 3.6.6 Display Canister Table

PRESS **L** to select **Canister Display** -or-  
 Move the cursor Up or Down along the **Help Menu** until the  
**Canister** line is selected. Then PRESS Enter (or ↵).

The Canister Table screen (Figure 16) will be displayed as follows:

F1 (Search), Note: To search, use F1, but move to field, using arrows  
 Enter (Return), Esc (Abort), PgUp, PgDn, Home(Top), End(Bottom)

C A N I S T E R			
Can #	Purged Wt	Net Wt	Pkg
9170	725	0	P

Figure 16 Canister Table Screen

PRESS <Esc> key to return.

3.6.7 Display Material Table

PRESS M to select Material Display -or-  
 Move the cursor Up or Down along the Help Menu until the  
 Material line is selected. Then PRESS Enter (or ↵).

The Material Table screen (Figure 17) will be displayed as follows:

F1 (Search), Note: To search, use F1, but move to field, using arrows  
 Enter (Return), Esc (Abort), PgUp, PgDn, Home(Top), End(Bottom)

M A T E R I A L T A B L E							
Can #	Key	FMT	MWD's	Assemblies	Outers	Inners	Pieces
9170	3524	BE	797.43	13	0	0	0

Figure 17 Material Table Screen

PRESS <Esc> key to return.

### 3.7 Administrative Functions

The administrative functions are accessible to the authorized Database Administrator(s). Therefore this section of the Acceptance Test should be performed by an authorized person.

PRESS **E** to select **Executive Functions** -or-  
Move the cursor Up or Down along the **Update Operations Menu** until the **Executive** line is selected. Then PRESS Enter (or **↵**).

TYPE the administrative password; OBSERVE the "OK" sign or refusal.

OBSERVE the administrative menu (Figure 18).

To select, Press first character or <Enter>. To see explanation, highlight the appropriate selection using the cursor movement keys.

CHOOSE:	Menu: mbadm	Directory: c:\mba\
Passwords	Modify or add passwords for Verify, Clear operators	
ValidUsers	Modify, delete, add valid MBA users	
Do Report	Print report: current mass balance session or history	
Cleanup	Remove specified sessions from the History table	
GoParadox	Go to Paradox	
Return	Return to Micro-MAC main menu	
Leave	Leave Paradox and return to DOS	
Backup	Backup the mass balance system	

Figure 18 Administration menu

#### 3.7.1 Passwords

PRESS **P** to select **Passwords** -or-  
Move the cursor Up or Down along the **Administrative Menu** until the **Passwords** line is selected. Then PRESS Enter (or **↵**).

OBSERVE the screen display which permits the assignment of a password to a person, linked via an alias as explained in sections 4.6.2 (Verify) and 4.6.3 (Clear).

ENTER a person name and a password, then PRESS <F2>.

PERFORM a "Clear" operation using the person / password combination just created as one of the verifiers.

### 3.7.2 ValidUsers

PRESS **V** to select **Valid Users** -or-  
Move the cursor Up or Down along the **Administrative Menu** until the **ValidUsers** line is selected. Then PRESS Enter (or **↵**).

OBSERVE the screen display which permits the assignment of an access permit level (Regular, Passwrđ, or Read) to a person.

CHANGE the access level to Regular if it is Passwrđ, or to Passwrđ if it currently is Regular, then PRESS **<F2>**.

RETURN to the main menu.

REPEAT the above steps to enter the administrative menu.

OBSERVE that a user with Regular permission must know the access password to get to the administrative menu; a user with passwrđ permission may change the password.

### 3.7.3 Report History or Session Information

The **Report** function can be used to produce Reports such as the examples given in appendix A.

PRESS **D** to select **Do Report** -or-  
Move the cursor Up or Down along the **Administrative Menu** until the **DoReport** line is selected. Then PRESS Enter (or **↵**).

OBSERVE a message offering a choice of History (**H**) or Session (**S**) reporting.

PRESS **H** and observe the message "Printing report".

REPEAT the above steps, except select the **S** option.

OBSERVE the reports coming from the printer; examine their content.

### 3.7.4 Cleanup History File

The purpose of this function is to permit the Database Administrator to exercise control over the size of the History file. Cleanup offers the user a choice of how many cycles (sessions) to purge from the front end (earliest) portion of the History file. A session includes all the transactions which occurred between "Verify" or "Clear" operations.

PRESS C to select Cleanup History File -or-  
Move the cursor Up or Down along the Administrative Menu until the Cleanup line is selected. Then PRESS Enter (or  $\leftarrow$ ↓).

OBSERVE a message prompting for the entry of a number of sessions to be purged.

TYPE a number \_\_\_\_\_  $\leftarrow$ ↓

OBSERVE display of Action and Date fields of the records to be purged.

In response to the Sure? (Y/N) prompt: TYPE Y

Use the "Report" function (3.7.3) or the Help / History function (4.4.3) to VERIFY that the correct number of sessions have been removed from the history table.

### 3.7.5 Backup Files

PRESS B to select Back Up Files -or-  
Move the cursor Up or Down along the Administrative Menu until the Backup line is selected. Then PRESS Enter (or  $\leftarrow$ ↓).

OBSERVE A screen message which permits you to specify a path for the backup. The default path is recommended. It will be of the format: b:\mba\ymmdd, where yymmdd will be the current date (example: 921015). The system will set up the path on the drive specified.

SELECT the default path (b:\mba\ymmdd) by pressing  $\leftarrow$ ↓.

OR

SELECT your preferred directory path (Use <Backspace> key to erase the default path, then TYPE the path \_\_\_\_\_  $\leftarrow$ ↓

OBSERVE messages indicating the completion of backup steps for scripts and data files. The backup will be completed in 5 minutes or less.

### 3.7.6 GoParadox

This function permits the Database Administrator to access Paradox and return to the MBA system quickly and efficiently.

Starting from the administrative menu, PRESS G.

OBSERVE a standard Paradox main menu.

VERIFY the backup which was completed in section 3.7.1) and use the tools / more / directory command to change to the directory path specified for the backup. Use the Paradox "View" option to view tables "Massbal", "Mbalhist", and "Inchute".

TYPE S then P then MBA .

OBSERVE return to the MBA system.  
RECORD results in the test execution log.

### 3.8 Quit Selection

In the production mode, whenever the user "Quits" running MBA, the results that he/she produced are automatically uploaded to the master directory on HLAN. Thus the results of current sessions and updated history are available at least once daily to the Database Administrator.

PRESS Q to select Quit -or-  
Move the cursor Up or Down along the Update Operations Menu until the Quit line is selected. Then PRESS Enter (or  $\leftarrow$ ↓).

OBSERVE screen messages indicating the data transfer.

At this point it will be necessary to exit from Stand-alone Paradox and log in to a PC which has network Paradox.

Use the GoParadox function (3.7.6), then the Tools/More/Directory command to switch to the master directory.

VERIFY (using the Paradox VIEW function) that the following tables contain the correct (transferred) data:

<u>Data Type</u>	<u>Table Name</u>
Session	Massbal
History	MbalHist
Mass Balance	Sludge
Canisters in Chute	Inchute
Summary of above	Summary

RECORD results in the test execution log.

4.0 REFERENCES

- (1) Russell, V.K. and Mullaney, J.E., "MAC Database Acceptance Test Procedures", WHC-SD-NR-CSWD-045, Westinghouse Hanford Company, May 31, 1990.
- (2) Mullaney, J.E., "MICRO-MAC Acceptance Test Summary Report", Westinghouse Hanford Company, July 12, 1990.
- (3) Mullaney, J.E. "MAC Database Mini Acceptance Test Procedures for Software Version 2.3", Westinghouse Hanford Company, June 14, 1991.
- (4) Mullaney, J.E., "MICRO-MAC Acceptance Test Summary Report (Version 2.3)", Westinghouse Hanford Company, August 30, 1991.
- (5) Mullaney, J.E., "MAC Database Mini Acceptance Test Procedures for Software Version 3.0", Westinghouse Hanford Company, Aug. 14, 1992.

5.0 APPENDIX A -- Reports

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Mass Balance History

Canister Number	Factor Weight	Net Weight	Cumulative Mass Balance	Action	Date
			0.00	Verify	12/18/92
			0.00	Verify	1/04/93
			0.00	Verify	1/13/93
0002C	0.00	0.00	3435.30	Chip-In	12/14/92
0002C	0.00	200.00	720.30	Chip-Out	12/14/92
0002C	0.00	200.00	3435.30	Chip-Wt	12/14/92
0003C	0.00	0.00	3493.40	Chip-In	12/14/92
0003C	0.00	203.00	1680.40	Chip-Out	12/14/92
0003C	0.00	203.00	3493.40	Chip-Wt	12/14/92
0004C	0.00	0.00	2139.30	Chip-In	1/04/93
0004C	0.00	100.00	2039.30	Chip-Out	1/04/93
0004C	0.00	100.00	2139.30	Chip-Wt	1/04/93
0005C	0.00	0.00	2139.30	Chip-In	1/04/93
0005C	0.00	200.00	1839.30	Chip-Out	1/04/93
0005C	0.00	200.00	2139.30	Chip-Wt	1/04/93
0006C	0.00	0.00	1407.60	Chip-In	1/04/93
0006C	0.00	150.00	1512.10	Chip-Out	1/04/93
0006C	0.00	150.00	2812.10	Chip-Wt	1/04/93
0007C	0.00	0.00	1407.60	Chip-In	1/04/93
0007C	0.00	100.00	1412.10	Chip-Out	1/04/93
0007C	0.00	100.00	2812.10	Chip-Wt	1/04/93
0008C	0.00	0.00	417.10	Chip-In	1/05/93
0008C	0.00	100.10	317.00	Chip-Out	1/05/93
0008C	0.00	100.10	417.10	Chip-Wt	1/05/93
0009C	0.00	0.00	688.30	Chip-In	1/13/93
0009C	0.00	100.00	688.30	Chip-Wt	1/13/93
2301E	0.00	501.00	2934.30	Out	12/14/92
2301E	0.00	501.00	3435.30	Weigh	12/14/92
2301E	679.00	0.00	679.00	In	12/14/92
2302E	0.00	502.00	2432.30	Out	12/14/92
2302E	0.00	502.00	3435.30	Weigh	12/14/92
2302E	685.20	0.00	1364.20	In	12/14/92
2303E	0.00	503.00	1929.30	Out	12/14/92
2303E	0.00	503.00	3435.30	Weigh	12/14/92
2303E	700.70	0.00	2064.90	In	12/14/92
2304E	0.00	504.00	1425.30	Out	12/14/92
2304E	0.00	504.00	3435.30	Weigh	12/14/92
2304E	691.40	0.00	2756.30	In	12/14/92
2305E	0.00	505.00	920.30	Out	12/14/92
2305E	0.00	505.00	3435.30	Weigh	12/14/92
2305E	679.00	0.00	3435.30	In	12/14/92
2401E	0.00	401.00	3092.40	Out	12/14/92
2401E	0.00	401.00	3493.40	Weigh	12/14/92
2401E	651.30	0.00	1371.60	In	12/14/92
2402E	0.00	402.00	2690.40	Out	12/14/92
2402E	0.00	402.00	3493.40	Weigh	12/14/92
2402E	686.30	0.00	2057.90	In	12/14/92
2403E	0.00	403.00	2287.40	Out	12/14/92
2403E	0.00	403.00	3493.40	Weigh	12/14/92
2403E	722.40	0.00	2780.30	In	12/14/92
2404E	0.00	404.00	1883.40	Out	12/14/92
2404E	0.00	404.00	3493.40	Weigh	12/14/92
2404E	713.10	0.00	3493.40	In	12/14/92

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Mass Balance History

Canister Number	Factor Weight	Net Weight	Cumulative Mass Balance	Action	Date
			0.00	Clear	3/11/94
			0.00	Verify	3/11/94
0015C	0.00	0.00	0.00	Chip-In	3/11/94
3322E	722.40	0.00	722.40	In	3/14/94
3322E	0.00	*****	722.40	Weigh	3/14/94
0016C	0.00	0.00	722.40	Chip-In	3/14/94
0016C	0.00	50.00	722.40	Chip-Wt	3/14/94
0015C	0.00	47.00	722.40	Chip-Wt	3/14/94
0340	722.40	0.00	1444.80	In	3/14/94
			0.00	Clear	3/14/94
0333	722.40	0.00	722.40	In	3/14/94
0333	0.00	555.00	722.40	Weigh	3/14/94
0334	722.40	0.00	1444.80	In	3/14/94
0334	0.00	*****	1444.80	Weigh	3/14/94
0337	722.40	0.00	2167.20	In	3/14/94
0334	0.00	*****	*****	Out	3/14/94
0338	722.40	0.00	-910.40	In	3/14/94
0339	722.40	0.00	-188.00	In	3/14/94
			0.00	Clear	3/14/94
0339	722.40	0.00	722.40	In	3/14/94
0341	722.40	0.00	1444.80	In	3/14/94
0339	0.00	650.00	1444.80	Weigh	3/14/94
0339	0.00	650.00	794.80	Out	3/14/94
0341	0.00	500.00	794.80	Weigh	3/14/94
0341	0.00	500.00	294.80	Out	3/14/94
0333	722.40	0.00	1017.20	In	3/14/94
0334	722.40	0.00	1739.60	In	3/14/94
0335	722.40	0.00	2462.00	In	3/14/94
0336	722.40	0.00	3184.40	In	3/14/94
0337	722.40	0.00	3184.40	Reject	3/14/94
			0.00	Verify	3/14/94
0333	722.40	0.00	722.40	In	3/14/94
0334	722.40	0.00	1444.80	In	3/14/94
0335	722.40	0.00	2167.20	In	3/14/94
0336	722.40	0.00	2889.60	In	3/14/94
0337	722.40	0.00	3612.00	In	3/14/94
0333	0.00	500.00	3612.00	Weigh	3/14/94
0334	0.00	500.00	3612.00	Weigh	3/14/94
0337	0.00	500.00	3612.00	Weigh	3/14/94
0335	0.00	500.00	3612.00	Weigh	3/14/94
0336	0.00	500.00	3612.00	Weigh	3/14/94
0333	0.00	500.00	3112.00	Out	3/14/94
0334	0.00	500.00	2612.00	Out	3/14/94
0335	0.00	500.00	2112.00	Out	3/14/94
0336	0.00	500.00	1612.00	Out	3/14/94
0337	0.00	500.00	1112.00	Out	3/14/94
0338	722.40	0.00	1834.40	In	3/14/94
0339	722.40	0.00	2556.80	In	3/14/94
0349	722.40	0.00	3279.20	In	3/14/94
0338	0.00	500.00	3279.20	Weigh	3/14/94
0349	0.00	500.00	3279.20	Weigh	3/14/94
0339	0.00	500.00	3279.20	Weigh	3/14/94
0338	0.00	500.00	2779.20	Out	3/14/94

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Mass Balance Current Session

Canister Number	Factor Weight	Net Weight	Cumulative Mass Balance	Action	Date
0021C	0.00	5.00	1444.80	Chip-Wt	3/31/94
0336	0.00	700.00	744.80	Out	3/31/94
0337	0.00	700.00	44.80	Out	3/31/94
0021C	0.00	5.00	39.80	Chip-Out	3/31/94
0334	722.40	0.00	762.20	In	3/31/94
0338	722.40	0.00	1484.60	In	3/31/94
0339	722.40	0.00	2207.00	In	3/31/94
0334	0.00	700.00	2207.00	Weigh	3/31/94
0338	0.00	699.00	2207.00	Weigh	3/31/94
0334	0.00	700.00	1507.00	Out	3/31/94
0338	0.00	699.00	808.00	Out	3/31/94
0339	0.00	688.00	120.00	Out	3/31/94
0340	722.40	0.00	842.40	In	3/31/94
0332	722.40	0.00	1564.80	In	3/31/94
0335	722.40	0.00	2287.20	In	3/31/94
6767E	722.40	0.00	3009.60	In	3/31/94
0340	0.00	702.00	3009.60	Weigh	3/31/94
0332	0.00	701.00	3009.60	Weigh	3/31/94
6767E	0.00	700.00	3009.60	Weigh	3/31/94
0335	0.00	703.00	3009.60	Weigh	3/31/94
0340	0.00	702.00	2307.60	Out	3/31/94
0332	0.00	701.00	1606.60	Out	3/31/94
0335	0.00	703.00	903.60	Out	3/31/94
6767E	0.00	700.00	203.60	Out	3/31/94
			0.00	Clear	3/31/94

6.0 APPENDIX A -- ATP Cross Reference

This section describes the relationship between the MBA user guide and the most recent Acceptance Tests run on the system.

The following sections within the User Guide did not have an exact match with an ATP test case. In several cases, the sections listed here reflect very detailed, low level instructions, which do turn out to be used in several ATP tests.

3.0	Mass Balance Main Menu
3.1	Mass Balance Function
3.1.1.1	By canister or Location
3.1.1.1.1	Select by Canister
3.1.1.1.2	Select by Location
3.1.1.1.3	Rest of Canister/Location Entry
3.1.1.1.4	Alarm Condition Response
3.1.1.1.5	Normal Response

The table starting on the following page shows the matches between the User Guide and ATP Tests.

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MBA ATP Step / User Guide Cross Reference

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	Section Number	Section Name
ATP: MBAATP	4.1	General
User Guide:	2.2	Start MBA From user menu
ATP: MBAATP	4.4.1	MassBal / In
User Guide:	3.1.1	In
ATP: MBAATP	4.4.2	MassBal / Weigh
User Guide:	3.1.2	Weigh
ATP: MBAATP	4.4.3	MassBal / Out
User Guide:	3.1.3	Out
ATP: MBAATP	4.4.4	Chip Canisters
User Guide:	3.1.1.2	Chip Canisters
ATP: MBAATP	4.5	Help Functions
User Guide:	3.6	Help Functions
ATP: MBAATP	4.5.1	Help / InChute
User Guide:	3.6.2	Display In Chute Tables
ATP: MBAATP	4.5.2	Help / Session
User Guide:	3.6.1	Display Session Tables
ATP: MBAATP	4.5.3	Help / History
User Guide:	3.6.3	Display History Tables.
ATP: MBAATP	4.5.4	Help / All
User Guide:	3.6.4	Display All (Location, Canister, and Mat
ATP: MBAATP	4.5.5	Help / Location
User Guide:	3.6.5	Display Location Table
ATP: MBAATP	4.5.6	Help / Canister
User Guide:	3.6.6	Display Canister Table

	Section Number	Section Name
ATP: MBAATP	4.5.7	Help / Material
User Guide:	3.6.7	Display Material Table
ATP: MBAATP	4.6	Mass Balance Control
User Guide:	3.5	Mass Balance Control
ATP: MBAATP	4.6.1	Password Administration
User Guide:	3.5.1	Password Administration
ATP: MBAATP	4.6.2	Verify
User Guide:	3.2	Verify
ATP: MBAATP	4.6.3	Clear
User Guide:	3.3	Clear
ATP: MBAATP	4.7	Download and Upload
User Guide:	3.4	Download and Upload
ATP: MBAATP	4.7.1	Download
User Guide:	3.4.1	Download Process
ATP: MBAATP	4.7.2	Upload
User Guide:	3.4.2	Upload Process
ATP: MBAATP	4.8	Administrative Functions
User Guide:	3.7	Administrative Functions
ATP: MBAATP	4.8.1	Backup
User Guide:	3.7.5	Backup Files
ATP: MBAATP	4.8.2	Report
User Guide:	3.7.3	Report History or Session Information
ATP: MBAATP	4.8.3	Cleanup
User Guide:	3.7.4	Cleanup History File

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MBA ATP Step / User Guide Cross Reference

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	Section Number	Section Name
ATP: MBAATP	4.8.4	Passwords
User Guide:	3.7.1	Passwords
ATP: MBAATP	4.8.5	ValidUsers
User Guide:	3.7.2	ValidUsers
ATP: MBAATP	4.8.6	GoParadox
User Guide:	3.7.6	GoParadox
ATP: MBAATP	4.9	Quit
User Guide:	3.8	Quit Selection
ATP: MCLEAN	4.5	Mass Balance Program Tests
User Guide:	3.1	Mass Balance Function
ATP: MCLEAN	4.5.1	MassBal / In
User Guide:	3.1.1	In
ATP: MCLEAN	4.5.3	MassBal / Out
User Guide:	3.1.3	Out