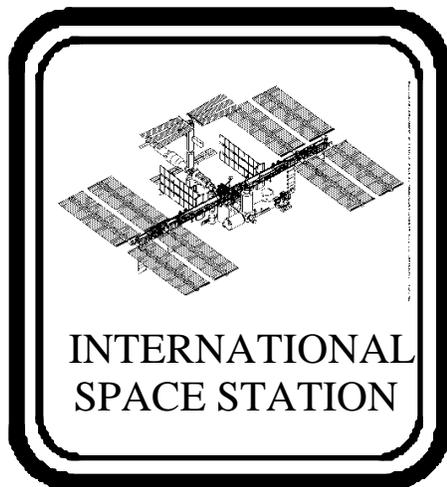


BOEING

International Space Station Program

D683-35473-1

**Payload Data Library
User's Guide
Initial**



February 17, 1997

Submitted to: National Aeronautics and Space Administration
Marshall Space Flight Center
Contract No. NAS8-50000 (DR SE49)

(This Page Intentionally Blank)

PAYLOAD DATA LIBRARY
USER'S GUIDE

DR SE49
(D683-35473-1)
INITIAL

FEBRUARY 17, 1997

Boeing Defense & Space Group
Missiles & Space Division
(a division of The Boeing Company)
Huntsville, Alabama

PREPARED BY:	T. Lucas	TBE	
CHECKED BY:	M. Ogles	TBE	
APPROVED BY:	B. Stallings	TBE	
DQA:	N. McMahon	TBE	
QA:	Not Applicable	N/A	
SUPERVISED BY:	J. Miller	2-8K39	
APPROVED BY:	D. Dolson	2-8K39	
	SIGNATURE	ORGN	DATE

(This Page Intentionally Blank)

ABSTRACT

This User's Guide for the International Space Station (ISS) Payload Data Library (PDL) provides information necessary to use the PDL application. It includes an overview of the PDL architecture as well as system requirements for the different platforms supported. Guidelines are provided for payload breakdown components, payload IDs, the schedule of data entry, and data distribution. Finally, instructions are given to assist the User in navigating PDL and entering data.

KEY WORDS

Complement Integration Engineer

Payload Data Library

Complement Integration Requirements

Payload Developer

Data Set

Payload Developer Requirements

Data Set Manager

(This Page Intentionally Blank)

DOC. NO.: D683-35473-1				
DOCUMENT RELEASE RECORD (DRR)				
RELEASES (& DATES)	Update this document by:			AUTHORIZATIONS (& REMARKS)
	ACTIVE PAGES	PAGES ADDED	PAGES DELETED	
Initial Coordination Copy 8/96	vii thru viii 1-1 thru 1-2 2-1 thru 2-4 3-1 thru 3-24 A-i thru A-ii A-1 thru A-2			
Final Coordination Copy 10/31/96	i thru viii 1-1 thru 1-4 2-1 thru 2-4 3-1 thru 3-24 A-i thru A-ii A-1 thru A-2			
Initial 2/17/97	i thru viii 1-1 thru 1-4 2-1 thru 2-4 3-1 thru 3-24 A-i thru A-ii A-1 thru A-2			Being delivered to MSFC per DR SE49 and schedule per DR MA14.

DOC. NO.: D683-35473-1				
DOCUMENT RELEASE RECORD (DRR)				
RELEASES (& DATES)	Update this document by:			AUTHORIZATIONS (& REMARKS)
	ACTIVE PAGES	PAGES ADDED	PAGES DELETED	

TABLE OF CONTENTS

SECTION		PAGE
	TITLE PAGE	i
	ABSTRACT AND KEY WORDS	iii
	DOCUMENT RELEASE RECORD	v
	TABLE OF CONTENTS	vii
1.	INTRODUCTION	1-1
1.1	SYSTEM OVERVIEW	1-1
1.2	SYSTEM REQUIREMENTS	1-1
1.2.1	<i>Windows</i>	<i>1-1</i>
1.2.2	<i>Macintosh – PowerPC</i>	<i>1-1</i>
1.2.3	<i>Unix/Motif</i>	<i>1-1</i>
1.3	CLIENT-SERVER TECHNOLOGY USED IN PDL	1-1
1.4	USER REQUIREMENTS	1-3
2.	GUIDELINES	2-1
2.1	PAYLOAD BREAKDOWN COMPONENTS	2-1
2.2	PAYLOAD IDS	2-1
2.3	SCHEDULE OF DATA ENTRY	2-2
2.4	DATA DISTRIBUTION	2-2
3.	USING THE PAYLOAD DATA LIBRARY	3-1
3.1	LOGGING ON	3-1
3.2	SELECTING A PAYLOAD	3-2
3.3	UNDERSTANDING THE MENU SYSTEM	3-3
3.3.1	<i>Navigating Through Disciplines</i>	<i>3-6</i>
3.3.2	<i>Navigating Through Options</i>	<i>3-7</i>
3.3.3	<i>Navigating Through Forms</i>	<i>3-8</i>
3.3.4	<i>Cross-Discipline Navigating</i>	<i>3-9</i>
3.3.5	<i>Accessing Help/News from Menu</i>	<i>3-10</i>
3.4	UNDERSTANDING THE STATUS LINE	3-11
3.5	UNDERSTANDING THE LAYOUT BUTTONS	3-12
3.6	VIEWING THE REPORTS IN PDL	3-13
3.7	USING THE PDL HELP	3-13
3.7.1	<i>Item-Specific Help</i>	<i>3-13</i>
3.7.2	<i>Form-Specific Help</i>	<i>3-14</i>
3.7.3	<i>General Help</i>	<i>3-14</i>
3.7.4	<i>Sending Comments to the PDL Team</i>	<i>3-18</i>
3.8	ACCESSING THE LATEST PDL NEWS ITEMS	3-19
3.9	ENTERING INFORMATION INTO THE PDL	3-20

3.10	PROMOTING DATA	3-23
3.11	IMPORTING GRAPHICS	3-23

TABLE OF CONTENTS (CONTINUED)

APPENDIX:

A	ACRONYMS AND ABBREVIATIONS	A-i
---	----------------------------	-----

LIST OF FIGURES

FIGURE		PAGE
1-1	CLIENT-SERVER TECHNOLOGY IN THE PDL	1-2
2-1	PAYLOAD BREAKDOWN COMPONENTS	2-1
2-2	PDL DATA ENTRY TEMPLATE	2-2
3-1	LOGGING ON	3-1
3-2	CHANGING A PASSWORD	3-2
3-3	UNDERSTANDING THE MAIN SCREEN	3-3
3-4	SELECTING A PAYLOAD	3-4
3-5	UNDERSTANDING THE MAIN MENU	3-5
3-6	SELECTING A DISCIPLINE	3-6
3-7	SELECTING AN OPTION	3-7
3-8	SELECTING A FLIGHT AND/OR RACK OR POP	3-8
3-9	SELECTING A FORM	3-9
3-10	SELECTING HELP/NEWS	3-10
3-11	UNDERSTANDING THE STATUS LINE	3-11
3-12	UNDERSTANDING THE LAYOUT BUTTONS	3-12
3-13	ACCESSING ITEM-SPECIFIC HELP	3-13
3-14	VIEWING ITEM-SPECIFIC HELP	3-14
3-15	VIEWING OPTION-SPECIFIC HELP	3-15
3-16	VIEWING FORM-SPECIFIC HELP	3-16
3-17	VIEWING GENERAL HELP	3-17
3-18	SENDING COMMENTS TO THE PDL TEAM	3-18
3-19	VIEWING PDL NEWS	3-19
3-20	ENTERING INFORMATION WITH A CHECKBOX	3-20
3-21	ENTERING INFORMATION IN SHORT FIELDS	3-21
3-22	ENTERING INFORMATION IN LONG FIELDS	3-22
3-23	ENTERING INFORMATION BY ADDING A RECORD	3-23

SECTION 1, INTRODUCTION

1.1 SYSTEM OVERVIEW

The Payload Data Library (PDL) is an electronic database system developed to support the Engineering and Operations Integration (E&OI) personnel in collecting and managing payload data. The primary function of PDL is to provide a convenient method for collection, processing, managing, and distribution of payload information necessary for payload complement integration and for preparation of integration requirements reports. PDL is configured as a Client-Server system utilizing Oracle software and is accessible to the user via the Internet. The user may download this software, as well as obtain a User Account and Password, by accessing the PDL Home Page on the World Wide Web (WWW) at <http://pdl.msfc.nasa.gov>. Interfacing between PDL and other ISS databases is accomplished by using data file transfers over various data networks.

1.2 SYSTEM REQUIREMENTS

The PDL Client software is compatible with Windows 3.1x, Windows '95, Windows NT, Mac PowerPC, and Unix/Motif workstations. Downloading the PDL Client provides all software needed to perform an installation of the PDL.

1.2.1 Windows

The PDL Client will run on an IBM-PC compatible computer running Windows 3.1, Windows NT, or Windows '95. A minimum system configuration to run this software is a 80486 processor (25 MHz), 16 MB RAM, 640 x 480 resolution color monitor with 16 colors, and 30 MB of available disk space. The PDL software operation cannot be guaranteed if your system does not meet these minimum requirements.

1.2.2 Macintosh - PowerPC

A minimum system configuration to run this software is a PowerPC processor, 16 MB RAM, a 832 x 624 resolution color monitor, and 40 MB of available disk space. The PDL software operation cannot be guaranteed if your system does not meet these minimum requirements.

1.2.3 Unix/Motif

TBD

1.3 CLIENT-SERVER TECHNOLOGY USED IN PDL

The PDL database uses Client-Server technology to implement a user-friendly, quick-response data collection and management system. Figure 1-1 depicts the PDL Client-Server configuration. Although a detailed understanding of this technology is not necessary to use the PDL, you may find the following information useful.

The Server portion of the PDL system is a Sun Ultra Server 1 Model 140 located at the George C. Marshall Space Flight Center (MSFC) in Huntsville, Alabama. The Oracle Relational Database Management System (RDBMS) runs on this server and will be kept up to date with the latest version of the database. The data that you enter into the PDL will be stored, managed, distributed, and archived on this server. Daily automated backups will ensure that your data is not lost as the result of any anomaly in server operations.

The Client portion of the PDL system is an application that you download from the PDL Home Page on the Web. Every effort has been made to make the PDL Client available on as many different platforms as possible. Once downloaded, the PDL Client application resides on your computer's hard drive and may be launched by double-clicking the PDL Client icon and then entering your User ID and Password. Your computer is then connected to the PDL server. The Client application will allow you to retrieve and update data stored on the server. To ensure that the latest data is available to all users, no data is stored on your local computer.

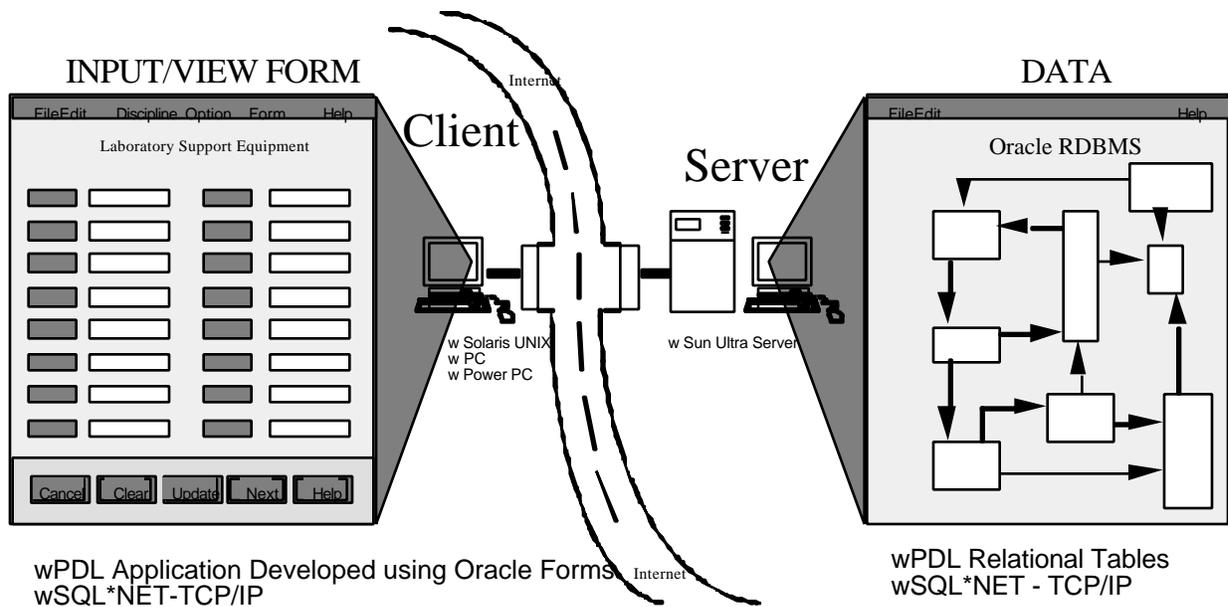


FIGURE 11 CLIENT-SERVER TECHNOLOGY IN THE PDL

1.4 USER REQUIREMENTS

The PDL Client application utilizes a Graphical User Interface (GUI) to provide an easy and consistent means of manipulating data; however, an understanding of the following functions associated with a GUI is required:

- A. Locating and launching programs from the desktop
- B. Using a mouse
- C. Using a pull-down menu
- D. Using system browsers for navigation to graphic files for upload into the PDL.

(This Page Intentionally Blank)

SECTION 2, GUIDELINES

2.1 PAYLOAD BREAKDOWN COMPONENTS

Space Station payload data is divided into disciplines within PDL for easy navigation. Figure 2-1 depicts an example of the payload discipline breakdown components.

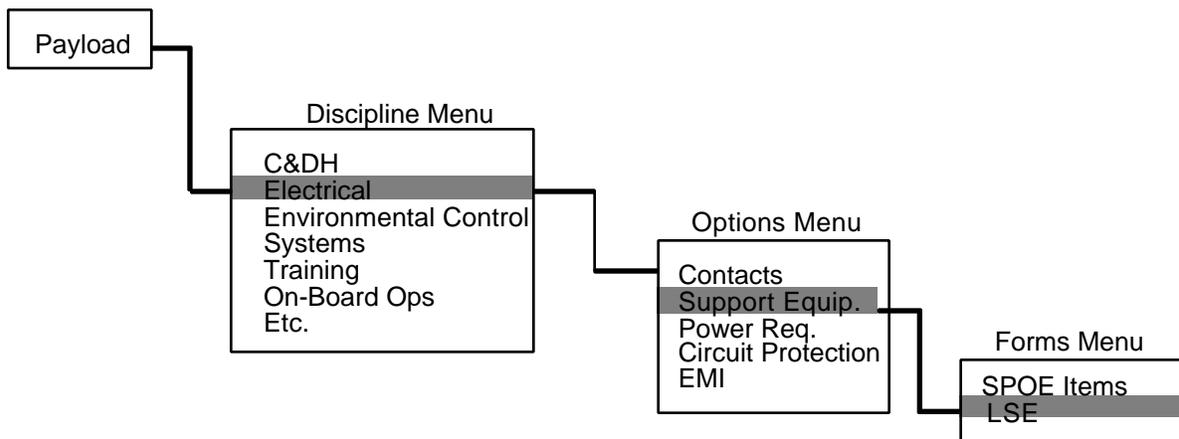


FIGURE 21 PAYLOAD BREAKDOWN COMPONENTS

2.2 PAYLOAD IDS

The PDL uses the parameter format specified by the User Mission Database (UMDB) for payload identification number definition. The UMDB parameter format is:

AAAnnn.mmB

AA- This is the two letter code that represents the payload owner. The first digit specifically represents the partner (N = NASA, J = NASDA, E = ESA, C = CSA), and the second digit specifically represents the organization (C = Commercial, for example). So ESA, Commercial organization, would be EC for the first two digits.

nnn- This is a three digit number, generated automatically by the UMDB, which represents the 'nth' payload of this type. So the first payload of type EC would be EC001; the second would be EC002, etc.

mm- This is a two digit number, generated automatically by the UMDB, which represents a subpayload. The first time a payload record is created, this number is 00. If another subpayload is created in the UMDB, then a new payload record is created

with the same payload ID, but this number is incremented by one to 01. The next subpayload created in the UMDB will be 02.

B- This one digit character can be one of the following: "A" for Attached payloads or "P" for Pressurized payloads. This character is automatically assigned when the payload is created as an Attached or Pressurized payload.

2.3 SCHEDULE OF DATA ENTRY

The required data entry completion for each Data Set will vary and is determined individually by each integration discipline. The template for most payloads' initial data promotion (data entry complete) is L-24 months. This template will be reduced periodically as the Space Station program nears Assembly Complete. A generic PDL template is shown in Figure 2-2.

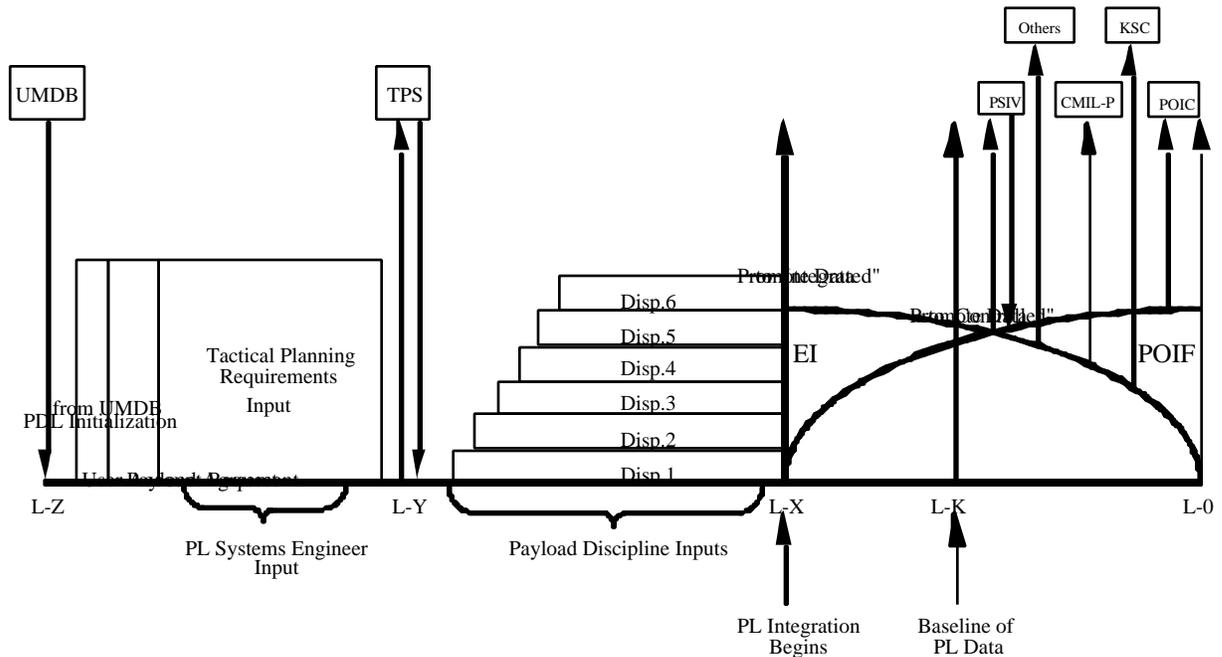


FIGURE 22 PDL DATA ENTRY TEMPLATE

2.4 DATA DISTRIBUTION

There are several end users that utilize payload information collected in the Space Station PDL. These end users will receive this information via database exports or File Transfer Protocols (FTP). The responsible group and PDL will work with end users to create an Interface Agreement Document (IAD) or an Interface Control Document (ICD) to specify the

format of the data to be transferred and the method of transfer. The following documents have been developed with end users:

- A. Huntsville Operations Support Center (HOSC) to E&OI PDL ICD (ICD-3-60056)
- B. Payload Software Integration and Verification (PSIV) to PDL IAD (D683-21415-1)
- C. Kennedy Space Center (KSC) to PDL IAD (TBD)
- D. Consolidated Management, Inventory, and Logistics Planning (CMILP) to PDL IAD (TBD)
- E. PDL/Payload Tactical Planning Tools to Mission Management Data System (MMDS) IAD (SSP TBD).

(This Page Intentionally Blank)

SECTION 3, USING THE PAYLOAD DATA LIBRARY

3.1 LOGGING ON

When the PDL Client Software is launched by double-clicking the PDL Client icon, the first screen will ask you to log on to the PDL Server. This screen consists of two fields (Username and Password) and three buttons (Cancel, New Password, and Logon). Clicking the Cancel button will exit the PDL Client Application, while the Logon button will attempt to log you on to the PDL Server using the Username and Password entered.

The first time you access PDL, the temporary password from the “PDL Welcome Newsletter” will expire and you will be required to enter a new password. From that point forward, the password will expire automatically at the beginning of every month. Figure 3-1 depicts the logon screen and field entries. To change your password, click the New Password button. Figure 3-2 shows the logon screen in the change-password mode. Two new fields (New Password and Verify Password) and a new button (No Change) will appear. If you

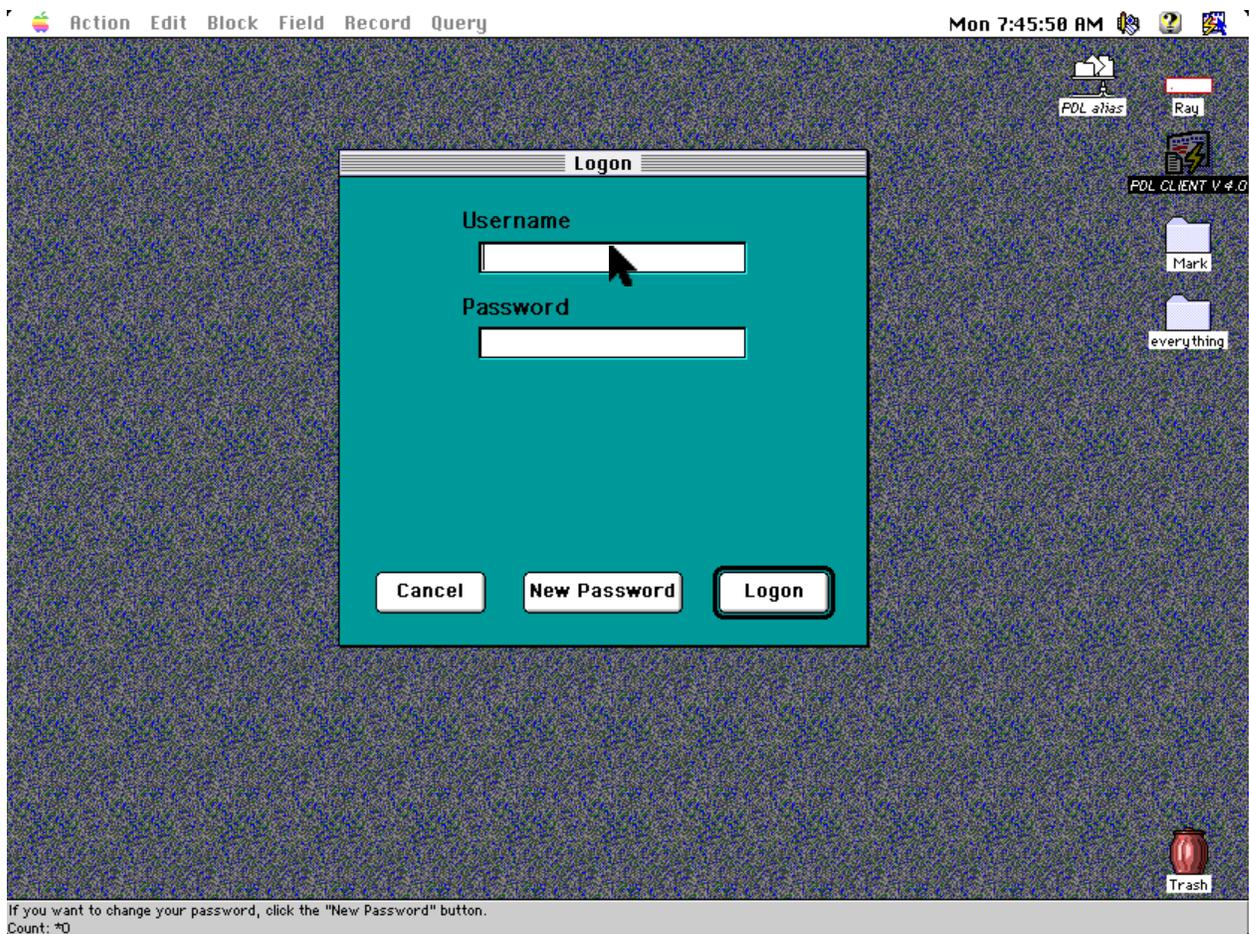


FIGURE 3-1 LOGGING ON

decide not to change your password, click the No Change button. Otherwise, enter your new password in both of these fields and click the Logon button to change the password and connect to the PDL server.

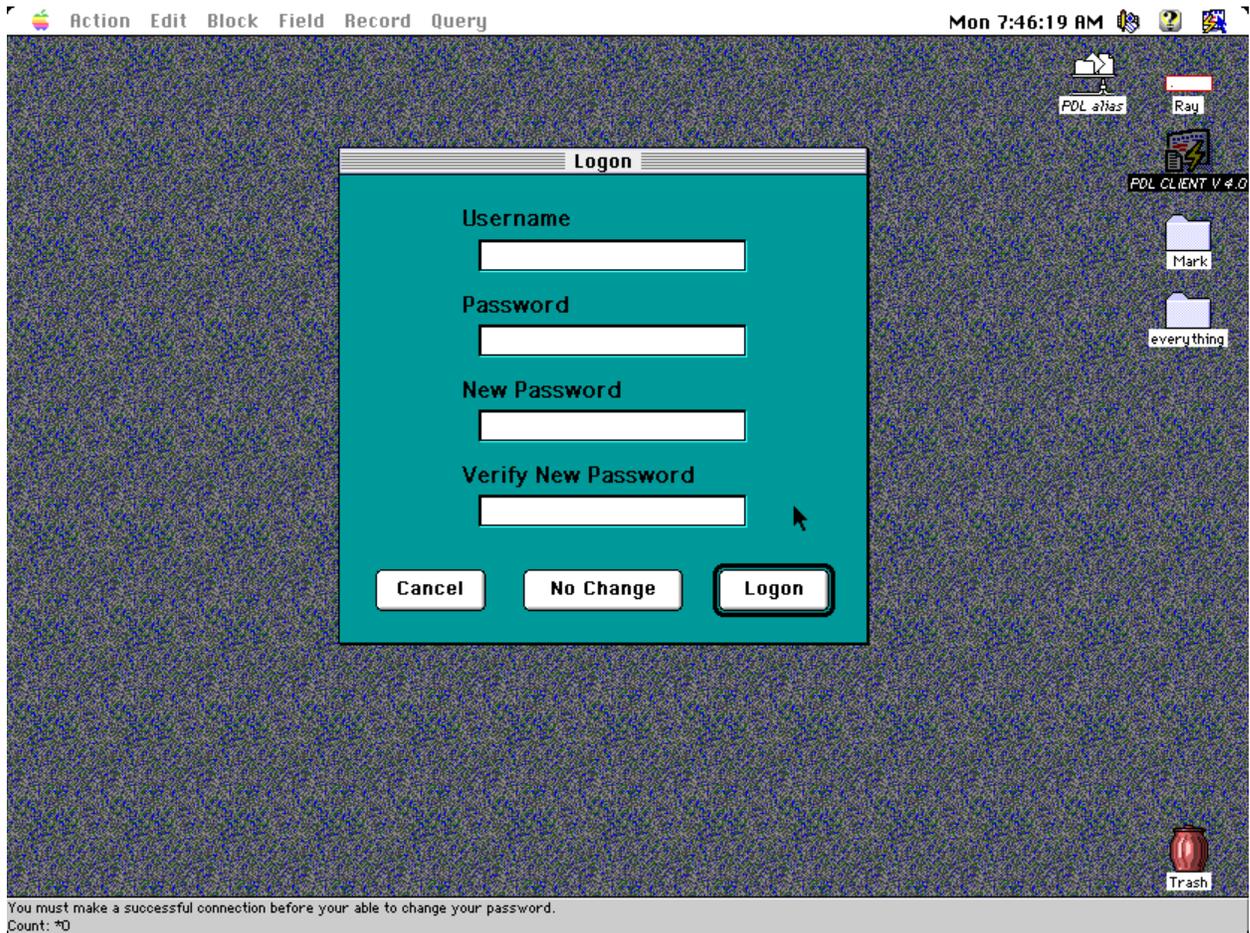


FIGURE 3-2 CHANGING A PASSWORD

3.2 SELECTING A PAYLOAD

Once you have successfully logged on to the PDL Server, the PDL Main Screen will appear. The Main Screen, shown in Figure 3-3 is easily recognized by the large PDL logo and the Payload Selection Pop-up Box at the bottom of the screen. The payload that appears in the Payload Selection Pop-up Box is selected by default. Whenever a new payload is selected, the Payload ID, Payload Acronym, and Payload Sponsor fields will display below the Payload Selection Pop-up Box for 10 seconds.

If you need to work on a payload other than the default payload, move the cursor to the Payload Selection Pop-up Box, as shown in Figure 3-4, click and hold to expand the list, then drag the cursor to the desired Payload and release.

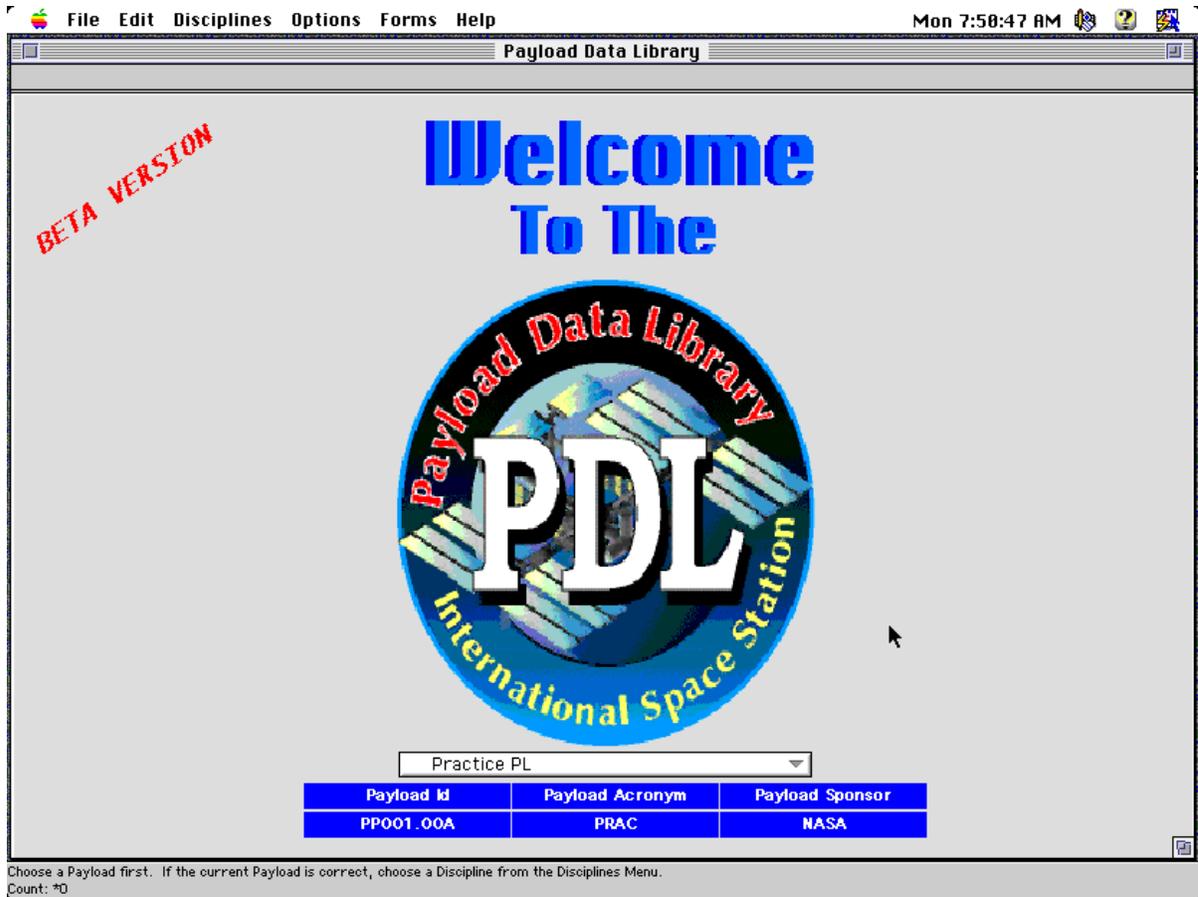


FIGURE 3-3 UNDERSTANDING THE MAIN SCREEN

Once a payload has been selected, you may select the desired Discipline, Option, and Form from the menu at the top of the screen.

3.3 UNDERSTANDING THE MENU SYSTEM

The PDL Client menu consists of File, Edit, Disciplines, Option, Forms, and Help choices as shown in Figure 3-5. The pull-down items under the File menu include Import, Export, Reports, Promote, Print, and Quit functions. The Import and Export functions are discussed in Section 3.11; the Reports function, in Section 3.6; and the Promote function in Section 3.10. The Print function captures and prints the current screen; the Quit function exits the PDL application.

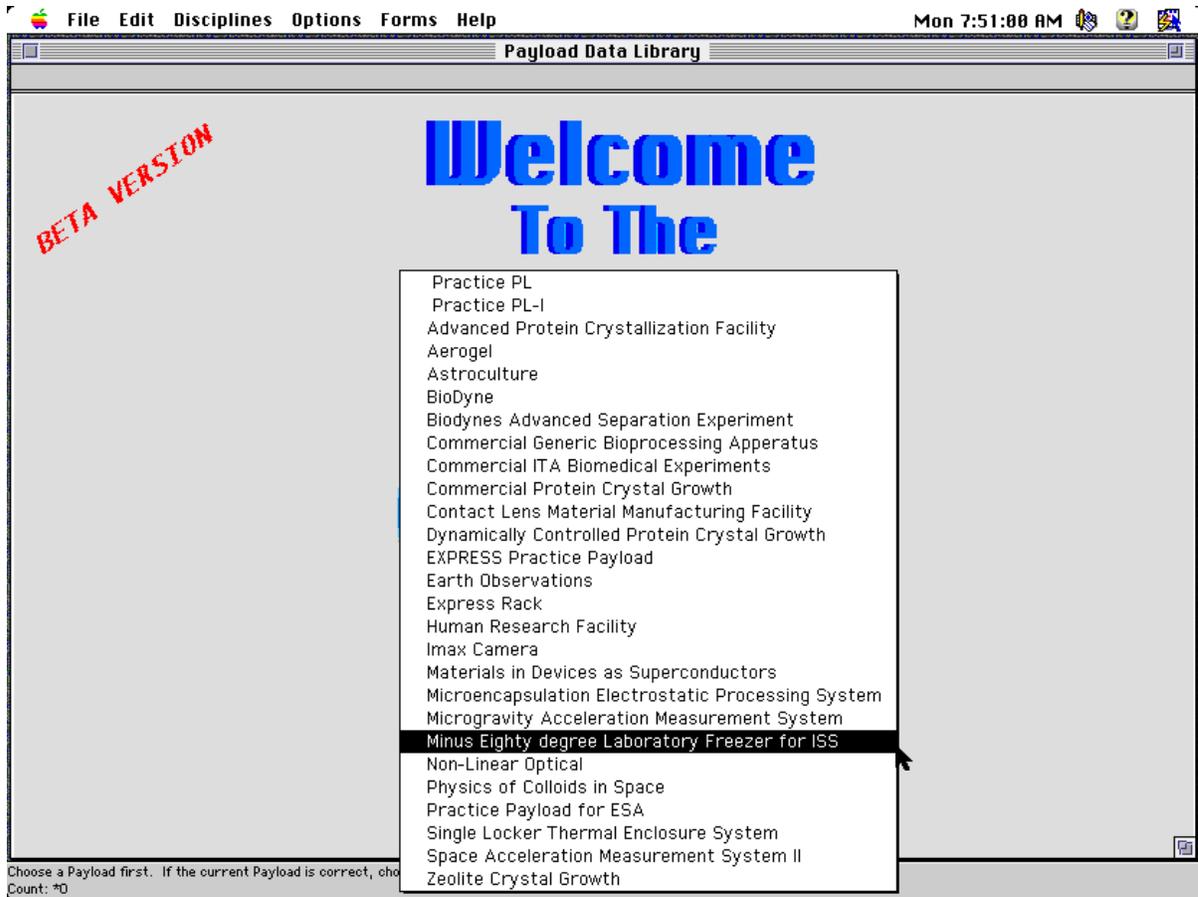


FIGURE 3-4 SELECTING A PAYLOAD



FIGURE 3-5 UNDERSTANDING THE MAIN MENU

3.3.1 Navigating Through Disciplines

Each PDL data entry screen is selected by navigating through a three-level hierarchy. Therefore, you must identify a particular Discipline, Option, and Form in order to reach a desired data entry screen. Since the PDL navigating system is governed by Discipline within a Payload, you must first select your discipline after logging on to the PDL and selecting payload. To display the discipline list, position the cursor on the Discipline menu and pull down the discipline list as shown in Figure 3-6.



FIGURE 3-6 SELECTING A DISCIPLINE

3.3.2 Navigating Through Options

Once the discipline is identified, the Option menu will automatically be populated based on that selected discipline. Option is a logical grouping of data entry forms. To display the option list, position the cursor on the Options menu and pull down the option list as shown in Figure 3-7. This example is under the Systems-PL discipline.

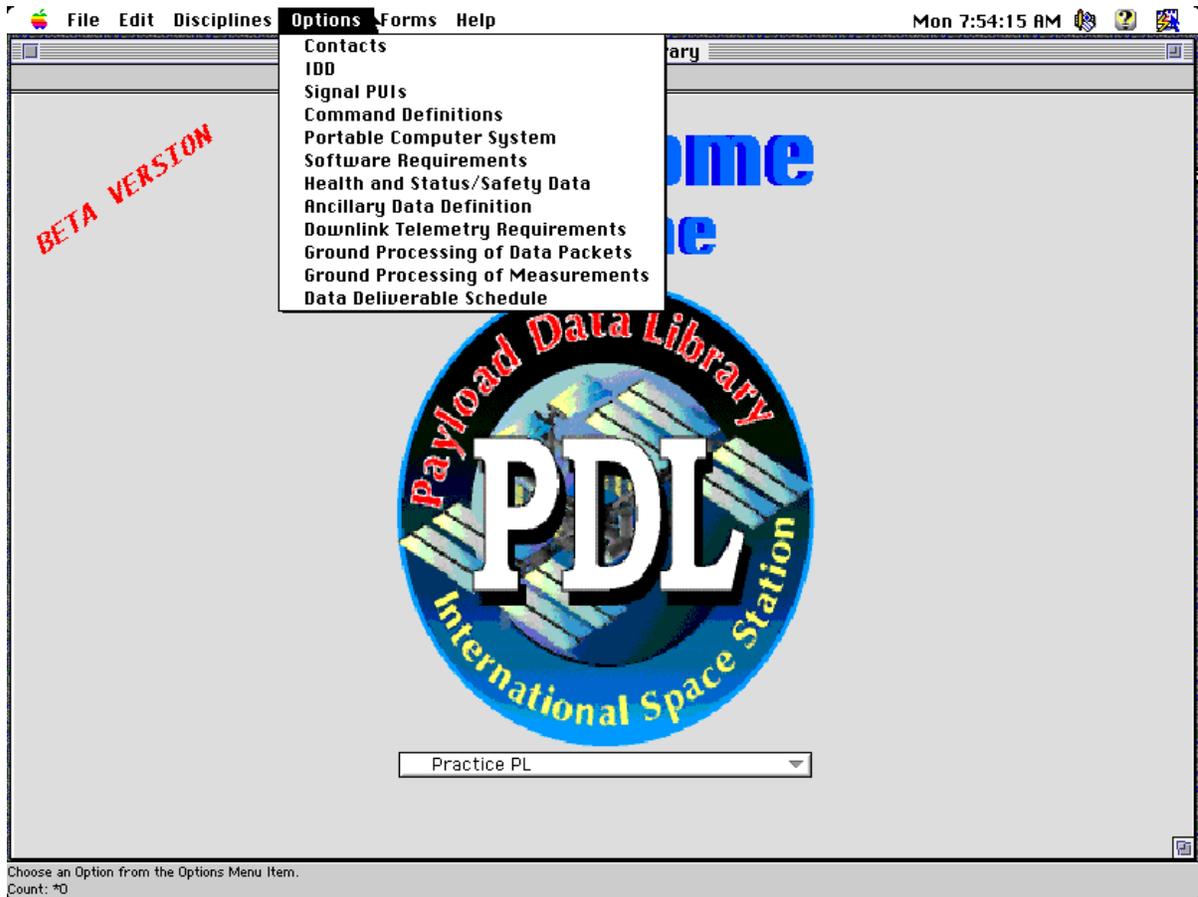


FIGURE 3-7 SELECTING AN OPTION

3.3.3 Navigating Through Forms

If the selected option is Flight, Rack, POP, or Subpayload Element associated, another screen will pop up. For instance, if you select Payload Rack On-Orbit Placement Requirements under the Option pull-down menu, the Flight and Rack Selection Screen pops up as shown in Figure 3-8. You select the Flight you would like to work on from the upper

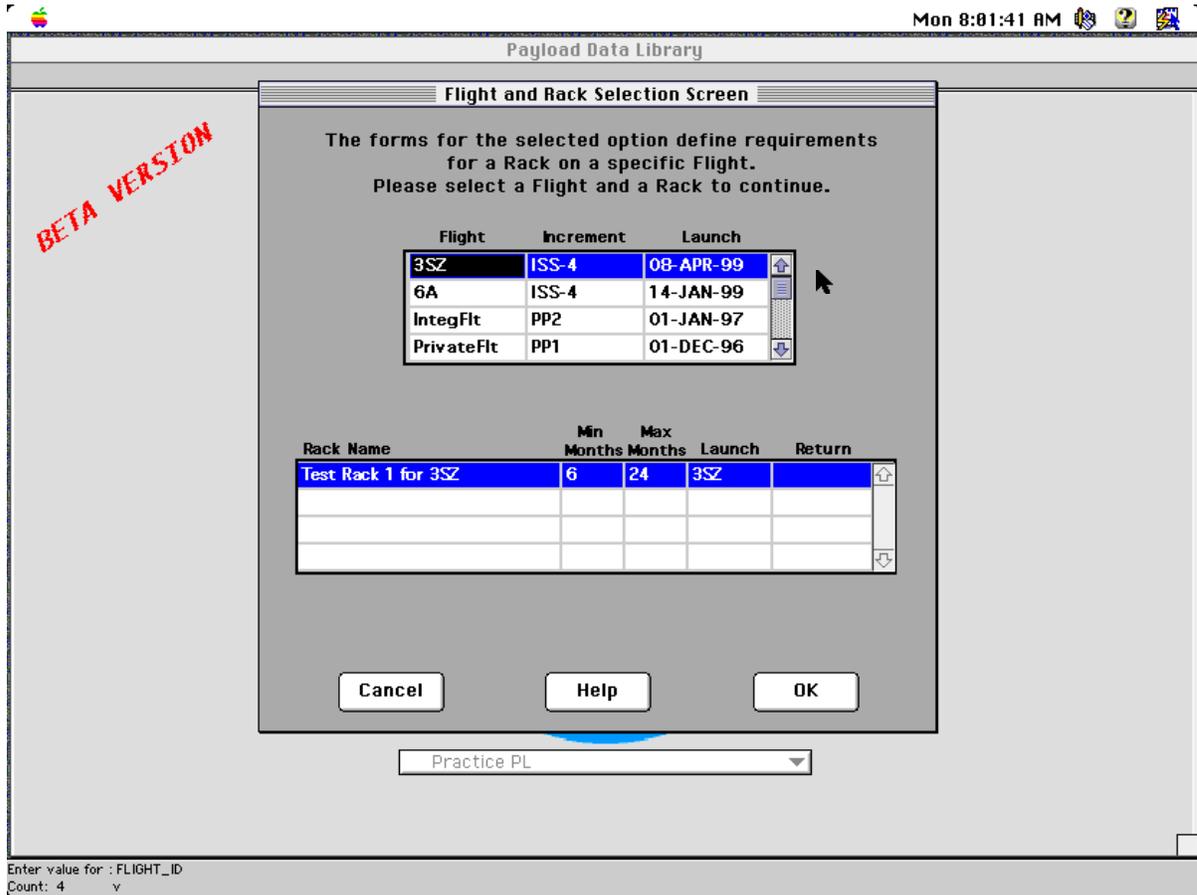


FIGURE 3-8 SELECTING A FLIGHT AND/OR RACK OR POP

part of screen. All racks for the selected flight will be listed in the lower part of the screen as shown in Figure 3-8. Click OK when finished. Pressing the Cancel button will deselect the option and return to the main screen. You may then reselect your desired Discipline and Option.

The forms menu will automatically be populated once an option is selected. The group of forms retrieved is based on the selected discipline and option. Selecting a form from the Form pull-down menu retrieves the form and its associated data from the database for display. An example of a Form Menu is shown in Figure 3-9.

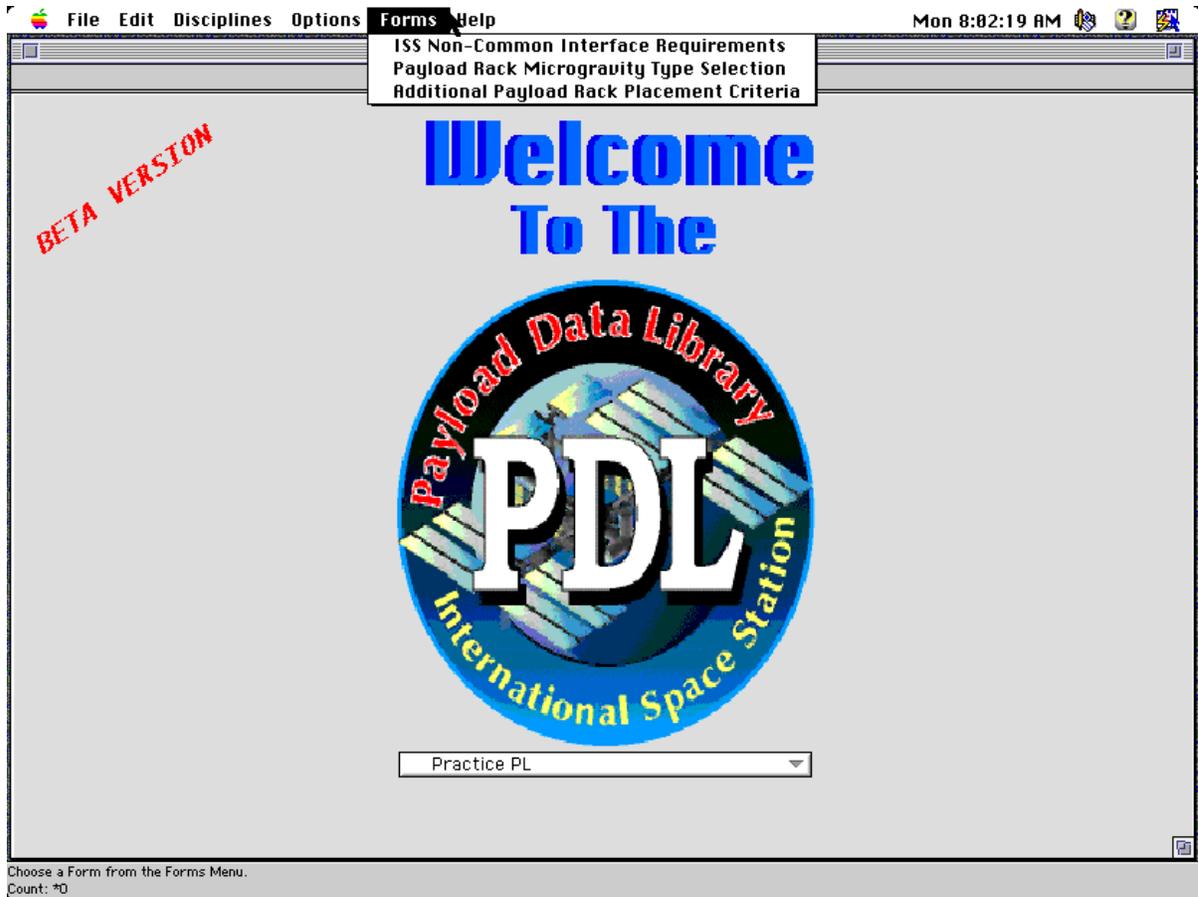


FIGURE 3-9 SELECTING A FORM

3.3.4 Cross-Discipline Navigating

If you work on a form across various disciplines, you can jump from one discipline to another without leaving the form. You can leave the form open and select different disciplines. PDL will automatically retrieve the applicable items based on the selected discipline. If the selected discipline does not apply to the selected form, PDL returns to the main screen where you can reselect Option and Form as you desire.

3.3.5 Accessing Help/News from Menu

In addition to the Help button on the lower right corner of a Form screen (as in Figure 3-11), the Help menu allows you to access help information as shown in Figure 3-10. Help is discussed in detail in Section 3.7. News items can also be selected from the Help menu. A detailed description of News is given in Section 3.8.

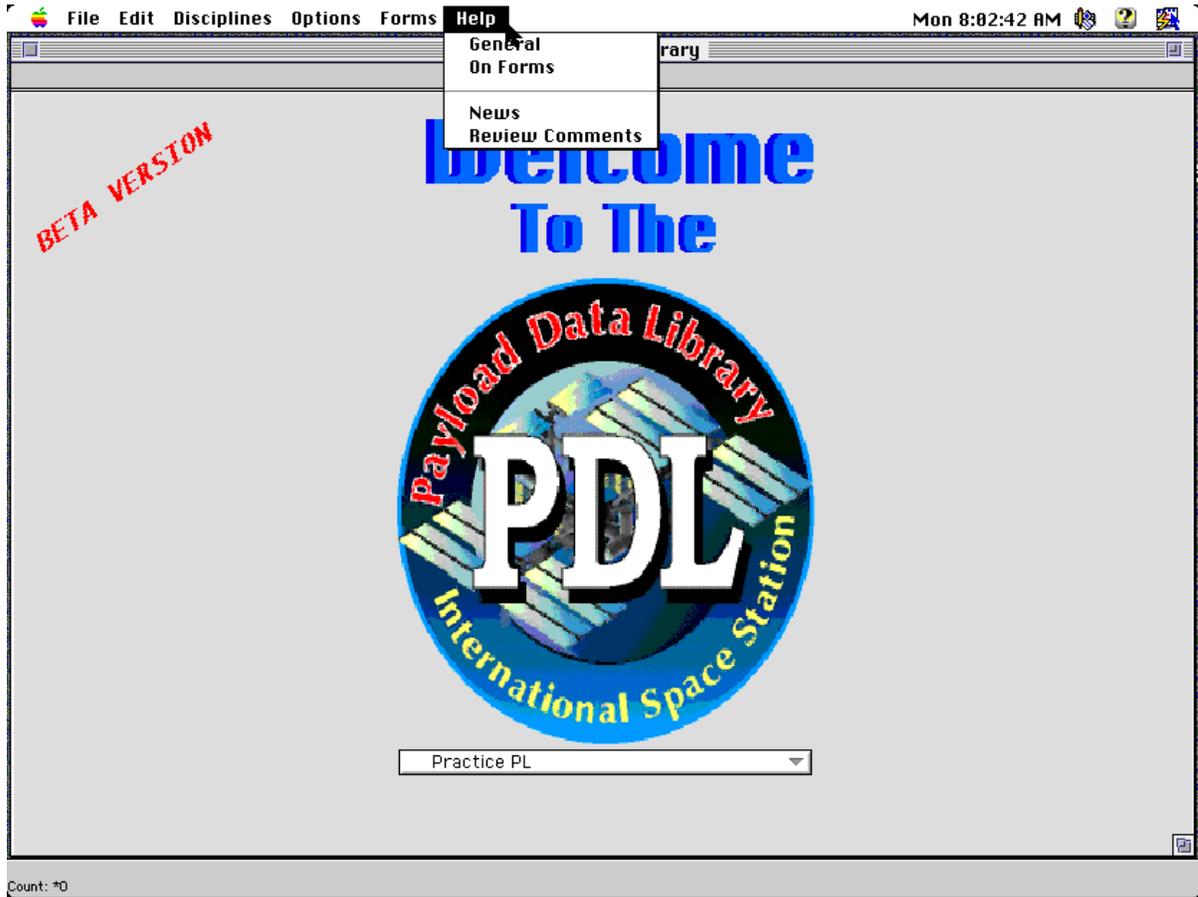


FIGURE 3-10 SELECTING HELP/NEWS

3.4 UNDERSTANDING THE STATUS LINE

The status line, depicted in Figure 3-11, at the top of the PDL Form screen displays the selected Discipline, Option, and Flight. The far right field shows the selected Rack or POP when appropriate. The status line also displays the selected payload, the original author and creation date of the form, the author and date of the latest change to the form, and the configuration control level.

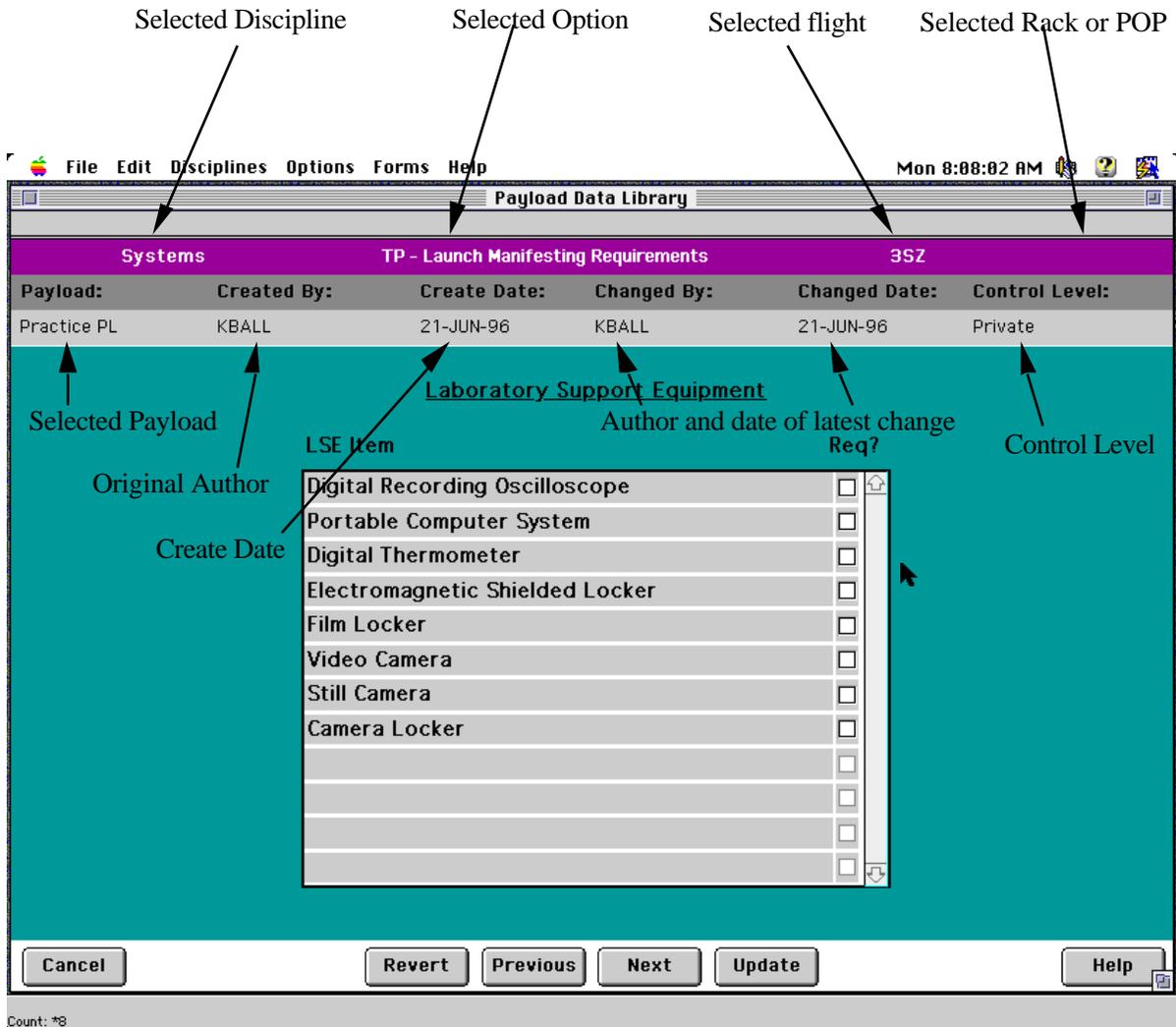


FIGURE 3-11 UNDERSTANDING THE STATUS LINE

3.5 UNDERSTANDING THE LAYOUT BUTTONS

All Forms layouts have buttons at the bottom of the screen, as shown in Figure 3-12. Each button has its own unique function that is easily executed by a single click. The buttons from left to right are:

- CANCEL** – Exits the Form and returns to the PDL Main Screen.
- REVERT** – Deletes any changes that have been made to the current form since the last save.
- PREVIOUS** – Navigates to the previous Form in the Forms menu list and is disabled when the first Form in the list is selected.
- NEXT** – Navigates to the next Form in the Forms menu list and is disabled when the last Form in the list is selected.
- UPDATE** – Saves all changes made to the current Form.
- HELP** – Invokes item-specific Help for items on a Form.
- ADD/DELETE** – Appears conditionally when applicable, adds or deletes records shown on screen.

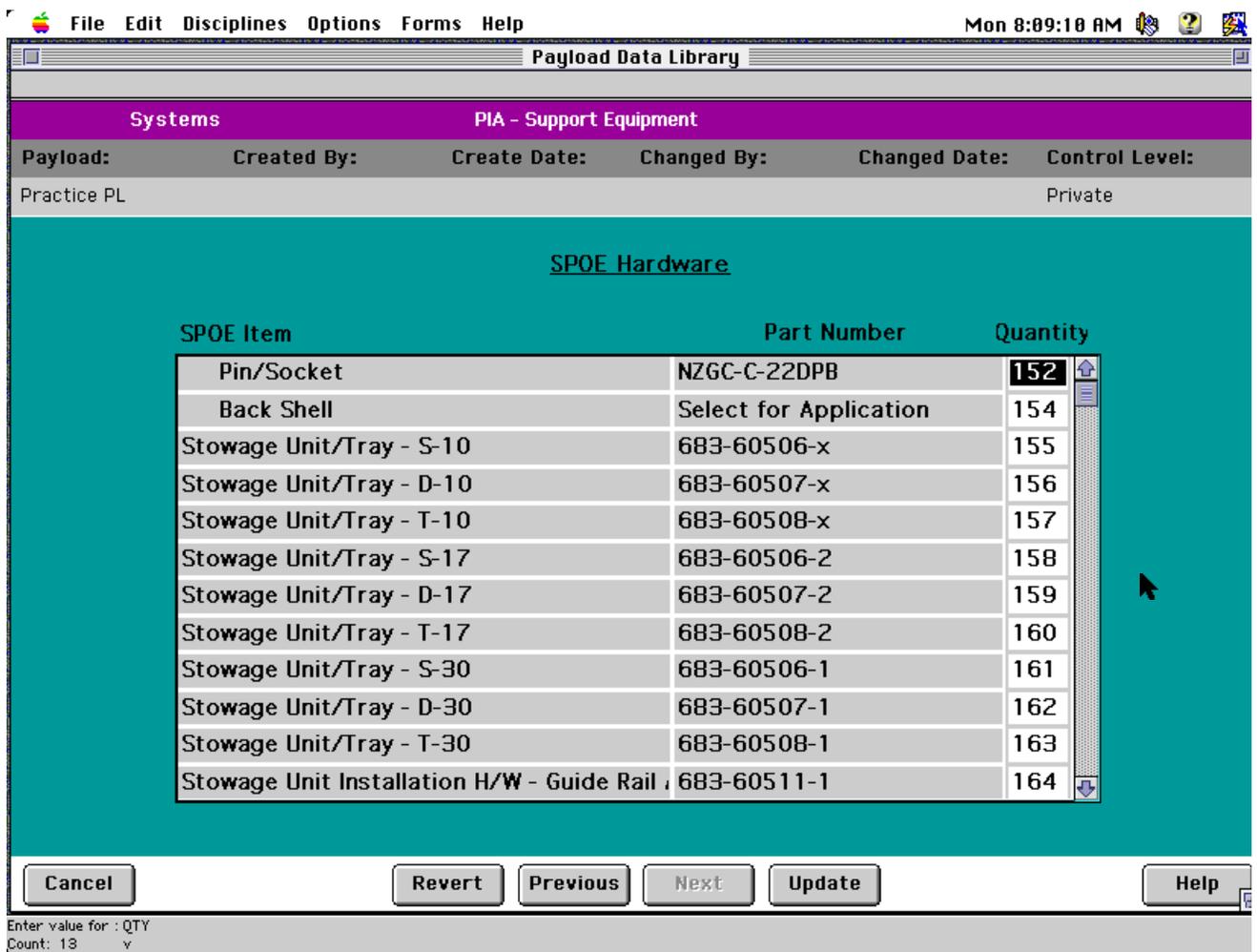


FIGURE 3-12 UNDERSTANDING THE LAYOUT BUTTONS

3.6 VIEWING THE REPORTS IN PDL

To view reports in PDL, select Reports from the File menu. Highlight a Report Title in the Report selection window to select it. You can also search for a key word by entering it in the Find box. In the Runtime Parameter form, set the Report parameters by choosing from the pop lists, then click the Run Report button.

3.7 USING THE PDL HELP

3.7.1 Item-Specific Help

To access Item-specific Help, place the cursor in the appropriate field, then click the Help button. See Figure 3-13.

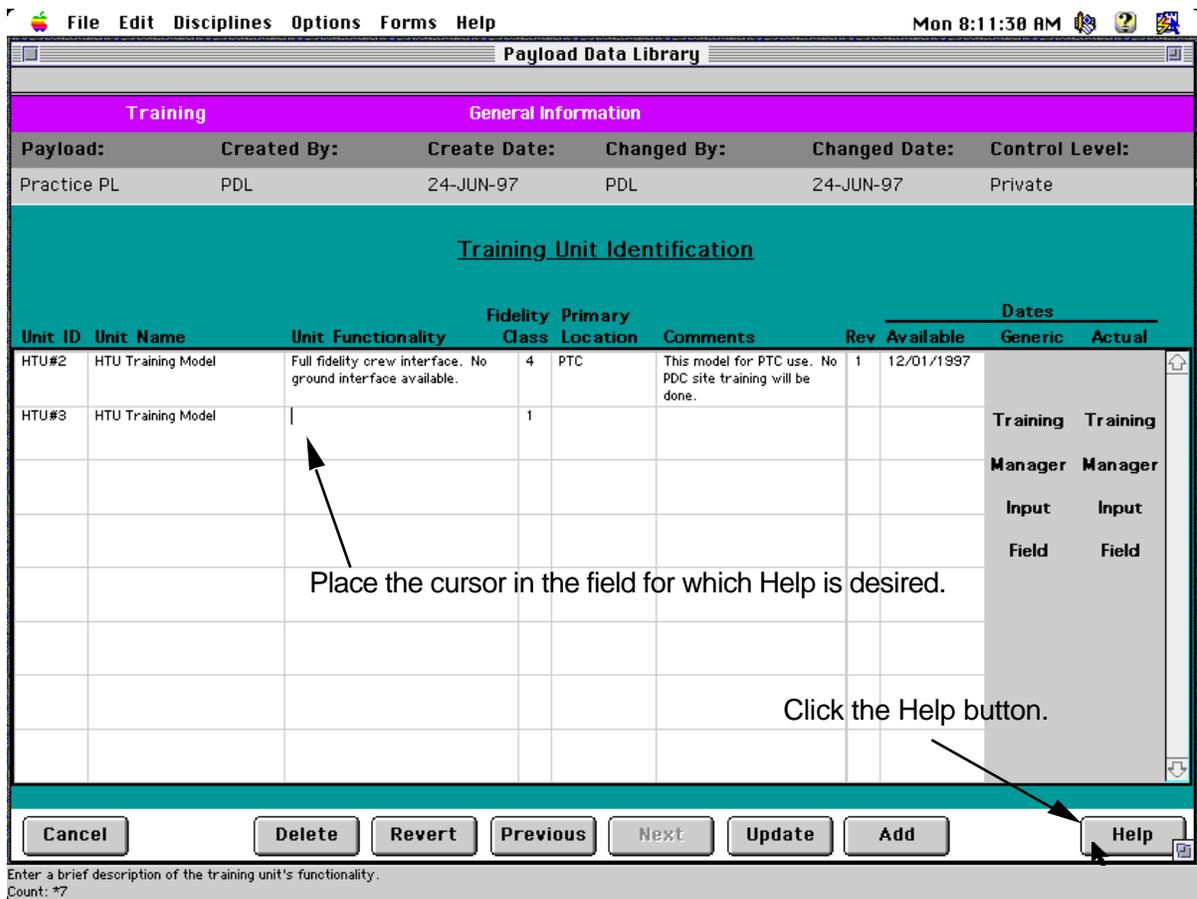


FIGURE 3-13 ACCESSING ITEM-SPECIFIC HELP

The Help for the selected field will be displayed. See Figure 3-14. Click Done when finished.

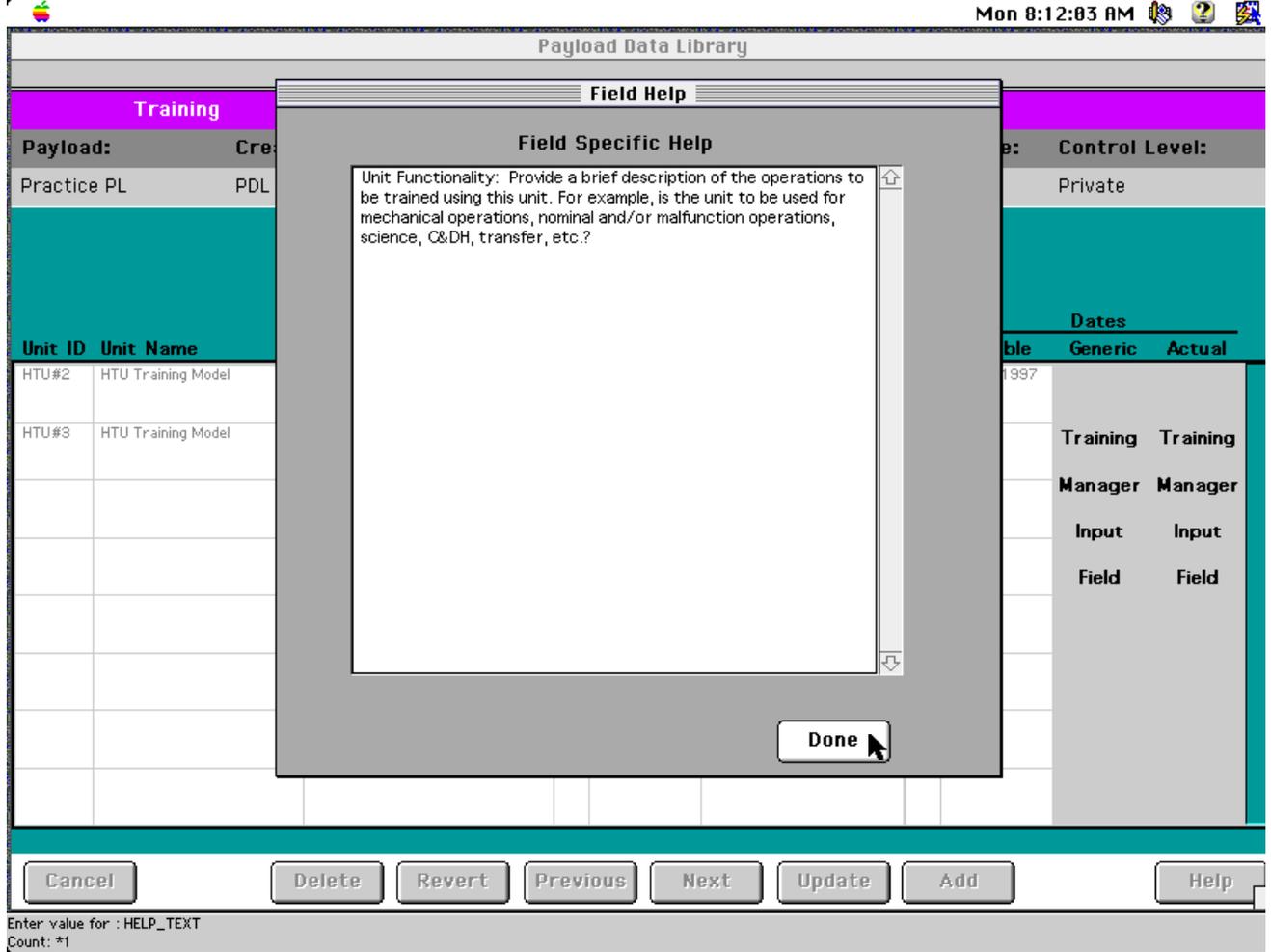


FIGURE 3-14 VIEWING ITEM-SPECIFIC HELP

3.7.2 Form-Specific Help

To access Form-Specific Help, choose On Forms from the Help menu. All PDL options are displayed. (Note: This is not discipline specific.) Choosing an Option will display Help and a list of forms for the selected Option. See Figure 3-15. If the user selects a Form, the Option Help is replaced by Form Help. See Figure 3-16. Click Done when finished.

3.7.3 General Help

To access General Help, choose General from the Help menu. Enter a keyword in the text box and click the Find button. A list of matching items will be displayed in the first scroll box. Items in the list contain the keyword in the title or in the help text. Select an item from this box and the associated Option title, Form title, Field title, and Help text will be displayed.

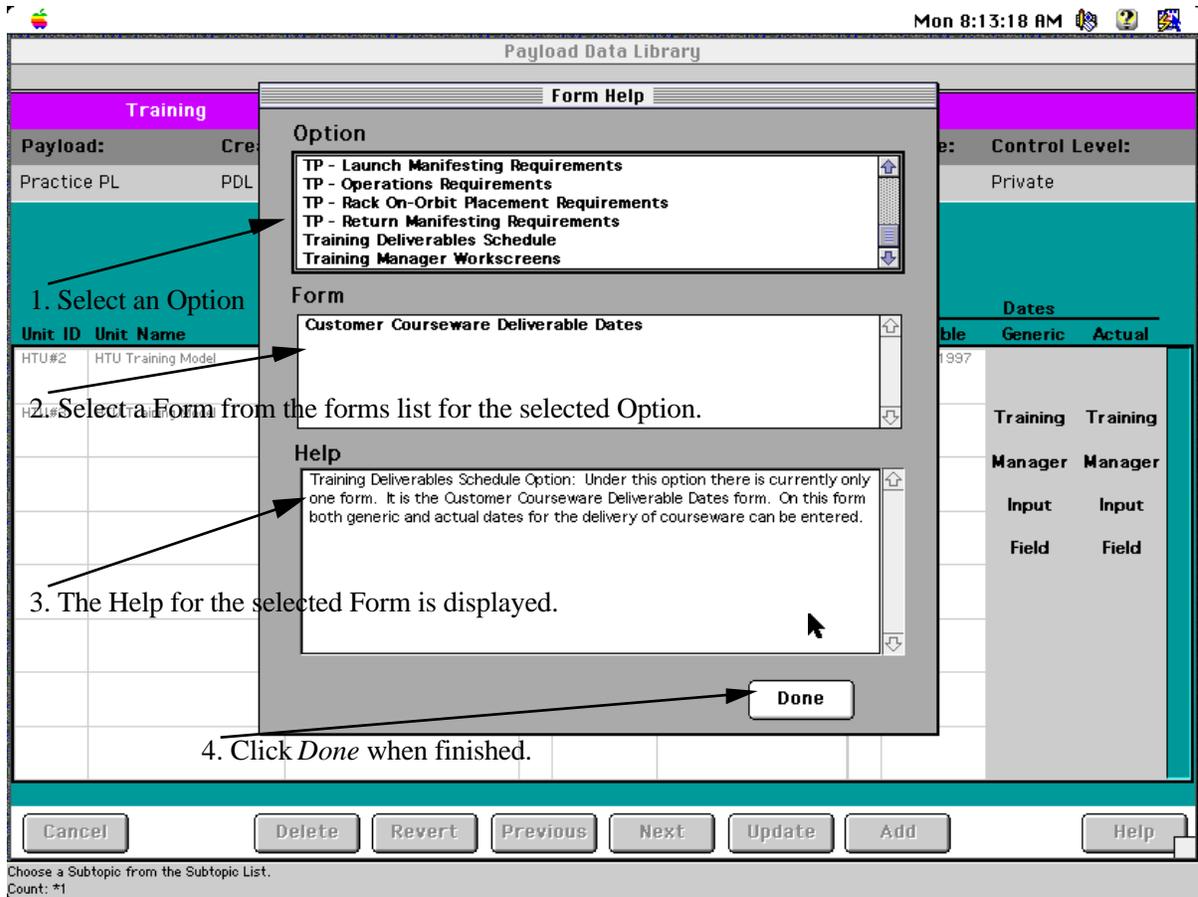


FIGURE 3-16 VIEWING FORM-SPECIFIC HELP

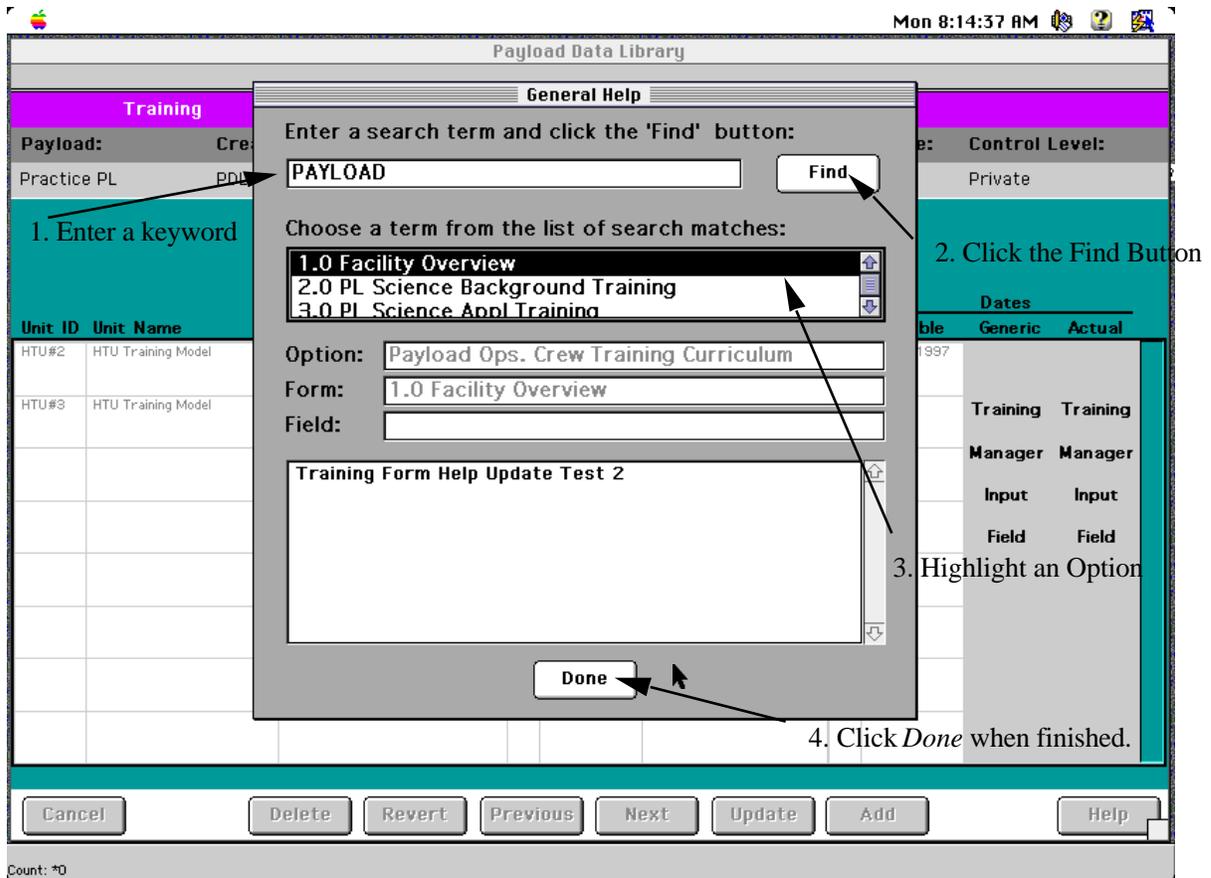


FIGURE 3-17 VIEWING GENERAL HELP

3.7.4 Sending Comments to the PDL Team

To send comments to the PDL Team, choose Review Comments from the Help menu and click the Add button. Your user name, current date, current version number, computer platform, current discipline title, current option title, current section title, and the next Comment ID number will be automatically entered into the record. You may then type in a message, comment, question, or problem in the description field (this is the only field that the user can update). Click the Update button to send the comment to the PDL team or click the Revert or Cancel button to erase the comment. Use the Comment ID number to check the status of and the PDL response to your comment. See Figure 3-18.

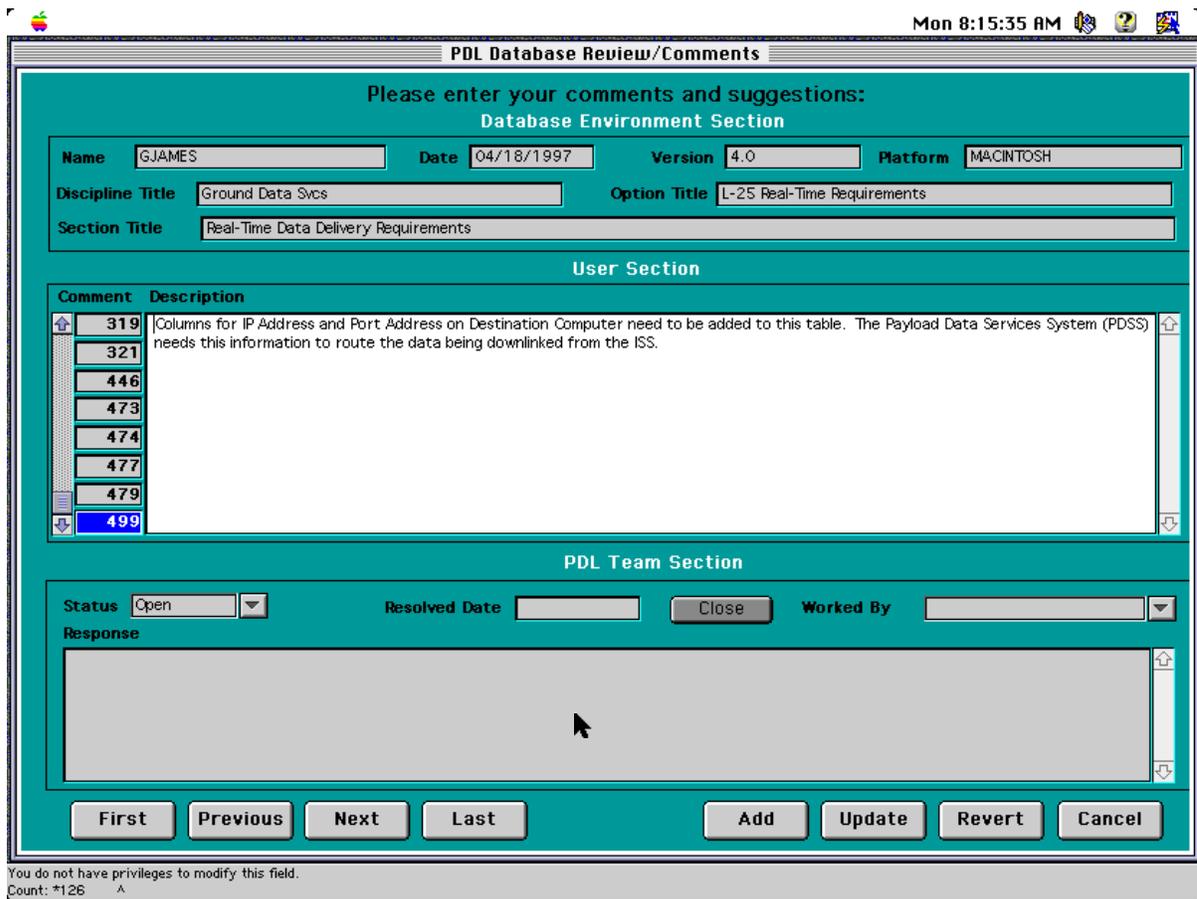


FIGURE 3-18 SENDING COMMENTS TO THE PDL TEAM

3.8 ACCESSING THE LATEST PDL NEWS ITEMS

PDL News, shown in Figure 3-19, is available by selecting News from the Help menu. The current PDL version number is displayed as well as informative messages from the PDL development team. Click the Done button to close the News window.

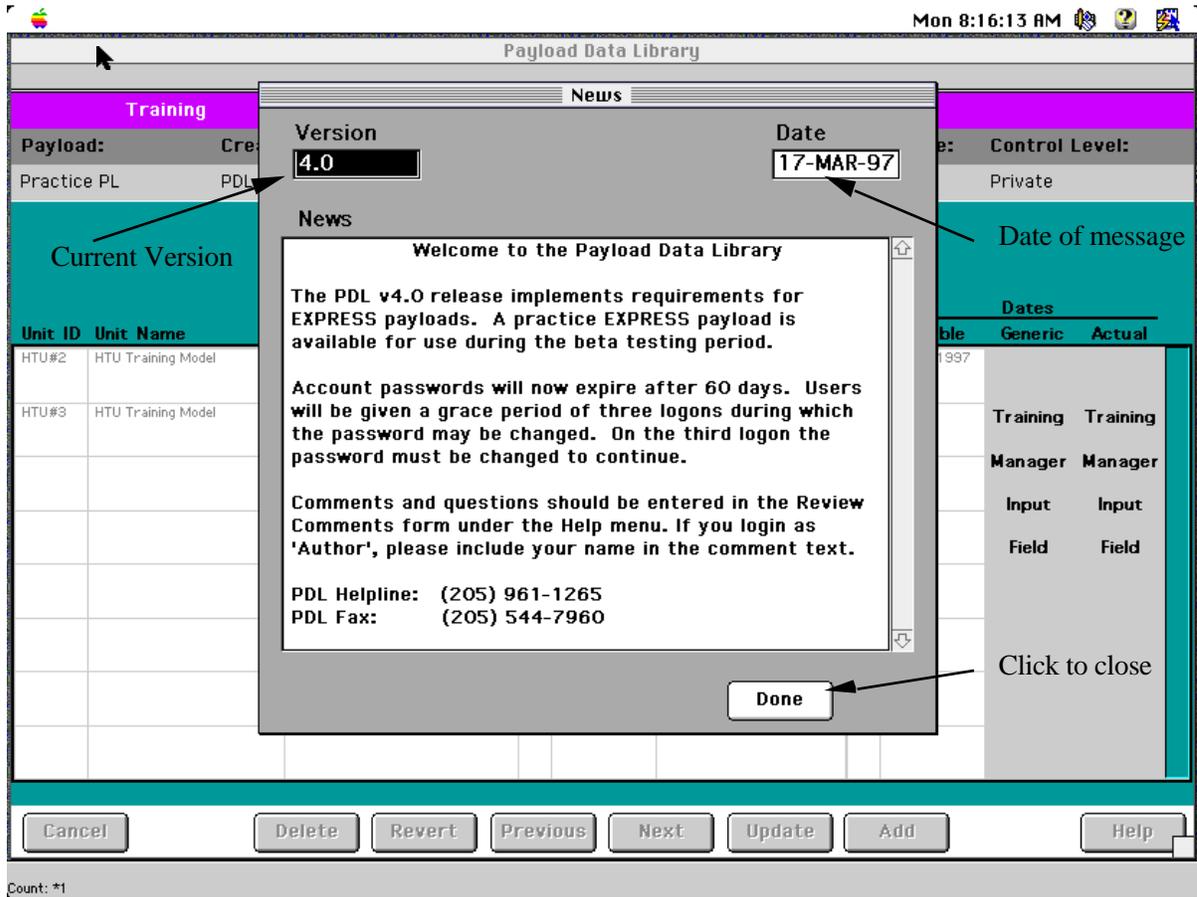


FIGURE 3-19 VIEWING PDL NEWS

3.9 ENTERING INFORMATION INTO THE PDL

There are several ways to enter information into PDL. Any constraints on data length or format are displayed in the Hint Line at the bottom of the screen and in the Item Help information available from the Help menu. After entering information, click the Update button on the bottom of the screen to save changes.

Select items in a list by clicking in a checkbox as shown in Figure 3-20.

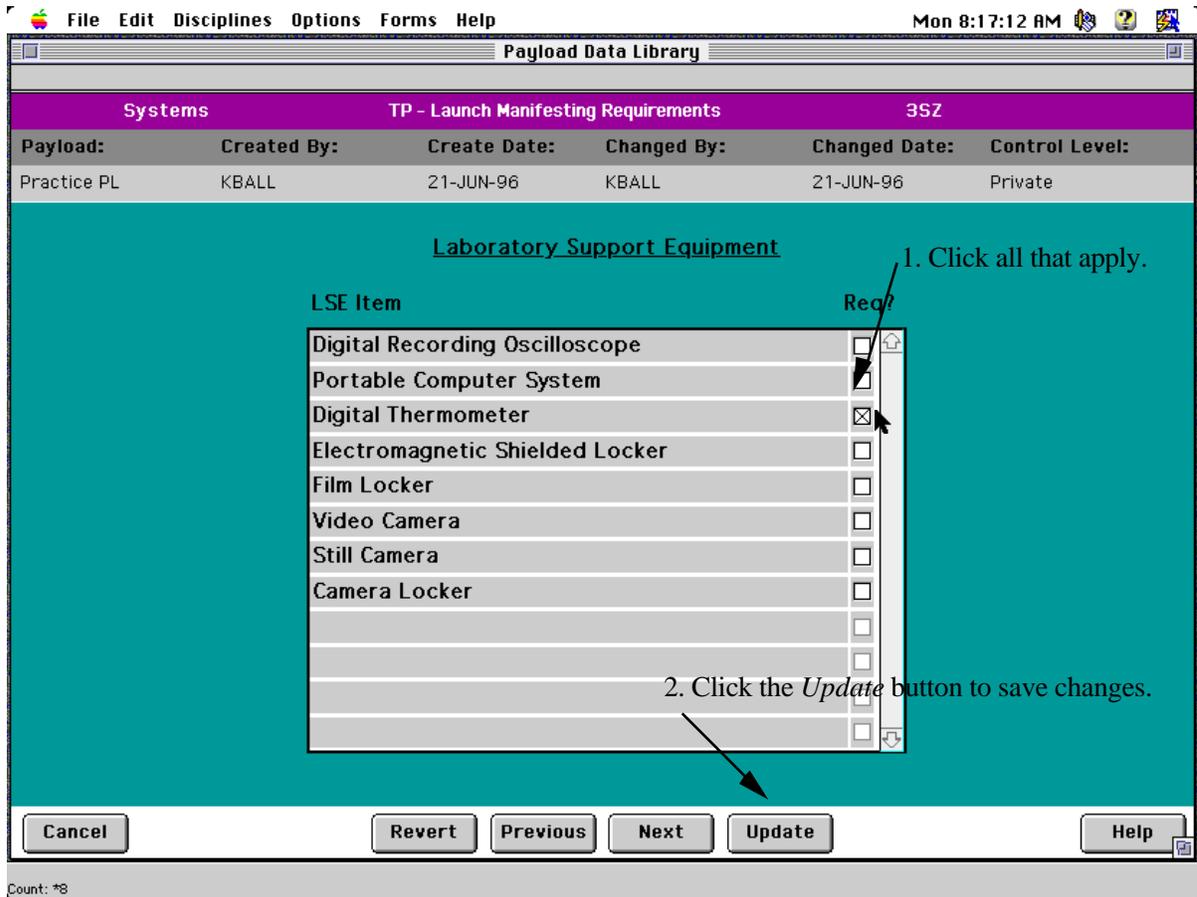


FIGURE 3-20 ENTERING INFORMATION WITH A CHECKBOX

Enter quantities by placing the cursor in the white entry field and typing the information, shown in Figure 3-21.

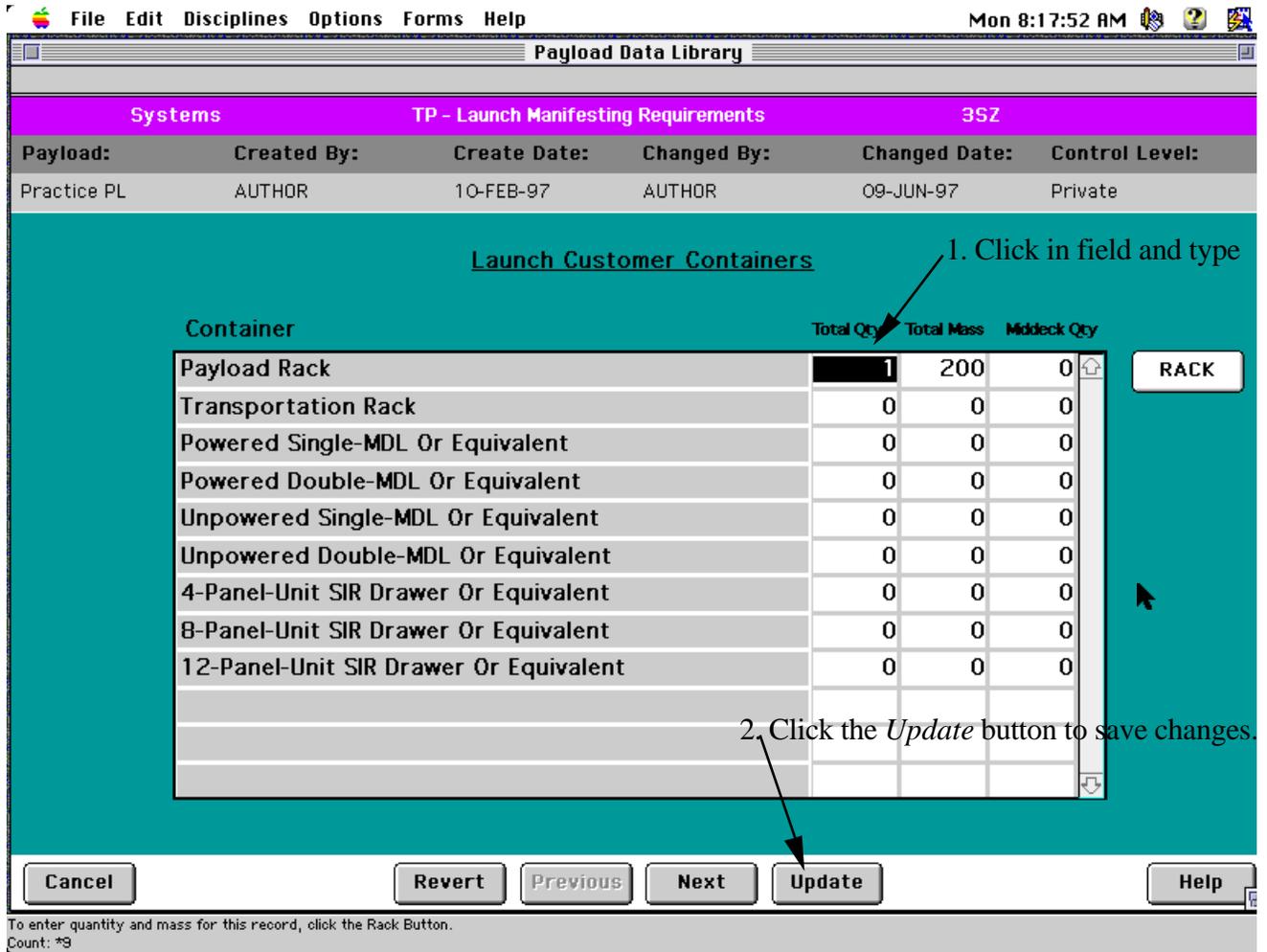


FIGURE 3-21 ENTERING INFORMATION IN SHORT FIELDS

Enter long descriptions and comments by placing the cursor in the large white entry field and typing all text, as shown in Figure 3-22. A scroll bar at the right edge of the field facilitates text scrolling. Text can also be navigated by using the Up and Down arrow keys.

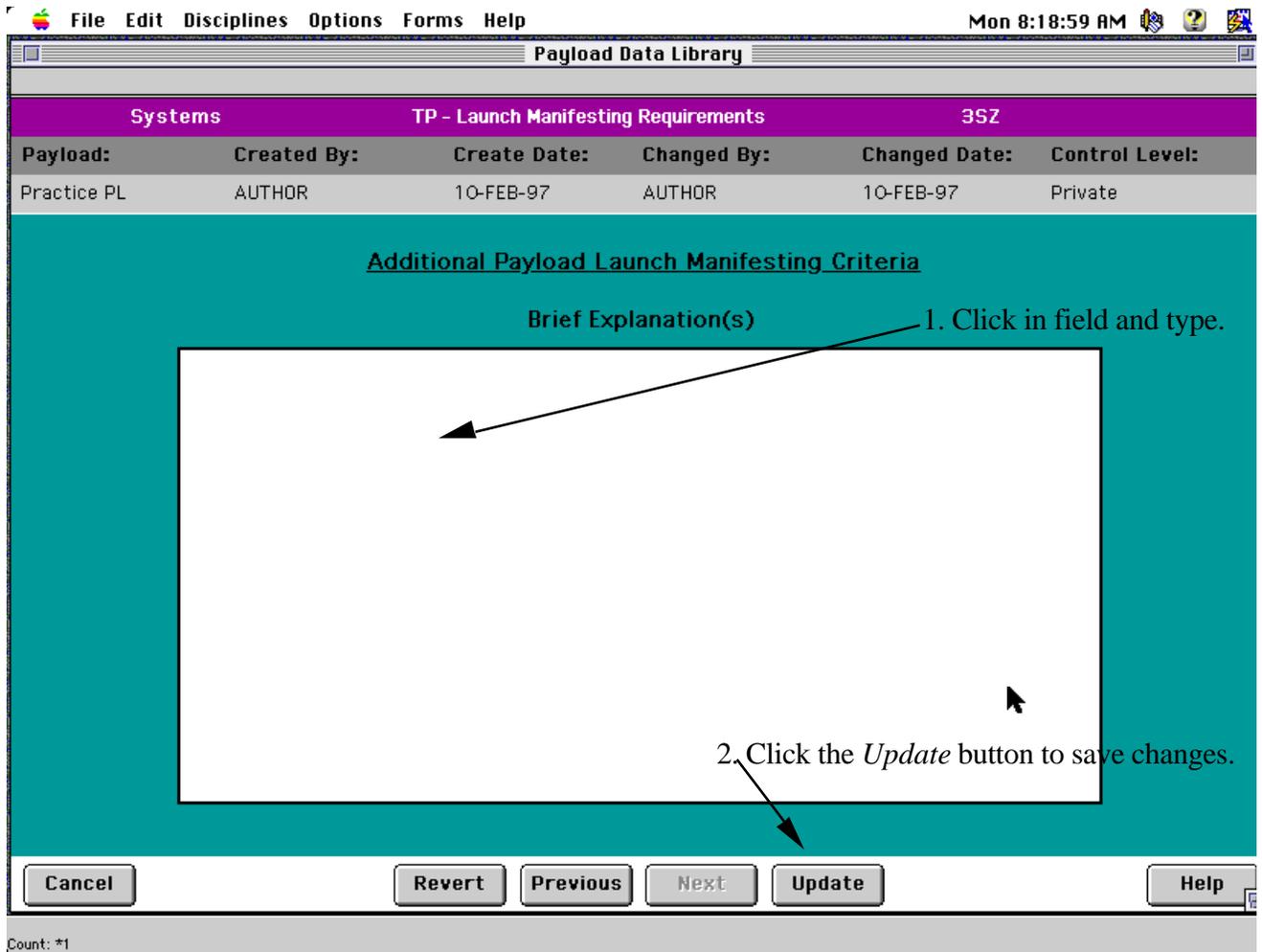


FIGURE 3-22 ENTERING LONG DESCRIPTIONS

To add an entry, such as an additional item to a list of predefined items, first click the Add button, as shown in Figure 3-23. After entering the new information, click the Update button to save changes.

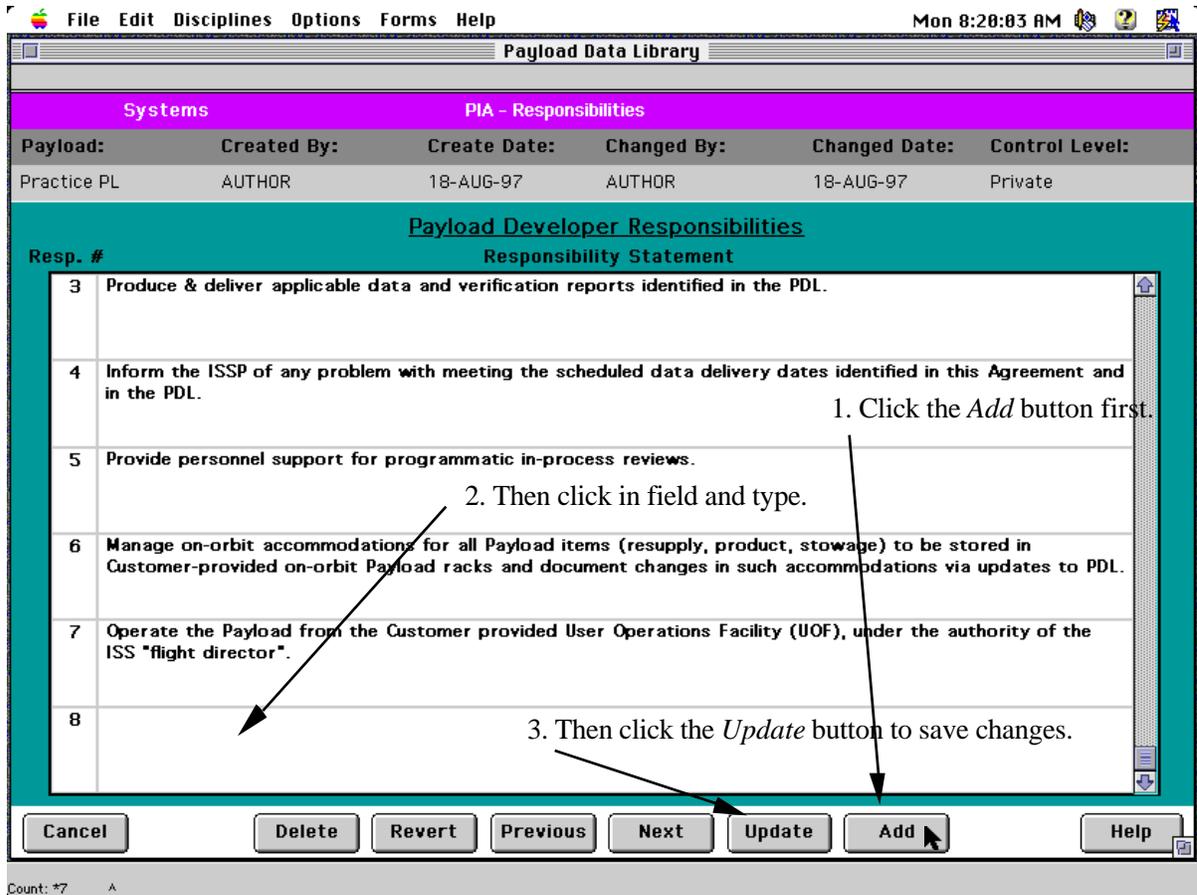


FIGURE 3-23 ENTERING INFORMATION BY ADDING A RECORD

3.10 PROMOTING DATA

TBD

3.11 IMPORTING GRAPHICS

TBD

(This Page Intentionally Blank)

APPENDIX A
ABBREVIATIONS AND ACRONYMS

(This Page Intentionally Blank)

APPENDIX A, ABBREVIATIONS AND ACRONYMS

C	Commercial or Canadian Space Agency
Cmd.	Command
CMILP	Consolidated Management, Inventory, and Logistics Planning
CSA	Canadian Space Agency
Disp.	Discipline
E&OI	Engineering and Operations Integration
EMI	Electromagnetic Interference
ESA	European Space Agency
FTP	File Transfer Protocol
GUI	Graphical User Interface
HOSC	Huntsville Operations Support Center
IAD	Interface Agreement Document
ICD	Interface Control Document
KSC	Kennedy Space Center
L	Launch
MB	Megabyte
MHz	Megahertz
MMDS	Mission Management Data System
MSFC	Marshall Space Flight Center
NASA	National Aeronautics and Space Administration
NASDA	National Space Development Agency of Japan
PC	Portable Computer
PDL	Payload Data Library
PL	Payload
POIF	Payload Operations Integration Function
POP	Payload Operation Performance
PSIV	Payload Software Integration and Verification
RAM	Random Access Memory
RDBMS	Relational Database Management System

SPOE	Standard Payload Outfitting Equipment
SSP	Space Station Program
STS	Space Transportation System
TBD	To Be Determined
TCP/IP	Transmission Control Protocol/Internet Protocol
UMDB	User Mission Database
WWW	World Wide Web