PERCEPTION®

Getting Started

A Training Tutorial

This training tutorial outlines the basic operating features of the *PERCEPTION* system.

It describes the menus, the database libraries, the tool bars, and how the user can navigate around the system and perform various operations.

This tutorial is a supplement to the user manual entitled "Getting Started With *PERCEPTION*," which provides more details for the user.

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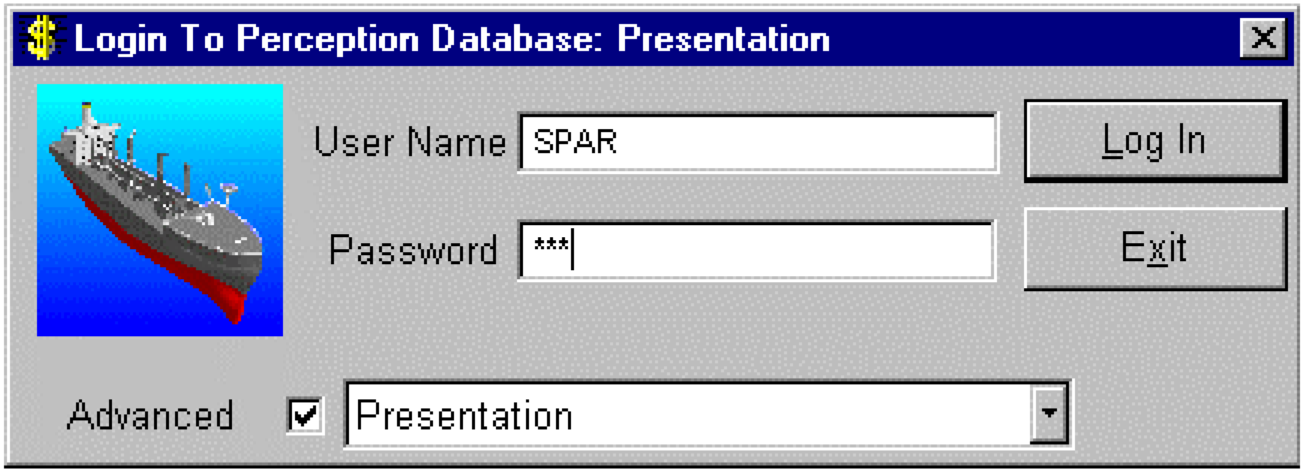
Starting *PERCEPTION*

To start the *PERCEPTION* software, click on the installed program icon.

The system will initially pop up a login window for the user to enter a name and password.



All *PERCEPTION* users must be defined on the database with name, password and access limits to selected software functions.

Refer the "System Administration Manual" for details on security issues.

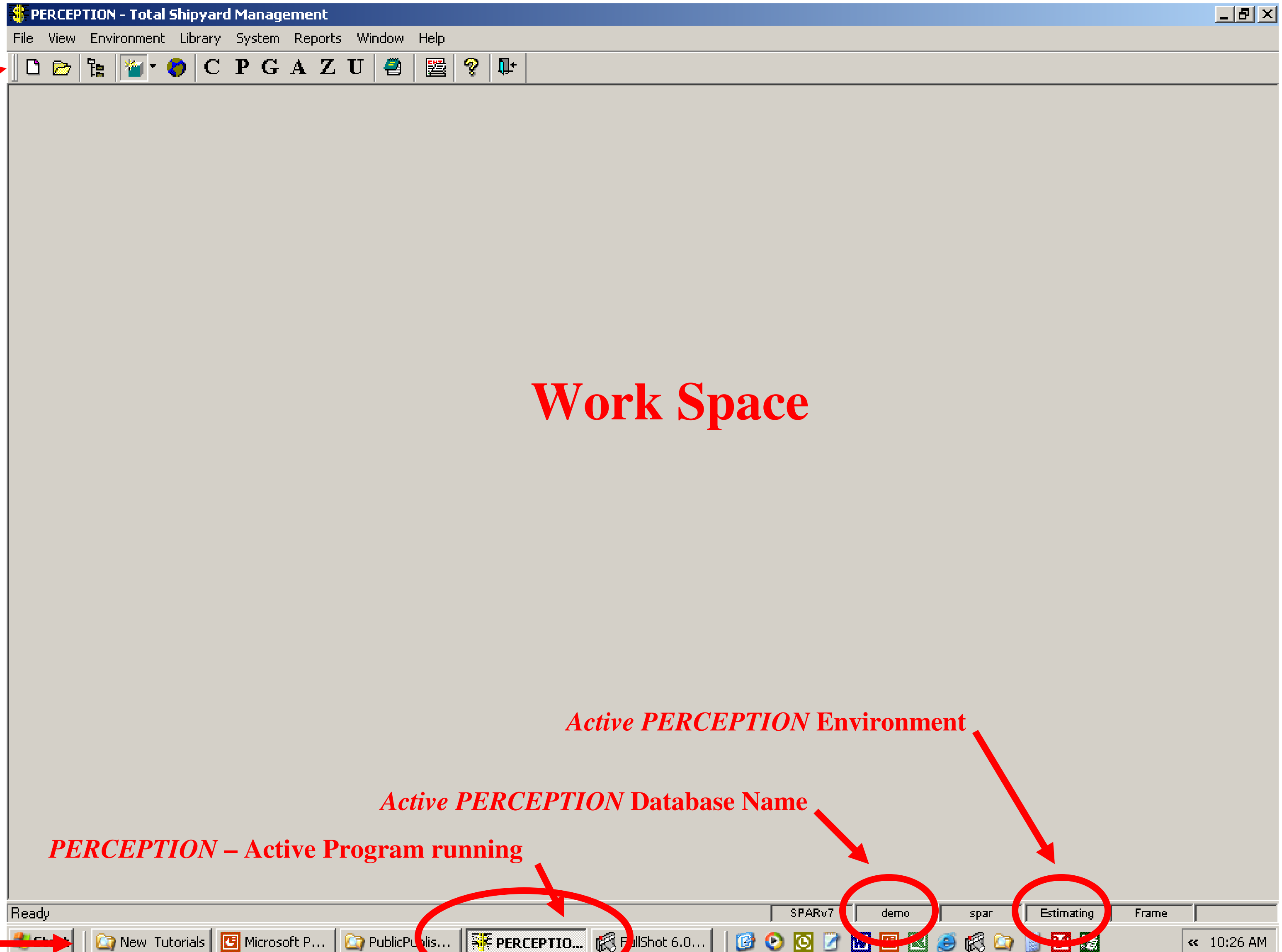
Main Window

The Main Window is organized in the following major processing areas:

- The Menu Bar for system functions
- The Toolbar for system processes
- Work space
- Help Bar
- Task Bar

Menu Bar

Tool Bar



Help Bar

Task Bar

Menu Bar

The Menu Bar of the Main Menu Screen provides the following supporting functions:

- **File**
- **Edit**
- **View**
- **Environment**
- **Library**
- **Data**
- **Reports**
- **Window**
- **Help**

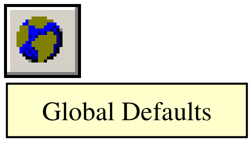
Note**:** ***Some of the features (for example, Edit) that are described later in this tutorial may be not be active at this time, but will become visible be as data is retrieved, added and changed.***

Tool Bar

Many of the supporting functions that are in the main menu system can also be executed by clicking a button on the toolbar. Many of these functions are standard Windows functions.

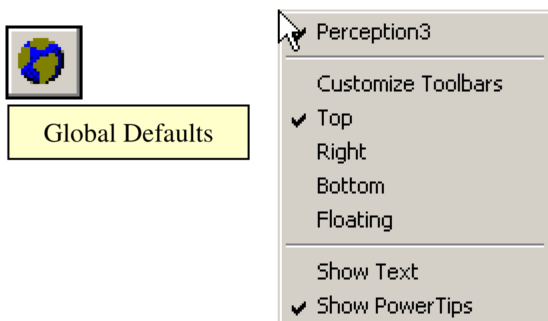
Additional toolbars are only visible when they are applicable to specific active windows.

When placing the cursor over any button (don't click), the system will display button text that identifies the button function.



The user can customize the position, the button size, and whether or not to display the button text of these toolbars.

By right clicking on a toolbar, the changes can be made to the toolbar from a selection menu.



The user may choose to have this button text always displayed for all buttons on the tool bar with the *Show Text* selection turned on.

Help Bar

The Help Bar, located just above the Task Bar at the bottom of the window display, provides the following information:

- **Status of active window**
- **Current Environment Selector setting**
- **Database in use**

Task Bar

The task bar at the bottom of your screen displays task buttons for all open (running) application programs.

When *PERCEPTION* is running, you will see its application task button entitled *PERCEPTION – Total Shipyard Management*.

In addition, there will be an application task button that identifies the running of the *PERCEPTION* database. This represents your connection to the database.

Environments

PERCEPTION is a modular system.

Each module operates within a specific business area called "Environments."

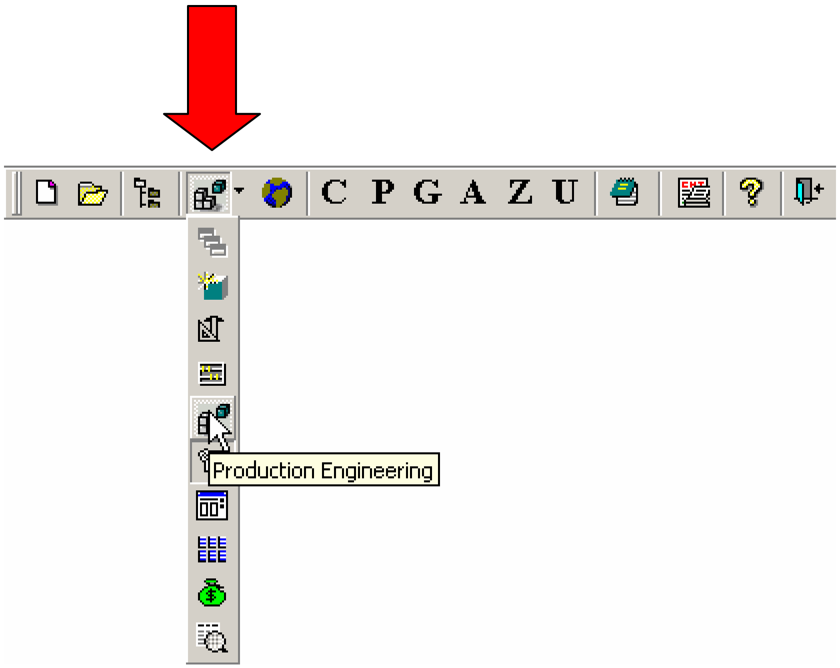
Environments reflect the business processes performed in various shipyard departments.

Environments currently serviced by *PERCEPTION* are the following:

- **Cost Estimating**
- **Engineering: Managing Drawings & Bills of Material Data**
- **Planning & Scheduling: Project Scheduling & Managing Planning Activities**
- **Production Engineering: Managing Work Orders, Manpower Planning, & Production Cost/Schedule Performance Reporting**
- **Material Control: Managing Project Requisitions, Shipyard Inventories, & Work Order Pallets**
- **Purchasing: Managing Purchase Orders & Expediting Deliveries**
- **Stores Management: Managing Inventories, Delivery Receipts & Production Issues; Also Managing Tool Room Assets.**
- **Accounting: Managing Time Charges, Vendor Invoices, Customer Billings and Job Costs With Interfaces to Accounting Systems**

Environment Selector

The *Environment Selector* button on the tool bar allows the user to easily change environment in which the current window will be viewed.



The *Environment Selector* can change the view of some of the open windows.

> **For example, the *Cost Estimating* view of Project *Details* is different from the *Production Engineering* view of the same window.**

The selected environment also can change the tool bar and what functions are available to the user.

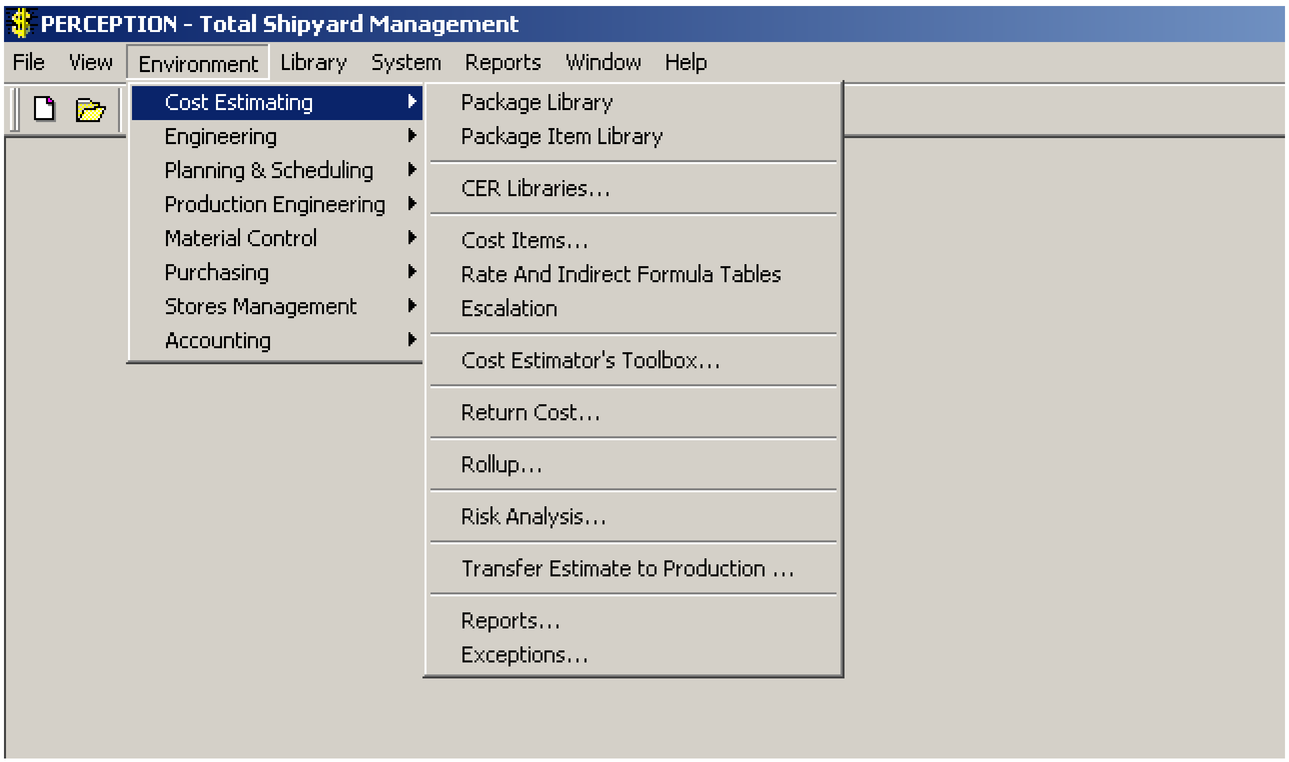
The user can see the current *Environment Selector* setting in the Help Bar at the bottom of the screen.

Every user of the system must be identified on the system database with their user name and password.

In addition, each user must be assigned to one or more environments to which they will have access. The user will then be restricted from accessing functions available in all other environments.

Refer the "System Administration Manual" for details on security issues.

Click on *Environment* in the main menu to view the various functions available within each environment.

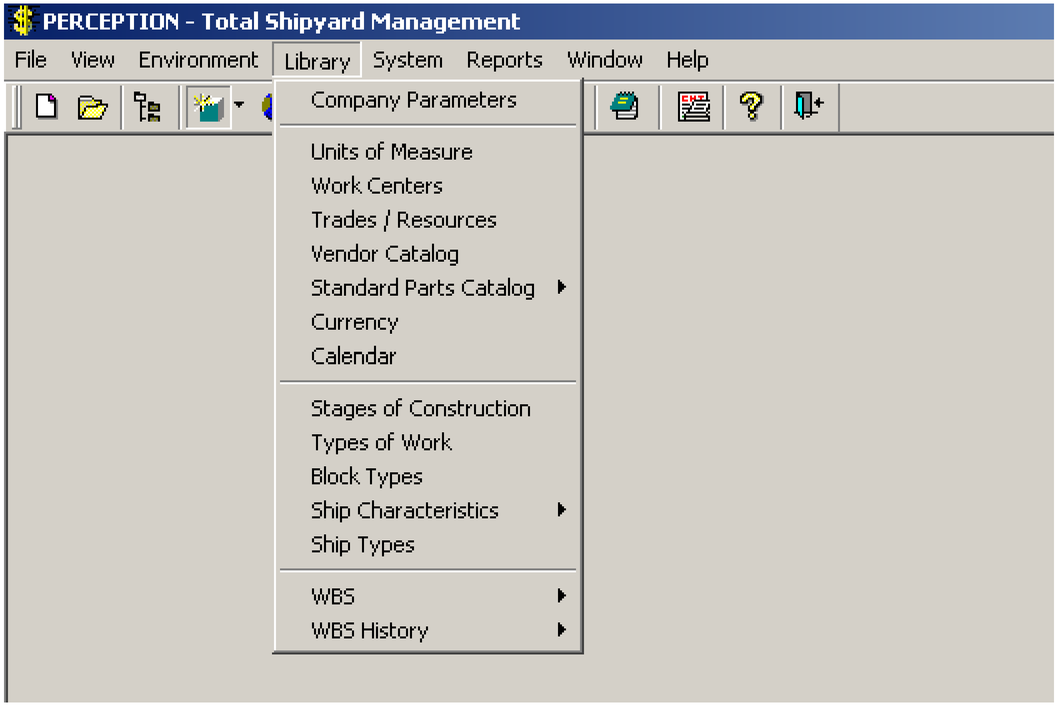


Functions available within the Cost Estimating environment

Libraries

While each of the environments manage their own particular libraries of information, some libraries and tables are used by more than one environment.

These may be accessed from the *Library* in the Main Menu.



PERCEPTION Library Files:

- Units of Measure
- Shipyard Work Centers
- Trades and Resources
- Vendor Catalog
- Standard Parts Catalog
- Currency Table
- Calendars
- Customers
- Stages of Construction
- Types of Work
- Hull Block Types
- Ship Characteristics and Ship Types

Using The Database

***PERCEPTION* provides a variety of features for developing and managing information using the database.**

The following describes the various procedures for adding information, and retrieving, modifying and deleting it from the database.

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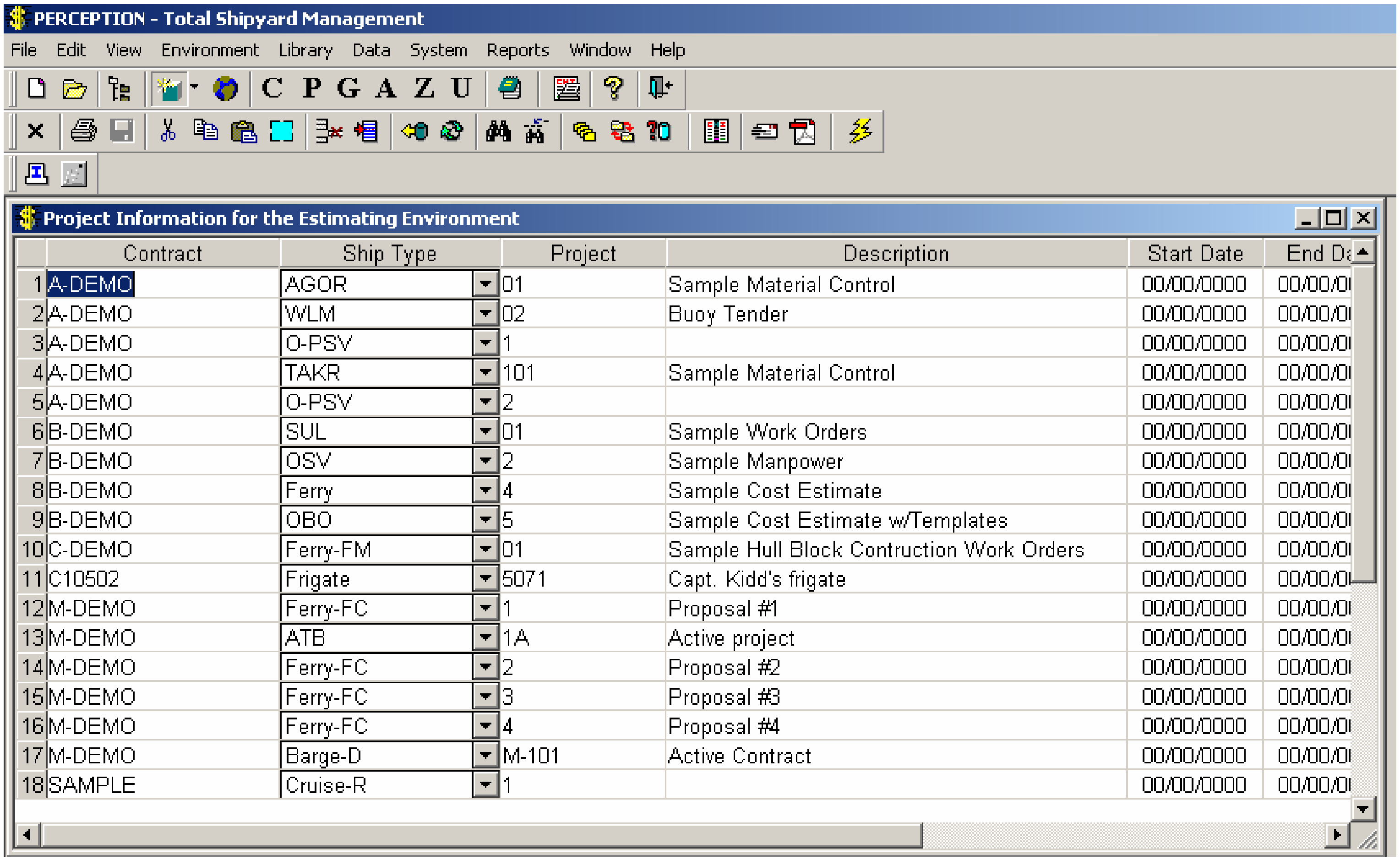
After completing the log-in, the desired worksheet is opened from a selection menu or from the toolbar.

Most data entry windows initially open with no information displayed.

The user is required to either retrieve desired information from the database or begin adding new information directly.

A common type of window is the worksheet, which is similar to a spreadsheet. To provide more user functionality, worksheets often have more toolbars. The figure below is a worksheet for entering projects. There are special <u>toolbar buttons</u> to Add Delete , Save data, etc.



	Contract	Ship Type	Project	Description	Start Date	End Da
1	A-DEMO	AGOR	01	Sample Material Control	00/00/0000	00/00/0
2	A-DEMO	WLM	02	Buoy Tender	00/00/0000	00/00/0
3	A-DEMO	O-PSV	1		00/00/0000	00/00/0
4	A-DEMO	TAKR	101	Sample Material Control	00/00/0000	00/00/0
5	A-DEMO	O-PSV	2		00/00/0000	00/00/0
6	B-DEMO	SUL	01	Sample Work Orders	00/00/0000	00/00/0
7	B-DEMO	OSV	2	Sample Manpower	00/00/0000	00/00/0
8	B-DEMO	Ferry	4	Sample Cost Estimate	00/00/0000	00/00/0
9	B-DEMO	OBO	5	Sample Cost Estimate w/Templates	00/00/0000	00/00/0
10	C-DEMO	Ferry-FM	01	Sample Hull Block Contruction Work Orders	00/00/0000	00/00/0
11	C10502	Frigate	5071	Capt. Kidd's frigate	00/00/0000	00/00/0
12	M-DEMO	Ferry-FC	1	Proposal #1	00/00/0000	00/00/0
13	M-DEMO	ATB	1A	Active project	00/00/0000	00/00/0
14	M-DEMO	Ferry-FC	2	Proposal #2	00/00/0000	00/00/0
15	M-DEMO	Ferry-FC	3	Proposal #3	00/00/0000	00/00/0
16	M-DEMO	Ferry-FC	4	Proposal #4	00/00/0000	00/00/0
17	M-DEMO	Barge-D	M-101	Active Contract	00/00/0000	00/00/0
18	SAMPLE	Cruise-R	1		00/00/0000	00/00/0

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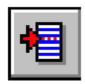
Adding New Database Records

To add new records, click on

- **The *Add* button**  **on the toolbar or**
- **The *Add Record* or *Insert Record* options from the *Data* menu.**

More records can be added by clicking *Add* each time.

However, using the keyboard *down-arrow* key also will open a new record for data entry.

Modifying Database Records

Moving from one field to another can be done by with the mouse or the *Tab* key. Data in various fields then can be edited or replaced.

Additional details are given below for a variety of data editing features.

Selecting Multiple Records

On the worksheet windows, multiple rows can be selected.

There are two methods for highlighting multiple records (i.e., rows of data).

- **For a series of records that are together row-wise, hold down the keyboard *Shift* key and a click at the top-most record to select. Keep holding the *Shift* key down and move the cursor down to the lowest record to select and click on it. All rows in this series will then become highlighted, or selected.**

- **For rows that are not all together in a series, but are interspersed in various rows, hold down the keyboard *Ctrl* key and then click on each row to be selected.**

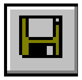
Deleting Database Records

Generally, there are two types of data entry screens that have slightly different methods for deleting records.

•For screens that display only a single record (most detail windows), click on the *Delete* button on the tool bar or select *Data/Delete Records* from the main menu. This tells the system to delete <u>only that record which is on display</u>.

On worksheet windows, multiple records can be deleted at one time by selecting the rows to be deleted and then clicking on the *Delete* button.

Saving Database Records

When finished adding, changing and/or deleting database records, click on the *Save* button  on the toolbar to write the changes to the database.

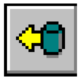
This *Save* transaction will also permanently delete any records that may have been deleted in the data window. The system will then inform the user when the update is successful.

The user also can *Close* the data window (X button) without clicking on the *Save* button, and the system will prompt to either save the changes or discard them.

If, for some reason, the program aborts <u>before the *Save* button has been clicked</u>, the current changes will not be saved on the database and must be re-entered.

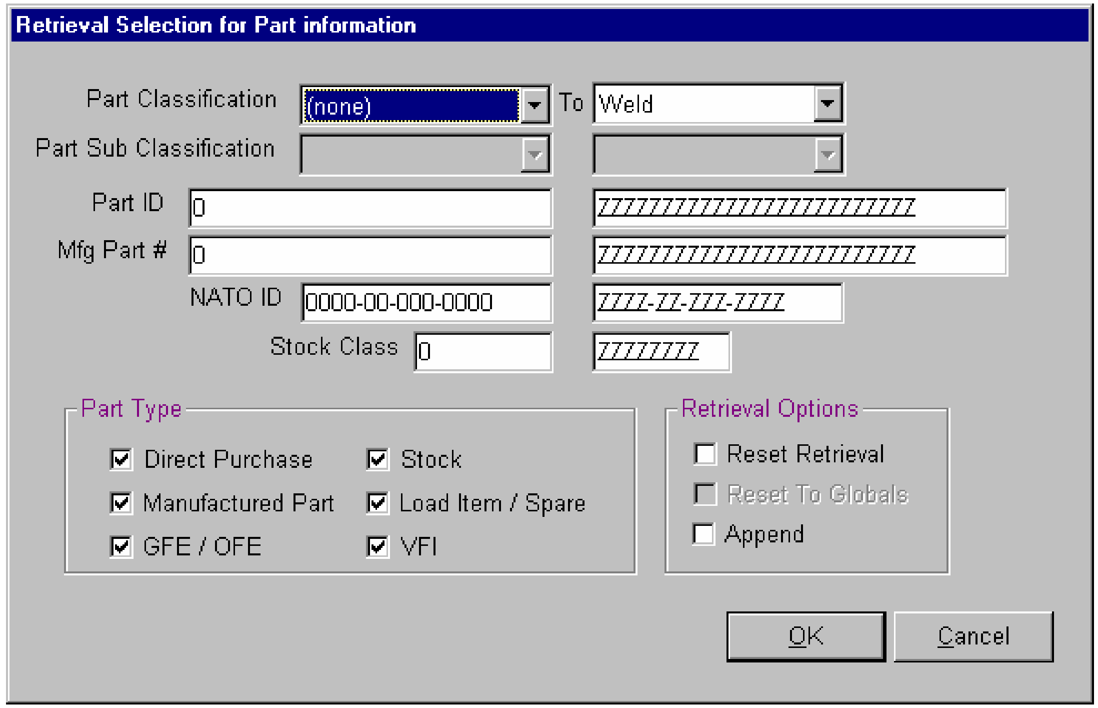
Retrieving Database Records

To retrieve existing records into a worksheet,

- **Click on the *Retrieve* button**  **on the toolbar, or**
- **Select *Retrieve* from the *Data* menu.**

The system will provide an opportunity for the user to narrow this retrieval operation to only the selection of records that are required.

The Parts Catalog retrieval window is an example.



The record retrieval selection process is one whereby the user can specify a range (minimum and maximum) of values for a particular set of information.

The user may use any or all of the criteria available on the selection window to narrow the search and retrieval process.

Most data fields that identify various records (for example, part number, work order number, purchase order number, etc.) are alphanumeric, even if the user has set up numeric identifiers.

The system treats all identifiers as alphanumeric. The system's sorting order for characters is as follows:

0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ.

Small letters and capital letters are treated equally.

The lowest possible value for an identifier is the numeric character zero (“0”).

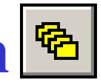
The highest possible value for an identifier is the maximum length of characters for the identifier filled with the character “Z”.

If the default values of 0 and ZZZZZZZZ are left unchanged for any field(s) on the retrieval window, then the system will not use that field when building the query from the database.

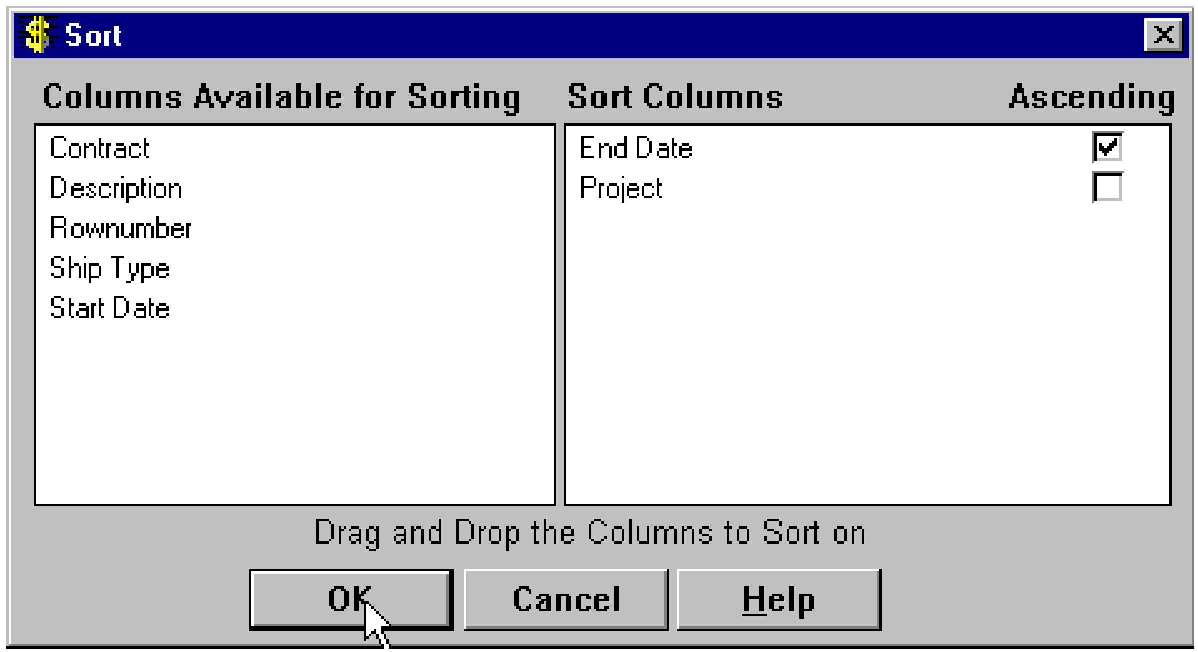
Sorting Records

Data displayed in any worksheet can be sorted by any column of information.

Click on the column header and the rows of data will be sorted immediately in ascending order of the contents of that column.

Another method for sorting is clicking on the ***Data/Sort*** **from the main menu or by clicking on the** ***Sort*** **button**  **on the tool bar.**

The system will display a pop-up window listing all of the column headings that can be selected for sort operations.



The Sort window contains two boxes:

- **<u>In the left box</u> is the selection of data fields (columns) of information in the worksheet to be sorted.**
- **<u>In the right box</u> are the columns selected by the user that are to be the basis for the sort.**

To select a column, the user highlights the column name from the list in the left-side box and <u>drags it to the right-side box</u>.

Multiple columns can be selected using this same procedure.

The column identified at the top of the right-side box is the column to be the major sort column. Columns listed below this major sort column are the minor sort columns in descending order of priority.

The check boxes, if turned on, will cause the system to sort that column in ascending order. If turned off (no check), the column will be sorted in descending order.

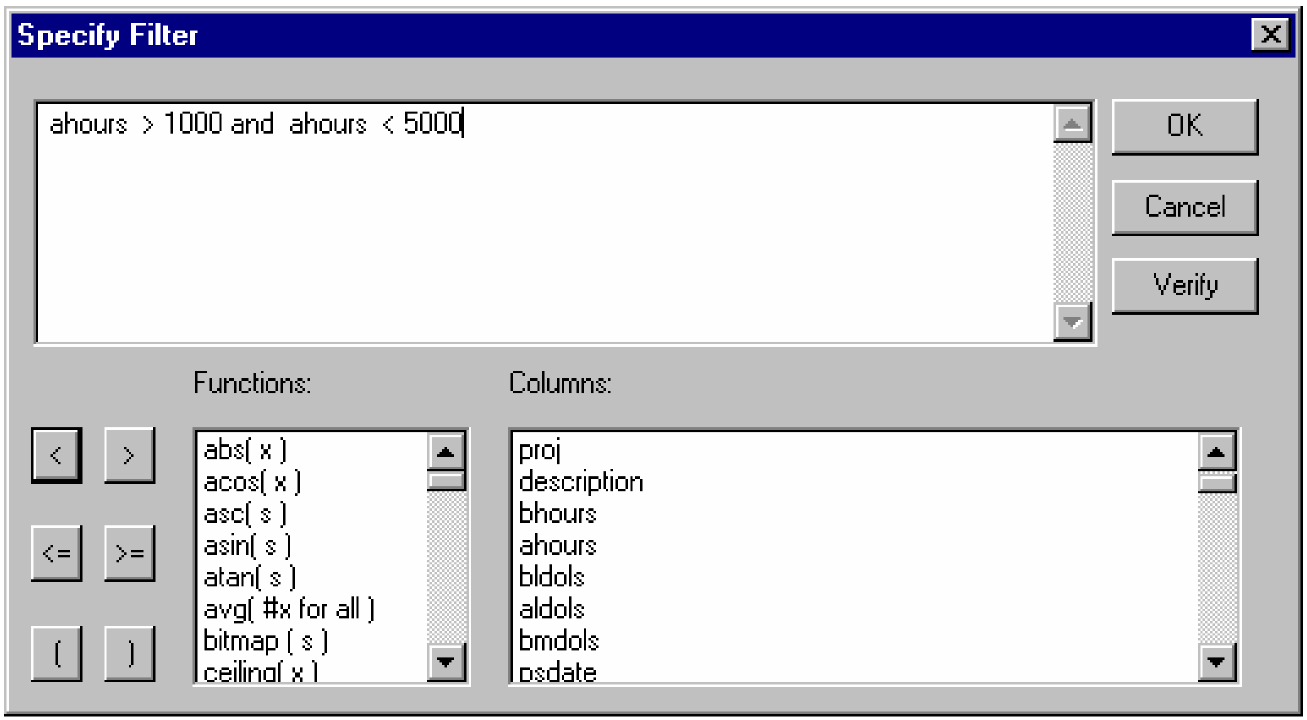
A column can be deselected from the right-side box by highlighting it and dragging it back to the left-side box.

Filtering Records

Once a worksheet has been loaded with records of data, the filter option allows the user to make global changes without affecting other records in the worksheet.

To use the filter, click on *Data/Filter* on the main menu or click on the *Filter* button on the tool bar.

The system will display a filter wizard that allows the user to create their own filter statement:



Printing Database Records

To print a copy of the window as displayed, select *File/Print Screen* from the main menu.

Clicking on the *Print* button  **on the toolbar will print all of the data that is displayed in the current open data window, but in database format.**

Editing Functions

<u>To change data within any record</u> displayed in the data entry window, click on the field to be modified and edit or re-enter the data.

Any number of data fields across any number of records displayed on the screen can be modified in similar ways by using the mouse cursor or the [Tab] key to move from field to field.

The following are frequently used operations for editing any given data field:

To <u>insert one or more characters</u> into a data field:

1. **Click on the space to the right of the character where the insertion is to begin. Note that the cursor becomes a vertical line (|).**

2. **Then, type in the characters to insert.**

To delete one or more characters from a data field;

1. Click on the left of the character string to be deleted.
2. Then, press the [Delete] key, repeatedly for each character to be deleted.

To delete a long string of characters from a data field:

1. Click on the space before the left end of the string.
2. Then, drag the cursor to the right end of the string. Note that the system will highlight the string during this dragging process.
3. Then, press the [Delete] key.

To replace a string of characters within a data field:

1. **Click on the space before the left end of the string.**
2. **Drag the cursor to the right end of the string until the string to be replaced is highlighted in dark blue.**
3. **Then, enter the replacement string of characters from the keyboard.**

To replace the entire contents of the data field,:

1. **Click on the data field until the system fully highlights the contents of the field.**
2. **Then, enter the replacement string of characters from the keyboard.**

Data Validation

It is important that any system use valid information. The old saying "garbage in, garbage out" still applies, even for the most sophisticated of systems.

This means that data going into the system must be accurate, and that for certain areas, the information must be complete.

Incomplete data can create problems when the system attempts to summarize status information. However, the responsibility for maintaining accurate and complete data can be shared between the users and the system.

PERCEPTION **has many features that help minimize data errors and omissions. These validation features generally are initiated at different points of the system:**

1. **Some validations are made on the spot as the user enters data into a data window.**
2. **Other automated validation features restrict the user to only previously defined data using drop-down windows that access tables developed elsewhere on the database.**
3. **Many validations are made by the system when the user attempts to save data onto the database.**

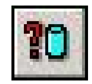
Additional Data Validation Features:

4. **There is a special data validation button on the toolbar. This validation checks for data discrepancies that may not be in error, but nevertheless may warrant user attention.**

5. **The system manages a list of business rules, many of which the user's systems administrator can turn on or off. Many of these business rules instruct the system on how to treat various transactions as being valid or not.**

6. **The system finally offers a wide range of exception reports. These reports allow the users to scan information on the database according to specified criteria. Those items on the database that meet or fail the criteria will be reported as directed by the user.**

There are several methods available for initiating data validation:

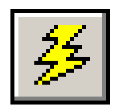
1. **Click on the data validation button**  **on the tool bar, and the system will run validation tests on <u>all</u> records currently retrieved in the worksheet.**
2. **Click on *Data/Validate Row* on the main menu to validate only that record currently in focus.**
3. **Click on *Data/Validate Selection* on the main menu to validate only those records highlighted.**
4. **Click on *Data/Validate New/Modified Data* on the main menu to validate only those records that are new or modified in the worksheet.**
5. **Click on *Data/Validate Current Data Set* on the main menu to validate all records in the worksheet. This is the same function as provided by the data validation button on the toolbar.**

Data validation tests also can be automated via a business rule whenever a user saves any data to the database.

To turn on this "Windows-Validate Before Save" rule, refer to the chapter "Managing Business Rules" in the *System Administration User Manual*.

The Drill-Down

Another important toolbar button is the *Drill-Down* button on the toolbar.

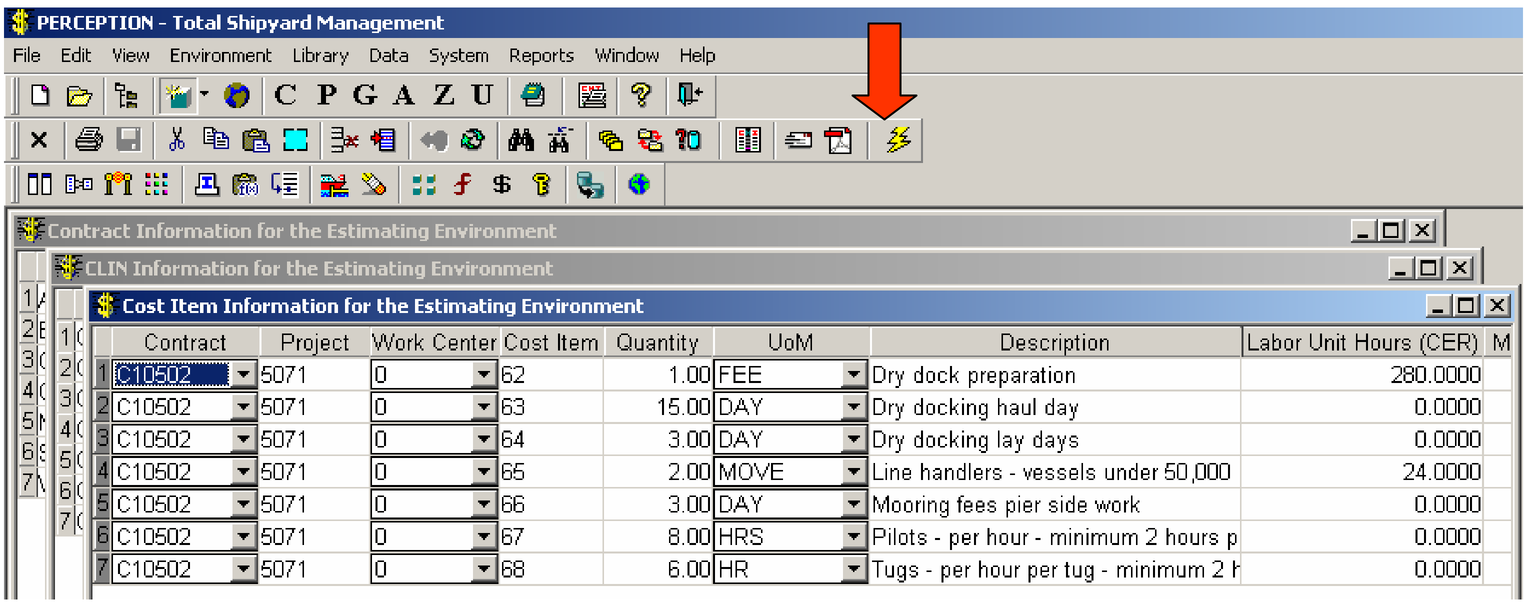


Most of *PERCEPTION*'s information is hierarchical.

For example,

1. **Under a project are work orders;**
2. **Under a purchase order are requisitions;**
3. **Under a requisition are requisition items; etc.**

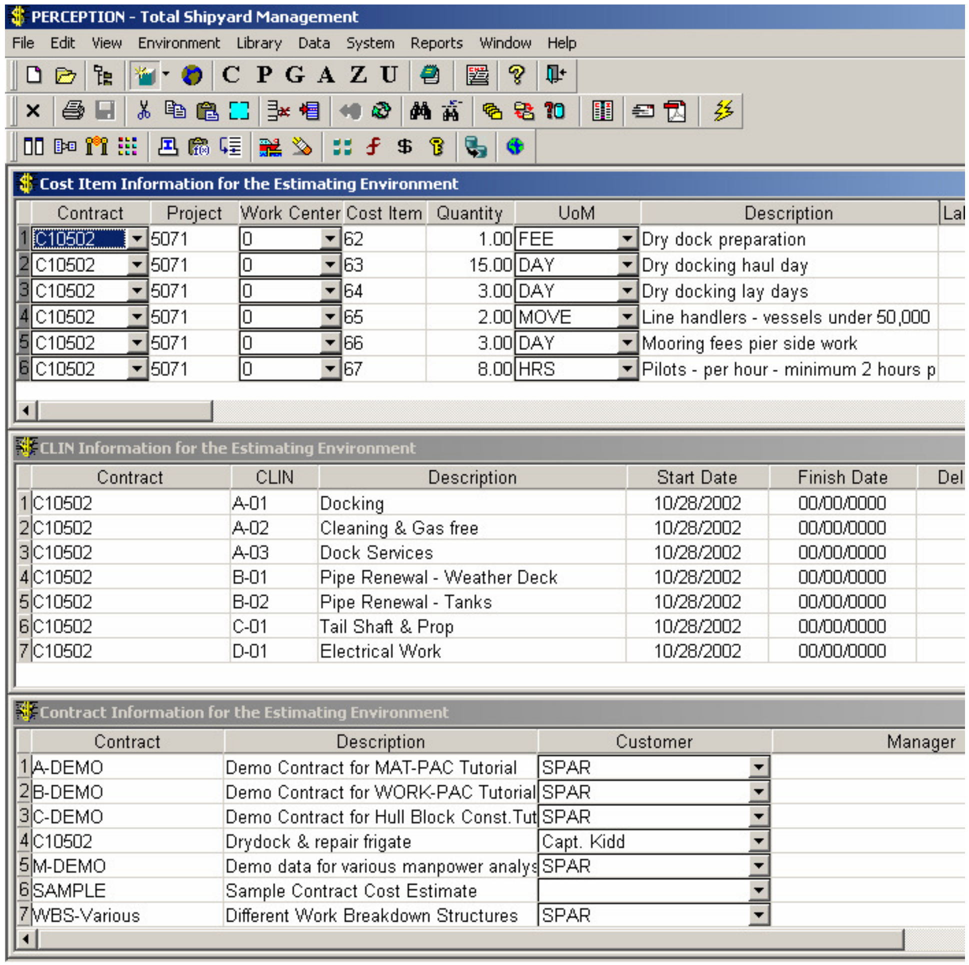
The drill-down allows the user to open lower level information at the click of the drill-down button.



Displaying Multiple Windows & Worksheets

As you drill down and open multiple worksheets, it is often convenient to see these windows layered in your PC monitor.

Select *Window/Tile Horizontal* from the main menu to stack the worksheets horizontally.

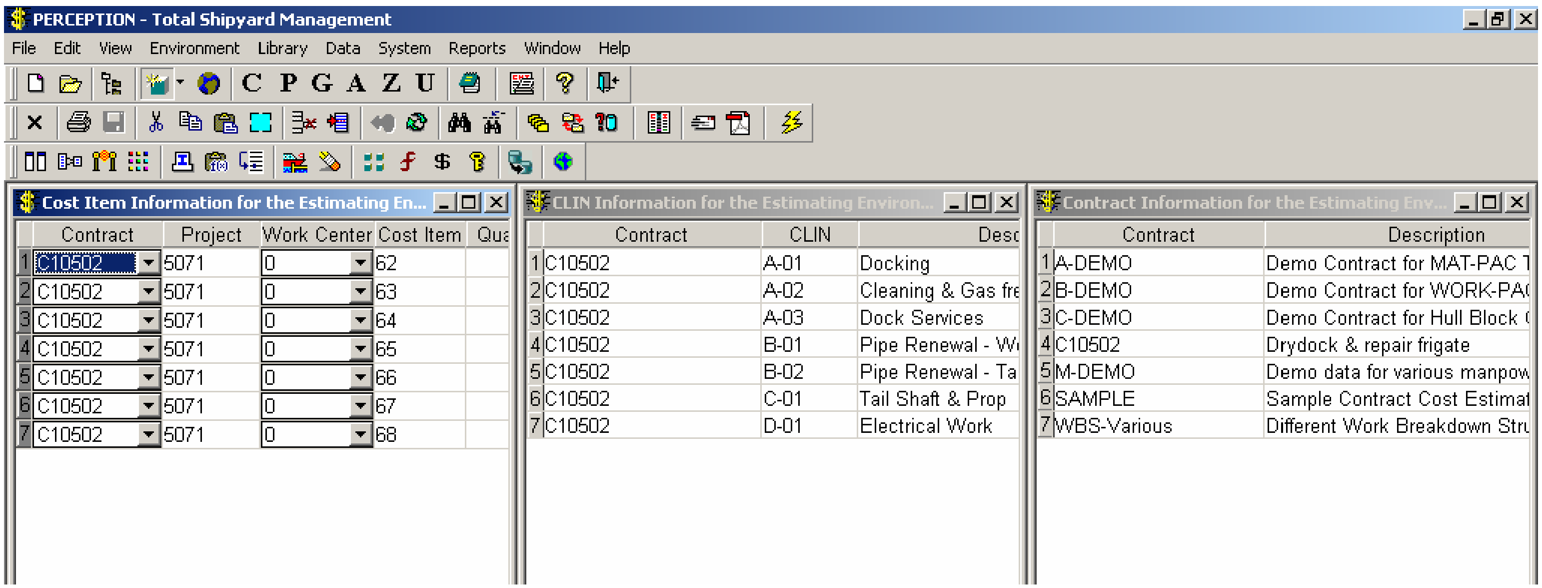


	Contract	Project	Work Center	Cost Item	Quantity	UoM	Description	Lal
1	C10502	5071	0	62	1.00	FEE	Dry dock preparation	
2	C10502	5071	0	63	15.00	DAY	Dry docking haul day	
3	C10502	5071	0	64	3.00	DAY	Dry docking lay days	
4	C10502	5071	0	65	2.00	MOVE	Line handlers - vessels under 50,000	
5	C10502	5071	0	66	3.00	DAY	Mooring fees pier side work	
6	C10502	5071	0	67	8.00	HRS	Pilots - per hour - minimum 2 hours p	

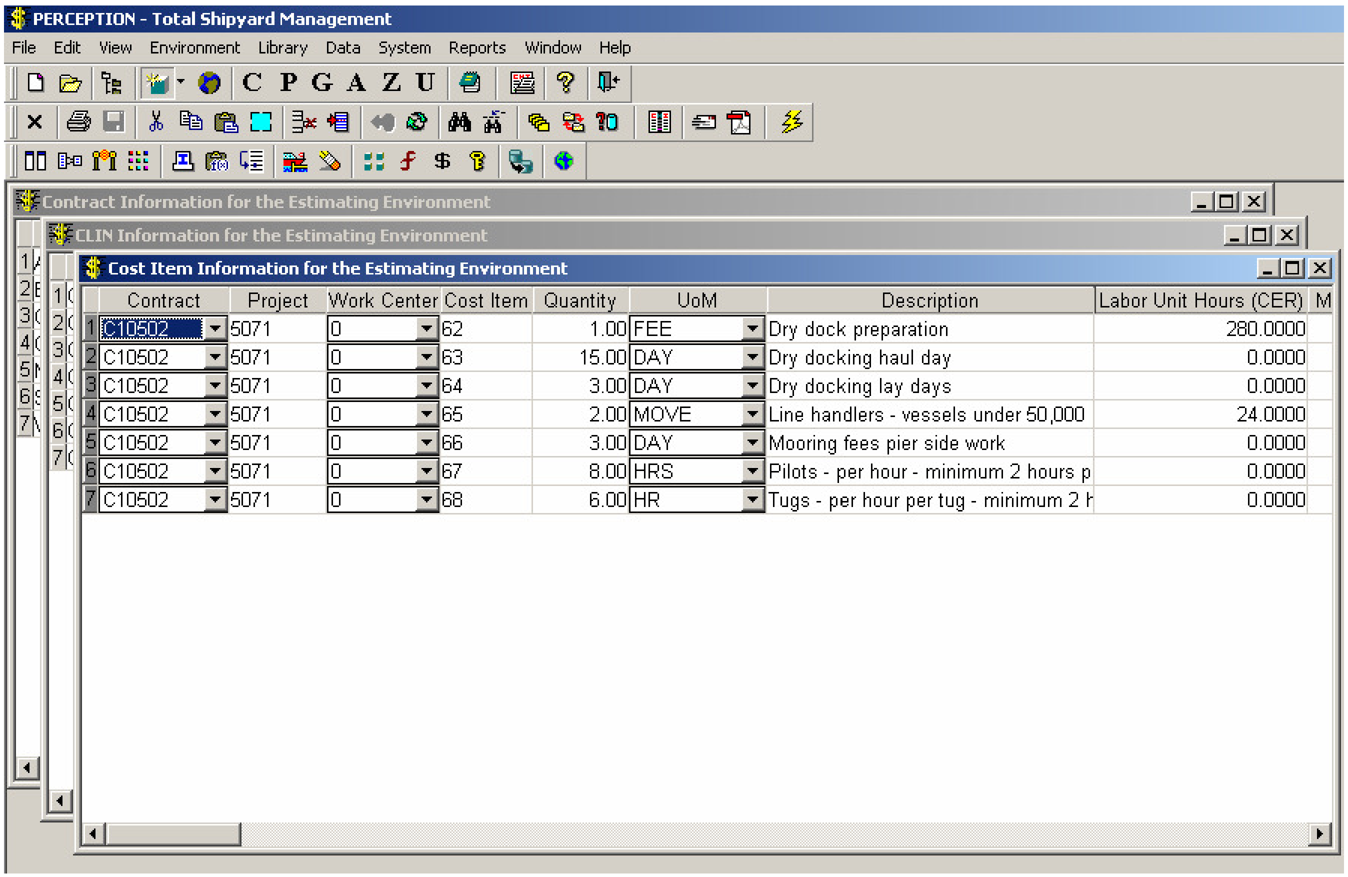
	Contract	CLIN	Description	Start Date	Finish Date	Del
1	C10502	A-01	Docking	10/28/2002	00/00/0000	
2	C10502	A-02	Cleaning & Gas free	10/28/2002	00/00/0000	
3	C10502	A-03	Dock Services	10/28/2002	00/00/0000	
4	C10502	B-01	Pipe Renewal - Weather Deck	10/28/2002	00/00/0000	
5	C10502	B-02	Pipe Renewal - Tanks	10/28/2002	00/00/0000	
6	C10502	C-01	Tail Shaft & Prop	10/28/2002	00/00/0000	
7	C10502	D-01	Electrical Work	10/28/2002	00/00/0000	

	Contract	Description	Customer	Manager
1	A-DEMO	Demo Contract for MAT-PAC Tutorial	SPAR	
2	B-DEMO	Demo Contract for WORK-PAC Tutorial	SPAR	
3	C-DEMO	Demo Contract for Hull Block Const.Tut	SPAR	
4	C10502	Drydock & repair frigate	Capt. Kidd	
5	M-DEMO	Demo data for various manpower analys	SPAR	
6	SAMPLE	Sample Contract Cost Estimate		
7	WBS-Various	Different Work Breakdown Structures	SPAR	

Select *Window/Tile Vertical* from the main menu to stack the worksheets vertically.



Select *Window/Cascade* from the main menu to stack the worksheets in cascading manner.



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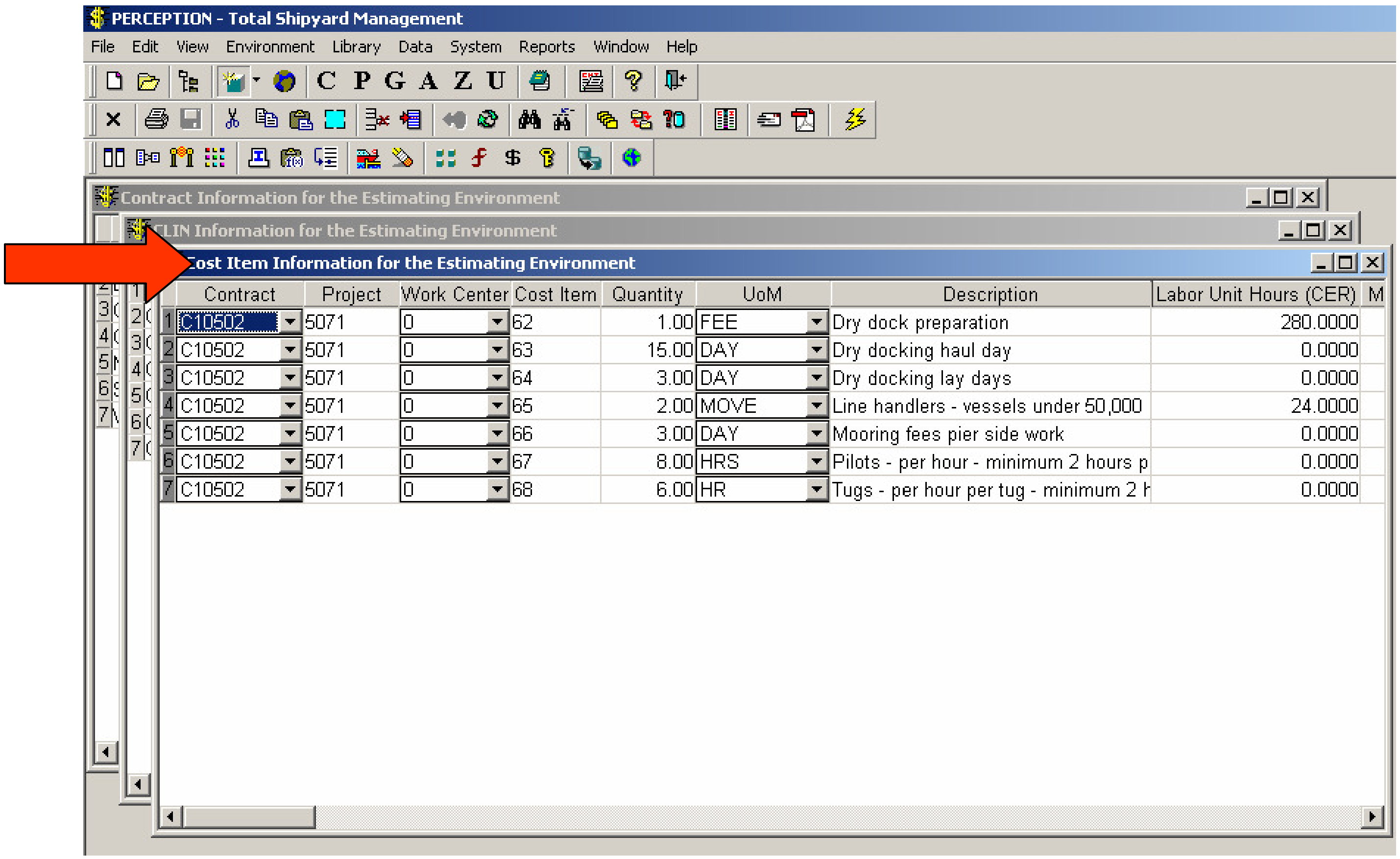
Just click on the header bar of any worksheet to activate for data entry.

Header Bar:



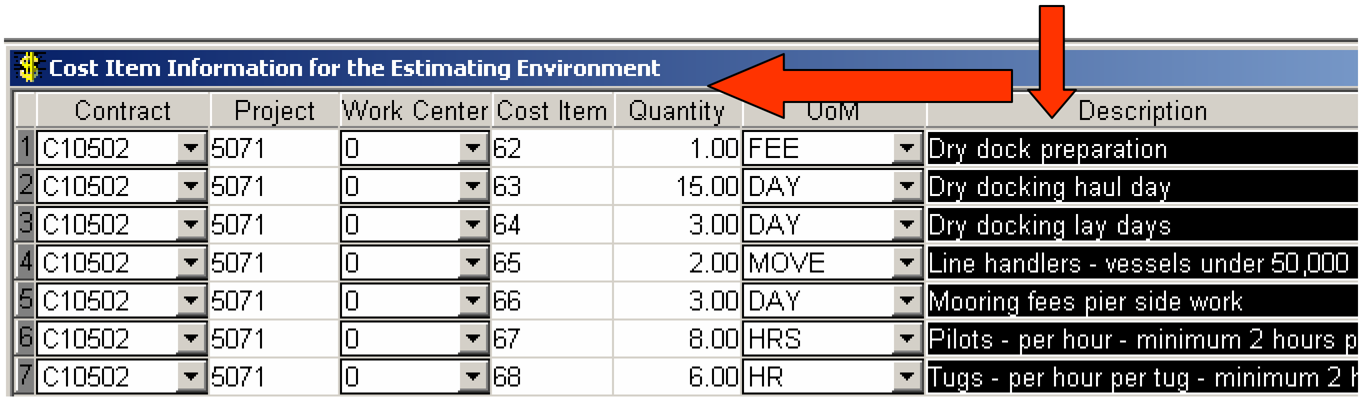
Customizing Worksheet Layouts

PERCEPTION **offers a number of features that allows the user to customize the system.**

Each worksheet scrolls to the right to display many different columns of information.

The user can customize each worksheet by moving columns to any desired position on the worksheet.

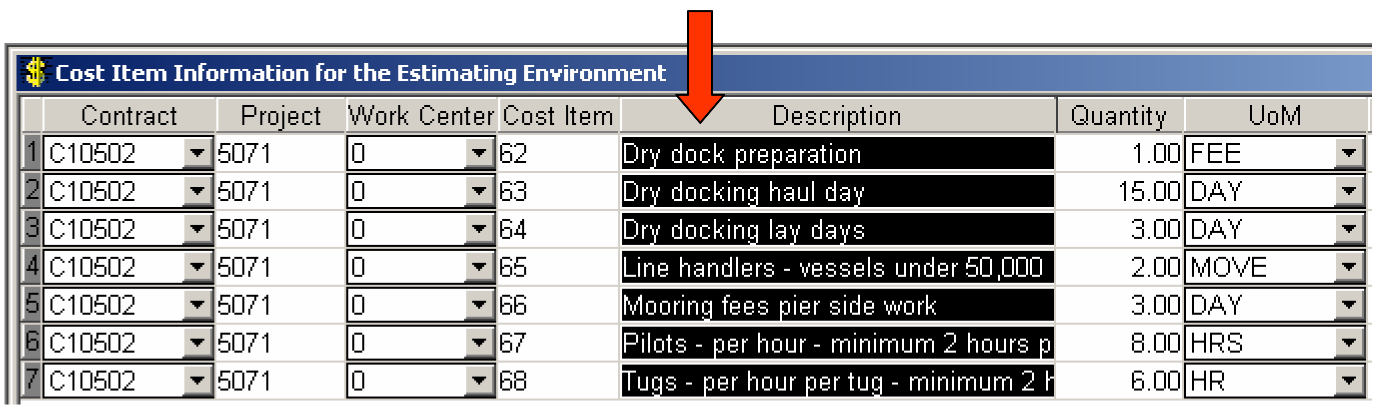
To move a worksheet column, simply click on the column header.



Cost Item Information for the Estimating Environment

	Contract	Project	Work Center	Cost Item	Quantity	UoM	Description
1	C10502	5071	0	62	1.00	FEE	Dry dock preparation
2	C10502	5071	0	63	15.00	DAY	Dry docking haul day
3	C10502	5071	0	64	3.00	DAY	Dry docking lay days
4	C10502	5071	0	65	2.00	MOVE	Line handlers - vessels under 50,000
5	C10502	5071	0	66	3.00	DAY	Mooring fees pier side work
6	C10502	5071	0	67	8.00	HRS	Pilots - per hour - minimum 2 hours p
7	C10502	5071	0	68	6.00	HR	Tugs - per hour per tug - minimum 2 h

... and drag it to the desired position.



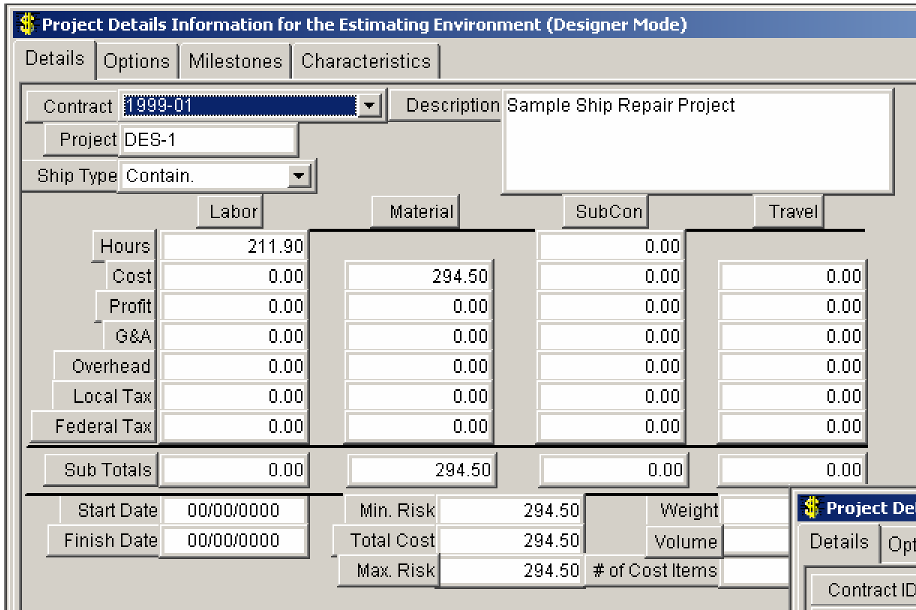
Cost Item Information for the Estimating Environment

	Contract	Project	Work Center	Cost Item	Description	Quantity	UoM
1	C10502	5071	0	62	Dry dock preparation	1.00	FEE
2	C10502	5071	0	63	Dry docking haul day	15.00	DAY
3	C10502	5071	0	64	Dry docking lay days	3.00	DAY
4	C10502	5071	0	65	Line handlers - vessels under 50,000	2.00	MOVE
5	C10502	5071	0	66	Mooring fees pier side work	3.00	DAY
6	C10502	5071	0	67	Pilots - per hour - minimum 2 hours p	8.00	HRS
7	C10502	5071	0	68	Tugs - per hour per tug - minimum 2 h	6.00	HR

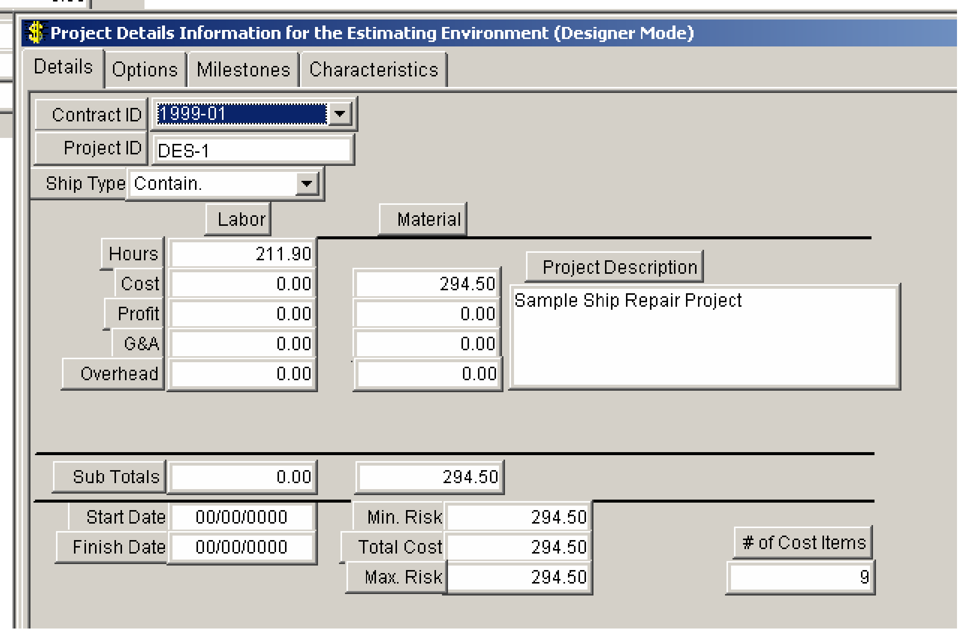
Data Window Designer

All columnar worksheets, free-form data windows and most system reports can be edited & customized by the user:

1. **Text Headings & Data Field Labels can be modified to suit specific user requirements. This includes using non-English text and Windows-supported non-English alphabetic characters.**
2. **Un-needed data columns and free-form data fields can be hidden from displayed view.**
3. **Data Fields can be re-arranged and re-sized in free-form data windows.**



Before Data Window Designer Changes

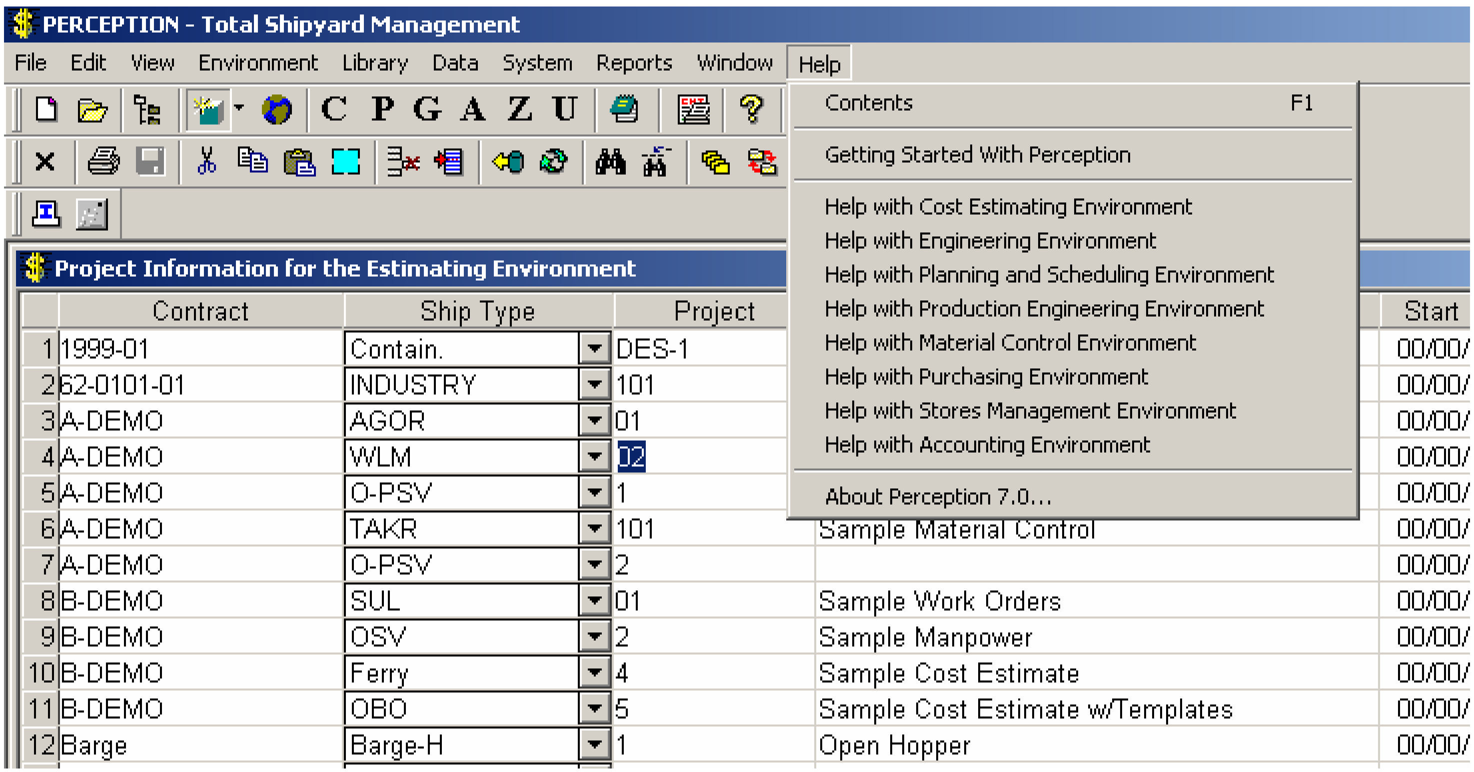


After Data Window Designer Changes:

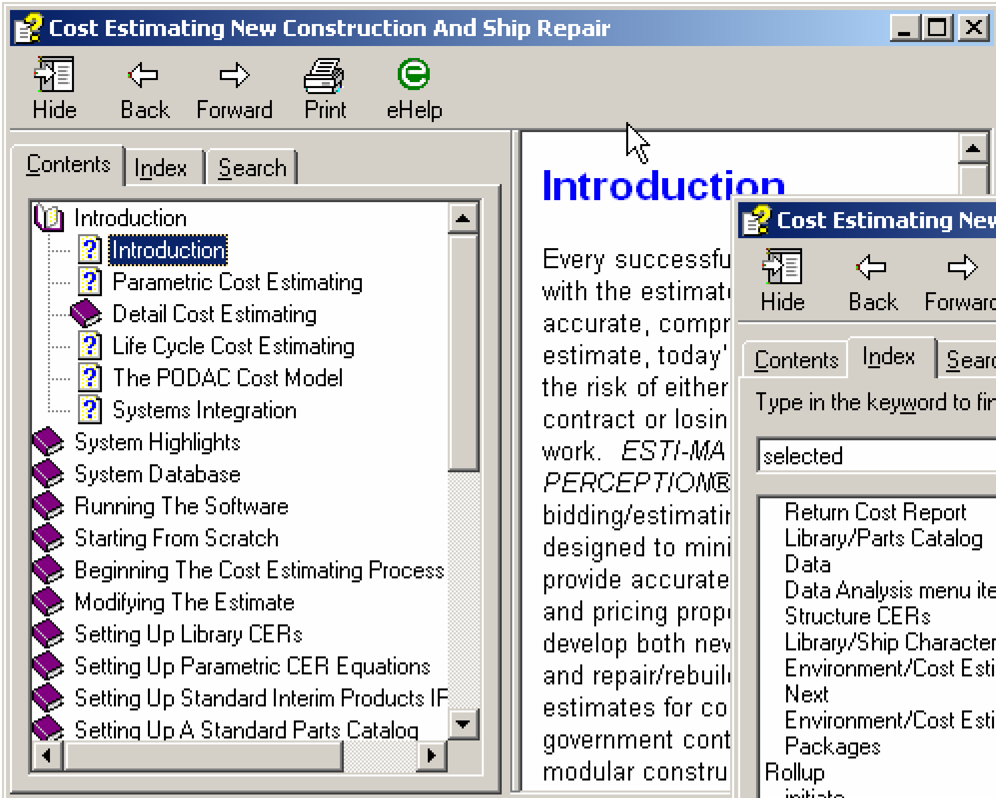
(Data fields hidden, moved, re-sized, and text headings modified)

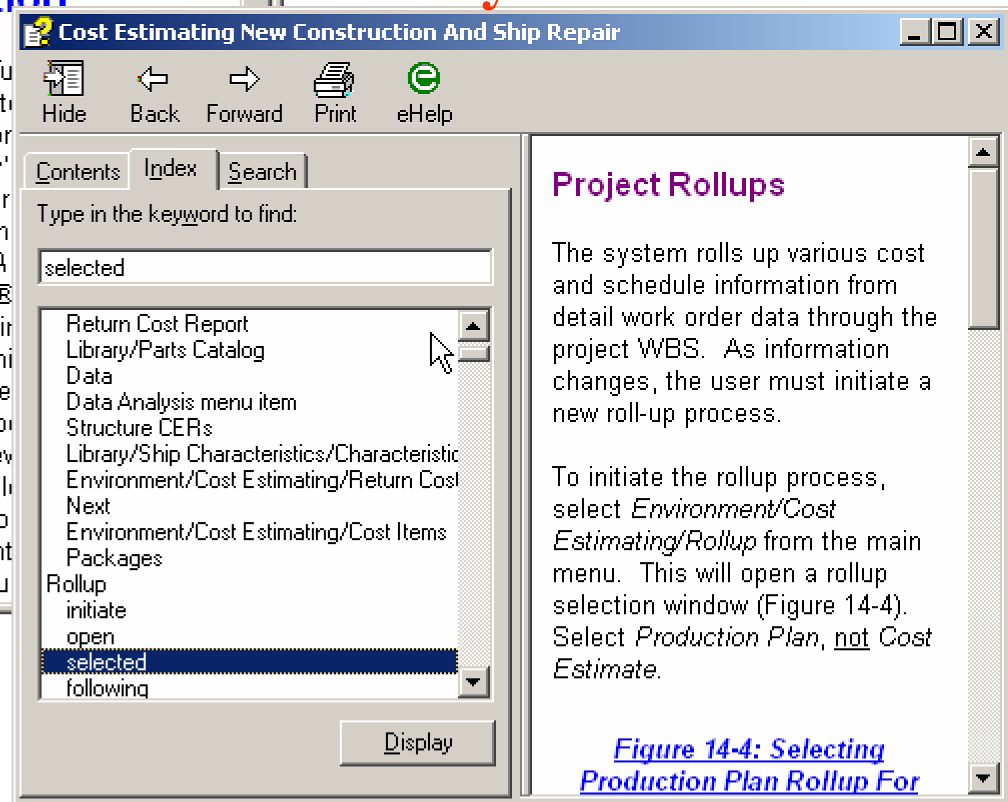
On-Line User Help

On-Line Help is only a click away:



Help is available by section of user manuals and by index reference.





Help also is available by keyword search.

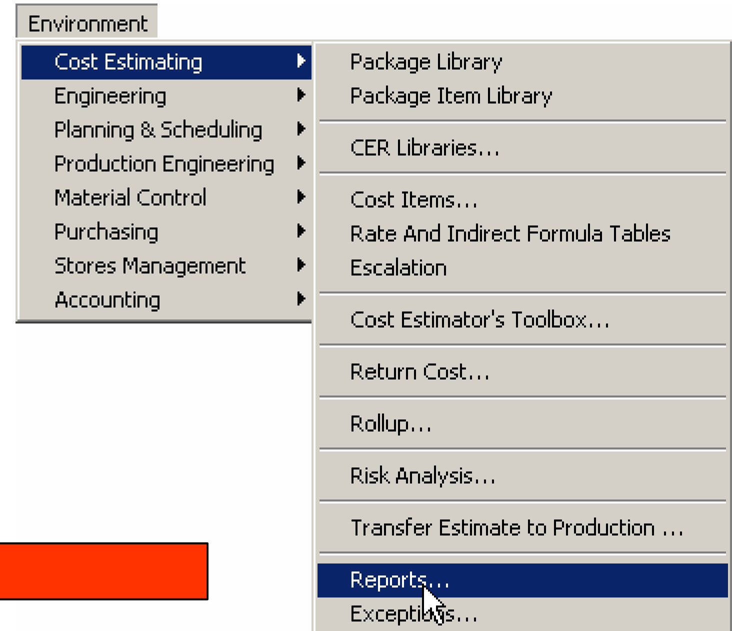
In addition, many windows in *PERCEPTION* have a *Help* button that will open the Help file with the relevant topic displayed.

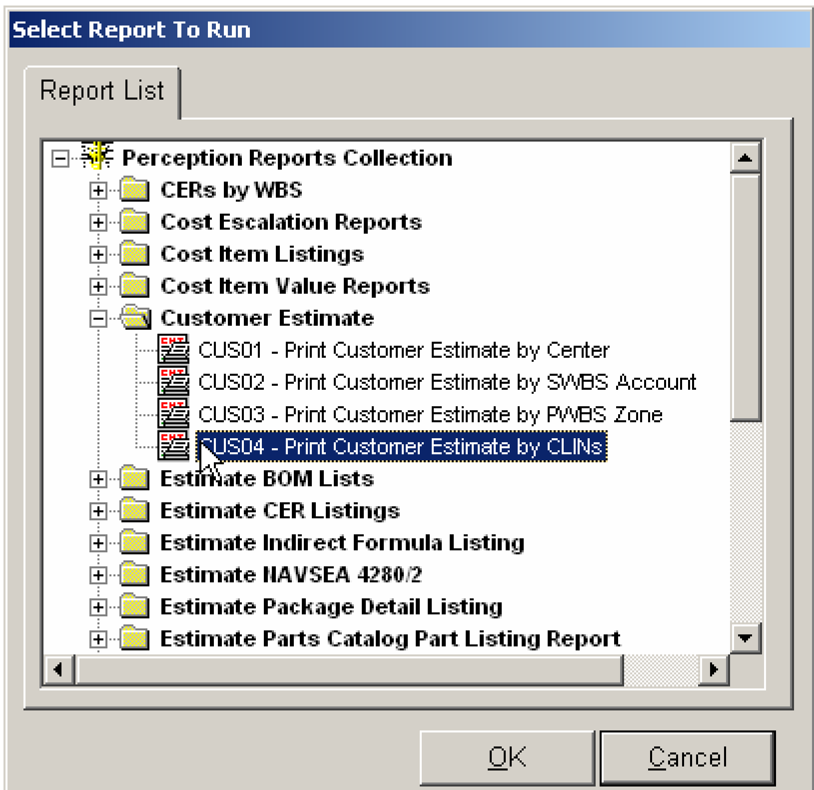
Reports

***PERCEPTION* offers many different reports, each with various levels of details and selection criteria.**

The following describes where and how to generate reports in the system.

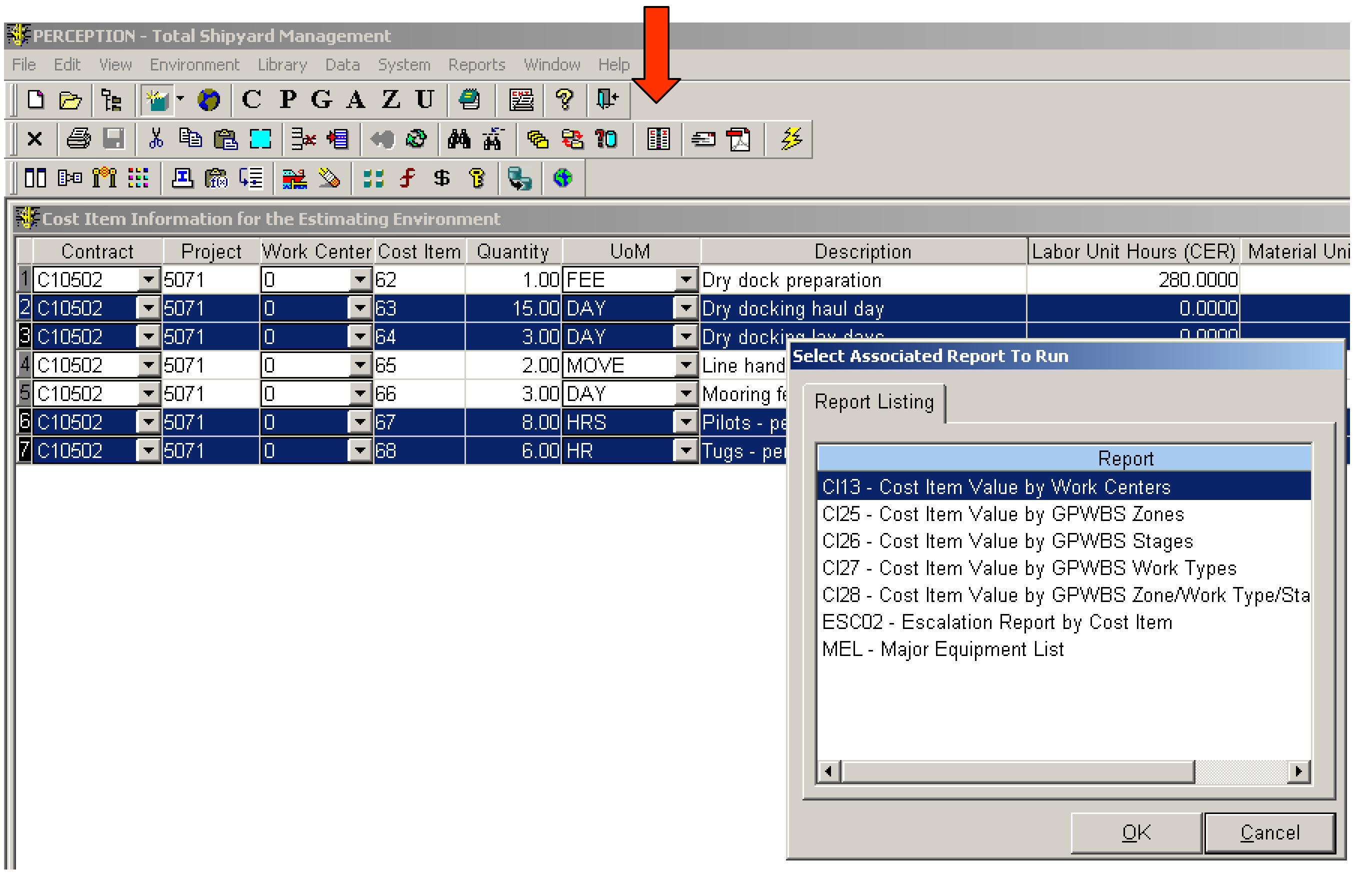
Each environment from the main menu provides a “Reports” section.





The pop up window lists all reports available for that environment. Click on the desired report folder and make your selection.

A short-cut to make reports of selected records in any given worksheet also is available. With the worksheet open, select as many records as you wish included in the report, then click on the "Run Associated Reports" button on the toolbar.



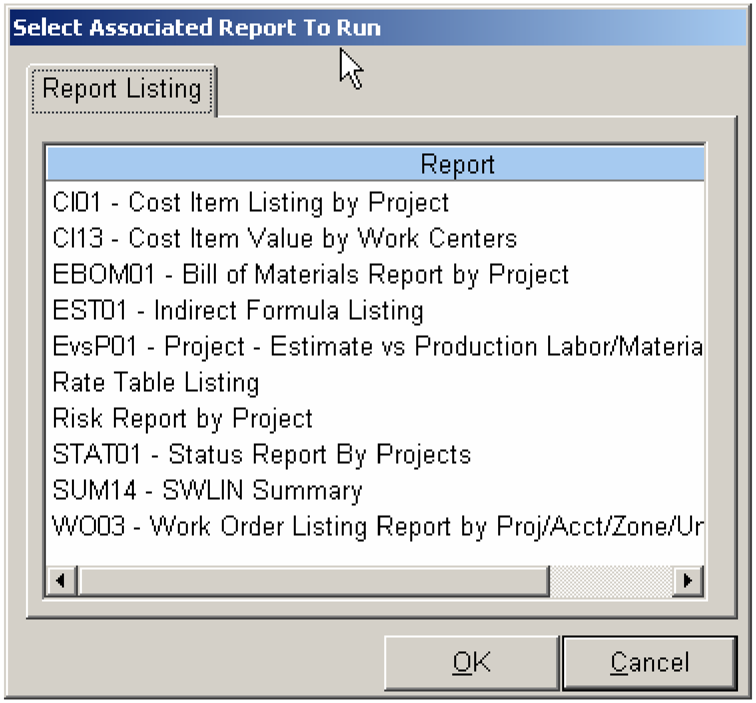
Then, select your choice of available report formats from the pop-up window.

Associated Reports

For every worksheet, there are a number of Associated Reports specific for the information contained in the worksheet.

Select one or more records in the worksheet. Then click on the *Run Associated Reports* button on the tool bar.

The system will display a list of reports associated with the information selected in the worksheet.



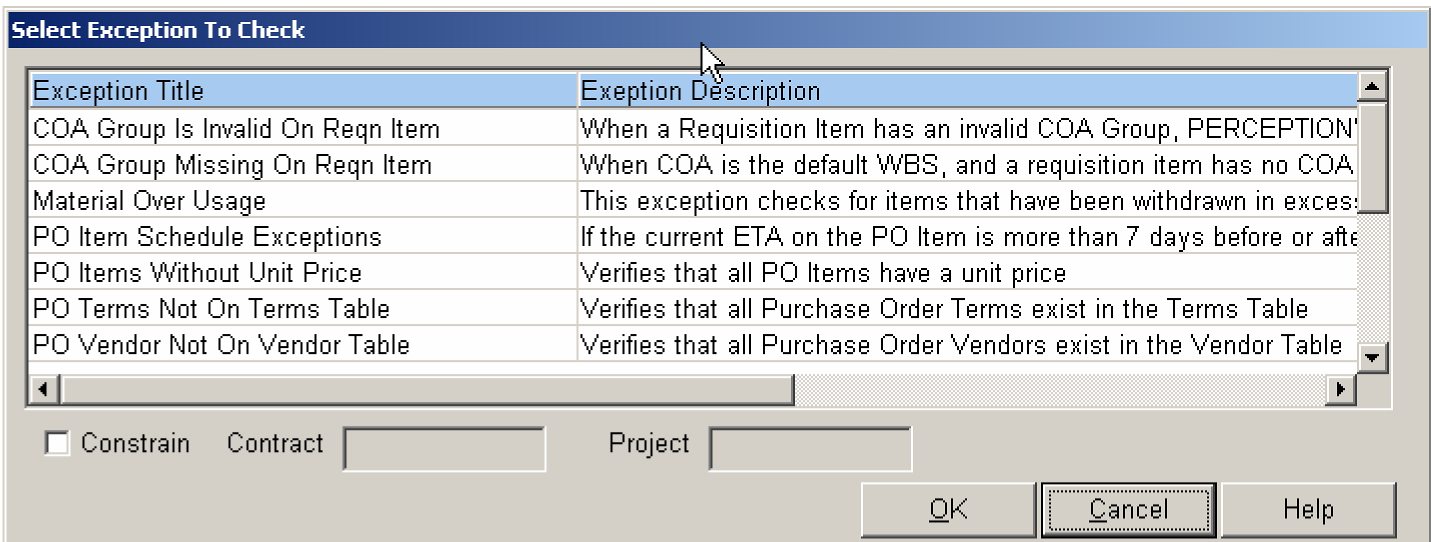
Exception Reports

Each environment has a selection of exception reports.

These reports identify missing information that can produce erroneous or misleading project totals.

The exception reports help users maintain a database that is more complete, accurate, and consistent.

From the environment on the main menu, select *Exception Reports* for a full list of those that are available for the selected environment:



Sample List of Exception Reports for Purchasing Environment

Make a report selection from the selection list

Stock Usage Without Cost

For Contract: N/A, Project: N/A

Page 1 of 1

Contract	Project	Req	Req Item	Acct	Zone	Coa Grp	WO	WC	Activity	Center	Drawing	BOM	Part Type	Part ID	Qty Req'd	Unit Price	Req'd Date
A-DEMO	02	262	01	262	20			0			262-01	01	Stock	SPN-PV-BFLY/150-20	9.00	0.00	00/00/0000
A-DEMO	02	262	02	262	20			0			262-01	02	Stock	SPN-PV-BFLY/150-24	4.00	0.00	00/00/0000
A-DEMO	02	262	03	262	20			0			262-01	03	Stock	SPN-PV-CHK/150-20	3.00	0.00	00/00/0000
A-DEMO	02	262	04	262	20			0			262-01	04	Stock	SPN-PV-GAT-A/150-20	3.00	0.00	00/00/0000

Sample Exception Report: List of Stock Items Used Without Pricing

Transaction Reports

A number of environments have a selection of transaction reports:

- **Material Receipts**
- **QA Inspections (not available)**
- **Return to Vendor**
- **Material Withdraws**
- **Vendor Invoices**
- **Stock Adjustments**

Type Transaction

Transaction Information for the Accounting Environment

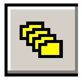
	Trans Number	Trans Code	Contract	Project	Group	Account	Zone	Outfit Zone/Grand Block	Unit/Block
1	1	WDRW	A-DEMO	01	2	262	20		709P
2	2	WDRW	A-DEMO	01	2	262	20		709P
3	3	WDRW	A-DEMO	01	2	262	20		709P
4	4	WDRW	A-DEMO	01	2	262	20		709P
5	5	WDRW	A-DEMO	01	2	262	20		709P
6	6	WDRW	A-DEMO	01	2	262	20		709P
7	7	WDRW	PD-337	337			01		0101
8	8	SWDRW	A-DEMO	02	2	262	20		709P
9	9	SWDRW	A-DEMO	02	2	262	20		709P
10	10	SWDRW	A-DEMO	02	2	262	20		709P
11	11	SWDRW	A-DEMO	02	2	262	20		709P
12	12	SWDRW	A-DEMO	02	2	262	20		709P
13	13	SWDRW	A-DEMO	02	2	262	20		709P
14	14	WDRW	A-DEMO	02	2	262	20		709P
15	15	WDRW	A-DEMO	101	1	116	15	01	709P
16	16	WDRW	A-DEMO	101	1	116	15	01	709P
17	17	WDRW	A-DEMO	101	1	116	15	01	709P

Sample Transaction Report Listing

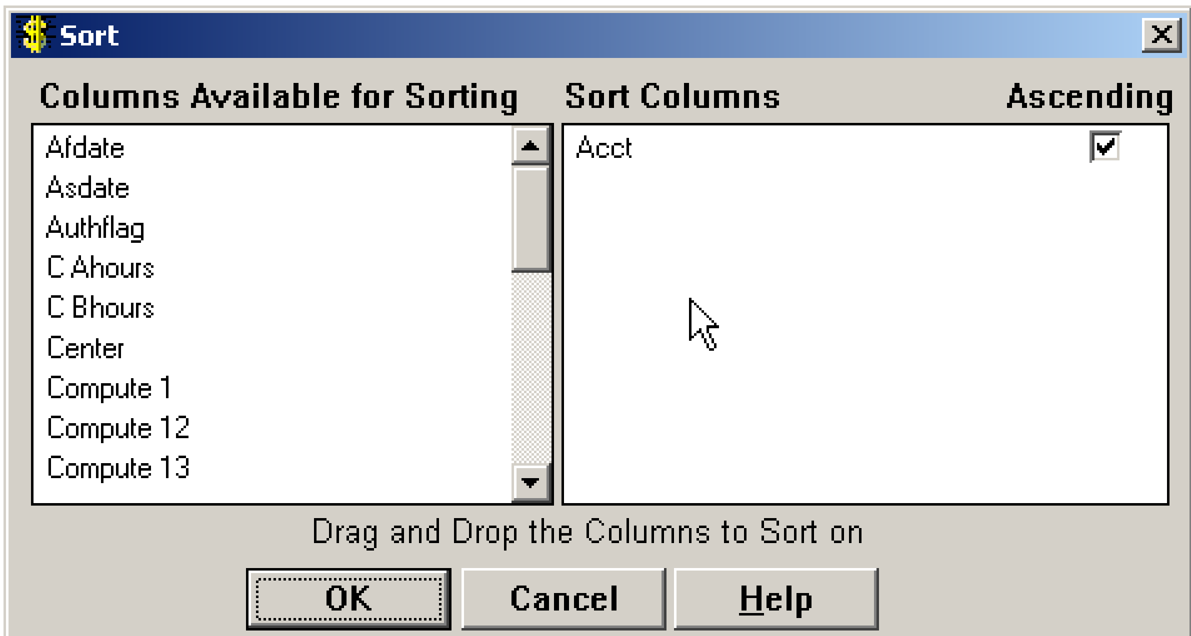
Special Sorts For Reports

There are many reports available in the system. The user can generate these reports across ranges of selection criteria and for various reporting options.

However, the system also allows the user to sort information within any of these reports.

Once the report has been displayed, click on the *Sort* button  **on the tool bar.**

The system will display a pop up window that lists the titles of all of the columns in the report



Choose only those column headings important for the sort by <u>dragging them over to the right side box</u>.

Multiple columns can be sorted in any mix of ascending or descending order.

Then, click on the *OK* button, and the report will be re-displayed in the order specified.

***PERCEPTION*: Managing Project Information**

PERCEPTION **is a project-oriented data management system.**

Even shipyard overhead and plant maintenance accounts are managed as a project, such as Project "2002."

Stock replenishments, which traditionally are not regarded as project-specific until the stock is used, also are managed under a project, such as "STK2002."

This project orientation keeps the use of the system very simple and consistent.

PERCEPTION **requires every project to be cataloged under a "contract."**

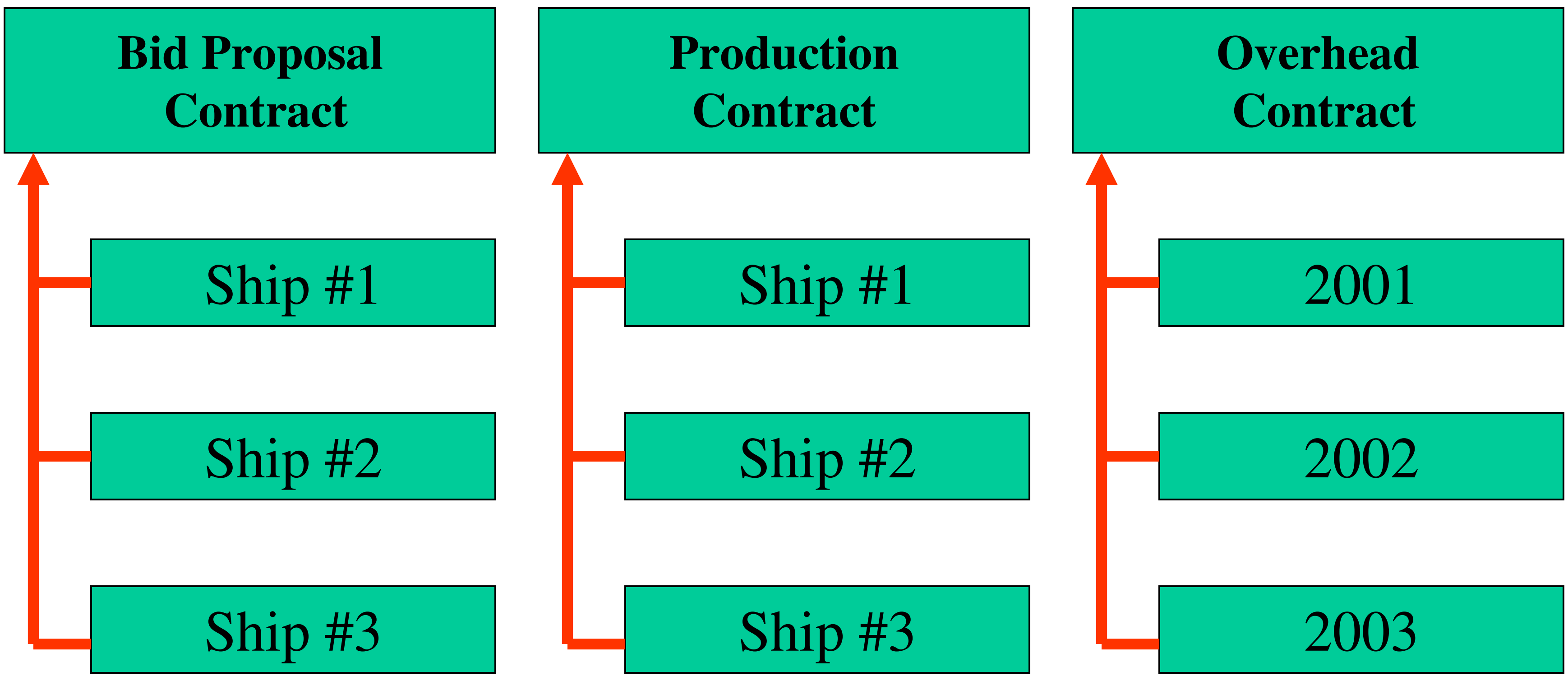
This enables a contract to include multiple projects, such as building or repairing multiple ships and to separate non-recurring activities like ship detail design and engineering from recurring production activities.

Then, the system can consolidate costs and schedules over all these included projects for the contract.

Project cost estimates that are not yet legal contracts still must be cataloged under a "contract."

This means that a proposal for building or repairing multiple ships can be estimated separately, yet costs can be summarized at an overall, consolidated level.

Examples of multiple project "contracts"



PERCEPTION Manages Project Information Using A Relational Database

***PERCEPTION* uses a relational database to store information.**

It is relational because most information managed by the system relates to one or more other pieces of information.

For example, work orders "belong" to projects, and work orders are cataloged under a project's work breakdown structure.

The same applies to the details of a cost estimate.

Another example is purchase orders that are directly related to material requisitions.

The requisitions, in turn, are related to their projects and to the project work breakdown structure.

For every project, *PERCEPTION* can manage a variety of project-related documents & transactions:

- **Cost Estimates**
- **Planning Activities**
- **Work Orders**
- **Engineering Drawings & Bills of Material**
- **Material Requisitions**
- **Purchase Orders**
- **Work Order Material Pallet Requirements**
- **Vendor Invoices**
- **Customer Billings**

Summarizing Cost & Schedule Performance By Project Work Breakdown Structure

The various documents and transactions involved in any project define the details of a project's cost and schedule.

***PERCEPTION* provides functions for managing and tracking these details, document by document, transaction by transaction.**

However, to provide more convenient oversight of costs and schedules, each project also has a need for summarizing cost and schedule performance at levels above those of the details.

The Project Work Breakdown Structure:

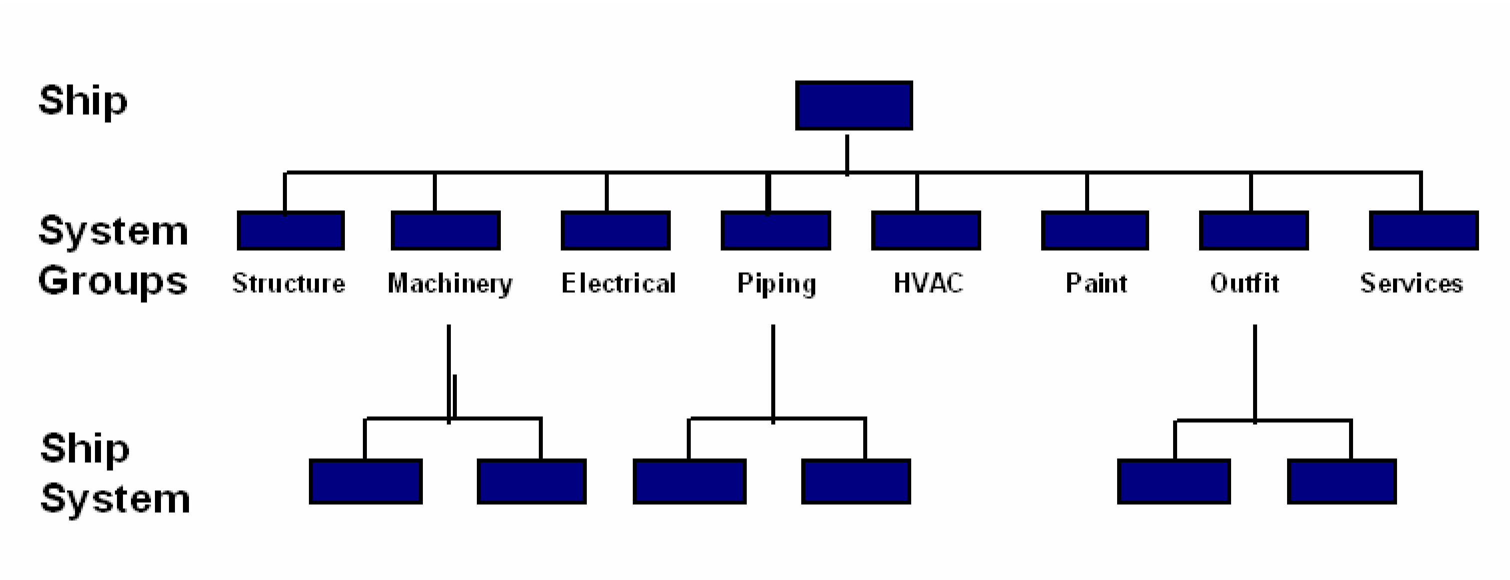
The project Work Breakdown Structure (WBS) is an organization of cost and schedule categories that provides this summary oversight capability.

PERCEPTION **can catalog costs and schedules using any one or more of the following work breakdown structures simultaneously:**

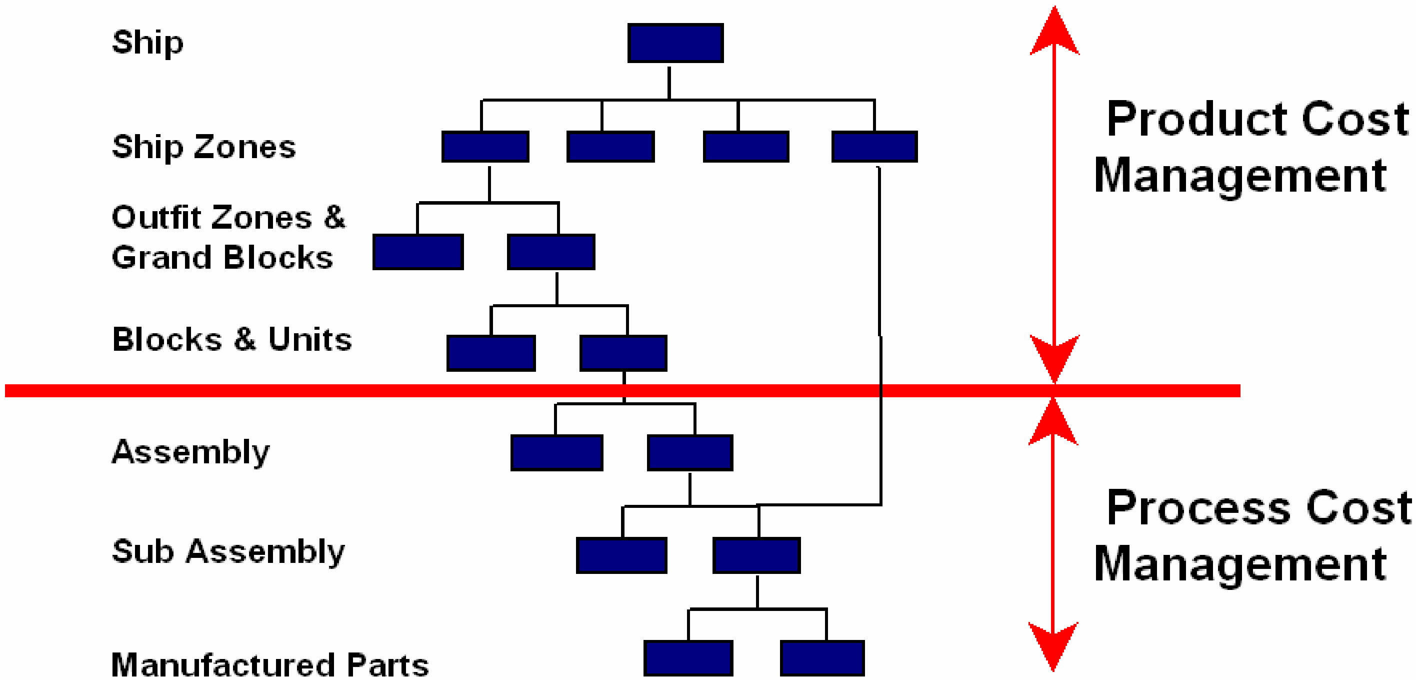
1. **Ship Systems Work Breakdown Structure (SWBS)**
2. **Product Oriented Work Breakdown Structure (PWBS)**
3. **Shipyard Organization Breakdown Structure, aka Chart of Accounts (COA)**
4. **Ship Owner's Contract Line Items (CLINs)**

The Systems Work Breakdown Structure (SWBS) is a 2-level set of categories that identify the ship by its engineered systems.

For ship repair, SWBS can be used to identify shipyard standard work activities.

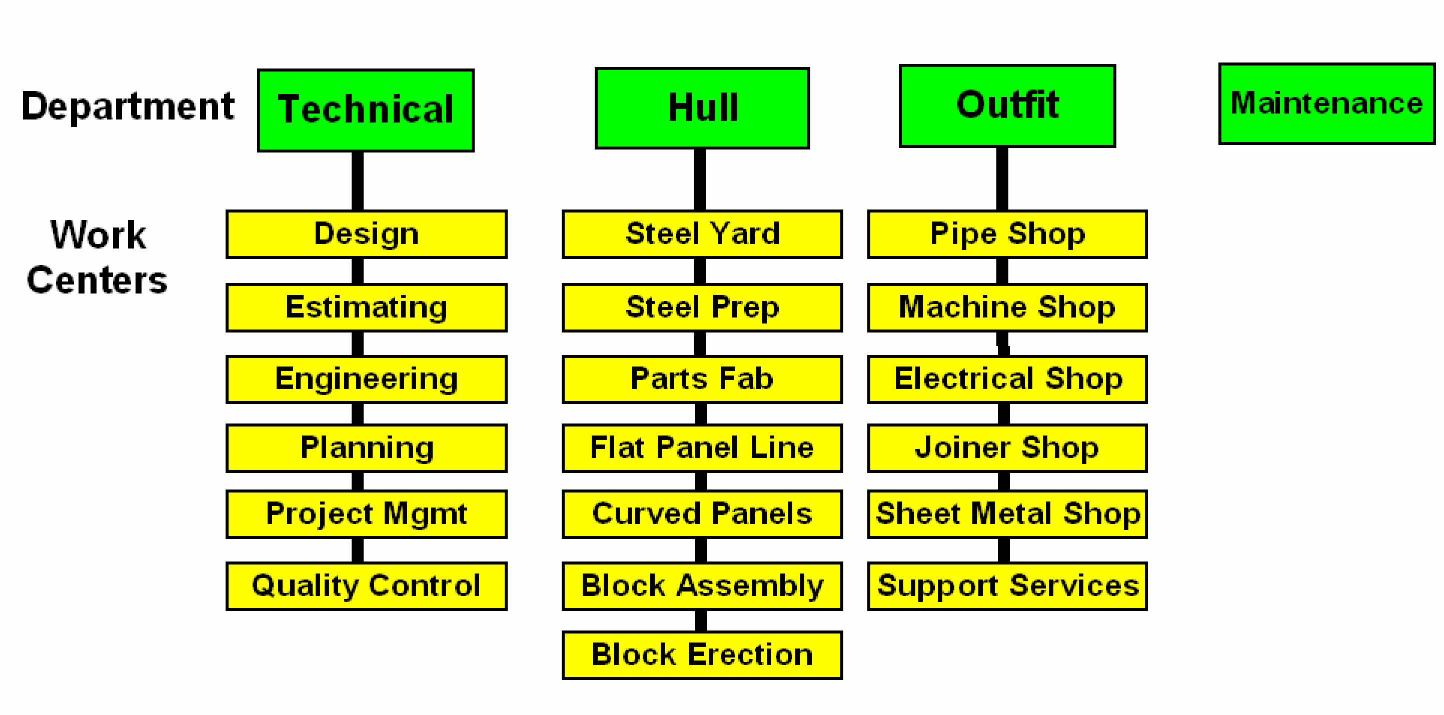


The Product Work Breakdown Structure (PWBS), especially useful for managing new construction, identifies construction components at each stage of construction.



The number and extent of PWBS levels used is optional.

The Organization Chart Of Accounts (COA) can be used to define the shipyard departments and work centers.



Most project information can be tagged by work centers independently of any use of COA.

CLINs are a set of cost categories specified by the ship owner.

The ship owner may require that all bid proposals and even progress reports be produced by the shipyard according to CLINs.

Because CLINs can be common across multi-ship projects, CLINs are defined at the overall contract level.

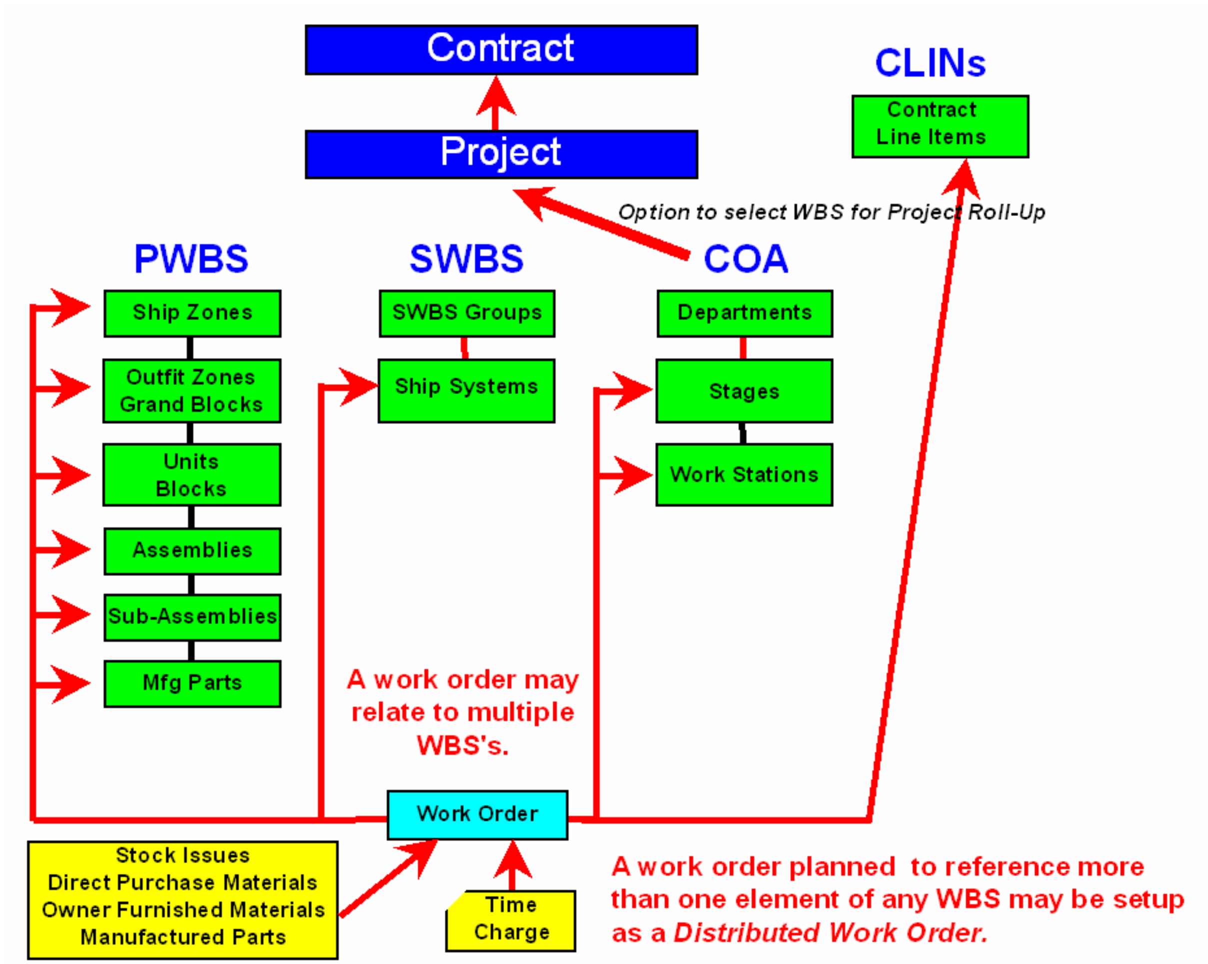
<u>SPECIAL NOTE</u>: Every shipyard has the flexibility to use one WBS, or more than one WBS, depending upon its own management needs and preference.

<u>There is no rigid set of categories</u> for any of the different WBS. In fact, a selected WBS can be different for each and every project.

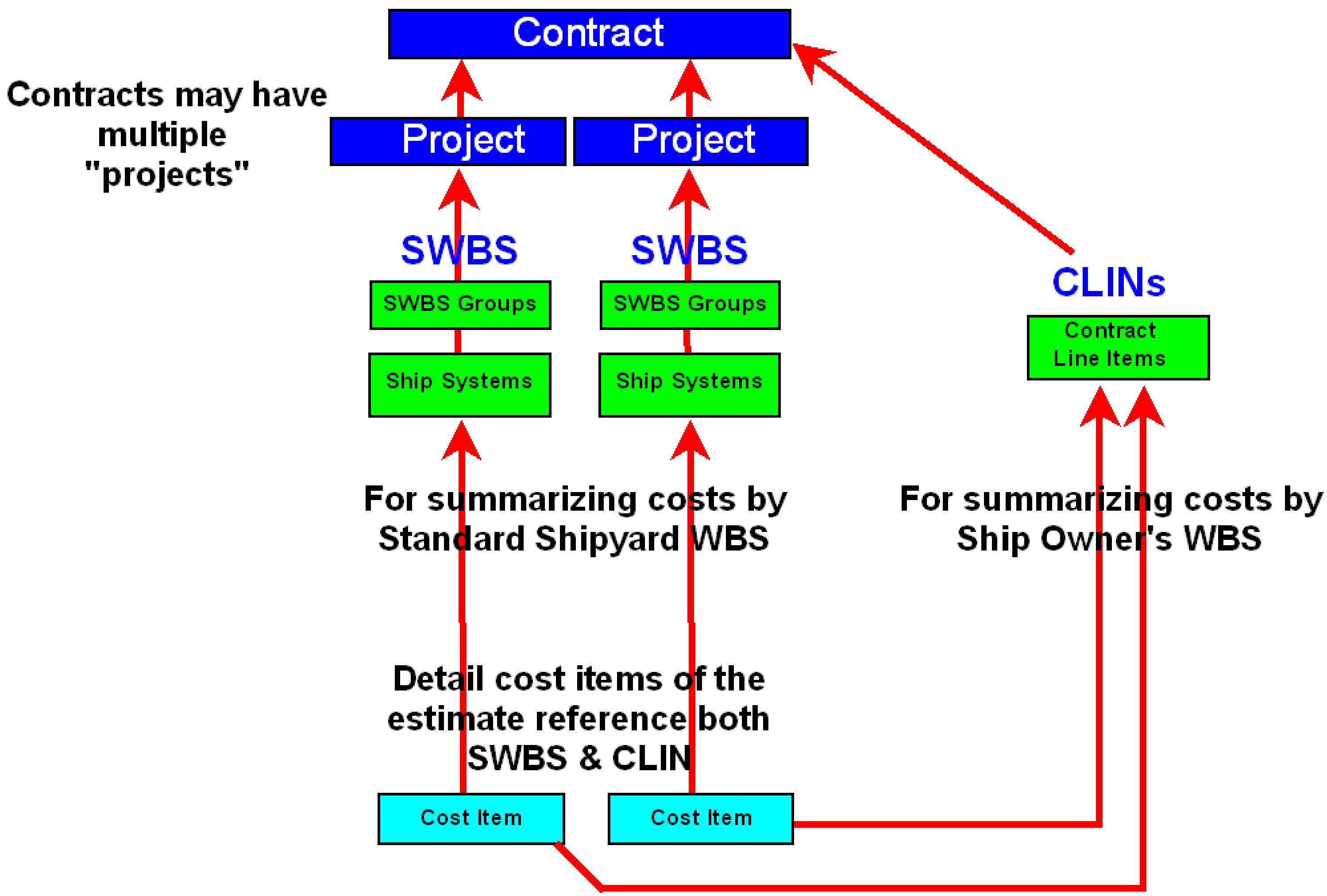
It is advisable, however, for the shipyard to select one WBS that is more or less standard across projects. That standard will enable the shipyard to better monitor and compare the performance of its production capabilities.

<u>Using different work breakdown structures for a project will provide visibility of cost and schedule performance from different points of view.</u>

Project documents & transactions can reference one or more different work breakdown structures.



Typical Multi-Ship Ship Repair Contract WBS

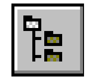


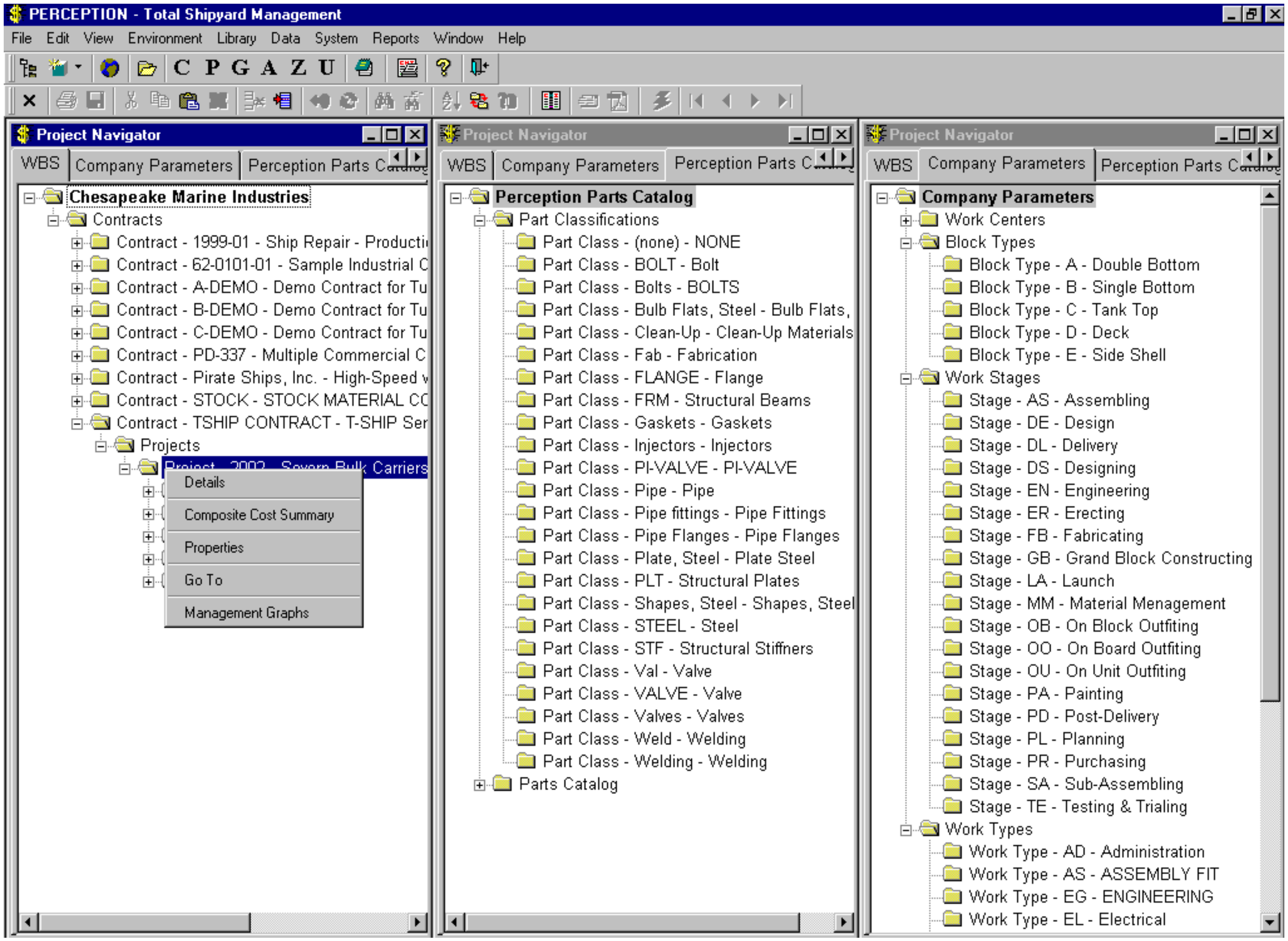
Project Navigator

The *Project Navigator* is a convenient means for displaying all WBS levels of a contract/project (CLINs, SWBS, PWBS, and COA).

The *Project Navigator* also displays the ship characteristics for the project and any design packages defined for a cost estimate.

The Navigator tab window has options to view common use libraries, such as the list of work centers and the parts catalog.

Select *View/Project Navigator* from the main menu, or click on the *Project Navigator* button  on the toolbar.



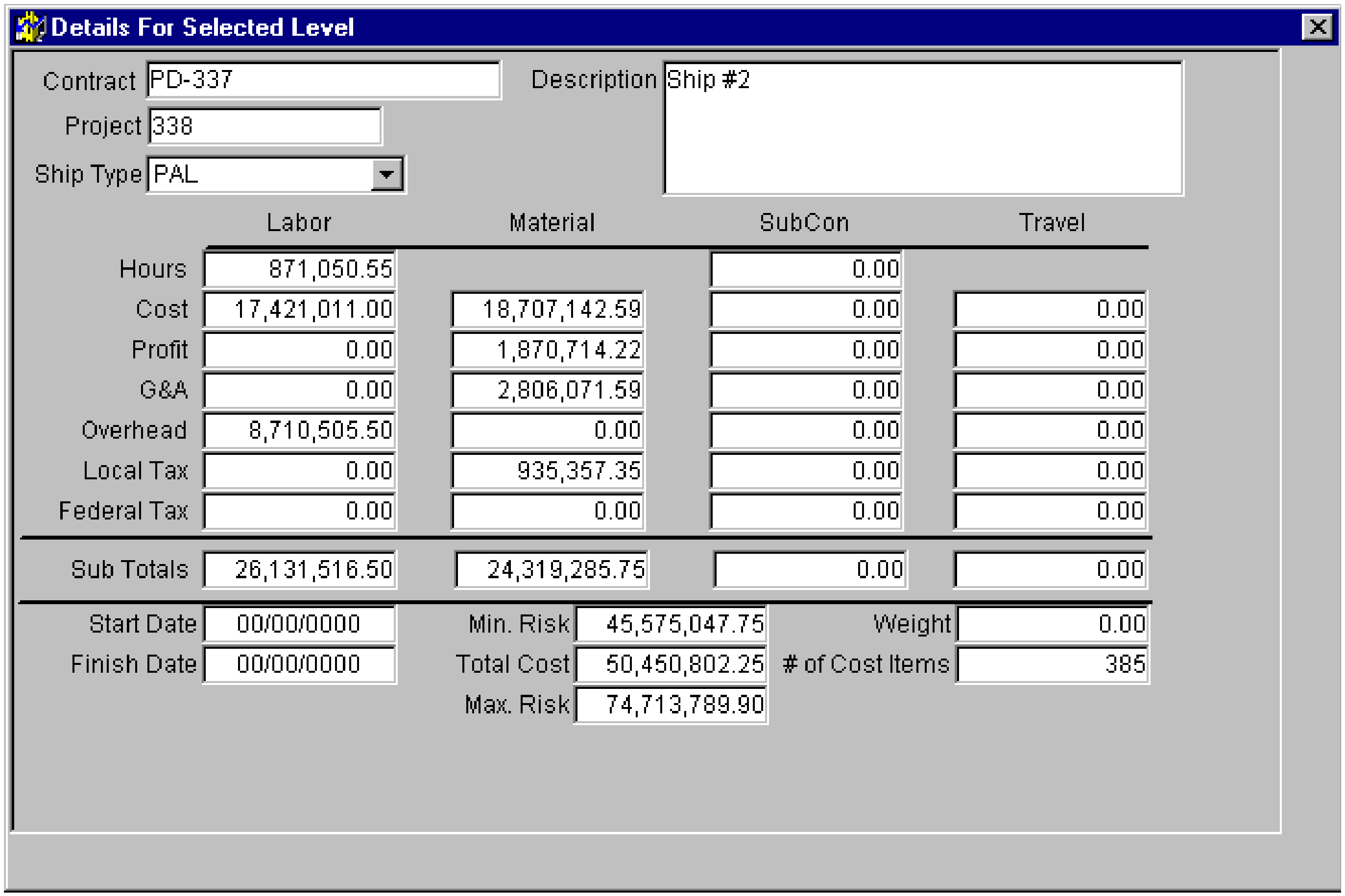
The "+" sign beside a level folder indicates that lower levels are available. By clicking on this, the next list of lower levels will be displayed.

By this process, the user can drill down into the various levels of the project.

By clicking on a specific level of interest, and then clicking on the right mouse button, a pop up menu provides the following options:

The following describes each of the options currently available:

Details **provide a summary of detail information for that level of the project.**



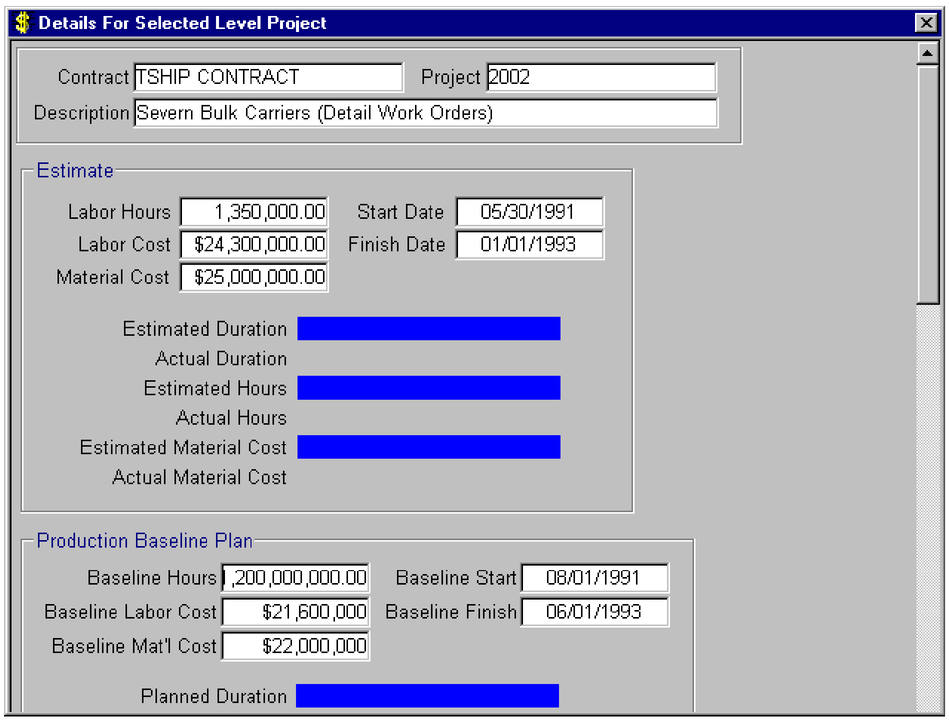
Details For Selected Level

Contract: PD-337
Project: 338
Ship Type: PAL
Description: Ship #2

	Labor	Material	SubCon	Travel
Hours	871,050.55		0.00	
Cost	17,421,011.00	18,707,142.59	0.00	0.00
Profit	0.00	1,870,714.22	0.00	0.00
G&A	0.00	2,806,071.59	0.00	0.00
Overhead	8,710,505.50	0.00	0.00	0.00
Local Tax	0.00	935,357.35	0.00	0.00
Federal Tax	0.00	0.00	0.00	0.00
Sub Totals	26,131,516.50	24,319,285.75	0.00	0.00

Start Date	00/00/0000	Min. Risk	45,575,047.75	Weight	0.00
Finish Date	00/00/0000	Total Cost	50,450,802.25	# of Cost Items	385
		Max. Risk	74,713,789.90		

Composite Cost Summary **summarizes cost and schedule information for all major applications of the system: the cost estimate; the planned schedule; labor cost and schedule performance; material cost and schedule performance; and miscellaneous notes that can be entered by the user.**



Use the down-scroll to view the entire display of information

Properties **displays general information (Properties) of the project level that is selected.**

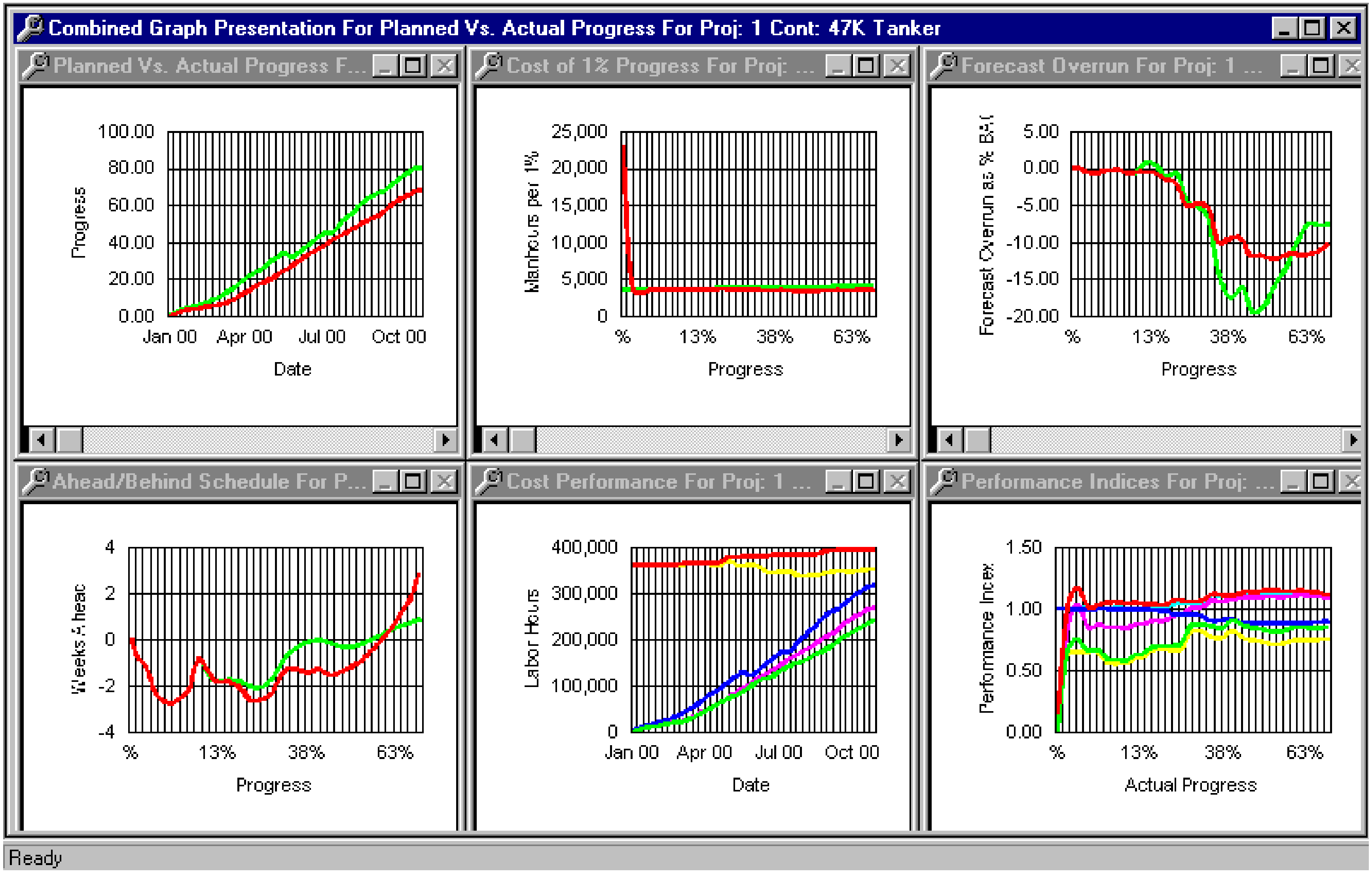
Go To **opens up the standard worksheet window for the level of the project selected. From there, the user may add/change/delete as may be necessary.**

Management Graphs **provide a series of graphical reports that track historical summary information of production data (labor and material costs) at each level of the project.**

Management Graphs Available:

- **Planned versus Actual Progress** tracks planned and actual percent progress.
- **Planned versus Actual Quantity** tracks planned and actual quantities for the units of measure for the given WBS level.
- **Cost 1% Progress** tracks labor hours planned versus actual per one percent (1%) of recorded progress.
- **Forecast Over/Under Run** tracks the forecast over/under run (EAC-BAC). A trend of over/under run at 100% completion also is tracked.
- **Ahead/Behind Schedule** tracks measured weeks ahead/behind schedule. A trend of schedule variance at 100% completion also is tracked.
- **Labor Hour Performance** tracks labor hours as scheduled (planned), earned value, actually charged, total budget (which may vary in time), and the estimate at completion (EAC).
- **Performance Indices** are tracked for labor hour performance.
- **Material Cost** tracks material cost budgets, purchases, commitments, etc.
- **Combined Graphs** display all of the above graphs

Sample Combined Graphic Reports



Snap shots of the historical data presented in these graphical reports is generated automatically by the system whenever the user initiates a project "rollup" by selecting *Environment/Production Engineering/Rollup* from the main menu.

When time charges are entered into the system (*Environment/Accounting/Timecards* selected from the main menu), the system provides the user with an option to perform the same rollup after the time charges have been posted to the work orders.

The historical data can be viewed project by project, WBS level by level, by selecting *Library/WBS History* from the main menu. This data then is displayed in a worksheet window.

Function Keys

The system supports a variety of "function" keys as short-cuts to a number of different operations.

The system supports a variety of “function” keys as short cuts to a number of different operations.

Some short cuts use the function “F” keys at the top of the keyboard.

Other short cuts use a combination of “Ctrl” key held down then pressing another key on the keyboard.

Function	F-Key	Ctrl-Key+
New Contract/Project Wizard		Ctrl+N
Retrieve records		Ctrl+R
Add records	F8	
Save records		Ctrl+S
Close window	F4	
Print		Ctrl+P
Access Parts Catalog	F12	
Vendor Invoice Items - Add Parts	F5	
Vendor Invoice Items - Receive Items	F6	
Vendor Invoice Items - Stub-out PO for invoice	F7	
Cut		Ctrl+X
Copy		Ctrl+C
Paste		Ctrl+V
Select All		Ctrl+A
Find		Ctrl+F
Replace		Ctrl+H
Go To		Ctrl+G