

Naval Surface Warfare Center  
Carderock Division  
West Bethesda, MD 20817-5700

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NSWCCD-80-TR-2020/021

Naval Architecture and Engineering Department  
Technical Report

**NAVSEA  
INTERACTIVE ELECTRONIC TECHNICAL  
MANUAL (IETM) VIEWER SOFTWARE  
PERFORMANCE REQUIREMENTS – Revision 1**

by

Stephanie Z. Farina (NSWCCD)

L. John Junod (NSWCCD)

Randy Kirk (NSWCCD)

Kathleen A. Moore (NSWCCD)

Terrence Sanchez (NSWCCD)

Lori Westbrook (NSWCCD)

Phil Deuell (AMSEC)



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<b>14. ABSTRACT</b> This NAVSEA Interactive Electronic Technical Manual (IETM) Viewer Software Performance Requirements document defines the standard requirements necessary for IETM viewer software to satisfy the look, feel, and interaction requirements for NAVSEA IETMs. These performance requirements have been created to provide NAVSEA IETM users a familiar, and consistent operation of the viewer software product, and a common look and feel of IETM information presentation. The requirements defined in this document establish an IETM viewer software functional standard that is intended to give developers of NAVSEA IETM viewer software a stable and well-defined requirement, but Acquiring Activities and developers are to be aware that compliance with this standard does not, in itself, assure accreditation and approval of the software product by Navy. This document is a first revision to NSWCCD-80-TR-2013/011 April 2013, and includes new requirements for the Process and Procedural Data Modules and a corresponding Logic Engine section in Appendix B, updated Main Menu Bar and Additional Information Bar requirements, a new derivative classification requirement, a new requirement for Scrolling and Screen-of-Screens, removal of the Suggested Icons Table, updated Appendix D State Tables, and removal of Appendix E- Requirement References to Other Specifications.		
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## Administrative Information

The Technical Information Systems Branch (Code 8140) of the Ship and Submarine Acquisition Engineering Division (Code 81) of the Naval Architecture and Engineering Department (Code 80) at the Naval Surface Warfare Center, Carderock Division (NSWCCD), wrote this report. The work was funded by NAVSEA06L under the work number N0002419WX03991.

This report is the first revision to NSWCCD-80-TR-2013/011 from April 2013.

- Added new requirement 3.3.3.1 Logic Engine.
- Updated 3.3.5 Main Menu Bar and Additional Information Bar requirement and 3.3.6 Additional Information Bar Requirement to allow for more flexibility in formatting.
- Updated 3.3.5.9 IDSTATUS requirement to include derivative classification.
- Added new requirement 3.6.2.5 Scrolling and Screen-of-Screens.
- Added references with certain requirements to Appendix B- Logic Engine
  - o 3.3.5 Main Menu Bar and Additional Information Bar
  - o 3.3.6.3 Applicability
  - o 3.7.1 User Interaction/Screen Dialogs
  - o 3.7.5 Audit Trail
- Appendix B Suggested Icons Table was removed from prior version of the document (NSWCCD-80-TR-2013/011) and replaced with the Appendix B Logic Engine section in this revision.
- All references to the Suggested Icons Table received new guidance to follow de facto industry icons and symbols.
  - o 3.3.5 Main Menu and Additional Information Bar
  - o 3.3.6 Additional Information Bar
  - o 3.4 Icons
- Updated Appendix D State Tables.
- Appendix E- Requirement References to Other Specifications was deleted from prior version of the document (NSWCCD-80-TR-2013/011).
- All mentions of Information Package (IP) have been changed Data Module (DM).
- All mentions of MIL-DTL-24784C have been changed to MIL-DTL-24784 or deleted as appropriate.
- SECNAV M-5510.36 has been cancelled, so references to it have been deleted. It has been replaced with SECNAVINST 5510.36B which is already cited in this document.

# 1 INTRODUCTION

## 1.1 Purpose

This NAVSEA Interactive Electronic Technical Manual (IETM) Viewer Software Performance Requirements document defines the standard requirements necessary for IETM viewer software to satisfy the look, feel, and interaction requirements for NAVSEA IETMs. The requirements specified in this document satisfy adherence to NAVSEA specification MIL-DTL-24784 and the international specification S1000D within the scope of look and feel and viewer/user interaction. The requirements define how the software product is to manage and present/display IETM information to users, as well as, how the product is to support user viewing and interaction with that information. These performance requirements have been created to provide NAVSEA IETM users a familiar, and consistent operation of the viewer software product, and a common look and feel of IETM information presentation. Software products developed to meet these requirements must comply with Department of Navy (DON) information assurance criteria and be certified and approved by the Navy for use within the Navy ship and shore-based information infrastructure. The requirements defined in this document establish an IETM viewer software functional standard that is intended to give developers of NAVSEA IETM viewer software a stable and well-defined requirement, but Acquiring Activities and developers are to be aware that compliance with this standard does not, in itself, assure accreditation and approval of the software product by Navy.

## 1.2 Navy Approved Software

Software satisfying the performance requirements set forth in this document must also satisfy Navy infrastructure and shipboard and Navy Marine Corps Intranet (NMCI) shore requirements. Using approved infrastructure software and components ensures Acquisition Activities of expeditious and successful deployment of publication products. Approved software is listed in the DON Application and Database Management System (DADMS). If proposed viewer software is not already approved, the Preparing and Acquiring Activities must obtain this approval and secure its accreditation within NMCI. The potential for failing to achieve accreditation must be considered and addressed before final delivery of the NAVSEA data and product.

## 1.3 Information Assurance

Software used within the Navy information infrastructure must comply with DON information assurance criteria and be certified and approved for use aboard ship and on the Navy Marine Corps Intranet (NMCI) infrastructure serving shore-based activities. Information assurance includes measures, procedures and precautions that protect and defend information and information systems by ensuring their availability, integrity, authentication, confidentiality, and non-repudiation. Certain types of software, software code, and functions are precluded by Navy information assurance guidelines. In addition, due to shipboard and NMCI security requirements, many commercial hardware and software products fail to function at all, need some modifications or special procedures to operate, or have security vulnerabilities that must be corrected before being allowed on Navy systems and networks. NMCI does not allow users to install software, or hardware that requires software or drivers, onto NMCI desktops.

All software and applications destined for shipboard installation must be approved and certified by Naval Information Warfare Systems Command (NAVWARSSCOM) and Naval Network Warfare Command (NETWARCOM). Consequently, all software applications and components must be tested, certified compatible with NMCI and/or approved shipboard computing environments, and packaged for deployment to NMCI desktops and ships. In addition, all modifications to a product must be recertified before deployment. To assist activities in using approved software for shipboard use, NAVSEA has established a standard infrastructure for development, management, and use of technical manuals and data (NAVSEAINST 4160.3B). Compatibility and compliance with this infrastructure will ease installation of TM data and applications on ship.

## 1.4 Scope

This document defines the performance requirements for IETM viewer products that are to be used for NAVSEA IETMs, and in particular, NAVSEA IETMs conforming to NAVSEA specification MIL-DTL-24784 and international specification S1000D. It defines standard screen architecture, uniform presentation of IETM content, and a common presentation of user options irrespective of presentation hardware.

## 2 APPLICABLE DOCUMENTS, REFERENCES AND ACRONYMS

### 2.1 General

The documents listed below are not necessarily all of the documents referenced herein but are the ones that are needed in order to fully understand the information provided by this guide. Other references are cited throughout this document where they are used.

### 2.2 Documents/Standards

1. DoD Instruction 5200.01, "DoD Information Security Program and Protection of Sensitive Compartmented Information",  
<https://www.esd.whs.mil/Directives/issuances/dodi/>
2. DOD Manuals M-5200.01 Volumes 1 through 4, DOD Information Security Program,  
<https://www.esd.whs.mil/Directives/issuances/dodi/>
3. DoD Instruction 5230.24 Distribution Statements on Technical Documents,  
<https://www.esd.whs.mil/Directives/issuances/dodi/>
4. SECNAV Instruction 5510.36, Department Of The Navy (DON) Information Security Program (ISP) Instruction,  
<https://www.secnav.navy.mil/doni/Directives/05000%20General%20Management%20Security%20and%20Safety%20Services/05-500%20Security%20Services/5510.36B.pdf>
5. NAVSEAINST 4160.3, Technical Manual Management Program,  
<https://navsea.navy.deps.mil/hq/Docs/Instructions/Forms/AllItems.aspx>
6. Web-Based Interactive Electronic Technical Manual (IETM) Common User Interface Style Guide Version 2.0 – NSWCCD-20-TR-2003/05,  
<https://www.navsea.navy.mil/Home/Warfare-Centers/NSWC-Carderock/Resources/Technical-Information-Systems/IETMs/TechReps/>
7. S1000D™, the International Specification for Technical Publications utilizing a Common Source Database, [www.s1000d.org](http://www.s1000d.org).

8. MIL-DTL-24784, Detail Specification: Manuals, Technical: General Acquisition and Development Requirements, General Specification for, <https://quicksearch.dla.mil/qsSearch.aspx>
9. ANSI Z535 Series of Safety Alerting Standards, <http://www.nema.org/Standards/z535/Pages/default.aspx>.

## 2.3 Acronyms

ACN Advanced Change Notice  
CALs Continuous Acquisition and Life-Cycle Support  
DWCNs Dangers, Warnings, Cautions, and Notes  
GFE Government Furnished Equipment  
IETM Interactive Electronic Technical Manual  
IPB Illustrated Parts Breakdown  
NAVSEA Naval Sea Systems Command  
NMCI Navy Marine Corps Intranet  
NSWCCD Naval Surface Warfare Center Carderock Division  
PDF Portable Document Format  
QA Quality Assurance  
TM Technical Manual  
TMDER Technical Manual Deficiency/Evaluation Report  
TOC Table of Contents

## 3 REQUIREMENTS

### 3.1 Background

NAVSEA specification MIL-DTL-24784 and the international specification S1000D detail content and development requirements for IETMs. The use of a common internet browser to view IETMs standardizes many user interaction features of the electronic document but also allows unique user interaction features either built into proprietary software products or customized for the IETM by its developer. Two documents (Web-Based Interactive Electronic Technical Manual (IETM) Common User Interface Style Guide Version 2.0 – July 2003; and DoD Handbook for Interoperability of Interactive Electronic Technical Manuals, MIL-HDBK 511, 15 May 2000) have standardized the common style and look and feel requirements of IETMs for NAVSEA developers and users. IETM procurements that require an IETM Viewer which conforms to the requirements in these documents will provide common IETM look-and-feel interface. However, mere conformance to these common look and feel requirements does not preclude the underlying components and software, necessary for the user to view the IETM product, from varying from acquisition to acquisition or from being proprietary in nature. The following sections of this document define the standard requirements for IETM viewer software to satisfy the look, feel and interaction requirements for NAVSEA IETMs. This standard NAVSEA IETM viewer software will be called the Viewer, or the NAVSEA Viewer, in the sections below.

### 3.2 Physical IETM Screen Layouts - The Title Bar and Outer Shell

The NAVSEA Viewer shall produce a display having both an outer shell and an inner shell, Figure 3-1.

#### 3.2.1 Title Bar

The NAVSEA Viewer shall display a horizontal title bar at the top of the screen in the outer shell. The title bar shall include the overall classification of the IETM and the Technical Manual (TM) identification number. Following these entries, the Viewer may also display the IETM title in the horizontal title bar.

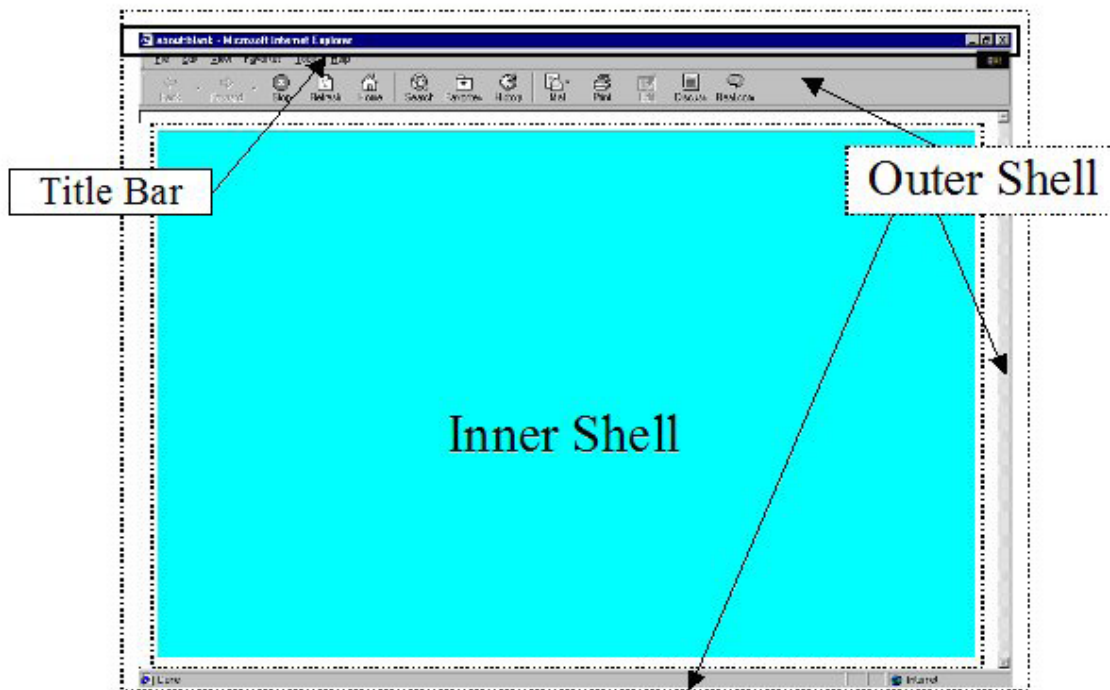


Figure 3-1 Outer and Inner Shells

#### 3.2.2 The Outer Shell

The outer shell is the application/browser window and is the portion of the screen that surrounds the inner shell. The Viewer shall display an outer shell containing a title bar as illustrated in *Figure 3-1*. Specific browsers are not intended to be implied by this example. In addition, the diagrams and screen shots, included in this document, are intended for illustration purposes only and shall not be construed as identifying requirements.

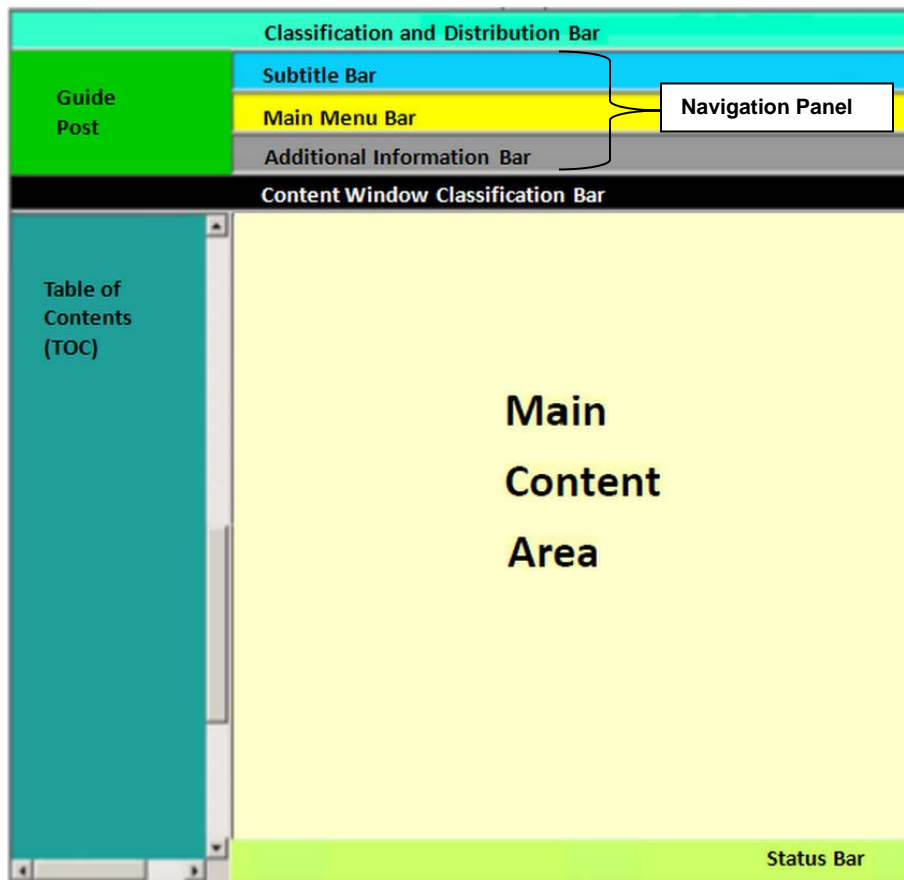
### 3.3 Physical IETM Screen Layout and Functions - The Inner Shell

The inner shell (see *Figure 3-1*) is the portion of the screen, within the browser shell, provided as the client application display area. The inner shell is the only portion of the screen area under the developer's control. The NAVSEA Viewer shall display the inner shell with the following features as illustrated in *Figure 3-2*.



- Guidepost
- Classification and Distribution Bar
- Navigation Panel
  - Subtitle Bar
  - Main Menu Bar
  - Additional Information Bar
- Table of Contents Panel
- Content Window Classification Bar
- Main Content Window
- Status Bar

The Viewer shall display these features satisfying the requirements set forth below.



*Figure 3-2 Inner Shell Features*

### 3.3.1 Guidepost

The Viewer shall display a drop-down Guidepost menu in the upper left corner of the inner shell. This menu shall provide user access to IETM document information and the ability to return to the standard default user interface. The Viewer may create the Guidepost such that it can be minimized and visually replaced by a compass rose icon. When the Viewer includes the

compass rose capability, it shall allow the user to toggle back and forth between the compass rose icon and the full Guidepost. Upon user selection of the Guidepost function when viewing an IETM, the Viewer shall display a drop-down menu listing the following function names in this exact order, top to bottom: Reset User Interface, IETM ID, Revision Summary, Safety Summary, Navy Distance Support, Feedback, Certification Sheet, Print Current Window, and Suspend Session. The Viewer may display, after these standard guidepost functions, other optional custom functions requested by an IETM Acquiring Activity. Exit is a standard guidepost function and will always be the last function listed on the Guidepost. The Viewer shall gray out any of the Guidepost functions that are not applicable to the data being displayed. The Viewer requirements for the Guidepost drop-down menu functions are described below.

### **3.3.1.1 Reset User Interface**

The Viewer shall allow the user to reset the user interface to the initial user interface displayed upon normal IETM start-up. The initial user interface is the default user interface. Prior to resetting the user interface, the user shall be asked whether the user interface should be reset. Upon user selection of the Reset function, the Viewer shall display a dialog box with an OK button and Cancel button at the bottom, and the following three selections: “Refresh the whole IETM view”, “Refresh current module”, and “Change applicability and refresh whole IETM view”. Upon user selection of “Refresh the whole IETM view” the Viewer shall close all open modules and reset the Table of Contents in the IETM. Upon user selection of “Refresh current module” the Viewer shall refresh only the module within which the user is working. Upon user selection of “Change applicability and refresh whole IETM view”, the Viewer shall display the applicability options and, upon selection, shall refresh the whole IETM view as described above.

### **3.3.1.2 IETM ID**

Upon user selection of the IETM ID function, the Viewer shall display administrative information, typically shown on a paper technical manual title page, in a separate window. This information includes security classification, TM identification number, revision number, manual title, type of manual, maintenance level(s), prime title, subtitle, manufacturer, contract number, seal, supersedure notice, supplement notice, disclosure notice, distribution statement, export control notice, destruction notice, copyright and proprietary information credit line, classification authority box, stock number, publishing authority, and publication date as applicable.

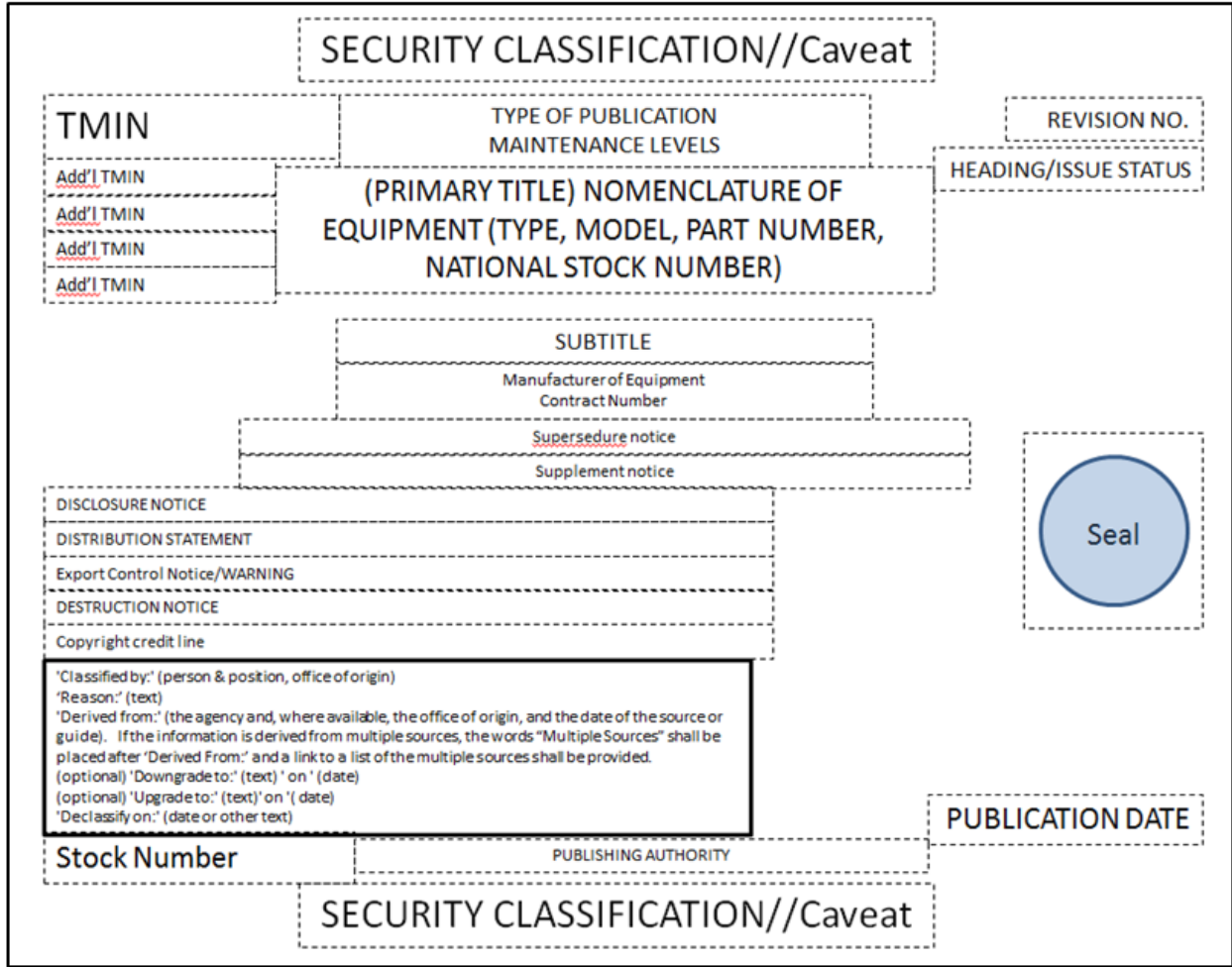


Figure 3-3 IETM ID

### 3.3.1.3 Revision Summary

Upon user selection of the Revision Summary function, the Viewer shall display the administrative information summarizing all of the revisions for the currently open IETM. The Viewer shall include in this summary hotlinks providing the user access to the various places within the IETM where the changes were made. The Revision Summary shall be auto-generated based on XML tags or attributes containing the reason for the change.

### 3.3.1.4 Safety Summary

Upon user selection of the Safety Summary function, the Viewer shall display the Safety Summary. The Safety Summary emphasizes the proper use of controls, describes the hazards to maintenance personnel and potential damage to the equipment, and recommends precautions, and includes warnings and dangers applicable to hazardous materials and related information.

### **3.3.1.5 Navy Distance Support**

Upon user selection of the Navy Distance Support function, the Viewer shall provide the user information on contacting Navy Distance Support in a separate window.

### **3.3.1.6 Feedback**

Upon selection of the Feedback function, the Viewer shall display menu options for the Technical Manual Deficiency/Evaluation Report (TMDER) website URL (TMDER Website), the locally stored TMDER (TMDER PDF) and other Feedback (Other Feedback). (See 3.3.5.6 *Feedback* for more details.)

#### **3.3.1.6.1 TMDER Website**

When the user selects the TMDER Website option, the Viewer shall launch the TMDER tool URL. The TMDER tool URL will be provided as GFE to IETM Acquiring Activities/IETM developers.

#### **3.3.1.6.2 TMDER PDF**

For users without Internet access or needing to obtain command approval before submittal, the Viewer shall provide an interactive PDF TMDER. (See 3.3.5.6.2 *TMDER PDF* for more details.)

#### **3.3.1.6.3 Other Feedback**

The Viewer shall allow the user to initiate and submit other feedback forms, reports and required administrative and technical data, including Maintenance Corrections Reports (MCRs), and the ordering of repair parts. (See 3.3.5.6.3 *Other Feedback* for more details.)

### **3.3.1.7 Certification Sheet**

Upon user selection of the Certification Sheet function, the Viewer shall display the IETM Certification Sheet. Note: If the Certification Sheet is not available, this feature shall be grayed out from the Guidepost. Since the Certification Sheet is an optional requirement specified by the IETM Acquiring Activity at TMCR/TMSR creation, the Viewer need only provide the means to view a completed Certification Sheet if one is available.

### **3.3.1.8 Print Current Window**

Upon user selection of the Print Current Window function, the Viewer opens a separate window and creates a PDF document of the content currently open/being displayed within the Main Content Window, including scrolled off content. The user can then elect to print the file (PDF) created by the Viewer.

### **3.3.1.9 Session Control**

The Viewer shall support Session Control with the capability to Suspend, Resume or Abort a session. The only function that shall be available from the guidepost is Suspend Session. If an IETM does not include the Suspend Session function, it shall appear in the guidepost but shall be grayed out. The Viewer shall allow the user to suspend a session at any time (e.g., for a break or emergency) by selection of the Suspend Session function. Suspend Session saves the state table

and history log and sets up the capability for resumption via Resume Session upon re-entry of the IETM. Both Resume Session and Abort Session functionality shall only be available at the initial startup of the IETM when a saved suspended session exists. Only one suspended session save per user/user login (see 3.7.4 *Login*) is allowed. If multiple users are assigned the same 'user' login, then only one suspended session per IETM will be allowed per standalone/disconnected device. Having multiple users with the same assigned 'user' login on a server is disallowed since disambiguation of which user is doing what creates a very hazardous situation. If IETMs are being used on thin clients fed from a server, then each user shall have an individually unique login.

Upon user selection of the Suspend Session function from the Guidepost, the Viewer will display a dialog box stating "Suspend Session will save the history log and current location for this session and exit the IETM." with an OK button and a Cancel button. The history log and location for this IETM session shall be saved against this IETM for the current user. The IETM will then exit.

Upon opening an IETM with Session Control, the Viewer shall verify whether the Viewer has a suspended session. If a suspended session is found, the user shall be prompted whether to open the IETM with the saved suspended session (Resume Session), to keep the saved session but open the IETM under a new session, or to abort (delete) the saved session and continue to open the IETM under a new session.

If the user chooses Resume Session, the Viewer shall provide a DANGER prompt with an OK button which must be acknowledged. The DANGER prompt shall read: "DANGER: Be aware that during the suspended session, this IETM has not tracked any key parameters or condition settings that may have changed (e.g., power situation, maintenance mode, temperature change) and/or other personnel may have worked on the end-item/platform making changes. Thus, proceed with extreme Caution. If resuming at a step of a procedure, you MUST use Prev (Step) to step backwards to the very beginning of the procedure before restarting work." The Viewer shall then re-start the session at the point at which it was suspended. The Viewer will load the saved state table and history into memory and remove the capability to resume the saved session. To resave the session, the user will need to suspend the session again.

If a user chooses to keep the previously suspended session and open a new session the Viewer will prompt the user with a Note that the current session may not be suspended because there is already a suspended session saved. If the user aborts the saved session, the Viewer shall display a dialog box asking the user "All history of this suspended session will be deleted. Are you sure you want to abort this session?" with an OK button and a Cancel button.

Selecting the Abort function upon entrance into the IETM shall erase any saved suspended session for the current user. However, if the permanent audit trail functionality (see 3.7.5 *Audit Trail*) is specified, then this partial session shall be saved to the permanent file with the last entry being 'Session Aborted'. The Viewer then opens a new IETM session. Please see *Figure 3-4 Session Control Flow Chart*.

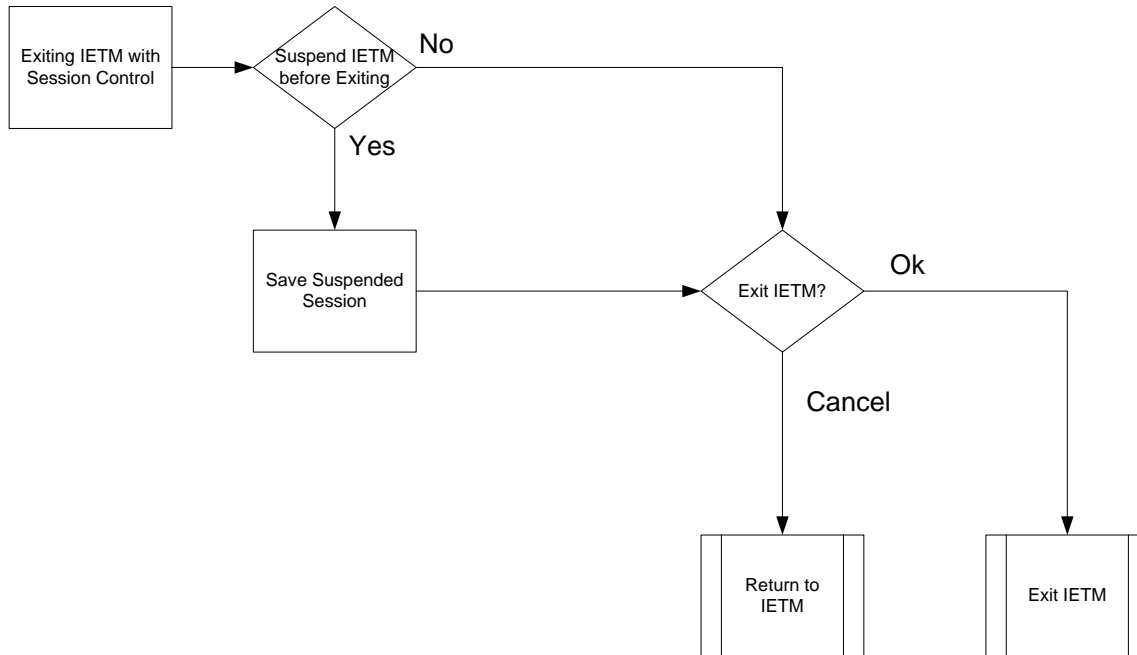


Figure 3-5 Session Control Flow Chart

### 3.3.1.10 Exit

Upon user selection of the Exit function, the Viewer shall display a dialog box asking the user “Are you sure you want to close the technical manual?” with a selectable OK button and a Cancel button. Upon selection of OK, the Viewer initiates the exit process. The user of the IETM shall always be asked for confirmation before the IETM exit process is executed. If the IETM has optional session control functionality, another method to exit the IETM is to use the Suspend Session function from the Guidepost (see *Session Control*).

When a user Exits the current IETM, the history log for the session shall be cleared. When the user re-enters the same IETM, a new history shall be started. However, if the permanent audit trail functionality is specified, then prior to clearing the session it shall be saved to the permanent file with the last entry indicating that the session has been exited.

### 3.3.2 Classification and Distribution Bar

The Viewer shall display the Classification and Distribution Bar as a persistent horizontal bar across the top of the inner shell. It shall be displayed such that it cannot be toggled on and off. The Viewer shall display within the Classification and Distribution Bar the overall classification of the entire IETM, an indication of the special handling instructions, which are caveats for S1000D (i.e., FOUO), and shall also display the distribution statement identifier (i.e., “DISTRIBUTION STATEMENT E”) for the IETM. The Viewer shall color the background displayed in the Classification and Distribution Bar to reflect the classification level of the IETM. Classification markings and Distribution Statements shall be in compliance with current DoD/DON/NAVSEA requirements (see *Documents/Standards*). Security markings and colors with their hex codes can be found in *Table 3-5 Security Markings and Colors*.

### 3.3.3 Navigation Panel

The Navigation Panel is comprised of multiple bars in the following sequence: Subtitle bar, Main Menu bar, and Additional Information bar. The Navigation Panel will appear above the Main Content Window. The position of the Navigation Panel must remain consistent throughout the application.

#### 3.3.3.1 Logic Engine

For NAVSEA Viewer implementers to provide Logic Engine functionality in a consistent manner to end users (technicians, subject matter experts, incident reconstruction teams, etc.) are detailed in the *Appendix B Logic Engine* section of the document. These requirements provide the additional performance requirements for interacting with logic engines: how Previous Node and Next Node; logic engine steps; dialogs; and, reference links under control by the logic engine shall behave.

#### 3.3.4 Subtitle Bar

The Viewer shall display a horizontal bar, called a Subtitle Bar, above the Main Menu Bar to display the title of the information being displayed in the Main Content Window.

#### 3.3.5 Main Menu Bar and Additional Information Bar

The Viewer shall display a Main Menu Bar as a horizontal bar at the top of the inner shell below the Subtitle Bar. The Additional Information Bar shall be displayed as a horizontal bar across the inner shell below the Main Menu Bar. The Viewer shall provide the following minimum set of functions within the Main Menu and Additional Information Bars: Previous, Next, Back, Forward, Applicability, Annotations, Print, History, Feedback, Help, and Exit. Exit shall be displayed rightmost on the Main Menu Bar. Additional functions required by IETM Acquiring Activities in addition to the minimum set may be displayed on the Additional Information Bar. The Viewer shall allow the user to select any one of these functions. The Viewer shall gray out those functions not available at any point in the user interaction with the IETM display. The Viewer may display the icons associated with the functions but the text must always be displayed. The Viewer shall use de facto industry symbols and icons for the functions. The Viewer performance requirements upon user selection of these functions are identified below. For NAVSEA Viewer implementers providing Logic Engine functionality, please refer to *Appendix B.6 Logic Engine Navigation Functions* and its sub-sections for additional requirements.

##### 3.3.5.1 Previous and Next

The Viewer shall provide Previous and Next functions on the Main Menu Bar that allow the user to traverse a procedure in a sequential manner. The Viewer shall cause the Previous and Next functions to be inoperable, and shall display them as grayed out, when the user is not in a procedure. For procedural information, fault information, maintenance checklists and inspections, training/learning information, and respond-compute information (e.g., process data module, dialog driven), the use of additional navigation functionality is needed. *Appendix D* details the actions within a Viewer state-table for how Next and Previous are to be processed.

### 3.3.5.2 Table of Contents (TOC)

Upon user selection of the TOC function on the Main Menu Bar, the Viewer shall toggle the Table of Contents Panel on and off in the display.

### 3.3.5.3 History

The Viewer shall have a navigational history function that tracks and logs each location (link) a user has visited since the IETM was first entered which shall constitute the beginning of a session. Upon selection of the History function, on the Main Menu Bar, the Viewer shall display a selectable list of the locations that the user previously visited during that session. Through selection, the user may return to any location within the session. The log shall only be appended and shall retain all locations in the order visited without alteration.

The Viewer shall not display any history of locations until a user begins an IETM session by entering an IETM. When a user Exits the current IETM, the history log for the session shall be cleared. When the user re-enters the same IETM or enters another IETM, a new history shall be started. However, if the permanent audit trail functionality is specified by the IETM Acquiring Activity as a Viewer option during publish time, then prior to clearing the session the history log shall be saved to a permanent file with the last entry indicating that the session has been exited. (See 3.7.5 *Audit Trail* for more details).

If the IETM has optional session control capabilities such as Suspend and Resume, the session (history log) shall be handled as follows:

1. If a user Suspends a session, via the Guidepost – Suspend Session, and upon verification that the user wants to suspend the session, the history log for this IETM session shall be saved against this IETM for the current user. The IETM will then exit.
3. If a user starts the IETM under a new session, the history log will start with an empty log.
4. If the user starts the IETM with an earlier suspended session using Resume session, the history log from the suspended session shall be loaded into history and the IETM will start where the user suspended the session. As a part of this resumption of the IETM, the saved state shall be fully restored to include any minimized alerts (e.g., Danger, Warning, Caution, etc.)
5. If the user starts the IETM as a new session but saves the previous suspended session, the history log for the earlier suspended session shall remain saved. The history log for the new session will start with an empty log.
6. If the user starts the IETM as a new session but aborts the previous suspended session, the history log shall erase any saved suspended session. However, if the permanent audit trail functionality is specified, then this partial session shall be saved to the permanent file with the last entry being ‘Session Aborted’.

### 3.3.5.4 Search Function

Upon user selection of the Search function, the Viewer shall display a search field to allow the user to search for items in the IETM. The Viewer shall support full text, context (categorical), and Boolean searches. The categories for context searches shall include TOC Titles, Figure Titles, Table Titles, Part Numbers, Part Nomenclature (S1000D only), Cage Code, Fault Code,



Data Module Codes (S1000D only), and Data Module Titles (S1000D only). The Viewer shall search the IETM for the selected items and display the linked results in the Main Content Window. For Boolean searches, commonly supported logic include instances where both x and y appear (Logical AND), instances where neither x nor y appear (Logical NOR), and instances where only x or only y appear (Logical EXCLUSIVE OR).

### **3.3.5.5 Print**

IETM printing involves printing a part of the manual, such as an information package, paragraph, table, or graphic. The Viewer shall limit printing and copying to sections, paragraphs, logical chunks of data, individual tables, and individual graphics and shall not allow printing of the entire IETM. In addition to the printed technical data, the Viewer shall also print, as specified below, time/date stamps, persistent alerts, classification and special handling instruction markings, distribution statements, destruction notices, and TMINS number, in accordance with DODI 5230.24.

The Viewer shall include the security classification, special handling instruction markings, distribution statement and TMINS in the header of each page of all printed content. The Viewer shall provide, in either the header or the footer of each printed page, the revision number of the IETM selection being printed and printed date/time stamp. In the footer of each printed page, the Viewer shall print the following text: “Printed from Electronic Source. Changes may have occurred since printing. Destroy after 14 days.” The Viewer shall print in both the header and the footer of each printed page: “Working Papers”. The Viewer shall assume the available printer can print only black-and-white and ensure that any use of color lends itself to black and white printing.

The Viewer shall provide a print-on-demand feature allowing printing of logical parts of the manual such as an information package or a set of instructions. The Viewer shall present information to the user to support the printing of a logical chunk of data such as a set of instructions, an operating procedure, or a diagram.

Upon user selection of the Print function on the Main Menu Bar, the Viewer shall display a drop-down menu containing the following options, in this order: Print Current Window, Print Current Module, Print Module Figures, and Print Current Figure. Upon selection of the Printer function options, the traditional printer options such as “select printer to use” or “number of copies” will appear. Viewer requirements for these options follow.

#### **3.3.5.5.1 Print Current Window**

Upon selection of Print Current Window, the Viewer shall print only the technical data in the window currently being viewed by the user, including material that is scrolled off the screen.

#### **3.3.5.5.2 Print Current Module**

Upon selection of Print Current Module, the Viewer shall print the technical data contained within the IETM module containing the data currently being viewed by the user.

#### **3.3.5.5.3 Print Module Figures**

Upon selection of Print Module Figures, the Viewer shall print all of the figures contained within the IETM module containing the data currently being viewed by the user.

#### **3.3.5.5.4 Print Current Figure**

Upon selection of Print Current Figure, the Viewer shall print the figure currently being viewed by the user.

#### **3.3.5.6 Feedback**

Upon selection of the Feedback function, the Viewer shall display menu options for the Technical Manual Deficiency/Evaluation Report (TMDER) website URL (TMDER Website), the locally stored TMDER (TMDER PDF) and other Feedback (Other Feedback). These options will allow the user to initiate and submit a TMDER and other feedback forms, reports and other required administrative and technical data, including Maintenance Corrections Reports (MCRs), and the ordering of repair parts. For an IETM with Session Control, the Audit Trail shall be saved at selection of the Feedback function and shall be transparent to the user and of use to administrative and quality assurance personnel. The audit trail shall capture all user and IETM interaction. The Viewer shall provide to the user the ability to choose an audit trail record, by selecting the desired trail, and display a log of all interactions of that IETM session.

##### **3.3.5.6.1 TMDER Website**

When the user selects the TMDER Website option, the Viewer shall launch the TMDER tool URL. The TMDER tool URL will be provided as GFE to IETM Acquiring Activities/IETM developers.

##### **3.3.5.6.2 TMDER PDF**

For users without Internet access or needing to obtain command approval before submittal, the Viewer shall provide an interactive PDF TMDER. When the user selects the TMDER PDF option, the Viewer shall display a separate out-line window containing the PDF Technical Manual Deficiency/Evaluation Report (TMDER) form NAVSEA 4160/1 (see *Figure 3-5*) in such a manner that it can be filled out by the user. The Viewer shall allow the user to complete the form, save the form, and print the form for mailing. The Viewer shall display the Out-Line Window with the fill-in form such that it can be moved by the user in order to see and reference the IETM on which the TMDER is being submitted. The Viewer shall automatically generate an electronic locator (e.g., address, version) and, to the greatest extent possible, shall automatically fill-in relevant fields on the form (e.g., user ID, system state, originator information, etc.). The Viewer shall display a "Form fill-in completed" function which must be selected by the user before returning to the IETM (e.g., "done," "okay," "close-out," "cancel".) Upon selection of the Form Fill-in Completed function, the Viewer shall close the TMDER out-line window and return to display of the position and state of the IETM when the TMDER function was selected. The interactive PDF TMDER form will be provided as GFE to IETM Acquiring Activities/IETM developers.

Ref: NAVSEAINST 4160.3 NAVSEA S0005-AA-GYD-030/TMMP			
<b>NAVSEA/SPAWAR TECHNICAL MANUAL DEFICIENCY/EVALUATION REPORT (TMDER)</b>			
INSTRUCTIONS: Continue on 8 1/2" x 11" on page if additional space is needed.			
1. Use this report to indicate deficiencies, problems and recommendations relating to publications.			
2. For <b>CLASSIFIED</b> TMDERs see OPNAVINST 5510H for mailing requirements.			
3. For TMDERs that affect more than one publication, submit a separate TMDER for each.			
4. Submit TMDERs at web site <a href="https://nsdsa.nmci.navy.mil">https://nsdsa.nmci.navy.mil</a> or mail to: <b>COMMANDER, CODE 310 TMDERs, NAVSURFWARCENDIV NSDSA, 4363 MISSILE WAY BLDG 1389, PORT HUENEME CA 93043-4307</b>			
1. PUBLICATION NUMBER	2. VOL/PART	3. REV/DATE OR CHG/DATE	4. SYSTEM/EQUIPMENT ID
5. TITLE OF PUBLICATION		6. REPORT CONTROL NUMBER (6 digit UIC-YY-any four: xxxxxx-10-xxxx)	
7. RECOMMEND CHANGES TO PUBLICATION			
7a. Page #	7b. Para #	7c. RECOMMENDED CHANGES AND REASONS	
8. ORIGINATOR'S NAME AND WORK CENTER		9. DATE	10. ORIGINATOR'S E-MAIL ADDRESS
11. TMMA of Manual (NSDSA will complete)			
12. SHIP OR ACTIVITY Name and Address (Include UIC/CAGE/HULL)		13. Phone Numbers:	
		Commercial ( ) - -	
		DSN - -	
		FAX ( ) - -	

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SIN 0116-LF-985-4100

Figure 3-6 Sample TMDER Form

### **3.3.5.6.3 Other Feedback**

The Viewer shall allow the user to initiate and submit other feedback forms, reports and required administrative and technical data, including Maintenance Corrections Reports (MCRs), and the ordering of repair parts. IETM Acquiring Activities shall have the capability to tailor this requirement to meet their needs, and when utilizing this functionality, IETM Acquiring Activities shall provide appropriate static or interactive forms, electronic addresses, and/or mailing addresses.

### **3.3.5.7 Exit**

The Exit function initiates the exit process. Upon selection of the Exit function, the Viewer shall ask the user for confirmation before the IETM exit process is completed. If the IETM has session control capabilities such as Suspend and Resume, then additional dialogs shall appear prompting the user of what course of action to take.

### **3.3.5.8 Help**

Upon selection of the Help function, the Viewer shall display a list of the available help such as IETM specific browser help, standard browser help, and help on how to use and navigate through the IETM.

### **3.3.5.9 IDSTATUS (S1000D only)**

The Viewer shall display the IDSTATUS Info function only for S1000D IETMs. Upon selection of this function, the Viewer shall display the IDSTATUS metadata for the current data module in the Main Content Window. This data shall include the data module code, issue number and date, classification, derivative classification, responsible company code, and QA status. While the IDSTATUS data is being displayed, the Viewer shall change the title of this function in the Main Menu Bar to Hide IDSTATUS Info. Upon selection of the Hide IDSTATUS Info function, the Viewer shall remove the IDSTATUS metadata from the display and return to what was displayed before Display IDSTATUS Info was first selected.

### **3.3.6 Additional Information Bar**

The Viewer shall display an Additional Information Bar as a horizontal bar across the inner shell below the Main Menu Bar. The Viewer shall provide the following minimum set of functions within the Main Menu and Additional Information Bars: Previous, Next, Back, Forward, Applicability, Annotations, Print, History, Feedback, Help, and Exit. Exit shall be displayed rightmost on the Main Menu Bar. IETM Acquiring Activities may require functions in addition to the minimum set. The Viewer shall gray out those functions not available at any point in the user interaction with the IETM display. The Viewer may display the icons associated with the functions but the text must always be displayed. The Viewer shall use de facto industry symbols and icons for the functions on the Additional Information Bar. For NAVSEA Viewer implementers providing Logic Engine functionality, please refer to *Appendix B.6 Logic Engine Navigation Functions* and its sub-sections for additional requirements. Specific requirements for each of the Additional Information Bar functions are set forth below.

### 3.3.6.1 Back

Upon entering an IETM, the Viewer shall display the Back function as grayed out and not operable. The Back function shall not become active until the user has navigated/traversed at least two displays. In this case, upon user selection of the Back function/icon on the Additional Information Bar, the Viewer shall display the last previous display that the user was viewing.

### 3.3.6.2 Forward

Upon entering an IETM, the Viewer shall display the Forward function as grayed out and not operable. The Forward function shall not become active until the user has navigated/traversed at least one display and has returned to a display using the Back function. In this case, upon user selection of the Forward function/icon on the Additional Information Bar, the Viewer shall display the next display the user was viewing.

### 3.3.6.3 Applicability

Upon user selection of the Applicability function/icon on the Additional Information Bar, the Viewer shall display the current applicability of the IETM and allow the user to change the applicability. Applicability is the ability of the IETM viewer or presentation system to automatically display the relevant information applicable to the existing configuration. The Viewer shall provide the user a mechanism for entering/modifying configuration parameters and the Viewer shall be able to filter by configuration, that is, the Viewer shall narrow the information presented to the user to that information associated with a specific configuration of the end item. For example, filtering might include filtering by hull type, ship class, ship alterations, or field changes. For NAVSEA Viewer implementers providing Logic Engine functionality, please refer to *Appendix B.7 Applicability in a Logic Engine* for additional requirements.

### 3.3.6.4 Annotations

Under the Annotations function, the Viewer shall provide to system administrators and users the ability to place special bookmarks and notes within an IETM. The default for annotations is that they are public information for all users such as special information that requires rapid deployment to the manual holders like Advance Change Notices (ACNs). Optionally, annotations can be private remarks needed only by the user such as to assist in their training. Upon user selection of the Annotations function, the Viewer shall display a drop-down menu containing the following options: Add Bookmark, Add Note, and Manage Bookmarks/Notes. Viewer requirements for these options are listed below. For annotations, the Viewer shall also satisfy the following requirements:

- The Viewer shall display a persistent visual indication that an annotation exists. The visual indication for Bookmarks shall be different from that for Notes. When the annotation is private, the visual indication shall only be visible to the owner/creator of the private annotation.
- The default initial presentation of annotations is to appear minimized.
- The Viewer shall visually differentiate public annotations from private annotations.

Note: In development of the Annotation function within the Viewer, NMCI and IT21 requirements should be explored to determine the path where annotations are saved.

#### **3.3.6.4.1 Add Bookmark**

The Viewer shall provide a means for the user to mark areas of interest within the IETM to facilitate future access. Bookmarks may be a way for users to mark “Favorites” and “Shortcuts.” Upon selection of Add Bookmark, the Viewer shall allow the user to enter a title for the bookmark. The Viewer shall default to public bookmarks. If the Viewer permits both private and public bookmarks, it shall allow the user to select whether the bookmark is public or private.

#### **3.3.6.4.2 Add Note**

The Viewer shall provide the Add Note function to enable system administrators and users to place special information within a manual in the form of notes, or annotations. The Viewer shall default Notes to being public. Optionally the Viewer may provide the option that the notes or annotations may be either public information accessible by all users (as may be the case with “Advance Change Notices” that require rapid deployment to the manual holders), or private notes needed only by the user for his own purposes. Upon user selection of Add Note, the Viewer shall allow the user to enter a title for the annotation in the empty field next to Title, enter the substance of the annotation in the empty field next to Note, and then allow the note to be public by selecting the Public Annotation option. The Viewer shall display a warning, in the Add Note dialog box stating “Information contained in a note does not supersede information contained in the document.”

#### **3.3.6.4.3 Manage Bookmarks/Notes**

Upon user selection of the Manage Bookmarks/Notes function, the Viewer shall list public annotations/notes that have been created within the IETM, and, if private annotations are allowed, private annotations created by the user. The Viewer shall list each annotation by Type (public or private and bookmark or note), Title and Creator. The Viewer shall display annotations that were not made public only to the user who created them. The Viewer shall allow the user to manage the annotations using the following functions, Edit, GoTo, Delete, and Delete All in the menu bar at the top of a dialog box.

#### **3.3.6.5 Additional Content**

The Viewer shall provide a quick means to readily access the following information: Task, Reference Material, Material Required, and Support Equipment. As the current data display may make some functions inoperable, the Viewer shall gray out any of the additional content functions that are not applicable to the actual IETM content being displayed.

#### **3.3.7 Table of Contents (TOC) Panel**

The Viewer shall display on the left side of the inner shell below the Guidepost a resizable area to display the Table of Contents, list of illustrations which includes multimedia, and list of tables. This resizable area and its contents shall be called the Table of Contents (TOC) Panel. This area shall have a resizable right-side border (so that the TOC area can be increased or reduced in size by selecting and dragging the right side border to the right or left, respectively). The Viewer shall display the full name of the TOC item when the user hovers the cursor over a TOC item.

The Viewer shall indicate the security classification, if any, of paragraph titles, figure titles, and table titles in the TOC (see *Security Markings*). All entries shall be linked to the actual subject matter.

The Viewer shall provide access to the TOC via a hierarchical breakdown such as system/subsystem, content functional or physical hierarchy, or by means of graphical interfaces. Note: The breakdown, based on the arrangement of content, can be enforced by the DTD or the publishing process. Example: The publishing process could arrange the TOC by identified DTD elements, i.e., for S1000D, information codes or schema types.

The Viewer shall expand and contract sections that are selected by the user. The Viewer may optionally display the TOC with a drill-up/drill-down function. If supported, drill-up/drill-down buttons shall be displayed above the TOC to allow the user to move through the fully expanded TOC. Drill-up moves the user back up hierarchically through the fully expanded TOC and drill-down moves the user down through the fully expanded TOC. A TOC is fully expanded when all levels of the TOC are displayed.

When either the list of illustrations or list of tables is selected, the full TOC shall be hidden and the chosen list shall be displayed in the TOC display area. As an option, the TOC may stay persistent and the list of illustrations (LOI) and list of tables (LOT) may appear after the last entry in the TOC. The Viewer shall indicate the security classification, if any, of figure and table titles in the LOI and LOT. The Viewer shall allow the user to select a list item and access the information presented in the selected item.

### **3.3.8 Main Content Window**

The Main Content Window is the area of the inner shell below the Navigation Panel and above the Status Bar. The Viewer shall display the text and graphics of the IETM in the Main Content Window area. This area may be divided into separate panes but shall not be divided into more than 4 panes. The Viewer shall display and arrange screens and panes in accordance with Appendix A.

#### **3.3.8.1 Content Window Classification Bar**

The Viewer shall display the Content Window Classification Bar as a horizontal bar across the top of the main content window. It shall be displayed such that it cannot be toggled on and off. The Viewer shall display within the Content Window Classification Bar the classification marking for what is currently shown in the Main Content Window. The Viewer shall display the classification level of the highest level for the specific content chunk being displayed (e.g., if screen-by-screen then the chunk is a screen; if scrollable-file-by-scrollable-file, then the chunk is the scrollable-file). The Viewer shall color the background displayed in the Content Window Classification Bar to reflect the classification level of the IETM in accordance with *Table 3-5 Security Markings and Colors* (paragraph 3.6.2.9.1).

Note: The classification marking that appears in the Title Bar of the outer shell is the overall classification of the entire IETM.

### 3.3.9 Status Bar

The Status Bar shall be a horizontal bar located at the bottom of the inner shell. The Viewer shall display in the Status Bar status information including status indicators and icons for active dangers, warnings, cautions, and notes.

### 3.4 Icons

The Viewer shall use de facto industry icons.

### 3.5 Screen Resolutions

The IETM display area and screen resolution are driven by the size and resolution of the display devices used to present/view the IETM while allowing areas for TOC, menu bars, and navigational controls. IETM and viewer application planners and developers must carefully plan for the size and resolutions of existing and anticipated display devices and technology. The Viewer shall successfully display the IETM on current and expected devices being used in the Fleet.

**The minimum screen resolutions for desktops, laptops, smart phones, electronic books, and tablets are provided in *Table 3-1 Minimum Screen Resolutions*.**

Device	Minimum Screen Resolutions
PC and laptop	800 x 600 pixels
Smart phone	480 x 800 pixels
Electronic book and tablet	800 x 600 pixels

*Table 3-1 Minimum Screen Resolutions*

### 3.6 Style and Format Requirements

This section covers generalized presentation requirements of an IETM and does not cover specific content issues.

#### 3.6.1 Text and Display Colors

Unless otherwise specified herein, the Viewer shall display text as black (#000000) and background as white (#FFFFFF). This aids in support of printing without loss of content. For operational exceptions, such as night ops and where color has special meaning, the Viewer shall use the browser-safe color palette shown in *Figure 3-6* which shows the 216 windows colors with their corresponding HEX values and RGB values. The source for this figure is <http://www.lynda.com/resources/hexpalette/hue.html>.



990033 R: 153 G: 000 B: 051	FF3366 R: 255 G: 051 B: 102	CC0033 R: 204 G: 000 B: 051	FF0033 R: 255 G: 000 B: 051	FF9999 R: 255 G: 153 B: 153	CC3366 R: 204 G: 051 B: 102	FFCCFF R: 255 G: 204 B: 255	CC6699 R: 204 G: 051 B: 153	993366 R: 153 G: 051 B: 102	660033 R: 102 G: 000 B: 051	CC3399 R: 204 G: 051 B: 153	FF99CC R: 255 G: 153 B: 204	FF66CC R: 255 G: 102 B: 204	FF99FF R: 255 G: 153 B: 255	FF6699 R: 255 G: 102 B: 153	CC0066 R: 204 G: 000 B: 102
FF0066 R: 255 G: 000 B: 102	FF3399 R: 255 G: 051 B: 153	FF0099 R: 255 G: 000 B: 153	FF33CC R: 255 G: 051 B: 204	FF00CC R: 255 G: 000 B: 204	FF66FF R: 255 G: 102 B: 255	FF33FF R: 255 G: 051 B: 255	FF00FF R: 255 G: 000 B: 255	CC0099 R: 204 G: 000 B: 153	990066 R: 153 G: 000 B: 102	CC66CC R: 204 G: 051 B: 204	CC33CC R: 204 G: 051 B: 204	CC99FF R: 204 G: 153 B: 255	CC66FF R: 204 G: 102 B: 255	CC33FF R: 204 G: 051 B: 255	993399 R: 153 G: 051 B: 153
CC00CC R: 204 G: 000 B: 204	CC00FF R: 204 G: 000 B: 255	9900CC R: 153 G: 000 B: 204	990099 R: 153 G: 000 B: 153	CC99CC R: 204 G: 153 B: 204	996699 R: 153 G: 102 B: 153	663366 R: 102 G: 051 B: 102	660099 R: 102 G: 000 B: 153	9933CC R: 153 G: 051 B: 204	660066 R: 102 G: 000 B: 102	9900FF R: 255 G: 000 B: 255	9933FF R: 153 G: 051 B: 255	9966CC R: 153 G: 102 B: 204	330033 R: 051 G: 000 B: 051	663399 R: 102 G: 051 B: 153	6633CC R: 102 G: 051 B: 204
6600CC R: 102 G: 000 B: 204	9966FF R: 153 G: 102 B: 255	330066 R: 051 G: 000 B: 102	6600FF R: 102 G: 000 B: 255	6633FF R: 102 G: 051 B: 255	CCCCFF R: 204 G: 204 B: 255	9999FF R: 153 G: 153 B: 255	9999CC R: 153 G: 153 B: 204	6666CC R: 102 G: 102 B: 204	6666FF R: 102 G: 102 B: 255	666699 R: 102 G: 102 B: 153	333366 R: 051 G: 051 B: 102	333399 R: 051 G: 051 B: 153	330099 R: 051 G: 000 B: 153	3300CC R: 051 G: 000 B: 204	3300FF R: 051 G: 000 B: 255
3333FF R: 051 G: 051 B: 255	3333CC R: 051 G: 051 B: 204	0066FF R: 000 G: 102 B: 255	0033FF R: 000 G: 051 B: 255	3366FF R: 102 G: 102 B: 204	3366CC R: 051 G: 102 B: 204	000066 R: 000 G: 000 B: 102	000033 R: 000 G: 000 B: 051	0000FF R: 000 G: 000 B: 255	000099 R: 000 G: 000 B: 153	0033CC R: 000 G: 051 B: 204	0000CC R: 000 G: 000 B: 204	336699 R: 051 G: 102 B: 153	0066CC R: 000 G: 102 B: 204	99CCFF R: 153 G: 204 B: 255	6699FF R: 102 G: 153 B: 255
003366 R: 000 G: 051 B: 102	6699CC R: 102 G: 153 B: 204	006699 R: 000 G: 102 B: 153	3399CC R: 051 G: 153 B: 204	0099CC R: 000 G: 153 B: 204	66CCFF R: 102 G: 204 B: 255	3399FF R: 051 G: 153 B: 255	003399 R: 000 G: 051 B: 153	0099FF R: 000 G: 153 B: 255	33CCFF R: 051 G: 204 B: 255	00CCFF R: 000 G: 204 B: 255	99FFFF R: 153 G: 255 B: 255	66FFFF R: 102 G: 255 B: 255	33FFFF R: 051 G: 255 B: 255	00FFFF R: 000 G: 255 B: 255	00CCCC R: 000 G: 204 B: 204
009999 R: 000 G: 153 B: 153	669999 R: 102 G: 153 B: 153	99CCCC R: 153 G: 204 B: 204	CCFFFF R: 204 G: 255 B: 255	33CCCC R: 051 G: 204 B: 204	66CCCC R: 102 G: 204 B: 204	339999 R: 051 G: 153 B: 153	336666 R: 051 G: 102 B: 102	006666 R: 000 G: 102 B: 102	003333 R: 000 G: 051 B: 051	00FFCC R: 000 G: 255 B: 204	33FFCC R: 051 G: 255 B: 204	33CC99 R: 051 G: 204 B: 153	00CC99 R: 000 G: 204 B: 153	66FFCC R: 102 G: 255 B: 204	99FFCC R: 153 G: 255 B: 204
00FF99 R: 000 G: 255 B: 153	339966 R: 051 G: 153 B: 102	006633 R: 000 G: 102 B: 051	336633 R: 051 G: 102 B: 051	669966 R: 102 G: 153 B: 102	66CC66 R: 102 G: 204 B: 102	99FF99 R: 153 G: 255 B: 153	66FF66 R: 102 G: 255 B: 102	339933 R: 051 G: 153 B: 051	99CC99 R: 153 G: 204 B: 153	66FF99 R: 102 G: 153 B: 153	33FF99 R: 051 G: 255 B: 153	33CC66 R: 051 G: 204 B: 102	00CC66 R: 000 G: 204 B: 102	66CC99 R: 102 G: 204 B: 153	009966 R: 000 G: 153 B: 102
009933 R: 000 G: 153 B: 051	33FF66 R: 051 G: 255 B: 102	00FF66 R: 000 G: 255 B: 102	CCFFCC R: 204 G: 255 B: 204	CCFF99 R: 204 G: 255 B: 102	99FF66 R: 153 G: 255 B: 102	99FF33 R: 153 G: 255 B: 051	00FF33 R: 000 G: 255 B: 051	33FF33 R: 051 G: 255 B: 051	00CC33 R: 000 G: 204 B: 051	33CC33 R: 051 G: 204 B: 051	66FF33 R: 102 G: 255 B: 051	00FF00 R: 000 G: 255 B: 000	66CC33 R: 102 G: 204 B: 051	006600 R: 000 G: 102 B: 000	003300 R: 000 G: 051 B: 000
009900 R: 000 G: 153 B: 000	33FF00 R: 051 G: 255 B: 000	66FF00 R: 102 G: 255 B: 000	99FF00 R: 153 G: 255 B: 000	66CC00 R: 102 G: 204 B: 000	00CC00 R: 000 G: 204 B: 000	33CC00 R: 051 G: 204 B: 000	339900 R: 051 G: 153 B: 000	99CC66 R: 153 G: 204 B: 102	669933 R: 102 G: 153 B: 051	99CC33 R: 153 G: 204 B: 051	336600 R: 051 G: 102 B: 000	669900 R: 102 G: 153 B: 000	99CC00 R: 153 G: 204 B: 000	CCFF66 R: 204 G: 255 B: 102	CCFF33 R: 204 G: 255 B: 051
CCFF00 R: 204 G: 255 B: 000	999900 R: 153 G: 153 B: 000	CCCC00 R: 204 G: 204 B: 000	CCCC33 R: 204 G: 204 B: 051	333300 R: 051 G: 051 B: 000	666600 R: 102 G: 102 B: 000	999933 R: 153 G: 153 B: 051	CCCC66 R: 204 G: 204 B: 102	666633 R: 102 G: 102 B: 051	999966 R: 153 G: 153 B: 102	CCCC99 R: 204 G: 204 B: 153	FFFFCC R: 255 G: 255 B: 204	FFFF99 R: 255 G: 255 B: 153	FFFF66 R: 255 G: 255 B: 102	FFFF33 R: 255 G: 255 B: 051	FFFF00 R: 255 G: 255 B: 000
FFCC00 R: 255 G: 204 B: 000	FFCC66 R: 255 G: 204 B: 102	FFCC33 R: 255 G: 204 B: 051	CC9933 R: 204 G: 153 B: 051	996600 R: 153 G: 102 B: 000	CC9900 R: 204 G: 153 B: 000	FF9900 R: 255 G: 153 B: 000	CC6600 R: 204 G: 102 B: 000	993300 R: 153 G: 051 B: 051	CC6633 R: 204 G: 102 B: 051	663300 R: 102 G: 051 B: 000	FF9966 R: 255 G: 153 B: 102	FF6633 R: 255 G: 102 B: 051	FF9933 R: 255 G: 153 B: 051	FF6600 R: 255 G: 102 B: 000	CC3300 R: 204 G: 051 B: 000
996633 R: 153 G: 102 B: 051	330000 R: 051 G: 000 B: 000	663333 R: 102 G: 051 B: 051	996666 R: 153 G: 102 B: 102	CC9999 R: 204 G: 153 B: 153	993333 R: 153 G: 051 B: 051	CC6666 R: 204 G: 102 B: 102	FFCCCC R: 255 G: 204 B: 204	FF3333 R: 255 G: 051 B: 051	CC3333 R: 204 G: 102 B: 051	FF6666 R: 255 G: 102 B: 102	660000 R: 102 G: 000 B: 000	990000 R: 153 G: 000 B: 000	CC0000 R: 204 G: 000 B: 000	FF0000 R: 255 G: 000 B: 000	FF3300 R: 255 G: 051 B: 000
CC9966 R: 204 G: 153 B: 102	FFCC99 R: 255 G: 204 B: 153	FFFFFF R: 255 G: 255 B: 255	CCCCCC R: 204 G: 204 B: 204	999999 R: 153 G: 153 B: 153	666666 R: 102 G: 102 B: 102	333333 R: 051 G: 051 B: 051	000000 R: 000 G: 000 B: 000								

Figure 3-7 Browser-Safe Web Palette

### 3.6.2 Standard Text/Fonts

The Viewer shall display textual information in data panes of the content area. The Viewer shall display text in uppercase and lowercase characters as required by the IETM content. The Viewer shall display lines of text as single spaced lines except for the requirements addressed below for procedural steps.

#### 3.6.2.1 Font Requirements

The Viewer shall display all narrative text, titles, headings, callouts, and special characters in sans-serif font. The Viewer shall not display a font size for electronic presentation smaller than 8 points.

### 3.6.2.2 Margins

The Viewer shall display margins in all text panes to prevent information from being obscured by borders or information in adjacent panes.

### 3.6.2.3 Justification

The Viewer shall employ left justification for all lines of text displayed as sentences or paragraphs.

### 3.6.2.4 Text Wrapping

The Viewer shall wrap text onto new lines when necessary, so that no line extends beyond the limits of the pane or right margin, including when resized. The Viewer shall break lines only between individual words or within an explicitly hyphenated word after the hyphenation symbol. If resized text exceeds the text pane area, the Viewer shall use vertical scrolling to make all necessary text accessible to the user.

### 3.6.2.5 Scrolling and Screen-of-Screens

A scrolling function or a set of screen-of-screens (e.g. 1 of 4) may be required to accommodate access to a large amount of co-located data comprising a particular function when display of material exceeds a full screen or window pane. A means to display the additional data shall be provided to indicate and allow the user to reach the additional materials. This applies when accessing bookmarks, the expanded TOC, applicability settings, tables, graphics, etc.

## 3.6.3 Display of IETM Content

The Viewer shall display IETM content as described in the sections below.

### 3.6.3.1 Title Screen

Upon initial access or reset of the IETM, a title screen shall be displayed. The title screen shall include the information typically displayed on a paper technical manual title page. More details on the information to be included on the title screen are found in 3.3.1.2 IETM ID. See *Figure 3-3 IETM ID* for an example.

### 3.6.3.2 Display of Change Markings

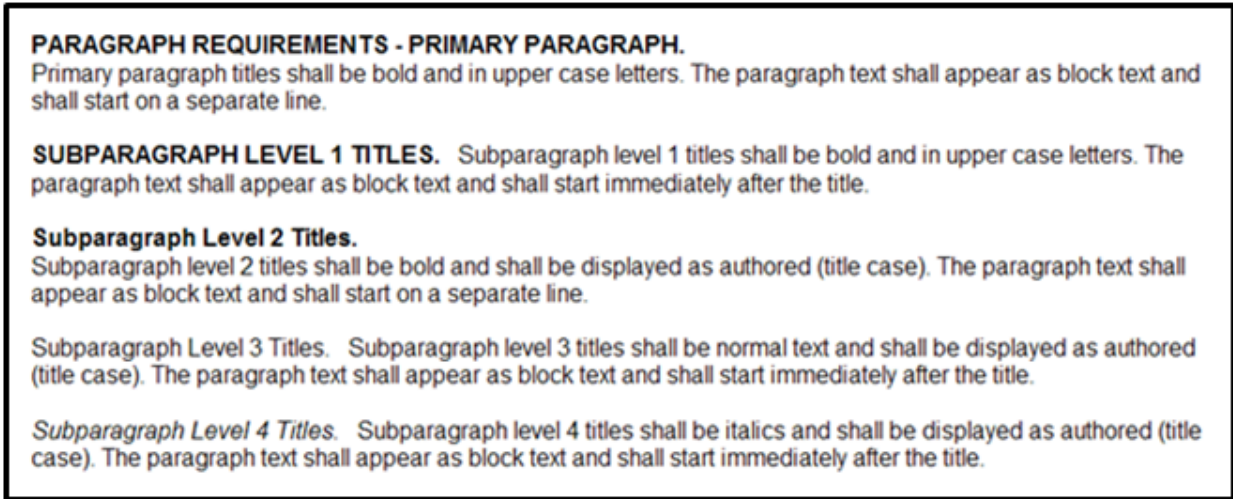
At publish time, the IETM author will be able to select whether the published IETM will contain change markings. If the IETM contains change markings, the Viewer shall provide the user an option, in the Additional Information Bar, to view change markings. The Viewer shall set the default for viewing change markings to off so that change markings are not displayed unless the user requests them. When new information is added within an element, such as new text, the Viewer shall display the added material in italics and the color green (hex code #00CC00).

Example: This is unchanged. *This is changed.*

### 3.6.3.3 Paragraphs

The Viewer shall display titles on all paragraphs and subparagraphs. The title shall begin at the left margin. The paragraph title shall describe that paragraph's contents. The Viewer shall format paragraph and subparagraph titles as follows:

1. Primary paragraph titles shall be bold and in upper case letters. The paragraph text shall appear as block text, and shall start on a separate line.
2. Subparagraph level 1 titles shall be bold and in upper case letters. The paragraph text shall appear as block text and shall start immediately after the title.
3. Subparagraph level 2 titles shall be bold and shall be displayed as authored (title case). The paragraph text shall appear as block text and begin on a separate line.
4. Subparagraph level 3 titles shall be normal text and shall be displayed as authored (title case). The paragraph text shall appear as block text and shall start immediately after the title.
5. Subparagraph level 4 titles shall be italic and shall be displayed as authored (title case). The paragraph text shall appear as block text and shall start immediately after the title.



*Figure 3-8 Paragraph/Subparagraph Example*

### 3.6.3.4 Procedural Steps

The Viewer shall display procedural steps three steps at a time except for IETMs that display steps in a linear fashion (see *Linear Display of Procedural Steps for IETMs*). The Viewer shall have the capability to require an acknowledgement that the three steps have been performed before displaying the next set of steps. Since IETM Acquiring Activities have the option of not requiring acknowledgement, the Viewer must also have the capability of advancing to the next set of steps without acknowledgement. The Viewer shall format procedural steps, sub-steps, and checklist items as follows:

1. First level procedural steps shall be numbered consecutively with Arabic numerals, have no title, and be block indented under first word of the step.
2. Second level procedural steps shall be numbered consecutively with lower case letters, have no title, and be block indented under first word of the step.

3. Third level procedural steps shall be numbered consecutively with Arabic numerals enclosed in parentheses, have no title, and be block indented under first word of the step.
4. Fourth level procedural steps shall be numbered consecutively with lower case letters enclosed in parentheses, have no title, and be block indented under first word of the step.

#### **3.6.3.4.1 Linear Display of Procedural Steps for IETMs**

For IETMs displaying procedural steps in a linear fashion, the Viewer shall display a blank line between steps and shall have no limit on the number of steps and sub-steps that can be displayed at any one time. As an IETM Acquiring Activity-determined option, the Viewer may display for each step a feature that permits the user to acknowledge that the step has been performed, for example, a check box or an icon. For diagnostics, testing, and troubleshooting, where there is a decision point, the Viewer shall provide the appropriate hot spots to navigate the user to the next step in the process. The Viewer shall display procedural steps such that they are scrollable.

#### **3.6.3.4.2 Check-off Lists**

For check-off lists, the Viewer shall display check boxes between the step number and the text as shown here: 1.  This is a step.

#### **3.6.3.4.3 Steps with Illustrations**

For presentation of illustrations with steps, the Viewer shall either display the step on the left with illustration on the right or display the step below with the illustration above. If more panes are needed for illustration, the Viewer shall not use more than four panes. When this is not feasible (such as a scrolling screen), the Viewer shall place the graphic in-line or place a camera icon in-line so that the illustration can be displayed in another window (out-line). See *Appendix A* for screen layouts.

#### **3.6.3.5 Lists**

The Viewer is required to display three types of lists, as identified below. Lists may be unnumbered, numbered sequentially, or lettered alphabetically. They may have an optional title.

##### **3.6.3.5.1 Random List**

The random list shall consist of one or more items in a random order. In a random list with hierarchical elements, the top level elements shall be prefixed with a dash symbol [-], the second level elements shall be prefixed with a bullet symbol [·], and the third level elements shall be prefixed with a dash symbol [-]. Random lists within alerts and notes shall have a bullet prefix.

##### **3.6.3.5.2 Sequential List**



The sequential list shall consist of one or more items in a specified order, such as alphabetic, numeric, or alphanumeric. In a sequential list of hierarchical elements, the top level elements shall be numbered with Arabic numbers; the second level elements with lower case letters; the third level elements with Arabic numbers in parentheses; the fourth level elements with lower case letters in parentheses; and the fifth level elements roman numbers in parentheses. There shall be two blank lines between changes in levels of hierarchy in the list.

### 3.6.3.5.3 Definition List

The definition list shall consist of the term and the definition. The definition list shall have the headers, “Term” and “Definition” above the appropriate sections of the list.

### 3.6.3.6 Display and Acknowledgement of Alerts and Notes

The Viewer shall display alerts (dangers, warnings, and cautions) and notes either in-line or as a pop-up with acknowledgement required. The method of display will be determined by the author at publish time. The Viewer shall display the signal word panel, the message text, and the safety warning symbol or hazardous material symbol (if used) within an alert border as shown in *Table 3-2 Alerts*. Notes shall be displayed as described in *Display of Notes*. The Viewer shall display Hazardous Material icons in accordance with the ANSI Z535 Series of Safety Alerting Standards. The Viewer shall pop-up the meaning of a hazardous material icon when the user hovers the cursor over the icon.

<p>DANGER</p>	<p>The symbol used for danger has the word danger in white text inside a red rectangle box with an optional ANSI Z535.3 hazard icon graphic. The danger statement is displayed below the danger symbol with all appearing within a larger white box with a red-hashed border. Note: For S1000D data, a warning tag will be output as a danger if the vital attribute is equal to "1".</p> <div data-bbox="467 982 1333 1241" style="border: 2px dashed red; padding: 10px; text-align: center;">  <span style="margin-left: 100px;"><b>▲ DANGER</b></span>  <span style="margin-left: 100px;">Insert Text here.</span> </div>
<p>WARNING</p>	<p>The symbol used for warning has the word warning in black text inside an orange rectangle box with an optional ANSI Z535.3 hazard icon graphic. The warning statement is displayed below the warning symbol with all appearing within a larger white box with an orange-hashed border.</p> <div data-bbox="467 1472 1333 1730" style="border: 2px dashed orange; padding: 10px; text-align: center;">  <span style="margin-left: 100px;"><b>▲ WARNING</b></span>  <span style="margin-left: 100px;">Insert Text here.</span> </div>


<p>CAUTION</p>	<p>The symbol used for caution has the word caution in black text inside a yellow rectangle box with an optional ANSI Z535.3 hazard icon graphic. The caution statement is displayed below the caution symbol with all appearing within a larger white box with a yellow-hashed border.</p> <div data-bbox="446 367 1364 661" style="border: 2px dashed yellow; padding: 10px; text-align: center;">  </div>
----------------	--

Table 3-2 Alerts

**3.6.3.6.1 In-line Alerts and Notes**

When alerts and/or Notes are to be displayed in-line and apply to the entire task or procedure, the alerts/Notes shall be displayed in-line prior to the applicable data. Each step shall first display the Dangers (if any), then Warnings (if any), then Cautions (if any), and then Notes (if any) followed by the step number and step paragraph. The step anchor (Target ID) shall be at the beginning of the step and display all preliminary Danger, Warning, Cautions, and Notes (DWCNs) prior to each step action. The step number shall be with the step paragraph and follow the DWCNs. *Figure 3-8* provides how the Viewer shall display a step in the Content Window.



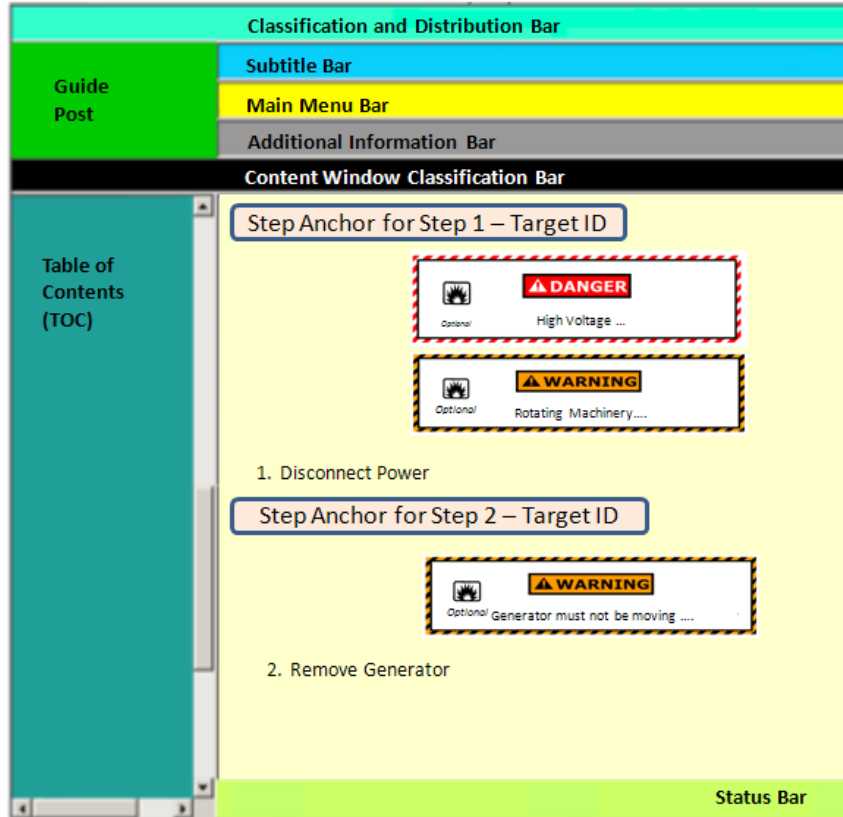


Figure 3-9 In-line Alerts Display

### 3.6.3.6.2 Pop-up Alerts and Notes

For pop-ups with acknowledgement, the Viewer shall display an acknowledgement button that the user must click before the Viewer proceeds with further displays. When there are multiple alerts and notes, the Viewer shall display the alerts and notes as stacked window frames in the order in which they were authored with the first alert appearing on the top of the stack. The Viewer shall require the user to acknowledge each alert and note individually before proceeding and shall create an audit log entry for each acknowledgement.

### 3.6.3.6.3 Alert Display on Status Bar

The Viewer shall display the appropriate icon, shown in *Table 3-3*, for the alert in the Status Bar at the bottom of the display and shall have it remain persistent until the entire task or procedure has been completed. In the case of multiple alerts of the same kind, the Viewer shall also display the number of open alerts immediately to the right of the minimized icon and enclosed in parentheses (for an example, see *Figure A-1 Inner Shell Layout*). The Viewer shall allow the user to review the alert by selecting the icon on the Status Bar. If the user selects an alert icon at any time during the conduct of the task or procedure, the Viewer shall display the text of the applicable Danger, Warning, or Caution. The Viewer shall display the icon for the Danger, Warning, or Caution as long as the Danger, Warning, or Caution is applicable.




Minimized Danger Icon Danger(s) Apply	ICON: Red Square with a white triangle outlined in black with "D" inside the triangle.	
Minimized Warning Icon Warning(s) Apply	ICON: Orange Square with a white triangle outlined in black with "W" inside the triangle.	
Minimized Caution Icon Caution(s) Apply	ICON: Yellow Square with a white triangle outlined in black with "C" inside the triangle.	

Table 3-3 Alert Icons

**3.6.3.6.4 Alert Colors**

The Viewer shall use the 8-bit safe colors listed in *Table 3-4* for display of the colors associated with Dangers, Warnings, Cautions, and Notes.

Color	Hexadecimal Value
Red	FF0033
Yellow	FFFF33
Orange	FF9933
Blue	0066CC
Black	000000
White	FFFFFF

Table 3-4 8 Bit Safe Colors for Alerts

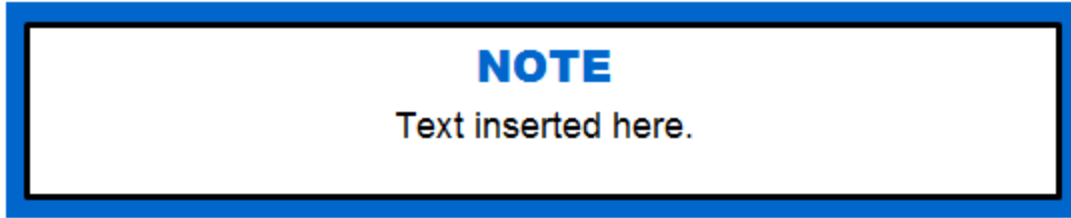
**3.6.3.6.5 Hazardous Material Icons**

The Viewer shall display Hazardous Material icons in accordance with the ANSI Z535 Series of Safety Alerting Standards. The Viewer shall pop-up the meaning of a hazardous material icon when the user hovers the cursor over the icon.

**3.6.3.6.6 Display of Notes**

The Viewer shall display Notes in an IETM as shown in *Figure 3-9*. The color shall be blue in accordance with *Table 3-4*. The Viewer shall display Notes in-line prior to the applicable text.





*Figure 3-10 Note*

### **3.6.3.7 Hot Spots/Links**

The Viewer shall display all links to additional information, hotspots, and selectable areas using the standard web practice for displaying links or hot spot text (that is, [blue underlined](#) initially and turning [purple underlined](#) after the link is followed). The Viewer shall require a single click of a text hot spot or an icon hot spot to execute the link transfer. When an internal link is selected, the Viewer will open the target in the Main Content Window. The Viewer shall precede references to paragraphs, steps, figures and tables with the captions "Paragraph", "Step", "Figure" and "Table", respectively.

### **3.6.3.8 Tables**

The Viewer shall display tables in a left-to-right, top-to-bottom array of cells. The Viewer shall display both in-line and out-line tables. The Viewer shall display a table listed in the TOC upon one click on the table listing. The Viewer shall maintain table headers on display as rows are scrolled. The Viewer shall display table footers, if used. Within footers, borders should be the same size lines as the rest of table; and a static line shall be maintained at the bottom of the table (separate frame optional). The Viewer shall have the capability to display table borders as single lines or double lines or, in the case of small tabular text, with no border lines, as specified by the IETM Acquiring Activity. The table title shall be placed two spaces after the table number, and they shall be centered above the table.

#### **3.6.3.8.1 Standardized Information Tables**

The Viewer shall display tables designated as “standardized information tables” with no deviations to the number of columns and the titles in the column headings. See Appendix C for the table format and table headings.

#### **3.6.3.8.2 CALS and Simple Tables**

A CALS table is a method for creating tabular data that gives the author control over formatting and size. CALS tables allow columns and rows to be spanned by cell data, alignments to be set and column and overall table width to be defined. The Viewer must be flexible enough to handle CALS tables. A simple table is a simplified version of a CALS table. Tables shall have a title. The Viewer shall display the table title centered above the table. The Viewer shall maintain consistent column spacing within a table. When more than one column of data is displayed, the Viewer shall provide sufficient space to clearly distinguish the data. The Viewer shall display no footnotes in a table. The Viewer shall make footnote data available (linked) using a hot-spot technique.

### 3.6.3.9 Graphics

The Viewer shall display graphics either in-line or out line as specified by the author. The Viewer shall display graphics to a scale so that all essential detail is legible. The Viewer shall display graphics in an assigned data pane of the Main Content Window. The Viewer shall display both static and interactive types of graphics, as may be required in the IETM. The viewer shall display static graphics in full detail in the graphic area provided, with no ability for manipulation. If a graphic cannot be displayed in its entirety and in full detail, the Viewer shall display it using interactive graphic display techniques (for example, scrolling and zooming). If multiple graphics support one step, the Viewer shall display them simultaneously as the available display area allows. The Viewer shall display encoded graphics along with any associated callout overlays designed to indicate the specific components of the graphic. The graphic's title shall follow two spaces after the figure number, and they shall be centered under the figure if in-line and at the top of the graphic pane if out line.

The Viewer shall provide the following graphics control functions:

- A pan control function that allows the user to pan across or up and down a graphic that exceeds the size of the data pane.
- Vertical and horizontal scroll bars to indicate that panning is available.
- A zoom control function that allows the user to enlarge (zoom in) or reduce (zoom out) the displayed graphic.
- A centering control function that allows the user to return the view of the graphic to its original size, location and orientation.
- A magnify control function that allows the user to magnify (enlarge) selected portions of the graphic.

The Viewer shall be capability of displaying Graphic Interchange Format (GIF), Joint Photographic Experts Group (JPEG), Computer Graphics Metafile (CGM), and Portable Network Graphic (PNG).

#### 3.6.3.9.1 Oversize Graphics

The viewer must be able to detect the size of the viewing device for oversize graphics. When the Viewer cannot display more than 50% of the graphic based on size, the Viewer shall provide a thumbnail with button to expand to the full-sized graphic, rather than displaying only a small part of the full-sized graphic. The Viewer shall display the button to expand the graphic in the middle of the graphics pane.

#### 3.6.3.9.2 Illustrated Parts Breakdown (IPB)

The Viewer shall display the Illustrated Parts Breakdowns (IPBs) in accordance with the IPB Standardized Table found in Appendix C. The Viewer shall enable the user to move back and forth between elements within the IPB and hotspots on the graphics.

#### 3.6.3.9.3 Troubleshooting Diagrams

The following interactive troubleshooting diagram functions are optional to the Viewer. For performing flow-tracing during troubleshooting, the Viewer function which allows the user to

change the flow-trace highlight color is optional. (Example: Change the flow tracing color for different piping systems). Optionally, the Viewer may dynamically generate a subset of the schematic/flow for a specific piping or wiring connection (a.k.a. “wire-on-the-fly”).

#### **3.6.3.9.4 Tear Offs**

The Viewer shall allow the user to select a graphic from the IETM and display it in another window which can be moved and used as a static reference when looking at other information within the IETM. This window can also be maximized so the graphic can be viewed at full-screen size. See *Figure A-10*. This window is called a tear off. The Viewer shall display the Guidepost, the Classification and Distribution Bar, and the Content Window Classification Bar as a horizontal bar across the top of each Tear Off window. The Viewer shall display within the Content Window Classification Bar the classification marking for what is currently shown in the Tear Off window. For detailed requirements, please refer to *3.3.1 Guidepost*, *3.3.2 Classification and Distribution Bar*, and *Content Window Classification Bar*. The Status Bar shall be displayed across the bottom of each Tear Off window. For detailed requirements, see *3.3.9 Status Bar*.

#### **3.6.3.10 Multimedia**

Multimedia shall be displayed without capability for manipulation. If multiple multimedia support one step, icons shall be displayed to allow the user to select each multimedia in turn. The multimedia Viewer shall support the following control functions: volume, enlarging, play, pause, and exit. The following multimedia formats shall be supported: Moving Picture Experts Group Layer-3 Audio (MP3), Waveform Audio File (WAV), Windows Media Audio (WMA), Audio Video Interleaved (AVI), QuickTime Movie (MOV), Moving Picture Experts Group Layer-4 Audio (MP4), RealVideo (RAM), Windows Media Video (WMV), Resource Header (RH), and Small Web Format/Shockwave/Flash (SWF).

### **3.6.4 Security Markings**

Technical data shall have security classification markings in accordance with DODI 5200.01/DOD M-5200.01 and SECNAVINST 5510.36. Distribution statements for technical data shall be in accordance with DODI 5230.24. (The IETM Acquiring Activity will provide the appropriate distribution statement and specific text to be used for each IETM in accordance with SECNAVINST 5510.36.) *Table 3-5 Security Markings and Colors* identifies the security classification marking and color requirements for the Classification and Distribution Bar.

#### **3.6.4.1 Security Markings for Classification Authority Box**

For classified manuals, the Viewer shall support security markings for the Classification Authority Box. The marking involves standardized titled categories with author-driven text. Upon opening an IETM or when the user selects the hyperlinked text in the Classification and Distribution bar, the Viewer screen shall display the Classification Authority Box in accordance with DODI 5200.01/DOD M-5200.01, as follows:

'Classified by:' (person & position, office of origin)  
 'Reason:' (text)  
 'Derived from:' (the agency and, where available, the office of origin, and the date of the source or guide). If the information is derived from multiple sources, the words "Multiple Sources" shall be placed after 'Derived From:' and a link to a list of the multiple sources shall be provided.  
 (optional) 'Downgrade to:' (text) ' on ' (date)  
 (optional) 'Upgrade to:' (text) ' on ' (date)  
 'Declassify on:' (date or other text)

Figure 3-11 Classification Authority Box

The Viewer shall display the Classification Authority Box (Figure 3-10) in a pop-up window.

**3.6.4.2 Security Markings for Electronically Displayed Data**

The Viewer shall display the Classification and Distribution bar (see *Classification and Distribution Bar*) and the Content Window Classification Bar (see *Content Window Classification Bar*) with a background color to reflect Security. Technical data developed using this specification shall have security classification markings in accordance with DODI 5200.01/DOD M-5200.01. The background color shall be as shown in below:

TITLE	Color	Example/Hex Color
TOP SECRET label	Orange	Hex Code #FF9933
SECRET label	Red	Hex Code #FF0033
CONFIDENTIAL label	Blue	Hex Code #00CCFF
UNCLASSIFIED label	Green	Hex Code #00CC33

Table 3-5 Security Markings and Colors

**3.6.4.3 Security Markings for Printed Material**

The Viewer shall print the classification, special handling instructions and distribution markings on all printed output in compliance with DODI 5200.01/DOD M-5200.01. Because graphics can be printed separately from the browser print function, classification markings shall be embedded within the graphic at the top and bottom. The Viewer shall embed required security markings at the top and the bottom of each page of all printed material.

**3.6.4.4 Security Markings for Portions**

The Viewer shall support portion marking for classified manuals. Portion marking shall be in accordance with DODINST 5200.01/DOD M-5200.01 and involves identifying the classification

level of each portion, ordinarily defined as a paragraph, but also includes subjects, titles, graphics, tables, charts, bullet statements, sub-paragraphs, classified signature blocks, bullets and other portions within technical manuals. Portion markings consist of the letters “(U)” for Unclassified, “(C)” for Confidential, “(S)” for Secret, and “(TS)” for Top Secret. The abbreviations, in parentheses, are placed before the portion to which they apply.

### 3.7 Interactive IETM Session Requirements

This section covers Viewer requirements to support IETM session interactivity.

#### 3.7.1 User Interaction/Screen Dialogs

The Viewer shall use pop-ups and in-line dialog mechanisms for gathering information from IETM users. The types of information collected can include, but are not limited to, whether or not specific operations have been performed, the present condition of the system, and the environmental situation. The Viewer shall employ dialog boxes to allow users to enter data (e.g. radio buttons, check-boxes, push buttons, fill-ins, combo boxes, scrolling selection lists, etc.). For NAVSEA Viewer implementers providing Logic Engine functionality, please refer to *Appendix B.8 User Interaction Controls* and its sub-sections for additional requirements.

#### 3.7.2 Screen Stacking

The Viewer shall not implement screen stacking, except when displaying alerts in accordance with Display and Acknowledgement of Alerts and Notes. *Figure 3-11* illustrates screen stacking where multiple windows are opened and overlap each other.

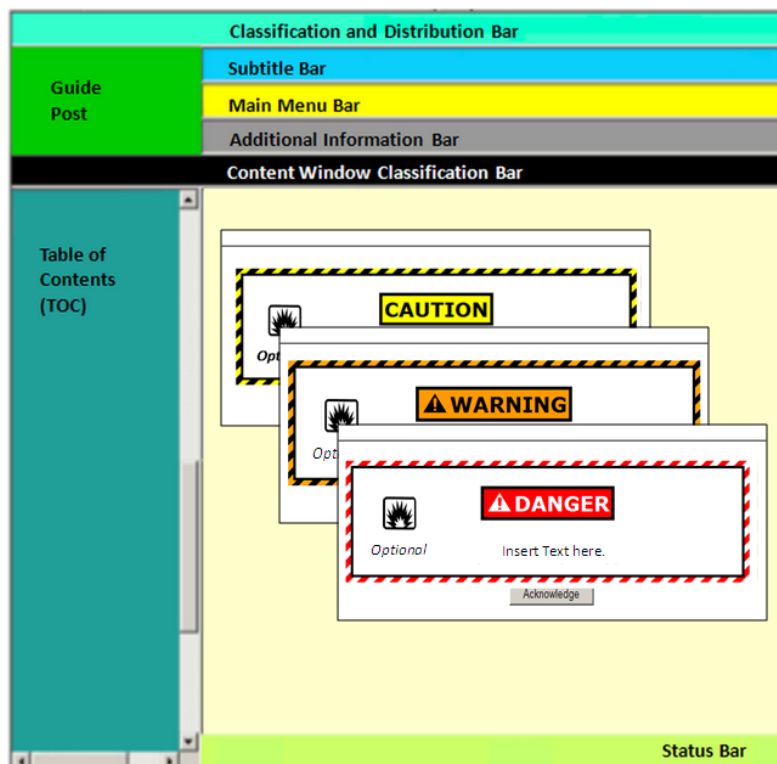


Figure 3-12 Screen Stacking

### 3.7.3 Response Time

If the IETM is busy for more than 2 seconds, the Viewer shall change the cursor to indicate a busy condition (e.g. an hourglass, circle in motion, etc.). When the busy condition has passed, the cursor shall be returned to its previous form.

### 3.7.4 Login

The Viewer shall support the Login function as an optional feature that can be requested by an IETM Acquiring Activity. Login provides the capability to identify a user by specific user ID (or profile) for tracking, authorization or other purposes including associating audit trail transactions, saved sessions and bookmarks with the user. If multiple individuals will be using the same user ID, then disambiguation of any specific user action may not be possible resulting in possible IETM malfunction and may greatly inhibit an incident reconstruction scenario.

### 3.7.5 Audit Trail

The Viewer shall support the Audit Trail function as an optional feature that can be requested by an IETM Acquiring Activity. An Audit trail captures all user and IETM interaction in an audit log to track where the user has navigated within the IETM. The audit log shall include dialog interaction entries along with the internal state table containing the status of the computerized variables underlying the IETM.

The audit log shall be saved upon suspension or exit of the IETM. The captured audit trail shall be written to a file and stored so that the log can be retrieved and viewed and/or attached to an external application system. The format of the log file shall be such that the individual events are identifiable, date/time stamped and the specific contents captured. The Audit log is not accessible to end-users and is not a selectable function from the Guidepost, Main Menu Bar, or Additional Information Bar. The audit log shall be a delimited (e.g., CSV, XML) text file of a format that can be opened in DON Application and Database Management System (DADMS) approved spreadsheet software.

The result of the audit trail logging shall (as a minimum) be saved to the device hosting the IETM (e.g., portable unattached device, server). The ability to sync the saved audit log over a network shall be provided. Audit logs shall only be overwritten when available free space has been exceeded or upon successful sync/transfer. The means for a system administrator to retrieve and review the audit log shall be provided and documented with the Viewer when delivered to the Government IETM Acquiring Activity.

For NAVSEA Viewer implementers providing Logic Engine functionality, please refer to *Appendix B.4.1 Audit Trail State Table* for additional requirements.

# APPENDICES

## APPENDIX A: USER INTERFACE INNER SHELL SCREEN

### A.1 User Interface Screen Regions Tool

This section is intended to be used to lay out standard inner shell screens for Viewer developers. Screen shots are provided as visual guidance. There are several examples that allow Viewer developers to split up their main display region in a variety of ways to suit specific needs. The regions and a basic description are listed below. Unless otherwise noted, examples will show TOC with all other bars and regions included.

- Guidepost: used to get to custom or IETM-specific controls.
- Classification and Distribution Bar: displays the overall classification of the entire IETM and the distribution statement identifier for the IETM.
- Subtitle Bar: displays the title of the information being displayed in the Main Content Window.
- Main Menu Bar and Additional Information Bar: provide the following minimum set of functions- Previous, Next, Back, Forward, Applicability, Annotations, Print, History, Feedback, Help, and Exit.
- Table of Contents Panel: is a resizable area to display the table of contents, list of illustrations, and list of tables.
- Content Window Classification Bar: displays the classification marking for text and graphics currently on the screen.
- Main Content Window: where the Viewer shall display the IETM text and graphics. Status Bar: used to communicate status and other messages to the end user.



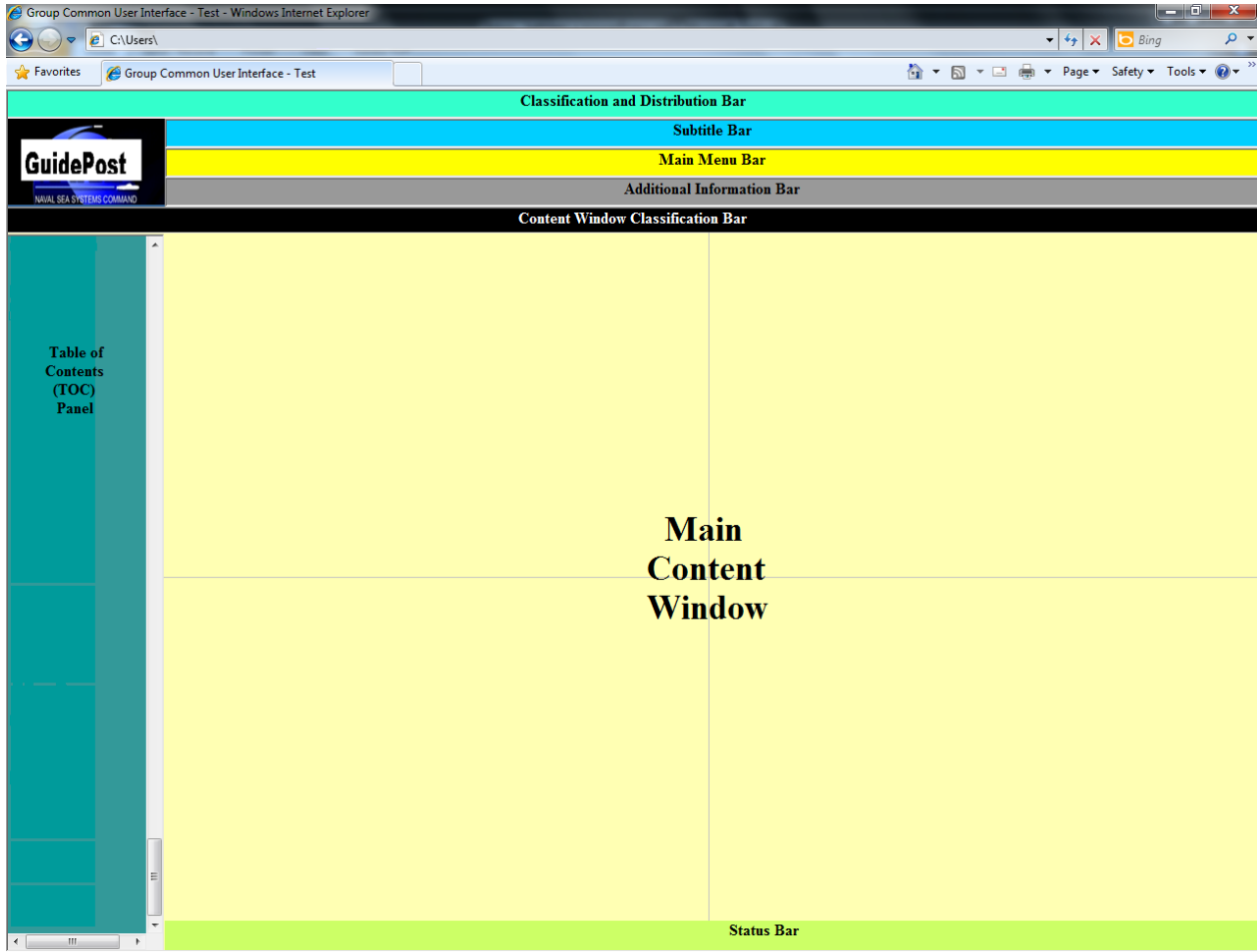


Figure A-1 Inner Shell Layout

### A.1.1 Single Main Frame Layout

Figure A-2 shows the layout with TOC and the single main frame layout.

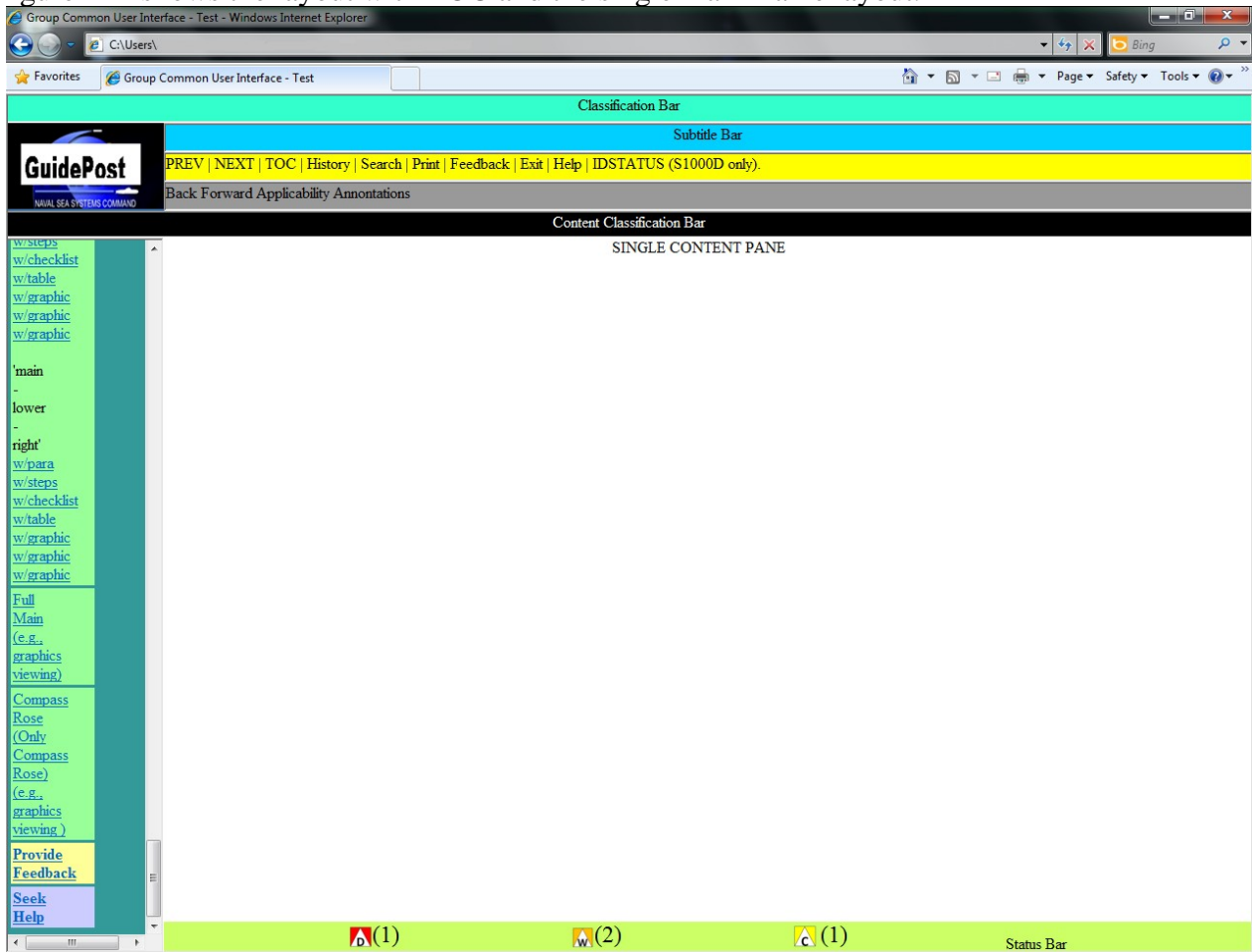


Figure A-2 Single Main Frame Layout

### A.1.2 Upper | Lower Dual Frame Layout

Figure A-3 shows the layout with the TOC and an upper | lower frame. An upper/lower dual frame layout will have text in the lower frame and a graphic in the upper frame.

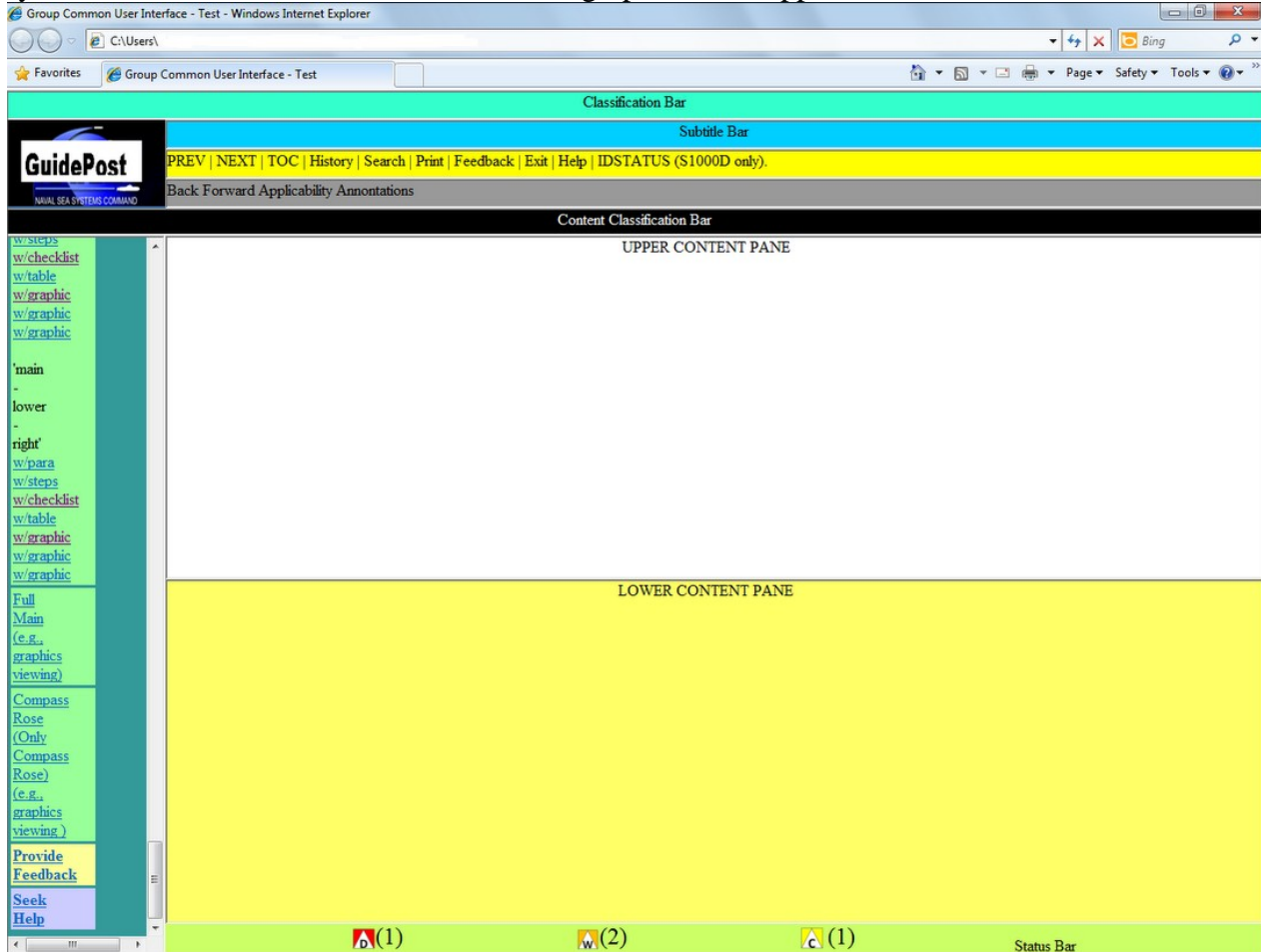


Figure A-3 Upper | Lower Dual Frame Layout

### A.1.3 Left | Right Dual Frames Layout

This example shows the layout with the TOC and a left | right frame. A left/right frame layout will have text in the right frame and a graphic in the left frame.

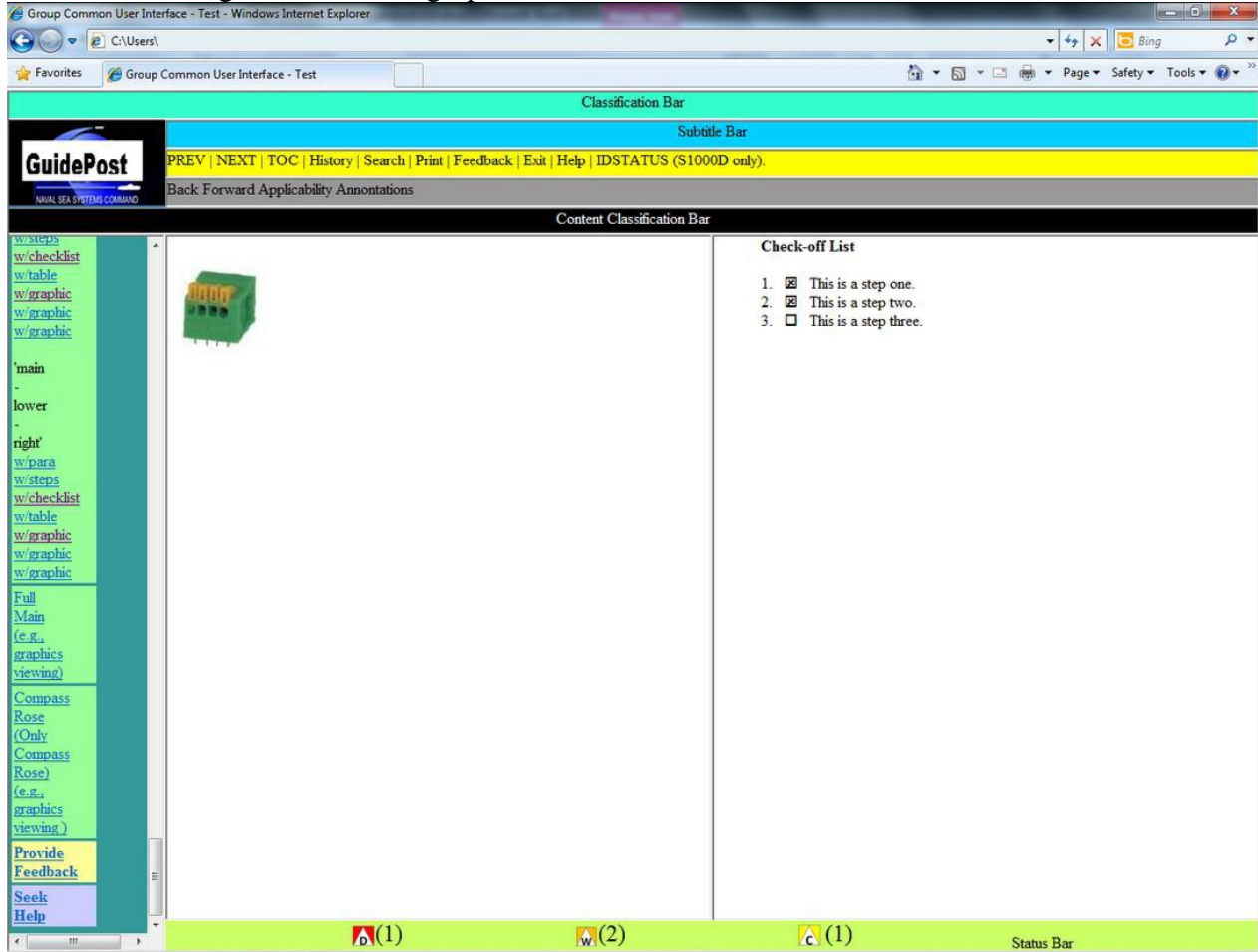


Figure A-4 Left | Right Dual Frames Layout

### A.1.4 Quadrant Frame Layout

This example shows a quadrant-based frame layout with the TOC and all bars/regions. In this layout, the upper-left quadrant will always contain a graphic, the lower-right quadrant will always contain text, and the other two quadrants may contain graphics or text as needed.

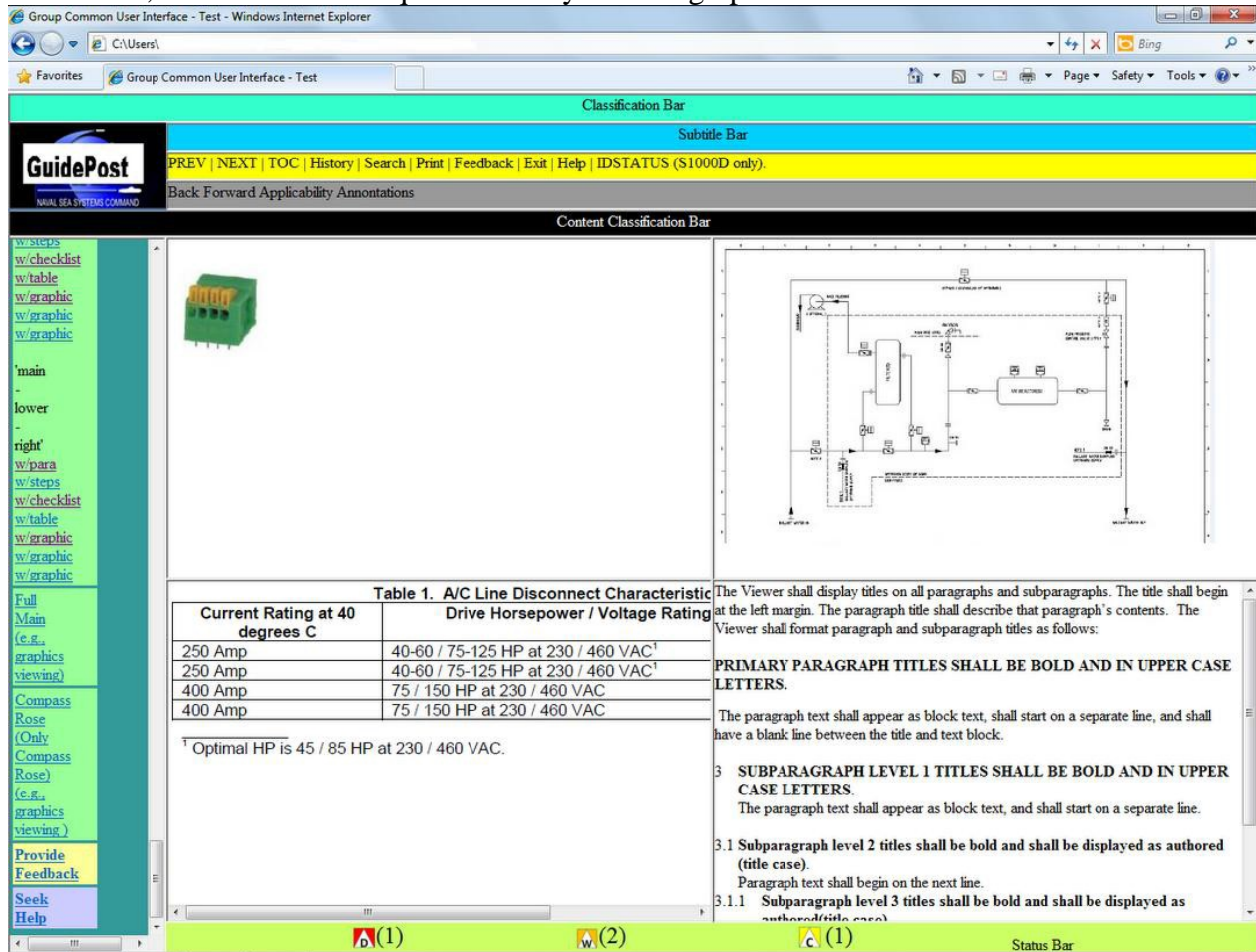


Figure A-5 Quadrant Frame Layout

### A.1.5 Triple Frame Layout

Figure A-6 shows a triple frame layout (upper left, upper right, and lower) with the TOC. In this layout, the upper-left and -right quadrants will contain graphics and the lower half will contain text.

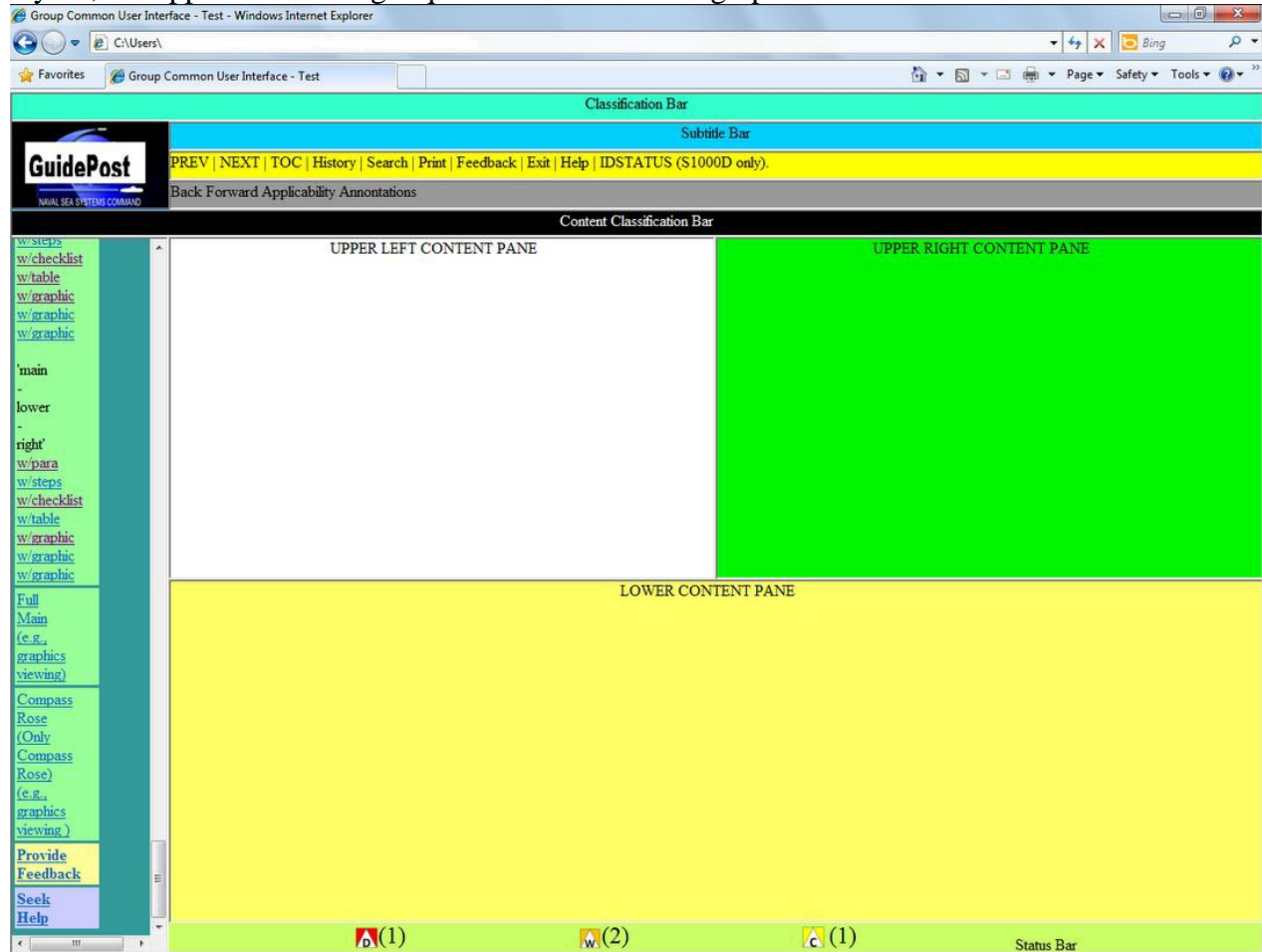


Figure A-6 Triple Frame Layout (Upper Left, Upper Right, and Lower)

This example shows another triple frame layout (upper, lower left, and lower right) with the TOC with all bars/regions. In this layout, the upper half will contain a graphic and the lower left and right quadrants will contain text.

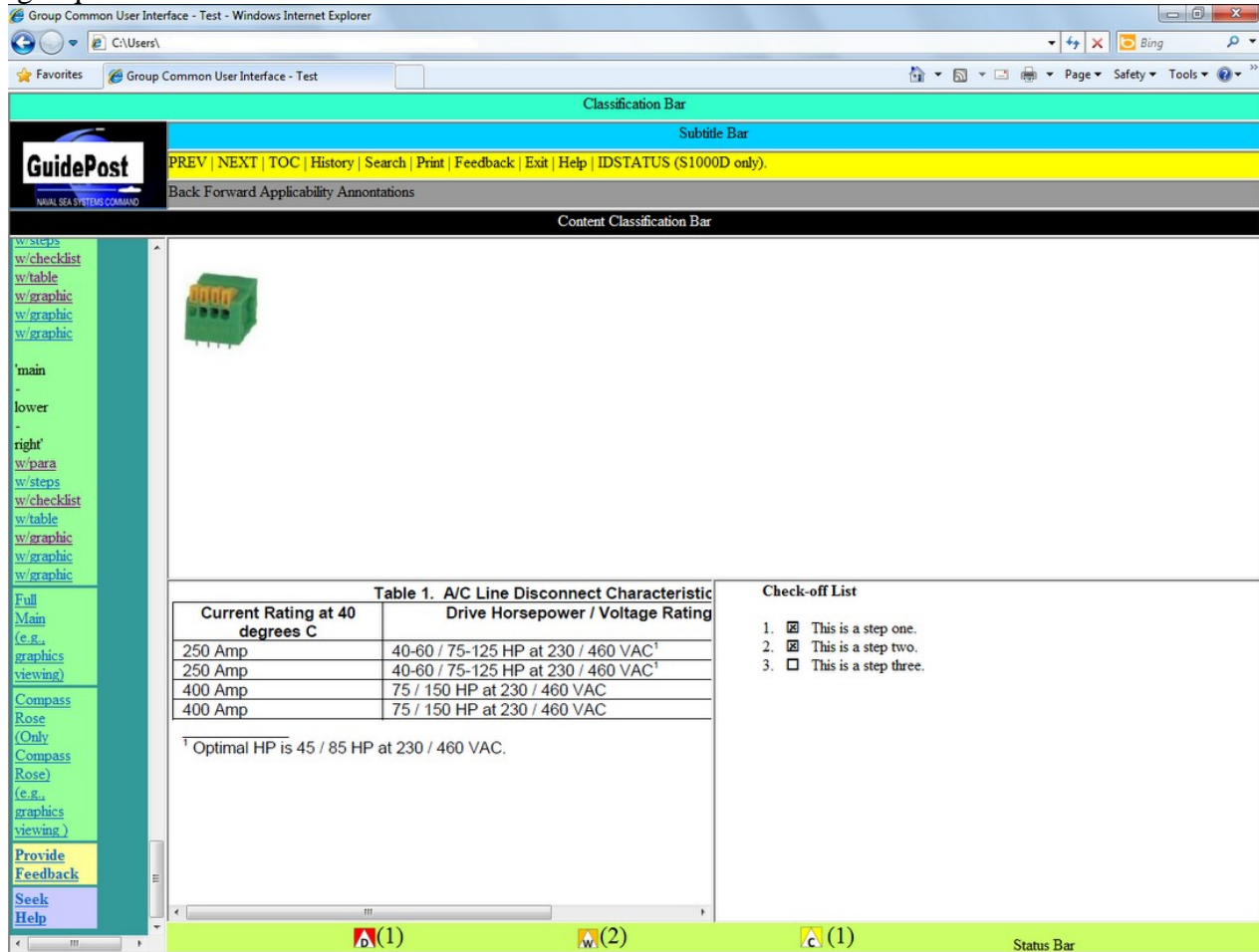


Figure A-7 Triple Frame Layout (Upper, Lower Left, and Lower Right)

Figure A-8 shows another triple frame layout (upper left, lower left, and right) with the TOC with all bars/regions. In this layout, the left-upper and -lower quadrants will contain graphics and the right half will contain text.

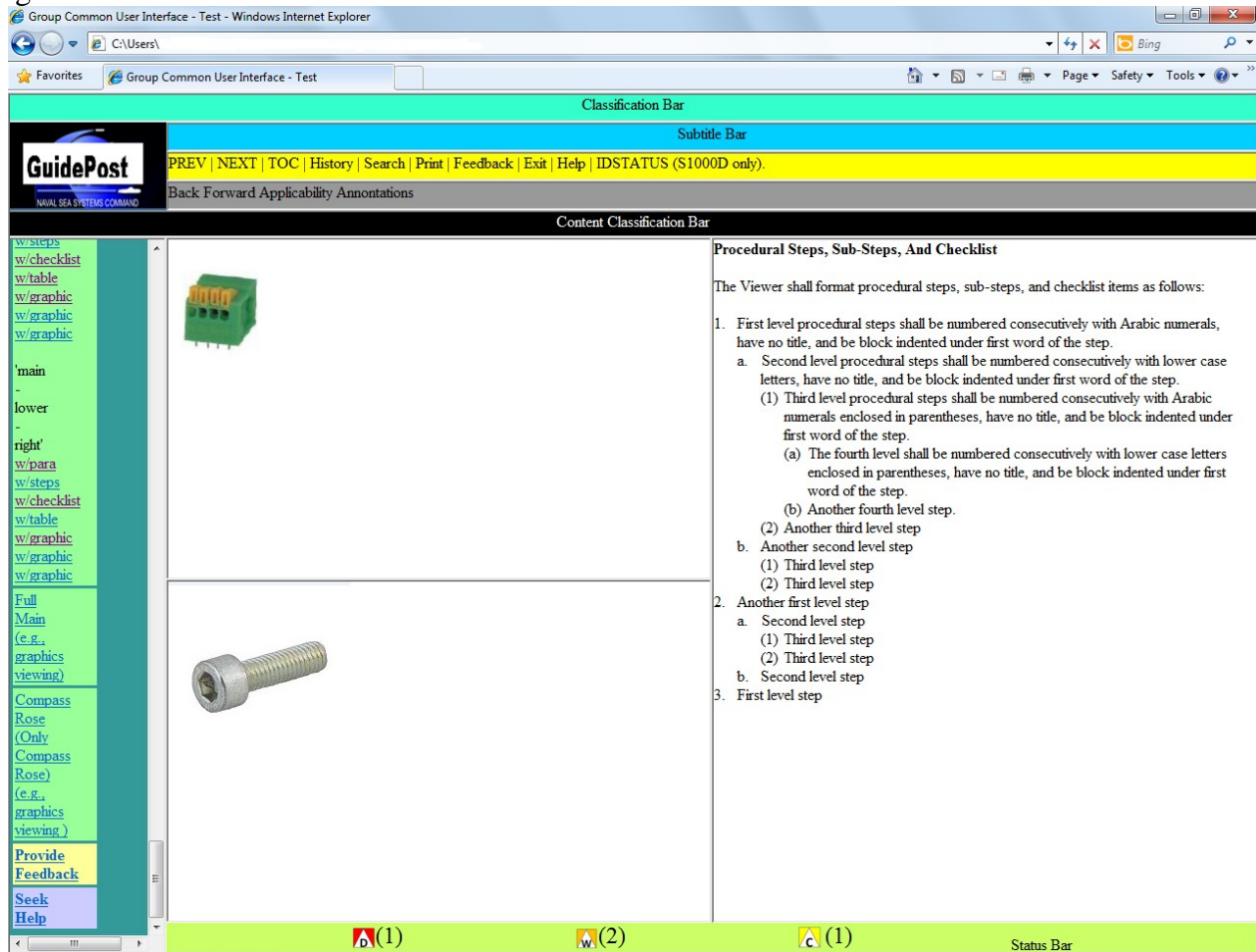


Figure A-8 Triple Frame Layout (Upper Left, Lower Left, and Right)



Figure A-9 shows another triple frame layout (left, upper right, and lower right) with the TOC. In this layout, the left half will contain a graphic and the right-upper and -lower quadrants will contain text.

The screenshot displays a web browser window with a triple frame layout. The browser title is "Group Common User Interface - Test - Windows Internet Explorer". The address bar shows "C:\Users\". The page features a "Classification Bar" (green), a "Subtitle Bar" (blue), and a "Content Classification Bar" (black). The main content area is divided into three panes:

- Left Pane:** A vertical navigation menu with links such as "w/steps", "w/checklist", "w/table", "w/graphic", "main", "lower", "right", "w/para", "w/steps", "w/checklist", "w/table", "w/graphic", "w/graphic", "Full", "Main (e.g., graphics viewing)", "Compass Rose (Only Compass Rose) (e.g., graphics viewing)", "Provide Feedback", "Seek", and "Help".
- Upper Right Pane:** A schematic diagram of an electrical system, showing components like "MOTOR", "MOTOR CONTROLLER", "MOTOR DRIVE", and "MOTOR DRIVE UNIT".
- Lower Right Pane:** A table and a checklist.
 

Current Rating at 40 degrees C	Drive Horsepower / Voltage Rating
250 Amp	40-60 / 75-125 HP at 230 / 460 VAC <sup>1</sup>
250 Amp	40-60 / 75-125 HP at 230 / 460 VAC <sup>1</sup>
400 Amp	75 / 150 HP at 230 / 460 VAC
400 Amp	75 / 150 HP at 230 / 460 VAC

<sup>1</sup> Optimal HP is 45 / 85 HP at 230 / 460 VAC.

**Check-off List**

  - This is a step one.
  - This is a step two.
  - This is a step three.

Figure A-9 Triple Frame Layout (Left, Upper Right, and Lower Right)

### A.1.6 No TOC Frame Layout

Figure A-10 is the layout for use with graphics, foldouts, parts, and schematics to give more screen real estate to the user. In addition to the Content Window, only the Guidepost, Classification and Distribution Bar, Content Window Classification Bar, and Status Bars are displayed.

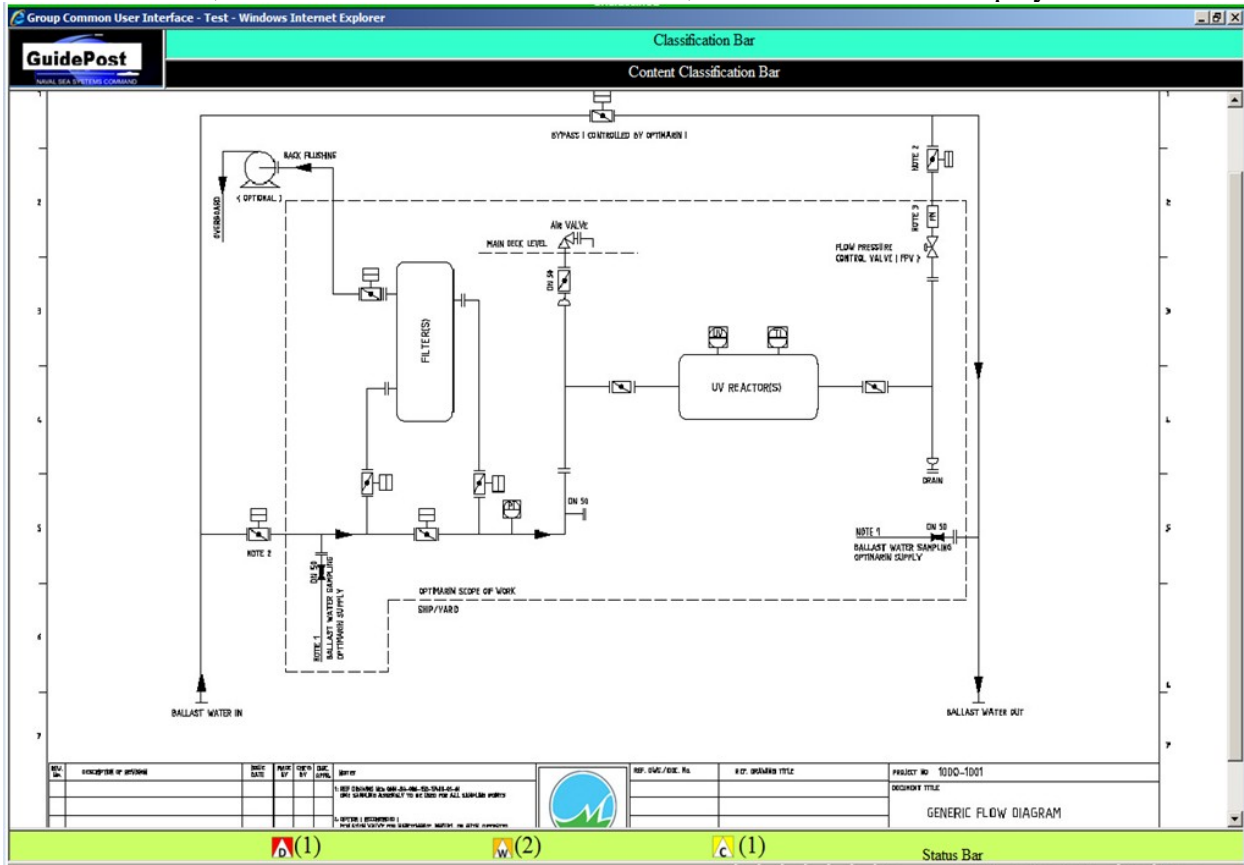


Figure A-10 No TOC Frame Layout

## APPENDIX B: LOGIC ENGINE

These requirements are provided for NAVSEA Viewer implementers to provide logic engine functionality in a consistent manner to end users (technicians, subject matter experts, incident reconstruction teams, etc.). These requirements provide the additional performance requirements for interacting with logic engines: how previous node and next node; logic engine steps, dialogs, and reference links under control by the logic engine shall behave.

### B.1 Logic Engine

The logic engine controls the sequencing, at run-time, of data modules and/or procedural steps based on the real-time results of calculations with variables via a computed data module. The value of variables is dynamic based on inputs from dialogs with users or dialogs with hardware, machinery, external sensors and equipment.

### B.2 Logic Engine – User Interaction

The logic engine requires the addition of two new functions which are Proceed and Undo.

Note: Within S1000D these are known as Next Node (Proceed) and Previous Node (Undo) for the Process Data Module.

Disambiguating the user controls reveals that there are three fixed Next/Previous pairs resulting in six dedicated buttons.

The six dedicated buttons are: Back/Forward (←, →), Previous Step/Next Step (↑, ↓), and Undo/Proceed (↶, ↷). When a procedural data module using the Next Step and Previous Step functions is contained within a computed data module, the behavior is as described herein. When a procedural data module using the Next Step and Previous Step functions is NOT contained within a computed data module, the behavior is described in Appendix D.

### B.3 Definition List for Some Logic Engine Terminology

In order to provide consistency in the document, the following, Table B – 1, terms have these definitions within this document:

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**Table B – 1 Definitions**

<b>Term</b>	<b>Definition</b>
Assertion	The term “Assertion” is a true or false value indicating that a particular situation has been identified as existing (true) or not existing (false). The particular situations are established and labelled with a name.
Back	The term “Back” is the function that takes the user back to the previous data module. Usually the return is to the beginning of the data module; however, when a link was previously selected, the return is to the location in the previously displayed data module where the link was selected.
Computed Data Module	The term “Computed Data Module” is a Data Module that contains one or more Logic Node(s).
Data Module	The term “Data Module” refers to data (as prescribed by an XML Schema) placed into a file of related paragraphs, steps, figures, tables, etc. collected together to form a group (module) on a specific object.
Focus	The term “Focus” refers to the object highlighted by some means to indicate to the user that the application believes this is where and what the user is reading.
Forward	The term “Forward” is the function that takes the user to the beginning of a previously visited data module(s) in the order of visitation.
Logic Node	The term “Logic Node” defines an action by the rendering application that involves a computation and possible interaction with either a user or an external event (e.g., sensor reading) which causes a new state to be reached by the rendering application. Using Assertions and States, a computation is made and evaluated to determine the next action of the Viewer application based on the logic prescribed within the node. The logic node defines the set of data that should be interpreted by the logic engine and displayed to the user as a single screen which can be scrollable. Note: In S1000D, this is called a <dmNode> element.
Next Node	The term “Next Node” is shorthand for next Logic Node. The Logic Node that follows (if one exists) in the sequence.
Post-set	The term “Post-set” refers to the assignment of a value to a variable to indicate that something has been achieved or discovered. Or, saving the results achieved during the execution of logic node(s). This value is set when you leave the Logic Node it is attached to.
Pre-set	The term “Pre-set” refers to the assignment of a value to a variable prior to entering a Logic Node.
Previous Node	The term “Previous Node” is shorthand for previous Logic Node. The Logic Node that was just previously performed (if one exists) in the sequence.
State	The term “State” refers to the value of a variable at the requested time. The power of the logic engine combined with computed data module(s) is in its ability to capture, store, and act upon state information (the values of defined variables such as Model, Serial Number, Power Source, or Continuity Exists). State information is normally captured via user dialogs and stored in a state table.

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State Table	The term "State Table" is simply a collection of declared variables and their currently assigned values (e.g., States). When the logic engine requires the value of a variable to determine what to display next, it searches the state table for the variable name and retrieves its value.
Variable	The term "Variable" refers to a value assigned an identification name. The named value can be revised to contain an updated value.

### B.4 State Tables

#### B.4.1 Audit Trail State Table

The audit trail state table contains every location (e.g., data module, publication, step, logic node, figure viewed, table viewed, foldout viewed, multimedia viewed, external reference viewed, etc.) that the user has travelled to within the document even if the user reverses, undoes or otherwise changes direction within the user's session. It also records any changed state table variables along with their new value.

#### B.4.2 Step State Table

The step state table tracks what steps have been performed. Unlike the audit trail state table, this state table only keeps the active location and the path the user took to get to the active location. Any types of reversals in navigation result in reverting things (e.g., states) to what they had been, and, thus, they are lost from the step state table.

### B.5 Local and Global Variables

#### B.5.1 Global Variables

Global variables are those variables can be reached from anywhere within the session.

*Note: For S1000D, global variables (i.e., global properties) are defined in the ACT and CCT as applicability properties and conditions and can be initialized in the PCT.*

Global variables have the following characteristics:

- Global variable values within the state table are retained for the entire active session.
- Global variables are used for applicability processing as well as for variables in computed data modules using the logic engine.
- Global variables are referenced by a global property reference.
- Global variables are available to any data module; however, with the exception of the computed data module, global variables are read only.
- Global variables can be created and values can be assigned or changed by the computed data module for the duration of the active session.

#### B.5.2 Local Variables

Local variables have the following characteristics:

- Local variables achieved only within the current computed data module and are not accessible after exiting the computed data module.
- Local variables are declared and initialized within the computed data module in which they are to be used.
- Local variables are referenced by a variable reference.
- Local variables are unavailable to any other data module.

### B.5.3 Ways for Variables or Properties to Obtain Values

There are several ways for variables or properties to obtain values:

- Directly assign values to variables or properties using pre-sets and post-sets within a computed data module.
- Dialogs can be used to ask the user questions and assign values depending on the user's answer.
- External applications can return values which get assigned to variables and/or properties.

## B.6 Logic Engine Navigation Functions

The navigation functions provide the interface to advance through sequences of logic nodes.

Functions are provided to move to the next logic node (Proceed) and previous logic node (Undo) in the logic engine. Each logic node defines the set of data that should be interpreted by the logic engine and displayed to the user as a single screen which can be scrollable.

Initially entering a computed data module starts with common information, preliminary requirements and safety information before arriving at the sequence of logic nodes.

### B.6.1 Proceed Function

The Proceed function (also known as Next Node) instructs the logic engine to advance and interpret the next logic node from the current position. Selecting Proceed shall advance through the following sections of the computed data module in the following sequence. Note: Whenever possible, multiple items from this list can be displayed together in succession using the scroll bar. However, logic nodes are the exception and shall be displayed independent of other items on this list.

- A. When present, information that applies to the whole task such as a description of the task. (For S1000D, this is <commonInfo> element)
- B. When present, information on an appropriate work area and average task duration. (For S1000D, this is each first child of the <productionMaintData> element (if present))
- C. When present, required conditions prior to starting the procedure. (For S1000D, this is each first child of the <reqCondGroup> element)
- D. When present, required personnel (persons). (For S1000D, this is each first child of the <reqPersons> element)
- E. When present, references to required drawings. (For S1000D, this is each first child of the <reqTechInfoGroup> element)
- F. When present, required support equipment. (For S1000D, this is each first child of the <reqSupportEquips> element)
- G. When present, required supplies. (For S1000D, this is each first child of the <reqSupplies> element)
- H. When present, required spares. (For S1000D, this is each first child of the <reqSpares> element)
- I. When present, required safety notices. (For S1000D, this is each grandchild of the <reqSafety> element)
- J. Each logic node includes nested logic nodes.
- K. When present, required closing requirements after the task are finished. (For S1000D, this is each first child of the <closeRqmts> <reqCondGroup> element)

The logic engine must advance until one of the following conditions occurs: user input is required, a navigation function (e.g., a choice needs to be made) is required, or the end of the computed data module has been reached.

Specific requirements for the logic node processing are as follows:

1. Applicability of the node is evaluated and the node is processed or skipped.
2. Any presets to variables or global properties are evaluated before displaying the content.
3. Upon encountering a reference to another data module within a computed data module, the

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logic engine will display the reference data module and processing will halt until the user selects Proceed.

4. When a logic node that has an applicability that evaluates to TRUE and contains a reference, the data module referenced is displayed to the user, and processing will halt until the user selects Proceed.
  - For a reference, the logic engine must cause the referenced data module to be accessed and processed accordingly. If the referenced data module is another computed data module with logic nodes, then those nodes must be executed by the logic engine. If the referenced data module is to another data module that is not a computed data module (thus, without a collection of logic nodes), then the referenced data module is processed by the Viewer software suspending the logic engine function until returned back from the referenced data module.
5. When a logic node with one or more procedural steps and an optional last dialog is executed and at least one procedural step or the dialog passes applicability evaluation, the procedural step(s) and/or dialog that pass applicability evaluation are displayed to the user and processing will halt until the user selects Proceed.
  - For procedural steps tagged within the logic node and not a reference to a procedural data module, the logic engine must process all step content including the hierarchical sub-step structure, build a display package, and send the display package to the display software to be rendered to the user. The procedural steps content is modified from the procedural data module with the addition of a variable reference or global property within a paragraph. Upon encountering a variable reference or global property, the logic engine must obtain the value associated with the referenced variable and embed that value into the paragraph to be displayed to the user.
6. When a logic node with one or more procedural step alternatives is executed, the first child step that applicability evaluates to TRUE in sequence order is displayed to the user and processing will halt until the user selects Proceed.
  - The procedural step alternatives provide the capability to group in one structure several potential steps of data for display. Only one step or none will be displayed depending on which applicability evaluates to TRUE within the procedural step alternatives.
7. When a logic node with a dialog is executed and passes applicability evaluation, the dialog is displayed to the user and processing will halt until the user makes a selection.
  - For a dialog, the logic engine must process the dialog content, build a display package, and send the display package to the display software to be rendered to the user. When a dialog is displayed either as the sole content of a logic node or as an alternative child step in a logic node, the dialog will assume responsibility for the Viewer navigation function.
8. When a logic node containing an external application is executed, the external application is executed with notification to the user of the ongoing action. The logic engine must process all external application content including parameters to send and expected results.

*Note: The preferred method for implementation is for the display software to perform the interface with the external application passing data to the logic engine via variables either as named variables or by defined positions in the sequences being exchanged with the external application with named variables having preference over positions in a sequence.*

9. When the end of the computed data module is reached, a message is displayed to the user indicating that it reached the end of the processing of logic nodes.

### B.6.2 Undo Function

The Undo function (also known as Previous Node) instructs the logic engine to logically reverse through actions taken beginning at the current location until a logic node with displayable content is encountered. When navigating to a previous logic node, the logic engine must restore the state table to the condition that it was when it last encountered the logic node being returned to. Restoring the state table includes resetting any variables to their values at the previous logic node. This allows the user to change his input, which could change the forward logical path.

When executing Undo, the previous logic node must be evaluated in the reverse order that Proceed used to move to the logic Node.

A warning must be displayed and acknowledged by the user before executing the Undo function. The warning shall be displayed with the exact wording as follows in the figure (see *Figure B-1 UNDO Warning Message*). Selecting “Undo” will continue with undo. Selecting “Cancel” dismisses the current dialog without an action and the system remains in the current screen.



*Figure B-1 UNDO Warning Message*

The logic engine must proceed backwards as follows:

1. Reversing, when the previously executed logic node that had an applicability that evaluated to TRUE and contained a reference, the reference shall be closed and the display returned to the previous logic node while resetting any variables to their values *last encountered* at the previous logic node.
2. Reversing, when previously executed logic node with one or more procedural steps and an optional last dialog is executed and at least one procedural step or the dialog passes applicability evaluation, the procedural step(s) and/or dialog that passed applicability evaluation shall be undone and the



display returned to the previous logic node while resetting any variables to their values *last encountered* at the previous logic node.

3. Reversing, when the previously executed logic node with one or more procedural step alternatives is executed, the procedural step that passed applicability evaluation shall be undone and display returned to the previous logic node while resetting any variables to their values *last encountered* at the previous logic node.
4. Reversing, when the previously executed logic node with a dialog is executed and passes applicability evaluation, the dialog shall be closed and the display returned to the previous logic node while resetting any variables to their values *last encountered* at the previous logic node.
5. Reversing, when the previously executed logic node containing an external application is executed, the external application shall be closed and display returned to the previous logic node while resetting any variables to their values *last encountered* at the previous logic node.
6. Reversing when at the end of the computed data module, the message that the user is at the end of the processing of logic nodes is removed and control is returned to the last executed logic node resetting any variables to their values *last encountered* at the previous logic node.
7. Reversing, when a loop node is encountered, the processing path depends upon the forward path and number of iterations that were taken through the loop. If the user continues to perform Undo function, the logic engine must process the same number of iterations in reverse as it processed in the forward path.

### **B.6.3 Previous Step and Next Step in a Logic Engine**

When the logic node encounters a procedural data module (as a referenced data module), or one or more procedural steps (as direct inline-steps within the logic node), the Previous Step (after completing at least one step) and Next Step shall be enabled. The Proceed function will be disabled during navigation of procedural steps. However, the Undo control will still be enabled to revert to the previous logic node. If at least one step has been performed, Previous Step will move backwards to the last step performed. Neither Forward, nor Back shall be operational during the performance of steps.

This functionality will continue until the user completes all the steps whereupon the Proceed will again become available. The Previous Step will also be available until either Proceed or Undo is selected to move away from the procedural steps.

### **B.7 Applicability in a Logic Engine**

The NAVSEA Standard Viewer will support both predefined applicability as well as using an expression to determine whether something is applicable.

- A. When the previously defined applicability variable is available, the applicability shall be evaluated looking for a 'true' state. When an expression is authored along with the defined applicability variable it will be "anded" with the standard applicability structure.
- B. An expression without using a previously defined applicability variable be used for filtering conditions to determine when something is applicable as well.

### **B.8 User Interaction Controls**

This section provides the minimum common set of user interaction controls required within a viewer that supports the logic engine functionality. These are usually dialogs, however, menus can be used.

#### **B.8.1 Dialog boxes**

Dialog boxes shall be used as the principal means by which the user converses with the underlying IETM application software. They shall be displayed in a separate window, which may overlay the

primary window in a separate (modal) window, and shall contain a heading and one or more graphical controls (buttons). The types of information to be collected may include, but is not limited to, whether or not specific operations have been performed, the present condition of the system, and the environmental situation. Dialogs shall be one of five kinds: alerts, fill-in-the-blanks, single/multiple choice, or composite. All dialogs shall contain the OK function and, with the exception of information only alerts, the Cancel function. The OK or the Cancel functions shall finish the user interaction with the dialog box. The layout and arrangement of all dialogs shall allow the user to differentiate between the material they contain and other types of displayed information. See *figures B - 2 through B - 5* for examples of different types of dialogs. Dialog boxes shall adhere to the following requirements:

- A. Both pop-up and in-line dialog boxes in the display frame may be used. Dialog boxes shall appear in a consistent and prominent location on the display.
- B. Dialogs shall be formulated as prompting questions that are intended to be presented by the electronic display system (EDS) to the user.
- C. Dialogs shall be developed so that they require a user to respond for example, enter data, acknowledging an alert, before any subsequent processing is undertaken.
- D. The dialog information in the IETM source data shall be formulated so that once a dialog is presented to the user and answered; certain assertions about the user's environment are able to be made.
- E. The information associated with dialogs shall permit the EDS to provide actions to follow all completed dialogs. Each of the immediately subsequent procedures available for presentation to the user shall be conditional upon one of the possible answers requested by the prompt.
- F. With the exception of alert dialog boxes, all dialog boxes shall contain an OK function and a Cancel function. Information only alerts only require an acknowledgement, and therefore, only require an OK function. If the user activates the Cancel function, the IETM display shall return to the display that existed immediately prior to the display of the dialog box.
- G. Dialogs may contain a Help function to provide further information about the dialog box. If used, the Help function consists of a short sentence of explanation about the dialog box.

### **B.8.1.1 Dialog Push Buttons**

Dialog boxes shall contain graphical controls called push buttons. Positive acknowledgement is required and is usually achieved via an "OK" button. Dialog push buttons are used as a means for the user to communicate with the IETM. Push buttons can be: radio buttons as in single-choice dialog boxes, check boxes as in multiple-choice dialog boxes, or functions as the selectable function OK on an alert dialog box. A push button shall be a word or graphic icon on the screen used to select or initiate an action. Push buttons shall be large enough to allow positioning of the cursor on the push button. Push buttons or choices shall provide visual feedback when selected. Push buttons shall be found on every type of dialog box. They shall each be single action entities. Push buttons shall indicate selections made or invoke a general action such as Cancel or OK. Push button shapes shall be consistent, such as, a box, a circle or an arrow, with the name of the selection or action written inside of the shape. Common push buttons (OK, Cancel) shall be displayed along the bottom of the dialog box. The common dialog buttons shall correspond to completing the last selection before leaving the dialog box.

### **B.8.1.2 Use of Push Buttons**

When a dialog box is displayed, the user shall have an opportunity to communicate information to the IETM through push buttons. The user-input information is displayed only and is not actually communicated to the IETM until the user activates the OK function by clicking on the "OK" push

button. If the user selects the "Cancel" button, no information shall be sent to the IETM and the IETM shall return to its previous display.

### **B.8.1.3 Presentation of Dialog Push Buttons**

The common push buttons shall be displayed in the following order centered along the bottom of the dialog box: "OK", and where they exist, "Cancel" and "Help". The common dialog buttons shall correspond to a completion of action, which is the last selection the user makes before leaving the dialog box.

### **B.8.1.4 Dialog Cursor Movement**

Cursor movement within dialog boxes shall be consistent throughout the IETM. The cursor shall move only to items which require input from the user. The default location of the cursor (the location of the cursor when the dialog box is initially displayed) in a dialog box is at the first selectable item (uppermost). When the selectable only movement mode is used, it shall restrict the allowable cursor locations to the radio buttons, check boxes, fill-in-the-blank spaces, and the push buttons within the dialog box. Cursor movement shall be accomplished through the tab and enter keys and through point-and-click input from a pointing device such as a mouse, trackball, or stylus. The user shall be able to move the cursor back within the dialog box either via the backspace key or the pointing device. Pressing the enter key shall send all data items entered into the dialog box to the IETM processor, and thus finish the dialog box. Pressing the enter key is functionally equivalent to pressing the "OK" push button.

### **B.8.1.5 Dialog Titles**

All dialog boxes shall contain a dialog title. All titles shall be left justified and the initial letter of major title words shall be capitalized. Titles shall be presented in a distinctive manner so that they cannot be confused with messages, response alternatives, or other text items.

### **B.8.1.6 Dialog Box Types**

Dialog box design throughout the IETM shall remain consistent to preserve a common look and feel.

#### **B.8.1.6.1 Fill-In-The-Blank Dialog Box**

For all fill-in-the-blank type dialogs, data entries shall be prompted explicitly by displayed labels for data fields. The user shall be given the capability to delete or otherwise change previously filled in entries. Fill-in-the-blank type dialogs (see *Figure B-2 Fill-In-The-Blank Dialog Box*) shall allow input of alphanumeric characters in response to displayed questions and/or data entry fields (for example: inputting user-identification data when signing-on to the computer system). The dialog-box design shall indicate clearly the nature of the required input, limitations on number or type of alphanumeric characters, units (if input is a measurement), and any other required conventions. Wherever possible, the data field label shall be placed on the same line as user input. Labels for data fields shall be distinctive. Field labels shall be placed in close proximity to their respective data entry area and shall end with a colon (:). The Cancel button shall provide the user with the capability to abort the action.

Figure B-2 Fill-In-The-Blank Dialog Box

### B.8.1.6.2 Single choice dialog box

Single choice dialogs shall be displayed using radio buttons. Radio buttons shall be circles. The user selects the choice by pointing and clicking in the appropriate circle. A filled circle shall indicate that the choice has been made. In a single choice dialog, only one choice can be made. The visual indication to the user that a choice has been made shall be displayed immediately upon selection. Disabled radio buttons will not be selectable, but may be visible (see *Figure B-3 Single-Choice Dialog Box*). Another method that is acceptable is a combo box with drop down choices; a common example is the entry of the state of residence on a web form such as: .

Figure B-3 Single-Choice Dialog Box

### B.8.1.6.3 Multiple choice dialog box

A multiple choice dialog (check boxes) shall be the type of dialog in which one or more selections are able to be made from a group of choices (see *Figure B-4 Multiple-Choice Dialog Box*). Multiple selections shall be made using check boxes. Check boxes shall be grouped into lists of non-mutually exclusive choices. The user shall be given the capability to check one or more of these boxes as needed using the cursor or number selection technique. Each button shall appear as a consistent shape (such as, a square) and shall be marked with a visual indicator when the button is selected. The visual cue for multiple-choice dialogs shall be square check boxes. The visual indicator shall be an X or a checkmark (✓) contained within the square when a choice is made. The visual indicator will appear at the instant of selection. Check boxes shall employ different shapes from radio buttons.

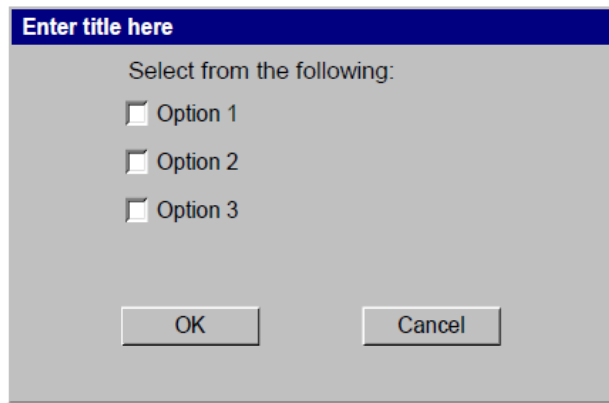


Figure B-4 Multiple-Choice Dialog Box

### B.8.1.7 Composite dialog box

The composite dialog is a dialog box in which the user is presented different types of dialog choices. The composite dialog box may contain any or all in combination of fill-in-the-blank dialogs, single-choice dialogs, and multiple-choice dialogs (see *Figure B-5 Composite Dialog Box*).

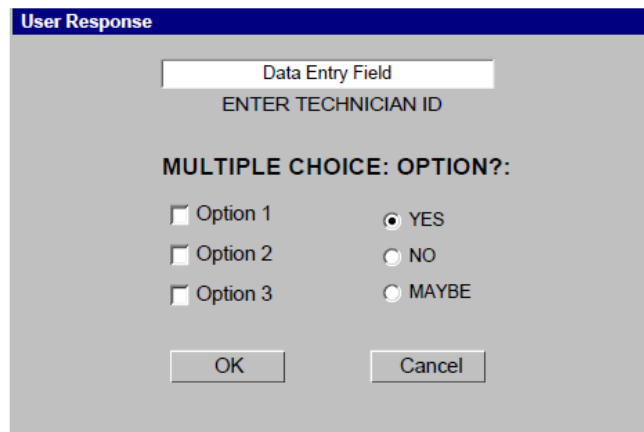


Figure B-5 Composite Dialog Box

### B.8.2 Menus

Menus either in concert with a dialog or via cascading menus are a secondary means by which the user converses with the underlying IETM application software.

Cascading menus may appear as a child of a function when selected. In a drop-down menu, this appears next to the function selected. There may be several levels of cascading menus. Functions that are not active during any rendering shall be presented as disabled (grayed out). (See *Figure B-6 Cascading Menu*).

*Note: Chap 3.9.5.2.10 in S1000D has numerous examples of Menus which equate in practice to the single-choice, multiple-choice, or composite types given above.*

- -choiceType (M) indicates how the menu choices are displayed
- "select" - The menu choices are displayed as selection (radio or checkbox)
- "pulldown" - The menu choices are displayed as a scrollable list.
- menuChoiceFlow (O) indicates how the menu choices are displayed
- "list" (D) - The menu choices are listed vertically.
- "inline" - The menu choices are listed horizontally.

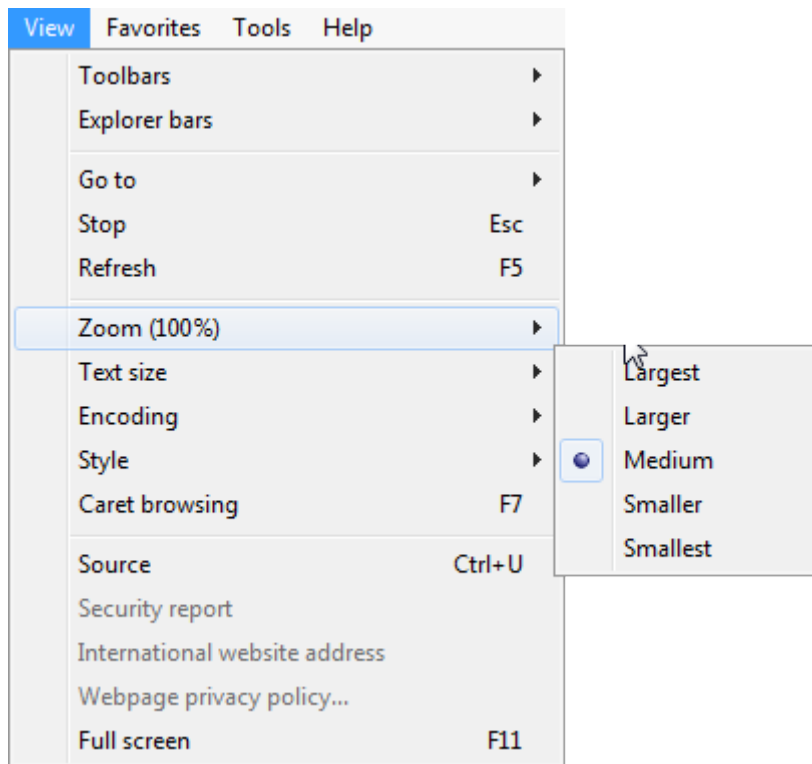


Figure B-6 Cascading Menu

### B.9 Back/Forward, Previous Step /Next Step and Undo/Proceed Navigation Functionality Reference Materials

The six viewer navigation dedicated functions and their buttons are: Back/Forward (←,→), Previous Step /Next Step (↓,↑), and Undo/Proceed (↶,↷). As shown in Table B - 2, the location and functionality of these functions in the Viewer can be found within this document.

Table B - 2 Viewer Back/Forward, Previous Step /Next Step and Undo/Proceed Navigation Functionality Reference Materials

Label	Function						
	Back (data module)	Forward (data module)	Previous (Step)	Next (Step)	“Undo” Undo	“Proceed” Proceed	
Icon	←	→	↑	↓	↶	➤	
Viewer Location	3.3.6 Add'l Info Bar		3.3.5 Main Menu Bar		3.3.6 Add'l Info Bar		
Reference is found in NAVSEA Interactive Electronic Technical Manual (IETM) Viewer Software Performance Requirements	Appdx D, D.1.1 #1. BACK and FORWARD		Appx D.1.1 General Requirements and Definitions #2 PREVIOUS and NEXT; #3; #4, #5, #11,& #12			Herein: 6.2 Undo	Herein: 6.1 Proceed
	3.3.6.1 Back		3.3.6.2 Forward				

**B.10 User Interactions Occurring Outside the Interaction of a Computed Data Module with Focus**

1. ALL software actions that cause the display to change other than these six functions:
  - Back/Forward (←,→)
  - Previous Step/Next Step(↓,↑)
  - Previous Node/Next Node (↶,➤)
  
2. Shall switch immediate focus to the newly selected interaction gadget. Interaction gadgets are items, such as but not limited to, the following:
  - Scrolling
  - Clicking/activating hyperlinks
  - Clicking/activating the table of contents
  - Clicking/activating the guidepost, main menu bar interaction (other than the 6 functions), or other menu bar interaction
  - Any interaction with dialogs
  - Acknowledgement of data module driven alerts [Danger, Warning, Caution]
  - Clicking/activating tabs or other viewer provided interaction devices/methods, operating system interactions, etc.
  
3. It shall be understood that after the focus of a newly selected interaction gadget (including operating system interaction) returns to the Viewer application, that viewer will remain EXACTLY the same as before the interaction shifted focus to the interaction gadget – as if everything in the Viewer application was frozen in time. If the secondary user interaction outside the Viewer application ends by closing the Viewer application, then the Viewer application has been exited and the Viewer application must be restarted.

4. If the Viewer is presenting a data module driven alert and acknowledgement of alert (e.g., Danger, Warning, Caution, and possibly Note) is required, then the Viewer shall freeze until acknowledgement of the alert.
5. Use of the scrolling functionality will not freeze the display; however, when scrolling the state of the Viewer application shall be as if the user has not interacted with the data module.
6. If the Viewer application is terminated during the frozen period due to other selected interaction gadget (guidepost, exit, system end task, system shutdown, etc.), and the Viewer has the session control capability (see main body of NAVSEA IETM Viewer Software Performance Requirements) the user shall be offered suspend functionality (for subsequent resume). If session control capability is not available, other than the record of actions in the audit trail there shall be no other record and any restart of the Viewer shall be a total reset without any knowledge of prior navigation through the IETM. Please remember that the audit trail records the user interaction regardless of any outcome (and it does not delete or erase any entries no matter whether the technician retraced steps or not).

**B.11 Active Controls for Computable Data Modules**

Table B - 3 indicates which of the Back, Forward, Previous Step, Next Step, Undo and Proceed are active for a computable data module with various children. Table B - 4 shows the computable data module references to other data modules. Table B - 5 shows Computable Data Module Logic Node Children.

Table B - 3 Computable Data Module Enter, Exit and Variables

Computable Data Module Enter, Exit and Variables	Back	Forward	Previous Step	Next Step	Undo	Proceed
<i>Enter (Preliminary) requirements</i>	N/A	N/A	N/A	N/A	N/A	➤
<i>Exit (Close) requirements</i>					↶	N/A
<i>Variable declarations</i>	N/A	N/A	N/A	N/A	↶	➤
<i>Variable Pre-set (Global or local)</i>	N/A	N/A	N/A	N/A	↶	➤
<i>Variable Post-set (Global or local)</i>	N/A	N/A	N/A	N/A	↶	➤



Table B - 4 Computable Data Module References to Other Data Modules

Computable Data Module References to Other Data Modules	Back	Forward	Previous Step	Next Step	Undo	Proceed	Display	Remarks
<p>Logic node/ reference to a data module that isn't Procedural nor Computable</p>	←	N/A	N/A	N/A	↶	N/A	Display referenced data module	<p>State Table is Frozen [No Changes] during Displayed Ref</p> <p>Note: UNDO will go back to last logic node.</p> <p>Note: PROCEED is disabled during display of the referenced data module.</p> <p>Note: BACK is enabled to return from the referenced data module.</p>
<p>Logic node/ reference to a procedural data module</p> <p>(Note: Must also be beginning of destination procedural data module. Cannot be to a step within the destination.)</p>	N/A	N/A	↑	↓	↶	↷	Display referenced procedural (containing steps) data module	<p>State Table is Frozen [No Changes] during Displayed Ref</p> <p>Note: UNDO will go back to last logic node.</p> <p>Note: PROCEED is disabled during display of the referenced data module.</p> <p>Note: BACK is enabled to return from the referenced data module.</p>

Table B - 5 Computable Data Module Logic Node Children

Computable Data Module Logic Node Children	Back	Forward	Previous Step	Next Step	Undo	Proceed	Display	Remarks		
logic node/ <b>figure</b>	N/A	N/A	N/A	N/A	↶	➤	Display Figure	State Table is Frozen [No Changes]		
logic node/ <b>multimedia</b>			N/A	N/A	↶	➤	Display Multimedia			
logic node/ <b>foldout</b>			N/A	N/A	↶	➤	Display Foldout			
logic node/ <b>table</b>			N/A	N/A	↶	➤	Display Table			
logic node/ <b>step</b>					⬆	⬇	↶	N/A	Display Procedural Step	Global Properties are READ only Note: PROCEED is disabled until after the last step has been performed via Next Step.
logic node/ <b>dialog</b>					N/A	N/A	N/A	N/A	Display Dialog	Note: Dialog OK/Submit and CANCEL perform as the PROCEED and UNDO functions OK/Submit function will modify Local or Global properties.
logic node/ <b>message</b>					N/A	N/A	↶	➤	Display message	State Table is Frozen [No Changes]
logic node/ <b>external application</b>			N/A	N/A	↶	➤	Provide user indication of external communication action	The external application passes data to the logic engine as Local variables either as named variables or by defined positions		

**B.12 Additional Viewer Capabilities**

1. The Viewer shall have the capability for a supervisor to verify completion of steps, procedures, and processes.
2. The Viewer shall have the capability for the skill level of a user to be filtered based on the skill level needed to perform a step, procedure, or process.
3. The Viewer shall have the capability to support external applications in a logic engine and for the display software to perform the interface with the external application passing data to the logic engine via variables either as named variables or by defined positions in the sequences being exchanged with the external application with named variables having preference over positions in a sequence.
4. The Viewer shall support the use of validation and attributed error messages for validating the fill-in-the-blank (user entry) through an expression evaluation.
5. The Viewer will automatically display the default value if authored in a dialog.
6. The Viewer shall honor typing of values (Boolean, real, integer, set, string, etc.)
  - a. A Boolean variable is allowed to have the values "true" or "false".
  - b. An integer variable must support, at a minimum, a 32 bits signed long integer, providing a range of -2.147.483.648 to 2.147.483.647.
  - c. A real variable must support, at a minimum, a 32 bits (4 bytes) real number. It must support the IEEE standard of 1-bit sign, 8 bits exponent, and 23 bits' mantissa which gives a minimum precision of six significant digits and a minimum exponent range of -38 to 38. A range of approximately  $3,4 \text{ E}-38$  to  $3,4 \text{ E}+38$  should be supported.
  - d. A string variable must support, at a minimum, a Unicode string up to 64 characters long.
7. The Viewer shall support behavior for external references as to whether to place the materials within a new pane (e.g., tear-off, newPane), within the existing materials (e.g., inline, embedInContext), navigate to the new materials (e.g., new context, replaceAndReturnToSource) and return when finished, or navigate to the new materials and disallow a return (e.g., replaceAndNoReturn).
8. The Viewer shall display the symbols associated with the hazards and careful handling (e.g., ESD, HCI, LOX, MAG, etc.).
9. The Viewer shall support the grouping of dialogs (e.g., S1000D dialog group) to allow layout of complex dialogs.
10. The Viewer shall support the computation of complex expressions to include set operators, string operators, Boolean operators, logarithmic operators, geometric operators, root operators, exponent operators, inverse operators, comparison operators, and algebraic operators.

## APPENDIX C: STANDARDIZED INFORMATION TABLES

### C.1 Standardized Information Table Markup

Standardized Information Tables consist of content-tagged data which is formatted as a table. Each type of Standardized Information Table is always formatted in a standardized way. Each row and each cell within a row is uniquely identified by its content. Rows and columns are not format-tagged as rows and columns. Column heads are not tagged and are automatically generated by the publish engine for display in the Viewer.

### C.2 Standardized Table Types

The following tables are designated as Standardized Information Tables:

- Controls and Indicators Table
- Displays/Alerts Table
- Environmental Conditions List
- Equipment, Accessories, and Documents Supplied Table
- Equipment Modification Table
- Fault Descriptions Table
- Field and Factory Changes List
- Major Equipment Table
- Materials List
- Protective Devices Index
- References List
- Required Conditions
- Safety Conditions List
- Special Tools List
- Test Fault Impacts Table
- Electrical Troubleshooting Index
- Abbreviations List
- Troubleshooting Procedure-B
- Useable On Codes List
- Group Assembly Parts List (GAPL)
- Numerical Index of Parts
- Reference Designation Index

### C.3 Controls and Indicators Table

Figure C-1 Controls and Indicators Table provides the names of panel designations as marked on the equipment, the positions and operating functions for each control, and the normal operating condition of each indicator in each of the operating functions.

<b>Controls and Indicators - &lt;title&gt;</b>			
	<b>Index No.</b>	<b>Control/Indicator</b>	<b>Position/Function</b>
<i>S1000D Issue 3/4 (N/A)</i>	<i>NOT AVAILABLE (Use CALS Table)</i>	<i>NOT AVAILABLE (USE CALS Table)</i>	<i>NOT AVAILABLE (Use CALS Table)</i>

Figure C-1 Controls and Indicators Table Template

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**Controls and Indicators**

<b>Index No.</b>	<b>Control/Indicator</b>	<b>Function</b>
45A	Condenser Drain Gate Valve	When open, drains “shell side” of condenser into sump can drain.
45B	Pump Drain Gate Valve	When open, drains recirculating pump into sump can drain.

*Figure C-2 Controls and Indicators Table Example*

**C.4 Displays/Alerts Table**

The purpose of Figure C-3 Displays/Alerts Table Template is to provide the required data for each display and alert and Figure C-4 provides an example of this. The table will indicate the index number (when used) referenced from the illustration, the associated display or alert and its nomenclature, including the reference designator, if applicable, and the function of the display or alert.

**Displays/Alerts - <title>**

	<b>Index No.</b>	<b>Display/Alert</b>	<b>Function</b>
S1000D Issue 3 IC=115 Schema=fault.xsd (Not until 4.1)	NOT AVAILABLE (Use CALS Table)	NOT AVAILABLE (USE CALS Table)	NOT AVAILABLE (Use CALS Table)
S1000D Issue 4.1 IC=115 <basicCorrelatedFaults> <faultDescr> <detectionInfo> Schema=fault.xsd	<viewLocation> <systemLocation> <catalogSeqNumberRef>	<systemIdent> <systemPosition> <faultMessageIndication> <faultMessageBody>	<faultEquip> <faultCond>
S1000D	<b>Notes:</b> Optional <remarks>		

*Figure C-3 Displays/Alerts Table Template*

**Displays/Alerts**

<b>Index No.</b>	<b>Display/Alert</b>	<b>Function</b>
45A	Primary Widget Monitor	Monitors Widget Input
45B	Secondary Widget Monitor	Monitors Widget Output
Notes: Return depleted widgets to Depot for recycling.		

*Figure C-4 Displays/Alerts Table Example*

**C.5 Environmental Conditions List**

For each DM, the Environmental Conditions List provides a list of environmental conditions such as ambient temperatures, heat dissipation per unit, humidity limits, coolants (airflow, water or oil flow rate, chilled and de-mineralized seawater) that must be satisfied and that can be checked off.

Note (S1000D Only): Information Code (IC) “00Q” is reserved to identify the S1000D condcorsreftable.xsd (aka CCT) which can contain conditional applicabilities; however, the environmental information in CCT would not be presented in static tabular checkbox form. More likely, environmental choices within the CCT would be dynamically presented.

Environmental Conditions - <title>	
S1000D Issue 3 IC=030B, 043G, 126B, 142B, Schema= checklist.xsd, fault.xsd, proced.xsd, process.xsd, schedule.xsd	<reqcond> might be used; however, there is no attribute to categorize the information.  Use CALS table.
S1000D Issue 4 IC=030B, 043G, 126B, 142B, Schema=checklist.xsd, fault.xsd, proced.xsd, process.xsd, schedule.xsd	<reqCondreqCondCategory="rcc02">

Figure C-5 Environmental Conditions List Template

Note: In Figure C-6, the checkboxes to the left are for technicians to check either on paper or electronically.

Environmental Conditions	
<input type="checkbox"/>	Widgets must be stored at 25% humidity.
<input type="checkbox"/>	Widgets must be packed in foam.

Figure C-6 Environmental Conditions List Example

### C.6 Equipment, Accessories, and Documents Supplied Table

The Equipment, Accessories, and Documents Supplied Table, Figure C-7, is a tabular listing of all equipment, accessories, and other documents supplied.

Equipment, Accessories, and Documents Supplied - <title>					
	Qty.	Name	PIN/RIC/Unit No.	Dimensions	Weight/Volume
S1000D Issue 3 =017M, 063A Schema= fault.xsd, proced.xsd, checklist.xsd	<qty>	<name>	<identno>, <nsn @nsc @ncb @nin3to9>, <con>	<quantity @qtytype= "qty01">	<quantity @qtytype= "qty08"> Or <quantity @qtytype= "qty07">
S1000D Issue 4 IC=017M, 063A Schema= fault.xsd, proced.xsd, checklist.xsd <supplyDescr>	<reqQuantity>	<name>	<identNumber> <natoStockNumber @natoCodificationBureau, @natoItemIdentNumberCore, @natoSupplyClass><supplyRqmtRef>	Via <catalogSeqNumberRef> <quantity quantityType="qty01">	<quantity quantityType="qty07 " or quantityType="qty08 ">
S1000D	<b>Notes:</b> Optional <remarks>				

Figure C-7 Equipment, Accessories, and Documents Supplied Table Template

Qty.	Name	PIN/RIC/Unit No.	Dimensions	Weight/Volume
3	Control Panel	TF- 3237-F	69x30x16	800/19.2
2	Coil	TF-3246-J	38Rx69	7500/230
1	Coil	TF-3247-J	38Rx69	7500/230
2	Base	TF-3242-F	126x120x6	1930/52.5
1	Base	TF-3243-F	126x120x6	1930/52.5

Figure C-8 Equipment, Accessories, and Documents Supplied Table Example

## C.7 Equipment Modification Table

The Equipment Modification Table, Figure C-9, contains all equipment modification change data, and Figure C-10 shows its example.

Equipment Modification - <title>			
	Change No.	Nomenclature	Description
S1000D Issue 3 IC=670C Schema=many	<authno>	<modtitle>	<notes>
S1000D Issue 4 IC=670C	@authorizationIdent	<modificationTitle>	<authorityNotes>
Schema=many <modification>			
S1000D	<b>Notes:</b> <i>Optional</i>		

Figure C-9 Equipment Modification Table Template

Equipment Modification		
Change No.	Nomenclature	Description
45A	Primary Widget Monitor	Do ASAP.
45B	Secondary Widget Monitor	Do next cycle.
<b>Notes:</b>		
<ul style="list-style-type: none"> <li>- Check date to make sure modification is the latest.</li> <li>- Check to see if cycle modification is required.</li> </ul>		

Figure C-10 Equipment Modification Table Example

## C.8 Fault Descriptions Table

The Fault Descriptions Table, Figure C-11 lists all fault descriptions along with the corresponding maintenance action to be taken.

Fault Descriptions - <title>		
	Fault Description	Maintenance Action
S1000D Issue 3 IC=410C Schema=fault.xsd <ifault>	<describe> <detail-fdesc> <b>System:</b> <sys-name> <b>SubSystem:</b> <subsys-name>	<locandrep> <remarks>
S1000D Issue 4 IC=410C Schema=fault.xsd <isolatedFault>	<faultDescr> <detailedFaultDescr> <b>System:</b> <systemName> <b>SubSystem:</b> <faultySubSystem>	<locateAndRepair> <remarks>
S1000D	Notes	

Figure C-11 Fault Descriptor Table Template

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<b>Fault Descriptions</b>	
<b>Fault Description</b>	<b>Maintenance Action</b>
<b>Steam Leakage</b>	Locate Steam Leak - NIST 123
	Plug Steam Leak - NIST 567
	Seal Steam Leak Plug – NIST 587
	Consult NIST Steam Pubs.
<b>System: Plumbing</b>	
Water Leak	Locate Water Leak – NIST 520
	Plug Water Leak – NIST 721
	Seal Water Leak Plug – NIST 889
	Consult NIST Plumbing Pubs.
<b>SubSystem: Drainage</b>	
Drainage Leak	Locate Drainage Leak – NIST 491
	Plug Drainage Leak – NIST 649
	Seal Plug Drainage Leak – NIST 851
	Consult NIST Drainage Pubs.
<b>Notes:</b> All relevant NIST pubs are on-line.	

*Figure C-12 Fault Descriptor Table Example*

**C.9 Field and Factory Changes List**

The Field and Factory Changes List, Figure C-13 identifies field changes, factory changes, engineering changes or notices, modifications, and so forth.

**Field and Factory Changes - <title>**

	<b>Change No.</b>	<b>Nomenclature</b>	<b>Description</b>
<i>S1000D Issue 3 IC=00T Schema=many</i>	<authno>	<modtitle>	<notes>
<i>S1000D Issue 4 IC=00T Schema=many</i>	@authorizationIdent	<modificationTitle>	<authorityNotes>
<i>S1000D</i>	<b>Notes:</b> <i>Optional</i>		

*Figure C-13 Field and Factory Changes List Template*

<b>Field and Factory Changes</b>		
<b>Change No.</b>	<b>Nomenclature</b>	<b>Description</b>
45A	Primary Widget Monitor <sup>1</sup>	Adjust static filter to new tolerance.
45B	Secondary Widget Monitor	Change tuning dial to LCD. <sup>2</sup>
Notes: - Return depleted widgets to Depot for recycling.		
<sup>1</sup> Use appropriate static filter.		
<sup>2</sup> Do not use Plasma option.		

*Figure C-14 Field and Factory Changes List Example*



### C.10 Major Equipment Table

A separate Major Equipment Table, Figure C-15, shall be provided for each combat system element. The tables shall include common name or abbreviation, nomenclature, quantity, and location.

Major Equipment				
	Common Name	System Nomenclature	Qty.	Location
S1000D Issue 3 IC=044E Schema=ipd.xsd <isn>	<dfp>		<uoi>	<dfi>
S1000D Issue 3	Optional <name> from <ein>			
S1000D Issue 4 IC=044E Schema=ipd.xsd <itemSequenceNumber>	<descrForPart>	<descrForItem>	<unitOfIssue>	<descrForLocation>
S1000D Issue 4	Optional <name> from <functionalItemRef>			

Figure C-15 Major Equipment Table Template

Major Equipment			
Common Name	System Nomenclature	Qty.	Location
<b>Shipboard Monitoring</b>			
Widget1 Monitor	Electronic Device	1	Bulkhead 1
Widget1 Sensor	Electronic Device	5	Bulkhead 1
Widget2 Monitor	Electronic Device	3	Bulkhead 3

Figure C-16 Major Equipment Table Example

### C.11 Materials List

The Materials List<sup>1</sup>, Figure C-17, is a list of all materials (consumable materials and/or expendable items) required to perform maintenance type procedures, and Figure C-18 is its example.

<sup>1</sup> See also S1000D Issue 3.0 Chap 6.2.3.3 para 2.4.5 Consumables, materials and expendables

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<b>Materials</b>				
	Nomenclature	Restriction(s)	Qty.	Part No. / Spec No.
S1000D Issue 3 IC=070D,072A, 302A, 402A, 502A, 602A, 934A Schema=proced. xsd	<nomen>	@refapplic <Itemloc>	<qty>	Part No: <pnr> Spec No: @authdoc CAGE: @mfc Stock No: <nsn @ns @ncb @nin3to9>
S1000D Issue 4 IC=070D,072A, 302A, 402A, 502A, 602A, 934A Schema=proced. Xsd <reqSupplies>	<name>	@itemLocationCode @applicRefId	<reqQuantity>	Part No: <partNumber> Spec No: @authority Document CAGE: @manufacturerCodeValue Stock No: <natoStockNumber @natoCodificationBureau @natoltemIdentNumberCore. @natoSupplyClass>
S1000D	Notes: Optional <remarks>			

*Figure C-17 Materials List Template*

<b>Nomenclature</b>	<b>Restrictions</b>	<b>Qty.</b>	<b>Part No. / Spec No.</b>
Cooling fan, dual auxiliary, Unit 61			Part No: Not Specified
Oscilloscope, AN/USM-425			Part No: SCAT 4308
Probe, oscilloscope, 10:1			Part No: Not Specified
Screwdriver, adjustment			Part No: Not Specified
Screwdriver, flat tip, 4"			Part No: JJ134252 Cage: K0378 Stock No: 4920-99-1234567
Screwdriver, No. 2 Phillips			Part No: Not Specified
System Diagnostic Test (SDT) tape			Spec No: MIL-T-27730A

*Figure C-18 Materials List Example*

**C.12 Protective Devices Index**

The Protective Devices Index, Figure C-19, lists all protective devices such as fuses, circuit breakers, and so forth. It includes the item reference designation, front panel marking of the device, trip-out value of the circuit breaker and rating of fuses, name of the circuit protected and a reference to troubleshooting diagram(s).

Protective Devices Index - <title>						
	Ref. Desig.	Front Panel Marking	Voltage Rating	Amp Rating	Circuit Protected	Reference
S1000D Issue 3 IC=441C Schema= fault.xsd, ipd.xsd	<lru> with <csnref> to retrieve <rfd>	<nomen>	<qtyvalue> <quantity @qtytype=qt y06>	<qtyvalue>qt y uom="A">	<reqconds> <reqcblst>	<refs>
S1000D Issue 4 IC=441C Schema= fault.xsd, ipd.xsd	<lru> with <catalogSeq NumberRef> to retrieve <referenceD esignator>	<name>	<quantity Value quantityUni tOfMeasure ="V"> <quantity @quantityT ype=qty06>	<quantityVal ue quantityUnit OfMeasure= "A">	<reqCondGro up> <reqCondCir cuitBreaker>	<refs>
S1000D	<b>Notes:</b> <i>Optional</i>					

Figure C-19 Protective Devices Index Template

Protective Devices Index					
Ref. Desig.	Front Panel Marking	Voltage Rating	Amp Rating	Circuit Protected	Reference
123-3456	APQ-37	123V	789A	Zinc jacket	NIST 235-567
456-2348	AEVI-8	456V	321A	Tin top	NIST 434-567/8
<b>Notes:</b> See other relevant NIST publications for more details.					

Figure C-20 Protective Devices Index Example

### C.13 References List

The References List<sup>2</sup> is a list of the manuals that pertain to system and subsystem equipment, and other documents of interest or use to operating or maintenance personnel.

	Document No.	Document Title
S1000D Issue 3 IC=017B Schema= many	<pubcode>	<pubtitle>
S1000D Issue 4 IC=017B Schema=many	<externalPubCode>	<externalPubTitle>

Figure C-21 References List Template

References	
Document No.	Document Title
TMINS	AN/MK-53 Decoy Launching System
TMINS	AN/SLA-10B
TMINS	AN/ULQ-16(V) <sup>2</sup>
TMINS	Additional Documentation

Figure C-22 References List Example

<sup>2</sup> See also S1000D Issue 3.0 Chap 6.2.2 para 15 References

**C.14 Required Conditions**

Required Conditions<sup>3</sup> presents a list of settings that must be checked before continuing with a procedure.

Required Conditions - <title>	
S1000D Issue 3 IC=126A, 126B Schema= checklist.xsd, fault.xsd, proced.xsd, process.xsd	<reqconds>
S1000D Issue 4 IC=126A, 126B Schema=checklist.xsd, fault.xsd, proced.xsd, process.xsd	<reqCondGroup>

Figure C-23 Required Conditions Template

Note: In Figure C-24, the checkboxes to the left are for technicians to check either on paper or electronically.

Required Conditions	
<input type="checkbox"/>	Power is on.
<input type="checkbox"/>	Operating Mode is stopped.

Figure C-24 Required Conditions Example

**C.15 Safety Conditions List**

The Safety Conditions List<sup>4</sup> is a list of general safety instructions for the DM.

Safety Conditions - <title>	
S1000D Issue 3 IC=012C Schema= checklist.xsd, fault.xsd, proced.xsd, process.xsd	<safety>
S1000D Issue 4 IC=012C Schema= checklist.xsd, fault.xsd, proced.xsd, process.xsd	<reqSafety>

Figure C-25 Safety Conditions List Template

Note: In Figure C-26, the checkboxes to the left are for technicians to check either on paper or electronically.

Safety Conditions	
<input type="checkbox"/>	Make sure power is de-energized.
<input type="checkbox"/>	Make sure pressure is within the operating range.

Figure C-26 Safety Conditions List Example

<sup>3</sup> See also S1000D Issue 3.0 Chap 6.2.3.3 para 2.4.2 Required Conditions

<sup>4</sup> See also S1000D Issue 3.0 Chap 6.2.3.3 para 2.4.7 Safety Conditions List

**C.16 Required Persons List (S1000D Only)**

The Required Persons<sup>5</sup> List is a list of people and skills required for the DM.

Required Persons				
Person	Category	Skill Level	Trade/Trade Code	Estimated Time
<person>	category	skill	<trade>	<esttime>
<asrequir>				

Figure C-27 Required Persons List

**C.17 Special Tools List**

The Special Tools List<sup>6</sup> is a tabular listing of all special tools, tool kits, test equipment, miscellaneous parts, and Government-furnished items that form a part of, or are supplied (or not supplied) with, the system or equipment.

	Nomenclature	Qty.	Part No. / Spec No. / CAGE Code / Stock Code No.
S1000D Issue 3 IC=061B Schema= checkboxlist.xsd, checkboxlist.xsd, checkboxlist.xsd, checkboxlist.xsd <supequi>	<nomen>	<qty>	Part No: <pnr> Spec no: @authdoc CAGE: @mfc Stock No: <nsn @nsc @ncb @nin3to9>
S1000D Issue 4 IC=061B Schema= checkboxlist.xsd, checkboxlist.xsd, checkboxlist.xsd, checkboxlist.xsd <supportEquipDescr >	<name>	<reqQuantity>	Part No: <partNumber> Spec no: @authorityDocument CAGE: @manufacturerCodeValue Stock No: <natoStockNumber @natoCodificationBureau, @natoItemIdentNumberCore, @natoSupplyClass>
S1000D	Notes: Optional <remarks>		

Figure C-28 Special Tools List Template

Note: In Figure C-29, based on the tag used in the right-most column, the words “Part No:”, “Spec No:”, “CAGE:” or “Stock No:” will be automatically generated as appropriate. Also, the checkboxes to the left are for technicians to check either on paper or electronically.

**Special Tools**

Nomenclature	Qty.	Part No. / Spec No. / CAGE Code / Stock Code No.
Torque wrench	1	Part No.: 234-12A
Hose fitting wrench	2	Stock Code No.: 4987-99-1234567
Notes: Reserve these tools in advance.		

Figure C-29 Special Tools List Example

<sup>5</sup> See also S1000D Issue 3.0 Chap 6.2.3.3 para 2.4.3 Required Persons List

<sup>6</sup> See also S1000D Issue 3.0 Chap 6.2.3.3 para 2.4.4.7 Support Equipment

**C.18 Test Fault Impacts Table**

The Test Fault Impacts Table is provided for each major combat system function. This table contains tests with fault isolation pictorial and fault impact evaluation references for each combat mission (AAW, ASW, SUW, and shore bombardment).

<b>Test Fault Impacts - &lt;title&gt;</b>					
	<b>Ref.</b>	<b>Test</b>	<b>Test Brief</b>	<b>Fault Isolation Pictorial</b>	<b>Impact Evaluation Ref.</b>
<i>S1000D Issue 3 IC=415A Schema=fault.xsd</i>	<lru>	<testnomen>	<testdesc>	<figure>	<testproc>
<i>S1000D Issue 4 IC=415A Schema=fault.xsd</i>	<lru>	<testName>	<testDescr>	<figure>	<testProcedure>
<i>S1000D</i>	<b>Notes:</b> <i>Optional &lt;remarks&gt;</i>				

*Figure C-30 Test Fault Impacts Table Template*

<b>Test Fault Impacts</b>				
<b>Ref.</b>	<b>Test</b>	<b>Test Brief</b>	<b>Fault Isolation Pictorial</b>	<b>Impact Evaluation Ref.</b>
45A	Voltage	Volt Meter	Sec. 2, # 3	Sec.5, para. 5
46B	Amperage	Ammeter	Sec. 3, #16	Sec.5, para. 6
<b>Notes:</b> Do not conduct this test if a thunderstorm is nearby.				

*Figure C-31 Test Fault Impacts Table Example*

**C.19 Electrical Troubleshooting Index**

Electrical Troubleshooting Indices are prepared for all relay coils, switches, and indicator lamps. They shall include the item reference designation, the functional name, energizing voltage, and a reference to the troubleshooting diagram(s).

<b>Electrical Troubleshooting Index - &lt;index&gt;</b>				
	<b>Ref. Des.</b>	<b>Functional Name</b>	<b>Voltage</b>	<b>Reference</b>
<i>S1000D Issue 3 IC=367A Schema= fault.xsd, ipd.xsd</i>	<lru> with <csnref> to retrieve <rfd>	<nomen>	<qtyvalue> <quantity @qtytype=qty06>	<figure>
<i>S1000D Issue 4 IC=367A Schema=fault.xsd, ipd.xsd</i>	<lru> with <catalogSeqNumberRef > to retrieve <referenceDesignator	<name>	<quantityValue> <quantity @quantityType=qty06>	<figure>

*Figure C-32 Electrical Troubleshooting Index Template*

**Electrical Troubleshooting Index**

Ref. Des.	Functional Name	Voltage	Reference
A14AL1	Power Line Filter	120 VAC	NIST 43-23 Sec. 3, para.12
A39	Thermal Switch Assembly	12 VDC	NIST 42-56 Sec. 4. para. 3
<b>Notes:</b> - NIST references are available on line.			

*Figure C-33 Electrical Troubleshooting Index Example*

**C.20 Abbreviations List**

The Abbreviations List is a consolidated list that identifies and defines all abbreviations, acronyms, and uncommon terms used in the TM.

Abbreviations - <title>		
	Abbreviation/Acronym/Term	Definition
<i>S1000D Issue 3 IC=005A,005B, 005C Schema=many</i>	<acronym>	<acrodef> <acroterm>
<i>S1000D Issue 4 IC=005A,005B, 005C Schema=many</i>	<acronym>	<acronymDefinition> <acronymTerm>

*Figure C-34 Abbreviations List Template*

Abbreviations	
Abbreviation/Acronym/Term	Definition
AAA	Anti-Aircraft Artillery
AOS	Acquisition of Signal
est	Estimated
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
LOS	Loss of Signal

*Figure C-35 Abbreviations List Example*

**C.21 Troubleshooting Procedure-B**

Troubleshooting Procedure-B lists procedures for detecting, isolating, and correcting systems, subsystems, and equipment failures and malfunctions.

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**Troubleshooting Procedure - <title>**

	<b>Probable Cause/Symptom</b>	<b>Malfunction</b>	<b>Corrective Action</b>
S1000D Issue 3 IC=410F Schema=fault.xsd	<afrc><fcondition> <describe>	<afi><describe> <fbasicdesc> <findication>	<afi><afi- proc><isoproc>
S1000D Issue 4 IC=410F Schema=fault.xsd	<faultReporting> <faultCode> <faultDescr>	<faultIsolation><faultDescr> <systemName> <faultMessageBody> <faultMessageIndication>	<faultIsolation> <faultIsolationProcure> <isolationProcedure>
S1000D	<b>Notes:</b> Optional <remarks>		

Figure C-36 Troubleshooting Procedure-B Template

<b>Troubleshooting Procedure</b>		
<b>Symptom</b>	<b>Probable Cause/ Malfunction</b>	<b>Corrective Action</b>
High steam pressure light is on and steam pressure has high reading above 110 psig.	Steam dump valve malfunction.	Check operation of steam dump valve. Manually open valve if it is stuck closed. To open manually, turn hand wheel to full counterclockwise (open) position.
	Malfunctioning of the pilot control pneumatic valve due to plugged steam pressure line or cracked pneumatic line.	Blow down pneumatic lines to controller. Check air supply to pilot controller.
Low feedwater level light on.	Low water level in feedwater tank.	Check feedwater tank. Add water as required.
High feedwater level light on.	High water level in feedwater tank.	Check feedwater tank. Do not overfill.
Salinity light on.	Salinity above .05 ppm in the condensate discharge from the boiler condenser or the condensate cooler due to water leak.	<ul style="list-style-type: none"> <li>• Locate and fix leak.</li> <li>• Flush system to clean salinity cells.</li> <li>• Return system to normal operation.</li> </ul>

Figure C-37 Troubleshooting Procedure-B Example

### C.22 Usable On Codes List

The Usable On Codes List provides a list of the usable on codes and their meanings.

**Usable On Codes for IPB Figure**

	<b>Used on Code</b>	<b>Definition</b>
S1000D Issue 3 IC= Schema= ipd.xsd	<smr>	@mov
S1000D Issue 4 IC= Schema=ipd.xsd <locationRcmdSegment>	<sourceMaintRecoverability>	@modelVersionValue
		@modelVersionValue optional<effectivity>

Figure C-38 Usable On Codes List Template



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**Usable On Codes for IPB Figure**

Used on Code	Definition
A	EL-587
B	EL-588 This is a remark.

*Figure C-39 Usable On Codes List Example*

**C.23 Group Assembly Parts List (GAPL)**

The GAPL is a tabular listing of all authorized repair parts for use in the performance of maintenance.

GAPL for IPB Figure				
<i>S1000D Issue 3 IC=075C, 907B Schema=ipd.x sd</i>	<b>Figure and Index No.</b>	<b>Part No.</b>	<b>Qty. Per Assy.</b>	<b>Used On Code</b>
	<isn>	<pnr> <nsn @nsc @ncb @nin3to9>	<qui>	<ccs> <uca> <uce>
	<b>Reference Design</b>	<b>Part Name and Description</b>	<b>CAGE Code</b>	<b>SM&amp;R Code</b>
	<rfd>	<qtytolerance> <qna> <remarks>	<mfc>	<smr>
<i>S1000D Issue 4 IC=075C, 907B Schema=ipd.x sd</i>	<b>Figure and Index No.</b>	<b>Part No.</b>	<b>Qty. Per Assy.</b>	<b>Used On Code</b>
	@item SeqNumber Value	partNumber @natoCodificatio nBureau @natoSupplyClass @natoltemIdentNum berCore fullNatoStockNumber	quantityPerUnit	<applicabil itySegment> usableOn CodeAssy usableOnCodeEquip
	<b>Reference Design</b>	<b>Part Name and Description</b>	<b>CAGE Code</b>	<b>SM&amp;R Code</b>
	reference Designator	quantityTolerance quantityPerNextHigher Assy remarks	@manufacturerCo d eValue	sourceMaintRecover ability

*Figure C-40 GAPL Template*

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GAPL for IPB Figure

Figure and Index No.	Ref. Designation	Part No.	Part Name and Description 1 2 3 4 5 6 7	Qty. Per Assy	CAGE Code	Used On Code	SM&R Code
Fig 3	1A1	3052251G1	END ITEM	REF			
-1		3052359G1	. Detailed part for End Item	1			PFOG EN
-2		3052398G1	. ASSEMBLY	1			
-3		3017972G1	. Attaching Part for Assembly	1			
-4		MS51957-28	.. Detailed part A for Assembly	18			
		MS15795-805	.. Detailed part B for Assembly	18			
-5		3052395G1	.. SUBASSEMBLY	1			
-6		MS51957-28	.. Attaching part A for Subassembly	6			
		MS15795-805	.. Attaching part B for Subassembly	6			
-7		82-35-302-15	.. Attaching part C for Subassembly and this Attaching Part has a <u>runover line</u>	2	94222		
-8		MS20426AD3-5	... Detailed part for Subassembly	2			
-9		3065314P3	... SUB-SUBASSEMBLY	1			
-10		3052395P1	... Attaching part for Sub-Subassembly	1			
-11	1A1A1	3052323G2	.... Detailed Part A for Sub-Subassembly	1		A	
	1A1A1	3052323G1	.... Detailed Part B for Sub-Subassembly	1		B	
-12	1A1A2	3052333G1	.... SUB-SUB-SUBASSEMBLY	1			
-13	1A1A3	3052255G1	.... Attaching part A for Sub-Sub-Subassembly	1			
-14	1A1A4	3052328G1	.... Attaching part B for Sub-Sub-Subassembly	1			
-15	1A1A5	3017930G1	.... Attaching part C for Sub-Sub-Subassembly	1			
-16	1A1A6	3017946G1	.... Attaching part D for Sub-Sub-Subassembly	1			
-17	1A1A7	3017926G1	.... Attaching part E for Sub-Sub-Subassembly	1			
-18	1A1A8	3052333G2	.... Attaching part F for Sub-Sub-Subassembly	1			
-19	1A1A9	3052260G2	..... Detailed part A for Sub-Sub-Subassembly	1		A	
	1A1A9	3052260G1	..... Detailed part B for Sub-Sub-Subassembly	1		B	
	1B1A9	4667840N3	..... Detailed part Alternate part for Sub-Sub-Subassembly	1		*C	

Figure C-41 GAPL Example

**C.24 Numerical Index of Parts**

The Numerical Index of Parts is an auto-generated index of part numbers. This table is auto-generated by the publisher.

Numerical Index of Parts		
	Part No.	IP/Figure/Index No.
S1000D Issue 3 IC=942B Schema=ipd.xsd	<csn>	<graphic boardno>
S1000D Issue 4 IC=942B Schema=ipd.xsd	<catalogSeqNumber>	<graphic infoEntityIdent>

Figure C-42 Numerical Index of Parts Template

Part No.	IP/Figure/Index No.
123456789012345	055 00/1/-
A1234567 23456	055 00/1/1
	055 00/2/1
AB1234567 23456	055 00/1/-
AC1234567 23456	055 00/2/-
C1234567 23456	055 00/1/-
D1234567 23456	055 00/1/-
E1234567 23456	055 00/1/2
F1234567 23456	055 00/1/3

Figure C-43 Numerical Index of Parts Example

**C.25 Reference Designation Index**

The Reference Designation Index provides direct access to the specific manual, figure, and index number related to a specific reference designation. It is auto-generated by the publisher.

Reference Designation Index			
	Ref. Desig.	IP/Figure/Index No.	Part No.
S1000D Issue 3 IC=942C Schema=ipd.xsd	<rfd>	<graphic boardno>	<pnr>
S1000D Issue 4 IC=942C Schema=ipd.xsd	<referenceDesignator>	<graphic infoEntityIdent>	<partNumber>

Figure C-44 Reference Designation Index Template

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<b>Reference Designation Index</b>		
<b>Ref. Desig.</b>	<b>IP/Figure/Index No.</b>	<b>Part No.</b>
1A1	055 00/1/-	123456789012345
1A1A1	055 00/1/1	A1234567 23456
	055 00/1/-	D1234567 23456
	055 00/2/1	A1234567 23456
1A1A1-EQ	055 00/1/-	C1234567 23456
1A1A2	055 00/1/2	E1234567 23456
	055 00/1/3	F1234567 23456
1A1A21C	00/1/-	AB1234567 23456
	055 00/2/-	AC1234567 23456

*Figure C-45 Reference Designation Index*

## APPENDIX D: REQUIREMENTS FOR PREVIOUS (STEP) AND NEXT (MAIN) AND RELATION TO OUTER SHELL BACK AND FORWARD

### D.1 Introduction

The requirements for PREVIOUS and NEXT are explained here through use cases and state tables.

#### D.1.1 General Requirements and Definitions

1. BACK and FORWARD are native to the outer shell (e.g., common web browser). BACK button is to display the previous screen (if the user has been to one). FORWARD button is to display the next screen (if the user has already been to it). Shortcuts within the Inner Shell to these may be placed on the Project Specific/Additional Navigation Bar for convenience.
2. PREVIOUS and NEXT are for procedural steps and therefore read as PREVIOUS (step) and NEXT (step).
3. Upon initially entering the first step, PREVIOUS (step) shall be grayed out and will not become active until after NEXT (step) has been selected. Upon reaching the final step, NEXT (step) shall be grayed out.
4. Initially entering a procedure starts with the preliminary requirements and safety information before arriving at the first step.
5. For S1000D only, after initially entering a Procedural Data Module (DM), selecting NEXT (step) shall step through the following sections of the DM (in the sequence identified below):
  - a. <commonInfo>
  - b. Each first child of the <productionMaintData> element(if present)
  - c. Each first child of the <reqCondGroup> element
  - d. Each grandchild of the <reqSafety> element
  - e. Each <proceduralStep> element (to include nested <proceduralStep> elements)
  - f. Each first child of the <closeRqmts><reqCondGroup> element
6. Linking from steps in one S1000D DM to another must be to the **start** of the second DM and cannot be to a step within the second DM. This avoids a major safety issue where it is possible to by-pass both the Preliminary Requirements and any applicable Dangers, Warnings, and Cautions. See also “Traversing” below.
7. Selecting BACK to return to a Procedural DM will return the user to the exact Step to which the user previously left the Procedural DM. This is required whether the user went to another Procedural DM or to a difference DM type (descriptive, fault, etc.)
8. Display of Alerts and Notes (e.g., Danger, Warning, Caution, Notes [DWCN]). When an alert or alerts are to be displayed in-line and apply to the entire task or procedure, the alert shall be displayed in-line prior to the applicable data. Each step shall first display the Dangers (if any), then Warnings (if any), then Cautions (if any), and then Notes (if any) followed by the step number and step paragraph. The step anchor (Target ID) shall be at the beginning of the step and display all preliminary DWCNs prior to each step action. The step number shall be with the step paragraph and follow the Dangers, Warnings, Cautions, and Notes. (See also 3.6.3.6 *Display and Acknowledgement of Alerts and Notes* in main document.)

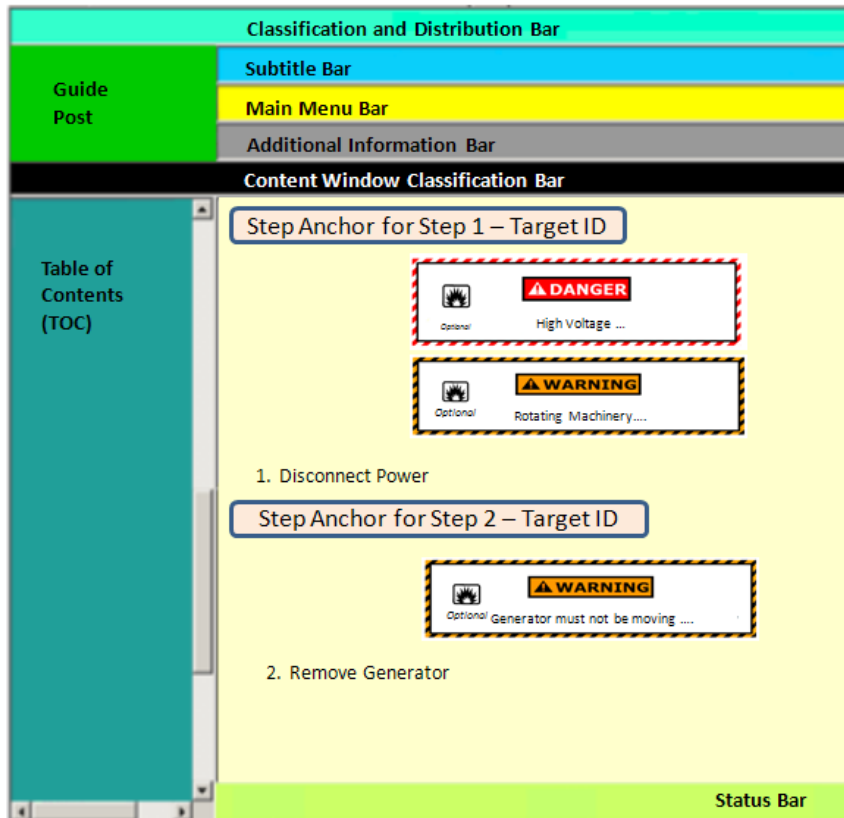


Figure D-1 Step Display in Content Window

9. When the viewer displays a step, the Content Window should display as in Figure D - 1.
10. "Before State" means the current neutral state of buttons/function before action is taken.
11. "After State" provides information on the action when a button/function is performed.
12. "Back" only goes to prior screen before starting procedural steps. When procedural steps cover more than one screen, use of PREVIOUS (step) is required to reach prior screens.
13. For S1000D only, PREVIOUS (step)/NEXT (step) are only available for the following DM Types:
  - Procedural information
  - Fault information
  - Crew/operator information
  - Process data module
  - Learning data module
  - Maintenance checklists and inspections
  - Training information
  - The following Data Module Types do not have step elements.
    - Descriptive information
    - Parts information
    - Maintenance planning information
    - Battle damage assessment and repair information
    - Wiring information

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- Technical information repository data module
  - Applicability
14. “ON” within the state tables means that the control is visible and enabled. “OFF” within the state tables mean that the control is disabled. A “?” within a state table means that the visibility and whether the control is enabled is unknown for that mode of operation.
  15. Within the same DM, “Branching” targets steps, while “Internal Referencing” targets other elements such as tables and figures. “Traversing” is to another DM. “Traversing” targets include tables, figures, and descriptive information; however, never to another step in the second DM. This avoids a major safety issue where it is possible to by-pass both the Preliminary Requirements and any applicable Dangers, Warnings, and Cautions.
  16. “Scroll” “ON” means that if needed scrolling is available.

**D.1.2 Other Actions and Functions**

Table D-1 provides the states of other actions and functions associated with the viewer while procedural actions are being performed. The controls for TOC, SEARCH and TABS are listed with "?" because whether the controls should be visible and enabled is unknown at this time for procedural steps.

Table D - 1 Other Actions & Functions

Before State							Action	After State						
Guidepost	Print	Applicability	TMDER	TOC	SEARCH	TABS		Guidepost	Print	Applicability	TMDER	TOC	SEARCH	TABS
On	On	On	On	On	On	On	Procedural Steps	On	On	On	On	?	?	?

**D.2 Step Use cases**

**D.2.1 Basic Step Navigation**

Table D-2 provides the basic sequential action of the viewer navigating through preliminary requirements, steps, and closing requirements either advancing to the next requirement or step, or returning to the previous step or requirement. An example is: In a non-dynamic procedure, user currently on Step 3 [Index 12] would use NEXT (step) function to go to Step 4 [Index 13] and use PREVIOUS (step) to return to Step 2 [Index 11] (at the target location which is the DWCN, if any, prior to the step) from Step 3 [Index 12].

Table D - 2 Basic Step Navigation

Index	Before State						Step Loc	Action	After State				
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc			BACK	FORW	PREV (Step) [Index]	NEXT (Step) [Index]	Scroll
1	On	Off	Off	On	On	None	Prel Reqs	Prel Reqs	Prior Screen	None	None [None]	Production Maintenance Data [2]	On
2	On	Off	On	On	On	Prel Reqs	Production Maintenance Data	Production Maintenance Data	Prior Screen	None	Prel Reqs [1]	Req Conditions [3]	On
3	On	Off	On	On	On	Production Maintenance Data	Req Conditions (See Note below)	Req Conditions (See Note below)	Prior Screen	None	Production Maintenance Data [2]	Req Persons [4]	On
4	On	Off	On	On	On	Req Conditions	Req Persons	Req Persons	Prior Screen	None	Req Conditions [3]	Req Technical Information [5]	On



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Index	Before State						Step Loc	Action	After State				
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc			BACK	FORW	PREV (Step) [Index]	NEXT (Step) [Index]	Scroll
5	On	Off	On	On	On	Req Persons	Req Technical Information	Req Technical Information	Prior Screen	None	Req Persons [4]	Req Support Equipment [6]	On
6	On	Off	On	On	On	Req Technical Information	Req Support Equipment	Req Support Equipment	Prior Screen	None	Req Technical Information [5]	Req Supplies [7]	On
7	On	Off	On	On	On	Req Support Equipment	Req Supplies	Req Supplies	Prior Screen	None	Req Support Equipment [6]	Req Spares [8]	On
8	On	Off	On	On	On	Req Supplies	Req Spares	Req Spares	Prior Screen	None	Req Supplies [7]	Req Safety [9]	On
9	On	Off	On	On	On	Req Spares	Req Safety	Req Safety	Prior Screen	None	Req Spares [8]	Step 1 [10]	On
10	On	Off	Off	On	On	Req Safety	1	Step 1	Prior Screen	None	Req Safety [9]	Step 2 [11]	On
11	On	Off	On	On	On	1	2	Step 2	Prior Screen	None	Step 1 [10]	Step 3 [12]	On
12	On	Off	On	On	On	2	3	Step 3	Prior Screen	None	Step 2 [11]	Step 4 [13]	On
13	On	Off	On	On	On	3	4	Step 4	Prior Screen	None	Step 3 [12]	Step 5 [14]	On
14	On	Off	On	On	On	4	5	Step 5	Prior Screen	None	Step 4 [13]	Step 6 [15]	On
15	On	Off	On	On	On	5	6	Step 6	Prior Screen	None	Step 5 [14]	Close Requirements [16]	On
16	On	Off	On	On	On	6	Close Requirements	Close Requirements	Prior Screen	None	Step 6 [15]	Last Req Condition [17]	On
17	On	Off	On	Off	On	Close Requirements	Req Conditions (See Note below)	Last Req Condition	Prior Screen	None	Close Requirements [16]	None [None]	On

Note: If more than one required condition, need to step through each condition.

**D.2.2 Basic Step Branching (Within the same DM)**


For basic step branching, a branch question is placed in a step and the user answers the question either by selecting NEXT (step) or ‘one-click’ on the answer. For example, a step might read “Check Voltage. If the voltage is above 4.5 V, go to Step 15”, where “go to Step 15” is a hyperlink.

In Table D-3 the user arrives at Step 2 [Index 11] and responds to a statement that could cause branched navigation. If the response is ‘False’, then Viewer continues to Step 3 [Index 13] using NEXT (step) but if the response is ‘True’ then the user jumps to Step 15 [Index 26]. This means the user could have arrived at Step 15 either directly from Step 14 [Index 24] or by branching from Step 2 [Index 12]. At Step 15, using PREVIOUS (step), the user’s return will depend on how they arrived and will return them to either Step 14 [Index 24] (at the target location which is the DWCN, if any, prior to the step) or because of branching to Step 2 [Index 12] (at the target location which is the DWCN, if any, prior to the step).


If the user returns to Step 2 using PREVIOUS (step) [Index 13 or Index 26], the user must re-answer the branch question in Step 2 to advance in the procedure. This is to ensure the user did not mistakenly respond to the branched step and is returning to correct the mistake. When returning to a step that branches, PREVIOUS (step) will return the user to the logical step that initially led them to the branch step (at the target location which is the DWCN, if any, prior to the step).

In the Table D-3 example, when the user in Step 2 [Index 11 or Index 12] selects PREVIOUS (step), the Viewer will always return the user to Step 1 [Index 10].


Table D - 3 Basic Step Branching

Index	Before State						Step Loc	Action 	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FOR W	PREV (Step)	NEXT (Step)	Scroll	
1	On	Off	Off	On	On	None	Prel Reqs	Initial Prel Reqs (See Note)		Prior Screen	None	None [None]	Production Maintenance Data [2]	On	
2	On	Off	On	On	On	Prel Reqs	Production Maintenance Data	Production Maintenance Data		Prior Screen	None	Prel Reqs [1]	Req Conditions [3]	On	

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Index	Before State						Step Loc	Action 	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FOR W	PREV (Step)	NEXT (Step)	Scroll	
3	On	Off	On	On	On	Production Maintenance Data	Req Conditions (See Note below)	Req Conditions (See Note below)		Prior Screen	None	Production Maintenance Data [2]	Req Persons [4]	On	
4	On	Off	On	On	On	Req Conditions	Req Persons	Req Persons		Prior Screen	None	Req Conditions [3]	Req Technical Information [5]	On	
5	On	Off	On	On	On	Req Persons	Req Technical Information	Req Technical Information		Prior Screen	None	Req Persons [4]	Req Support Equipment [6]	On	
6	On	Off	On	On	On	Req Technical Information	Req Support Equipment	Req Support Equipment		Prior Screen	None	Req Technical Information [5]	Req Supplies [7]	On	
7	On	Off	On	On	On	Req Support Equipment	Req Supplies	Req Supplies		Prior Screen	None	Req Support Equipment [6]	Req Spares [8]	On	
8	On	Off	On	On	On	Req Supplies	Req Spares	Req Spares		Prior Screen	None	Req Supplies [7]	Req Safety [9]	On	
9	On	Off	On	On	On	Req Spares	Req Safety	Req Safety		Prior Screen	None	Req Spares [8]	Step 1 [10]	On	
10	On	Off	Off	On	On	Prel Reqs	1	Initial Step 1		Prior Screen	None	Req Safety [9]	Step 2 [11]	On	
11	On	Off	On	On	On	1	2	Step 2 IF/Then "False" to Step 3		Prior Screen	None	Step 1 [10]	Step 3 [13]	On	False To Index 13
12	On	Off	On	On	On	1	2	Step 2 IF/Then "True" Jump to Step 15. Need to select link to jump to Step 15.	Step 15	Prior Screen	None	Step 1 [10]	Step 3 [13]	On	True To Index 26
13	On	Off	On	On	On	2	3	Step 3		Prior Screen	None	Step 2 [11]	Step 4 [14]	On	From Index 11

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Index	Before State						Step Loc	Action 	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FOR W	PREV (Step)	NEXT (Step)	Scroll	
14	On	Off	On	On	On	3	4	Step 4		Prior Screen	None	Step 3 [13]	Step 5 [15]	On	
15	On	Off	On	On	On	4	5	Step 5		Prior Screen	None	Step 4 [14]	Step 6 [16]	On	
16	On	Off	On	On	On	5	6	Step 6		Prior Screen	None	Step 5 [15]	Step 7 [17]	On	
17	On	Off	On	On	On	6	7	Step 7		Prior Screen	None	Step 6 [16]	Step 8 [18]	On	
18	On	Off	On	On	On	7	8	Step 8		Prior Screen	None	Step 7 [17]	Step 9 [19]	On	
19	On	Off	On	On	On	8	9	Step 9		Prior Screen	None	Step 8 [18]	Step 10 [20]	On	
20	On	Off	On	On	On	9	10	Step 10		Prior Screen	None	Step 9 [19]	Step 11 [21]	On	
21	On	Off	On	On	On	10	11	Step 11		Prior Screen	None	Step 10 [20]	Step 12 [22]	On	
22	On	Off	On	On	On	11	12	Step 12		Prior Screen	None	Step 11 [21]	Step 13 [23]	On	
23	On	Off	On	On	On	12	13	Step 13		Prior Screen	None	Step 12 [22]	Step 14 [24]	On	
24	On	Off	On	On	On	13	14	Step 14		Prior Screen	None	Step 13 [23]	Step 15 [25]	On	
25	On	Off	On	On	On	14	15	Step 15 from Step 14		Prior Screen	None	Step 14 [24]	Step 16 [27]	On	From Index 24
26	On	Off	On	On	On	2	15	Step 15 from Step 2		Prior Screen	None	Step 2 [12]	Step 16 [27]	On	From Index 12
27	On	Off	On	On	On	15	16	Step 16		Prior Screen	None	Step 15 [25 or 26]	Step 17 [28]	On	
28	On	Off	On	On	On	17	17	Step 17		Prior Screen	None	Step 16 [27]	Close Requirements [16]	On	
29	On	Off	On	On	On	17	Close Requirements	Close Requirements		Prior Screen	None	Step 17 [28]	Last Req Condition [30]	On	
30	On	Off	On	Off	On	Close Requirements	Req Conditions (See Note below)	Last Req Condition		Prior Screen	None	Close Requirements [29]	None [None]	On	

Note: If more than one required condition, need to step through each condition.

**D.2.3 Basic Step Navigation with Traverse Hyperlinks (Between DMs)**

Selecting a hotspot or other link within a step traverses the user to the intended target. To return to the step, the user must select BACK. Some examples of traverse links include tables, figures, and descriptive information (but never another step). For example, a user at Task A Step 4 clicks the table reference and traverses to the target table (located within Task B). Selecting PREVIOUS (step), the user would navigate to Task A Step 3 and NEXT (step) would navigate the user to Task A Step 5. To return to Task A Step 4, the user must select BACK.


In Table D-4 the user at Step 4 [Index 13] responds to a hyperlink to a non-step elements table or figure within the same screen. Even though the user traversed from Step 4, the Viewer must recognize the user is still active at Step 4 [Index 13] in evaluating how to proceed should the user select PREVIOUS (step) or NEXT (step). If the user selects PREVIOUS (step), the user arrives at Step 3 [Index 12] and for NEXT (step) selection, the user advances to Step 5 [Index 16]. The user returns to Step 4 [Index 13] from the traversed target by selecting BACK.

In Table D-4 the user at Step 6 [Index 17] responds to a hyperlink to a non-step elements table or figure, etc. or to a step element on a different screen and different DM. Even though the user traversed from Step 6, the Viewer must recognize the user is still active at Step 6 [Index 17] in evaluating how to proceed should the user select BACK to return to this active DM. Upon return from the transverse target using BACK, the Viewer must recognize the user is active at Step 6 [Index 17]. If the user then selects PREVIOUS (step), the user arrives at Step 5 [Index 16] and for NEXT (step) selection, the user advances to Step 7 [Index 21].

Table D - 4 Basic Step Navigation with Traverse Hyperlinks

Index	Before State						After State								
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc	Step Loc	Action	Link Target	BACK	FOR W	PREV (Step)	NEXT (Step)	Scro ll	Comment
1	On	Off	Off	On	On	None	Prel Reqs	Initial Prel Reqs (See Note)		Prior Screen	None	None [None]	Production Maintenance Data [2]	On	
2	On	Off	On	On	On	Prel Reqs	Production Maintenance Data	Production Maintenance Data		Prior Screen	None	Prel Reqs [1]	Req Conditions [3]	On	

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Index	Before State									After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc	Step Loc	Action 	Link Target	BACK	FOR W	PREV (Step)	NEXT (Step)	Scro ll	
3	On	Off	On	On	On	Production Maintenance Data	Req Conditions (See Note below)	Req Conditions (See Note below)		Prior Screen	None	Production Maintenance Data [2]	Req Persons [4]	On	
4	On	Off	On	On	On	Req Conditions	Req Persons	Req Persons		Prior Screen	None	Req Conditions [3]	Req Technical Information [5]	On	
5	On	Off	On	On	On	Req Persons	Req Technical Information	Req Technical Information		Prior Screen	None	Req Persons [4]	Req Support Equipment [6]	On	
6	On	Off	On	On	On	Req Technical Information	Req Support Equipment	Req Support Equipment		Prior Screen	None	Req Technical Information [5]	Req Supplies [7]	On	
7	On	Off	On	On	On	Req Support Equipment	Req Supplies	Req Supplies		Prior Screen	None	Req Support Equipment [6]	Req Spares [8]	On	
8	On	Off	On	On	On	Req Supplies	Req Spares	Req Spares		Prior Screen	None	Req Supplies [7]	Req Safety [9]	On	
9	On	Off	On	On	On	Req Spares	Req Safety	Req Safety		Prior Screen	None	Req Spares [8]	Step 1 [10]	On	
10	On	Off	Off	On	On	Req Safety	1	Step 1		Prior Screen	None	Req Safety [9]	Step 2 [11]	On	
11	On	Off	On	On	On	1	2	Step 2		Prior Screen	None	Step 1 [10]	Step 3 [12]	On	
12	On	Off	On	On	On	2	3	Step 3		Prior Screen	None	Step 2 [11]	Step 4 [13]	On	
13	On	Off	On	On	On	3	4	Step 4 has link to a table, figure, etc. within same screen	Link to same screen (index 14)	Prior Screen	None	Step 3 [12]	Step 5 [16]	On	Within same screen (index 14)

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Index	Before State						Step Loc	Action	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FOR W	PREV (Step)	NEXT (Step)	Scro ll	
14	On	On	On	On	On	3	4	Hyperlink (at Step 4) selected to target of Table, figure, etc. within same screen	Link to Table, Figure, etc., within same screen	Prior Screen	None	Step 3 [12]	Step 5 [16]	On	
15	On	On	On	On	On	3	4	At Target location within same screen.		From Target location: Return to Prior Screen at Step 4 [13]	None	Step 3 [12]	Step 5 [16]	On	Note: Screen location changed to Target Location.
16	On	On	On	On	On	4	5	Step 5		Prior Screen	None	Step 4 [13]	Step 6 [17]	On	
17	On	Off	On	On	On	5	6	Step 6 has link to a table, figure, etc. on a different screen and DM	Link to different screen and DM (index 18)	Prior Screen	None	Step 5 [16]	Step 7 [21]	On	On different screen and DM (index 18)
18	On	On	On	On	On	5	6	Hyperlink (at Step 6) selected to target of Table, figure, etc. on a different screen and DM	Link to Table, Figure, Step etc., on a different screen and DM	Prior Screen	None	Step 5 [16]	Step 7 [21]	On	

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Index	Before State						Step Loc	Action	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FOR W	PREV (Step)	NEXT (Step)	Scro ll	
19	On	On	On	On	On	5	6	At Target location on a different screen and DM		From Target location: Return to Step 6 of this Procedural DM	None	Step 5 [16]	Step 7 [21]	On	Note: Screen location changed to Target Location.
20	On	On	On	On	On	5	6	Returning to Step 6 after going to a table, figure, etc. on a different screen and DM	Link to Table, Figure, Step etc., on a different screen and DM	Prior Screen	Return to the Target For Step 6 hyperlink	Step 5 [16]	Step 7 [21]	On	
21	On	On	On	On	On	6	7	Step 7		Prior Screen	None	Step 6 [17] or [20]	Step 8 [22]	On	
22	On	On	On	On	On	7	8	Step 8		Prior Screen	None	Step 7 [21]	Close Requirements [23]	On	
23	On	Off	On	On	On	8	Close Requirements	Close Requirements		Prior Screen	None	Step 8 [22]	Last Req Condition [24]	On	
24	On	Off	On	Off	On	Close Requirements	Req Conditions (See Note below)	Last Req Condition		Prior Screen	None	Close Requirements [23]	None [None]	On	

Note: If more than one required condition, need to step through each condition.

**D.2.4 Step Branching with ‘Yes-No’ Dialog Box (Within the same DM)**

An advanced branching method is through ‘Yes-No’ dialog boxes. When the user arrives at a step, a dialog box is placed either in-line or as a pop-up box. For example, the dialog box might read, “Is the pressure between 28 and 32 psi?” with selections of “Yes” or “No”.



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Using this question and Table D-5, the user arrives at Step 2 [Index 11] with the dialog box and example question. By selecting 'No', the Viewer advances to Step 3 [Index 13] or selecting 'Yes,' the Viewer advances to Step 15 [Index 26]. Based on the example of Table D-5, the user could have arrived at Step 15 [Index 26] either directly from Step 14 [Index 24] or by branching from Step 2 [Index 11]. Using PREVIOUS (step), the user's return will depend on how they arrived and will return them to Step 14 [Index 24] or because of branching to Step 2 [Index 11]. If the user returned to Step 2 [Index 11] using PREVIOUS (step), the user must again respond to the dialog box in Step 2 to advance in the procedure. This is to ensure the user did not mistakenly respond to the branched step and is returning to correct the mistake. When returning to a step that branches, PREVIOUS (step) will return the user to logical step that initially led them to the branch step. In the Table D-5 example, when the user in Step 2 [Index 11] selects PREVIOUS (step), the Viewer will always return the user to Step 1 [Index 10].

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Table D - 5 'Yes-No' Dialog Box

Index	Before State						Step Loc	Action	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	
1	On	Off	Off	On	On	None	Prel Reqs	Initial Prel Reqs (See Note)		Prior Screen	None	None [None]	Production Maintenance Data [2]	On	
2	On	Off	On	On	On	Prel Reqs	Production Maintenance Data	Production Maintenance Data		Prior Screen	None	Prel Reqs [1]	Req Conditions [3]	On	
3	On	Off	On	On	On	Production Maintenance Data	Req Conditions (See Note below)	Req Conditions (See Note below)		Prior Screen	None	Production Maintenance Data [2]	Req Persons [4]	On	
4	On	Off	On	On	On	Req Conditions	Req Persons	Req Persons		Prior Screen	None	Req Conditions [3]	Req Technical Information [5]	On	
5	On	Off	On	On	On	Req Persons	Req Technical Information	Req Technical Information		Prior Screen	None	Req Persons [4]	Req Support Equipment [6]	On	
6	On	Off	On	On	On	Req Technical Information	Req Support Equipment	Req Support Equipment		Prior Screen	None	Req Technical Information [5]	Req Supplies [7]	On	
7	On	Off	On	On	On	Req Support Equipment	Req Supplies	Req Supplies		Prior Screen	None	Req Support Equipment [6]	Req Spares [8]	On	
8	On	Off	On	On	On	Req Supplies	Req Spares	Req Spares		Prior Screen	None	Req Supplies [7]	Req Safety [9]	On	
9	On	Off	On	On	On	Req Spares	Req Safety	Req Safety		Prior Screen	None	Req Spares [8]	Step 1 [10]	On	
10	On	Off	Off	On	On	Req Safety	1	Initial Step 1		Prior Screen	None	Req Safety [9]	Step 2 [11]	On	
11	On	Off	On	On	On	1	2	Step 2 Select "No" to proceed to Step 3	3	Prior Screen	None	Step 1 [10]	Off	On	To Index 13.

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Index	Before State						Step Loc	Action	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	
12	On	Off	On	On	On	1	2	Step 2 Select "Yes" to Jump to Step 15	15	Prior Screen	None	Step 1 [10]	Off	On	To Index 26
13	On	Off	On	On	On	2	3	Step 3		Prior Screen	None	Step 2 [11]	Step 4 [14]	On	
14	On	Off	On	On	On	3	4	Step 4		Prior Screen	None	Step 3 [13]	Step 5 [15]	On	
15	On	Off	On	On	On	4	5	Step 5		Prior Screen	None	Step 4 [14]	Step 6 [16]	On	
16	On	Off	On	On	On	5	6	Step 6		Prior Screen	None	Step 5 [15]	Step 7 [17]	On	
17	On	Off	On	On	On	6	7	Step 7		Prior Screen	None	Step 6 [16]	Step 8 [18]	On	
18	On	Off	On	On	On	7	8	Step 8		Prior Screen	None	Step 7 [17]	Step 9 [19]	On	
19	On	Off	On	On	On	8	9	Step 9		Prior Screen	None	Step 8 [18]	Step 10 [20]	On	
20	On	Off	On	On	On	9	10	Step 10		Prior Screen	None	Step 9 [19]	Step 11 [21]	On	
21	On	Off	On	On	On	10	11	Step 11		Prior Screen	None	Step 10 [20]	Step 12 [22]	On	
22	On	Off	On	On	On	11	12	Step 12		Prior Screen	None	Step 11 [21]	Step 13 [23]	On	
23	On	Off	On	On	On	12	13	Step 13		Prior Screen	None	Step 12 [22]	Step 14 [24]	On	
24	On	Off	On	On	On	13	14	Step 14		Prior Screen	None	Step 13 [23]	Step 15 [25]	On	
25	On	Off	On	On	On	14	15	Step 15 from Step 14		Prior Screen	None	Step 14 [24]	Step 16 [27]	On	
26	On	Off	On	On	On	2	15	Step 15 from Step 2		Prior Screen	None	Step 2 [11]	Step 16 [27]	On	From Index 11
27	On	Off	On	On	On	15	16	Step 16		Prior Screen	None	Step 15 [25] or [26]	Step 17 [28]	On	
28	On	Off	On	On	On	16	17	Step 17		Prior Screen	None	Step 16 [27]	Close Requirements [29]	On	

Index	Before State						Step Loc	Action	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	
29	On	Off	On	On	On	17	Close Requirements	Close Requirements		Prior Screen	None	Step 17 [28]	Last Req Condition [30]	On	
30	On	Off	On	Off	On	Close Requirements	Req Conditions (See Note below)	Last Req Condition		Prior Screen	None	Close Requirements [29]	None [None]	On	

Note: If more than one required condition, need to step through each condition.

### D.2.5 Step Branching with Multiple Choice Responses (Within the same DM) using a Dialog Box

Step branching with Logical Calculations involves selecting multiple choice responses or inputting a value for multiple outputs. The operations is similar to branching through ‘Yes-No’ dialog boxes with additional outcomes. When the user arrives at a step, a dialog box or input box is placed either in-line or as a pop-up box. For example, the dialog box might read “Select the range of pressures below.” with selections of “a. under 28 psi”, “b. 28 to 32 psi”, and “c. over 32 psi”. Using this example and Table D-5, the user arrives at Step 3 [Index 12] with the dialog box and example question. By selecting ‘a’, the Viewer advances to Step 4 [Index 15], selecting ‘b’, the Viewer advances to Step 10 [Index 22], or selecting ‘c’, the Viewer advances to Step 15 [Index 28].

Based on the examples of Table D-6, the user could have arrived at Step 10 [Index 22] either directly from the previous sequential Step 9 [Index 20] or through branching from Step 3 [Index 12] and arrived at Step 15 [Index 28] either directly from the previous sequential Step 14 [Index 26] or through branching from Step 3 [Index 12]. Using PREVIOUS (step), the user’s return will depend on how they arrived and will return them to either the previous sequential step or the branched step. If the user returned to Step 3 using PREVIOUS (step), the user must again respond to the dialog box in Step 3 to advance in the procedure. This is to ensure the user did not mistakenly respond to the branched step and is returning to correct the mistake. When returning to a step that branches, PREVIOUS (step) will return the user to logical step that initially led them to the branch step. In the Table D-6 example, when the user in Step 3 [Index 12] selects PREVIOUS (step), the Viewer will always return the user to Step 2 [Index 11].

Table D - 6 Step Branching with Multiple Choice Responses

Index	Before State						Step Loc	Action 	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	
1	On	Off	Off	On	On	None	Prel Reqs	Initial Prel Reqs (See Note)		Prior Screen	None	None [None]	Production Maintenance Data [2]	On	
2	On	Off	On	On	On	Prel Reqs	Production Maintenance Data	Production Maintenance Data		Prior Screen	None	Prel Reqs [1]	Req Conditions [3]	On	
3	On	Off	On	On	On	Production Maintenance Data	Req Conditions (See Note below)	Req Conditions (See Note below)		Prior Screen	None	Production Maintenance Data [2]	Req Persons [4]	On	
4	On	Off	On	On	On	Req Conditions	Req Persons	Req Persons		Prior Screen	None	Req Conditions [3]	Req Technical Information [5]	On	
5	On	Off	On	On	On	Req Persons	Req Technical Information	Req Technical Information		Prior Screen	None	Req Persons [4]	Req Support Equipment [6]	On	
6	On	Off	On	On	On	Req Technical Information	Req Support Equipment	Req Support Equipment		Prior Screen	None	Req Technical Information [5]	Req Supplies [7]	On	
7	On	Off	On	On	On	Req Support Equipment	Req Supplies	Req Supplies		Prior Screen	None	Req Support Equipment [6]	Req Spares [8]	On	
8	On	Off	On	On	On	Req Supplies	Req Spares	Req Spares		Prior Screen	None	Req Supplies [7]	Req Safety [9]	On	
9	On	Off	On	On	On	Req Spares	Req Safety	Req Safety		Prior Screen	None	Req Spares [8]	Step 1 [10]	On	
10	On	Off	Off	On	On	Req Safety	1	Initial Step 1		Prior Screen	None	Req Safety [9]	Step 2 [11]	On	
11	On	Off	On	On	On	1	2	Step 2		Prior Screen	None	Step 1 [10]	Step 3 [12]	On	

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Index	Before State						Step Loc	Action	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	
12	On	Off	On	On	On	2	3	Step 3 - Select Multiple choices or input a value for multiple outputs. Result A proceeds to Step 4	Step 4	Prior Screen	None	Step 2 [11]	Off	On	To Index 15.
13	On	Off	On	On	On	2	3	Step 3 - Select Multiple choices or input a value for multiple outputs. Result B proceeds to Step 10	Step 10	Prior Screen	None	Step 2 [11]	Off	On	To Index 22.
14	On	Off	On	On	On	2	3	Step 3 - Select Multiple choices or input a value for multiple outputs. Result C proceeds to Step 15	Step 15	Prior Screen	None	Step 2 [11]	Off	On	To Index 28.
15	On	Off	On	On	On	3	4	Step 4		Prior Screen	None	Step 3 [12]	Step 5 [16]	On	
16	On	Off	On	On	On	4	5	Step 5		Prior Screen	None	Step 4 [15]	Step 6 [17]	On	
17	On	Off	On	On	On	5	6	Step 6		Prior Screen	None	Step 5 [16]	Step 7 [18]	On	
18	On	Off	On	On	On	6	7	Step 7		Prior Screen	None	Step 6 [17]	Step 8 [19]	On	
19	On	Off	On	On	On	7	8	Step 8		Prior Screen	None	Step 7 [18]	Step 9 [17]	On	

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Index	Before State						Step Loc	Action	Link Target	After State					Comment
	BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	Prev Step Loc				BACK	FORW	PREV (Step)	NEXT (Step)	Scroll	
20	On	Off	On	On	On	8	9	Step 9		Prior Screen	None	Step 8 [19]	Step 10 [18]	On	
21	On	Off	On	On	On	9	10	Step 10 from Step 9		Prior Screen	None	Step 9 [20]	Step 11 [19]	On	
22	On	Off	On	On	On	3	10	Step 10 from Step 3		Prior Screen	None	Step 3 [12]	Step 11 [23]	On	From Index 13
23	On	Off	On	On	On	10	11	Step 11		Prior Screen	None	Step 10 [21] or [22]	Step 12 [24]	On	
24	On	Off	On	On	On	11	12	Step 12		Prior Screen	None	Step 11 [23]	Step 13 [25]	On	
25	On	Off	On	On	On	12	13	Step 13		Prior Screen	None	Step 12 [24]	Step 14 [26]	On	
26	On	Off	On	On	On	13	14	Step 14		Prior Screen	None	Step 13 [25]	Step 15 [27]	On	
27	On	Off	On	On	On	14	15	Step 15 from Step 14		Prior Screen	None	Step 14 [26]	Step 16 [29]	On	
28	On	Off	On	On	On	3	15	Step 15 from Step 3		Prior Screen	None	Step 3 [12]	Step 16 [29]	On	From Index 14
29	On	Off	On	On	On	15	16	Step 16		Prior Screen	None	Step 15 [27] or [28]	Step 17 [30]	On	
30	On	Off	On	Off	On	16	17	Step 17		Prior Screen	None	Step 16 [29]	Close Requirements [31]	On	
31	On	Off	On	On	On	17	Close Requirements	Close Requirements		Prior Screen	None	Step 17 [30]	Last Req Condition [32]	On	
32	On	Off	On	Off	On	Close Requirements	Req Conditions (See Note below)	Last Req Condition		Prior Screen	None	Close Requirements [31]	None [None]	On	

Note: If more than one required condition, need to step through each condition.

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