



# Analysis of Compliance to Human-System Interface Design Review Guidelines (NUREG-0700)

7.2.61.7 – Rev. 1

Date: 2011-07-07

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## Revision History

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<i>Revision</i>	<i>Date</i>	<i>Description</i>	<i>Author</i>
A	2008-11-21	Original Draft	Margaret Smith
0	2009-02-25	Issued for use.	Margaret Smith
0A	2011-07-06	Updating to add analysis of Alarm Handler.	Laurier Baribeau
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## TABLE OF CONTENTS

1.0	Introduction .....	1
1.1	Purpose .....	1
1.2	Scope .....	1
2.0	Analysis.....	1
2.1	Applications in the Analysis .....	1
2.2	Process of the Analysis .....	2
2.3	Alarms .....	2
	Appendix.....	3

## 1.0 INTRODUCTION

### 1.1 PURPOSE

The Canadian Nuclear Safety Commission (CNSC) wishes CLS to follow more prescriptive human factors guidelines in the software CLS produces. In particular, to design screens according to accepted human factors standards, as presented in document NUREG-0700, *Human-System Interface Design Review Guidelines*.

CLS document 7.4.39.1, *Control System Common Specification* includes human factors guidelines.

This document describes the analysis that was done, prior to updating document 7.4.39.1, to see how CLS software complies with the NUREG-0700 document.

### 1.2 SCOPE

The letter from Corrine Harris, CLS, to J. Schmidt, CNSC dated June 19, 2008, *CNSC Staff Review of CLS's Human Factors and Animal Care and Use Documentation for the BMIT Facility*, item 8, identifies those sections of NUREG-0700 that are applicable as:

- 2.2.2, 2.2.5, 2.3 , 2.4, 2.6, 2.7, 2.8, 4.2

## 2.0 ANALYSIS

### 2.1 APPLICATIONS IN THE ANALYSIS

Most screens at CLS are implemented using a tool called Epics Display Manager (EDM). Some screens are implemented using other tools such as QT. Control room operators also use an application called Control System Studio (CSS) which contains an alarm handler. Four applications were chosen for the analysis. The intent was to choose applications that represent a cross-section of the applications at CLS, with primary focus on those used by operators in the control room.

Two applications written using EDM were chosen and one written in QT. The EDM applications are:

- Facility – This application displays the status of the building automation HVAC equipment. It is used by technicians throughout the building and by operators in the control room.
- Beamline Master Display – This application provides a central location for control of beamline front ends and machine protection. It also shows status of devices on the beamlines. It is used by operators in the control room.

The QT application is:

- HXMA IDA – This application is used to run XAFS scans. It is used primarily on the HXMA beamline.

The alarm application is:

- CSS Alarm Handler (BEAST – Best Ever Alarm System Toolkit) – It is currently used only in the control room by operators. It displays and aids operators in managing incoming alarms.

## 2.2 PROCESS OF THE ANALYSIS

Each of the four applications were compared against the list of requirements in NUREG-0700 and, for each requirement, noted whether or not the application was compliant. Based on that information we then identified if CLS is compliant for each requirement.

CLS is compliant for most requirements. There are a few that are not compliant; an explanation is given and an indication if we intend to become compliant.

Appendix A shows the compliance matrix produced. The rows and columns are described at the beginning of Appendix A.

## 2.3 ALARMS

Section 4.2 of NUREG-0700 refers to alarms. This section only applies to the CSS alarm application and not to the other three.

## APPENDIX

### Human-System Interface Design Review Guidelines (NUREG-0700 Rev 2) CLS Compliance

There is one row in the compliance matrix for each applicable requirement from NUREG-0700 Rev 2.

The columns in the compliance matrix are:

- Requirement number – the number of the requirement in NUREG-0700
- Requirement title – the title of the requirement as written in NUREG-0700
- CLS Compliance – Whether or not CLS is compliant with this requirement
- Facility – Whether or not the Facility EDM-based application is compliant with this requirement
- Beamline Master Display – Whether or not the Beamline Master Display EDM-based application is compliant with this requirement
- HXMA IDA – Whether or not the HXMA IDA QT-based application is compliant with this requirement
- CSS – Whether or not the CSS alarm handler application is compliant with the requirement.

The compliance columns are noted with the following symbols:

Symbol	Meaning of the symbol
Title	The requirement number is only for a title – there is no requirement with this number
√	Compliant
V√	Very Close to compliant such that it can be considered compliant. Non compliant items are noted
A√	Compliant using alternate view to the criteria. The alternate criteria is explained.
X	Not Compliant. Reason explained.
X√	Not Compliant but intend to be compliant. Work to be done is explained.
n/a	Criteria is not applicable - reason explained.

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## -----EDM Based Apps ----- QT Based App

Req. #	Requirement Title	CLS Compliance		Facility	Beamline Master Display	HXMA IDA	CSS Alarm Handler
<b>2.2</b>	<b>User Input Formats</b>	<b>Title</b>		<b>Title</b>	<b>Title</b>	<b>Title</b>	<b>Title</b>
<b>2.2.2</b>	<b>Menus</b>	<b>Title</b>		<b>Title - Buttons for tabbed windows are considered to be a menu.</b>	<b>Title - Buttons for tabbed windows are considered to be a menu.</b>	<b>Title</b>	<b>Title</b>
2.2.2.1	General	Title		Title	Title	Title	Title
2.2.2.1-1	Explicit Option Display	√		√	√	√	√
2.2.2.1-2	Consistent Display of Menu Options	√		√	√	√	√
2.2.2.1-3	Consistent Location for Menu	√		√	√	√	√
2.2.2.1-4	Consistent entry Prompt	√		√	√	√	√
2.2.2.1-5	Permanent Menu Minimized	√		√	√	√	√
2.2.2.1-6	Activation of Pull-Down and Pop-Up Menus	√		√	√	√	√
2.2.2.1-7	User Requested Menus: Pull-Downs and Pop-Ups	√		√	√	√	√
2.2.2.1-8	Hiding Menus After a Command is Carried Out	√		√	√	√	√
2.2.2.1-9	Programmable Keys	√		n/a - programmable keys not used	n/a - programmable keys not used	n/a - programmable keys not used	√
2.2.2.1-10	Explanatory Title for Menu	√		√	√	√	√
2.2.2.1-11	Complete Display of Menu Options	√		√	√	√	√
2.2.2.1-12	Option Display Dependent on Context	√		√	√	√	√
2.2.2.1-13	Function of Menu Should be Evident	√		√	√	√	√
2.2.2.1-14	Menus Distinct from Other Displayed Information	√		√	√	√	√
2.2.2.1-15	Breadth and Depth of Menu Items	√		√	√	√	√

2.2.2.1-16	Number of Options	√	Some menus have more than 8 options - e.g. CLS main menu.	√	√	√	√
2.2.2.1-17	Equivalent Keyboard Commands	√		n/a - no keyboard equivalent commands	n/a - no keyboard equivalent commands	n/a - no keyboard equivalent commands	√
2.2.2.1-18	Continuous Presentation of Menu	√		√	√	√	√
2.2.2.1-19	Providing Default Options	√		√	√	n/a - don't have menu options selected more often	√
2.2.2.1-20	Option Previews	√		n/a - no option previews	n/a - no option previews	n/a - no option previews	n/a - no option previews
2.2.2.1-21	Visual Grouping of Menu Options	√		n/a - no long menus	n/a - no long menus	n/a - no long menus	√
2.2.2.1-22	Critical or Frequently Chosen Options	√		√	√	√	√
2.2.2.1-23	Initial Cursor Position	√		√	√	√	√
2.2.2.1-24	Menu Macro Capability	n/a	Would not provide faster access.	n/a - no menu macro capability	n/a - no menu macro capability	n/a - no menu macro capability	n/a - no menu macro capability
2.2.2.1-25	Use of Multiple Paths	X	We use short navigation paths instead of multiple paths	X - navigation paths are short	X - navigation paths are short	X - navigation paths are short	√
2.2.2.1-26	Representation of Menu Structure	√		√	√	n/a - single option path only	√
2.2.2.1-27	Indicating Selectable Menu Items	√		√	√	√	√
2.2.2.2	Arrangement of Menu Options	Title		Title	Title	Title	Title
2.2.2.2-1	Logical Ordering of Menu Options	√		√	√	√	√
2.2.2.2-2	Default Ordering of Menu Options	√		√	√	√	√

2.2.2.2-3	No Scrolling in Menus or Menu Bars	V√	In limited cases where it improves the usability of the software, scroll bars are used for pull down menus.	n/a - no scrolling menus	√	V√ - Some menus have scroll bars - varies depending on user	√
2.2.2.2-4	Single-Column List Format	√		√	√	√	√
2.2.2.2-5	Fixed Menu Order	√		√	√	√	√
2.2.2.3	Heirarchical Menus	Title		Title	Title	Title	Title
2.2.2.3-1	Labeling Grouped Options	√		n/a - no subunits of menus	n/a - no subunits of menus	n/a - no subunits of menus	√
2.2.2.3-2	Heirarchic Menus for Sequential Selection	√		n/a - no long lists	n/a - no long lists	n/a - no long lists	n/a - no long lists
2.2.2.3-3	Consistent Design of Hierarchic Menus	√		√	√	√	√
2.2.2.3-4	Labeling in Heirarchic Menus	√		√	√	√	√
2.2.2.3-5	Visual Representation of Path	X√	Some applications need to be upgraded (e.g Facility App)	X - needs some code changes	√	√	√
2.2.2.3-6	Minimal Steps in Sequential Menu Selection	√		√	√	√	√
2.2.2.3-7	Return to Higher-Level Menus	√		√	√	n/a - single option path only	√
2.2.2.3-8	Indicating Current Position in Menu Structure	X√	Some applications need to be upgraded (e.g Facility App)	X - needs some code changes	√	n/a - heirarchical menu not used	√
2.2.2.3-9	Distinct Subordinate Menus	√		√	√	n/a - heirarchical menu not used	√

2.2.2.3-10	Control Options Distinct from Menu Branching	√		√	√	√	√
2.2.2.3-11	Return to General Menu	√		√	√	√	√
2.2.2.3-12	Use of Broad, Shallow Menu Structures	√		√	√	√	√
2.2.2.3-13	Minimizing Menu Choices In the Middle of a Menu Structure	√		√	√	√	√
2.2.2.3-14	Direct Selection of Submenus	X	We use short navigation paths, so direct selection of submenus is not necessary.	X	X	n/a - no submenus	√
2.2.2.4	Menu Bars	Title		Title	Title	Title	Title
2.2.2.4-1	Systematic Organization of Items on Menu Bar	√		√	√	√	√
2.2.2.4-2	Category Labels on Menu Bar	√		√	√	√	√
2.2.2.4-3	Height of Menu Bar	√		√	√	√	√
2.2.2.5	Selection of Menu Options	Title		Title	Title	Title	Title
2.2.2.5-1	Menu Selection by Keyed Entry	√		n/a - menu selection is primary	n/a - menu selection is primary	n/a - menu selection is primary	√
2.2.2.5-2	Standard Area for Code Entry	√		n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided
2.2.2.5-3	Stacking Menu Selections	√		n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided
2.2.2.5-4	Bypassing Menu Selection with Command Entry	√		n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided	n/a - menu selection by code entry not provided

2.2.2.5-5	Menu Selection by Pointing	√		√	√	√	√
2.2.2.5-6	Acknowledgement of Menu Selection	√		√	√	√	√
2.2.2.5-7	Non-Selection of Conflicting Menu Items	√		√	√	√	√
2.2.2.5-8	Non-Selectable Menu Items	√		n/a - all menu items are selectable	n/a - all menu items are selectable	√	√
2.2.2.5-9	Separate Selection and Activation Actions	V√	Compliant except for touch screens which don't have a separate select and enter action.	V√ - Compliant except for touch screens which don't have a separate select and enter action.	√	√	√
2.2.2.5-10	Large Pointing Area for Option Selection	√		√	√	√	√
2.2.2.5-11	Selection of ON/OFF Items	√		n/a - no examples of on/off menu items	√	√	√
2.2.2.5-12	Indicating Selected Menu Items	√		√	√	√	√
2.2.2.5-13	Indicating Selectable Area	√		√	√	√	√
2.2.2.5-14	Indicating Completion of Selection	√		√	√	√	√
2.2.2.6	Wording and Coding Menu Options	Title		Title	Title	Title	Title
2.2.2.6-1	Menu Options Worded as Commands	√		√	√	√	√
2.2.2.6-2	Option Wording Consistent with Command Language	√		√	√	√	√
2.2.2.6-3	Consistent Coding of Menu Options	√		n/a - letter codes not used	n/a - letter codes not used	n/a - letter codes not used	√
2.2.2.6-4	Key Coded Menu Selection	√		n/a - letter codes not used	n/a - letter codes not used	n/a - letter codes not used	√
2.2.2.6-5	Menu Color	√		√	√	√	√
2.2.2.6-6	Letter Codes for Menu Selection	√		n/a - letter codes not used	n/a - letter codes not used	n/a - letter codes not used	√

2.2.2.6-7	Highlighting When Cursor Passes Over Items	√		√	√	√	√
2.2.2.6-8	ON/OFF Menu Items	X	Not compatible with our current development tools.	n/a - no on/off menu items	X	n/a - no on/off menu items	√
2.2.2.6-9	Indication of Active Menu Selection	√		√	√	√	√
<b>2.2.5</b>	<b>Forms</b>	<b>Title</b>		<b>Title - the only form for Facility App is the Print form.</b>	<b>Title</b>	<b>Title</b>	<b>Title</b>
2.2.5-1	Form Filling for Command Entry	√		√	√	√	√
2.2.5-2	Defaults for Command Entry	√		√	√	√	√
2.2.5-3	Consistent Format for Command Forms	√		√	√	√	√
2.2.5-4	Forms for Information Entry	√		√	√	√	√
2.2.5-5	Grouping Data Fields	√		√	√	√	√
2.2.5-6	Combined Entry of Related Data	V√	For devices, each entry is atomic and processed individually.	√ - For devices, each entry is atomic and processed individually. For Print form, data is sent at end of transaction.	√ - For devices, each entry is atomic and processed individually. For Print form, data is sent at end of transaction.	√	√
2.2.5-7	Data Fields Label	√		√	√	√	√
2.2.5-8	Minimal Use of Delimiters	√		√	√	√	√
2.2.5-9	Standard Delimiter Character	√		n/a - no delimiters used	√	√	√
2.2.5-10	Flexible Interrupt	√		√	√	√	√
2.2.5-11	Deferring Input of Information			n/a - cannot defer or omit	n/a - cannot defer or omit	√	√
2.2.5-12	Use of Tabular Displays	√		n/a - no tabular data	n/a - no tabular data	n/a - no tabular data	n/a - no tabular data

2.2.5-13	Distinctive Label Formats	√		√	√	√	√
2.2.5-14	Aiding Entry of Duplicated Data	√		n/a - no tabular data	n/a - no tabular data	n/a - no tabular data	n/a - no tabular data
2.2.5-15	Tabbing of Advance to Subsequent Fields	√		√	√	√	√
2.2.5-16	Direct Pointing Devices for Selecting Fields	√		√	√	√	√
2.2.5-17	Row Scanning Cues	√		n/a - no long forms	n/a - no long forms	n/a - no long forms	√
2.2.5-18	Providing Default Information	√		√	√	√	√
<b>2.3</b>	<b>Cursors</b>	<b>Title</b>		<b>Title</b>	<b>Title</b>	<b>Title</b>	<b>Title</b>
2.3.1	Appearance	Title		Title	Title	Title	Title
2.3.1-1	Distinctive Cursor	√		√	√	√	√
2.3.1-2	Display of Cursor	√		√	√	√	√
2.3.1-3	Non-Distracting Design	√		√	√	√	√
2.3.1-4	Stable Cursor	√		√	√	√	√
2.3.1-5	Initial Cursor Placement	√		√	√	√	√
2.3.1-6	Consistent HOME Position	√		√	√	√	√
2.3.1-7	Automatic Return of Cursor	√		n/a - user does not have to repeatedly return cursor	n/a - user does not have to repeatedly return cursor	n/a - user does not have to repeatedly return cursor	n/a - user does not have to repeatedly return cursor
2.3.2	Controls	Title		Title	Title	Title	Title
2.3.2-1	Cursor Control - General	√	Provided by O/S	√	√	√	√
2.3.2-2	Compatible Control of Cursor Movement	√		√	√	√	√
2.3.2-3	Easy Cursor Positioning	√		√	√	√	√
2.3.2-4	Consistent Positioning	√		√	√	√	√
2.3.2-5	Cursor Control Key Functions	√		√	√	√	√
2.3.2-6	Cursor Control at Keyboard	√		√	√	√	√

2.3.2-7	Location of Cursor Control Keys	√		√	√	√	√
2.3.3	Movement	Title		Title	Title	Title	Title
2.3.3-1	Cursor Movement	√		√	√	√	√
2.3.3-2	Responsive Cursor Control	√		√	√	√	√
2.3.3-3	Precise Pointing	√		√	√	√	√
2.3.3-4	Selectable Rate Aiding	√		n/a - rate aiding not available	n/a - rate aiding not available	n/a - rate aiding not available	n/a - rate aiding not available
2.3.3-5	User Selectable Speed	√		√	√	√	√
2.3.3-6	Variable Step Size	√		√	√	√	√
2.3.3-7	Easy Cursor Movement to Data Fields	√		√	√	√	√
2.3.3-8	Explicit Activation	√		√	√	√	√
2.3.3-9	Display Format Protection	√		√	√	√	√
2.3.3-10	Free Cursor Movement	√		√	√	√	√
2.3.3-11	Proportional Spacing	√		√	√	√	√
2.3.3-12	Cursor Movement by Units of Text	√		n/a - no units of text	n/a - no units of text	n/a - no units of text	√
2.3.3-13	Data Entry Independent of Cursor Placement	√		√	√	√	√
2.3.4	Multiple Cursors	Title		Title	Title	Title	Title
2.3.4-1	Minimal Use of Multiple Cursors	√		√	√	√	√
2.3.4-2	Multi Monitor/Multi Controller Cursor Characteristics	√		√	√	√	√
2.3.4-3	Distinctive Multiple Cursors	√		√	√	√	√
2.3.4-4	Compatible Control of Multiple Cursors	√		√	√	√	√
2.3.4-5	Distinctive Control of Multiple Cursors	√		√	√	√	√
2.3.4-6	Multiple Pointing Cursor Control Devices	√		√	√	√	√

2.3.4-7	Unique Shapes	√		√		√		√
2.3.5	Pointing Cursors	Title		Title		Title		Title
2.3.5-1	Pointing Cursor Visibility	√		√		√		√
2.3.5-2	Pointing Cursor Blink	√		√		√		√
2.3.5-3	Pointing Cursor Image Quality	√		√		√		√
2.3.5-4	Pointing Cursor Design	√		√		√		√
2.3.5-5	Pointing Cursor Size Constancy	√		√		√		√
2.3.5-6	Pointing Cursor Movement	√		√		√		√
2.3.6	Text Entry Cursors	Title		Title		Title		Title
2.3.6-1	Text Entry Cursor Visibility	√		√		√		√
2.3.6-2	Identification of Text Entry Cursor	√		√		√		√
2.3.6-3	Text Entry Cursor Blink	√		√		√		√
2.3.6-4	Nonobscuring Text Entry Cursor	√		√		√		√
2.3.6-5	Number of Text Entry Cursors	√		√		√		√
2.3.6-6	Text Entry Cursor Size	X		√		√		√
								X - The text entry cursor's height is larger than the adjacent characters' height. However this improves visibility and equal height is not desired. The width is also not equal.
2.3.7	Multiple Display Devices	Title		Title		Title		Title
2.3.7-1	Cursor Motion Across Contiguous Similar Displays	√		√		√		√
2.3.7-2	Cursor Motion Across Physically Separated Dissimilar Displays	√		√		√		√

2.4 System Response		Title		Title	Title	Title	Title
2.4.1	Prompts	Title		Title	Title	Title	Title
2.4.1-1	Prompting User Entries	√		√	√	√	√
2.4.1-2	Prompting Address Entry	√		n/a - specifying address not done	n/a - specifying address not done	n/a - specifying address not done	n/a - specifying address not done
2.4.1-3	Standard Symbol for Prompting Entry	√		√	√	√	√
2.4.1-4	Prompting Command Correction	A√	Instead feedback values are displayed and input values are restricted to permissible ranges are	A√ - no prompts; feedback display is used.	A√ - no prompts; feedback display is used.	√	√
2.4.1-5	Prompting Field Length	√		√	√	√	√
2.4.1-6	Data Format Cuing in Labels	√		√	√	√	√
2.4.1-7	User-Requested Prompts	n/a	Interfaces are GUI driven, not command line driven.	n/a	n/a	n/a - Beamline scientists gives help approp to users.	√
2.4.1-8	Prompting Data Entry	√		√	√	√	√
2.4.1-9	Graphic Display of Control Prompting	√		√	√	√	√
2.4.2	Feedback	Title		Title	Title	Title	Title
2.4.2-1	Feedback During Data Entry	√		√	√	√	√
2.4.2-2	Feedback for Completion of Data Entry	A√	Instead, screen is updated with feedback data in place of confirmation message.	A√ - feedback data updated.	A√ - feedback data updated.	A√ - provides feedback indicating processing is happening	√
2.4.2-3	Feedback for Repetitive Data Entries	√		n/a - no repetitive data entry	n/a - no repetitive data entry	n/a - no repetitive data entry	√

2.4.3	System Response Time	Title		Title	Title	Title	Title
2.4.3-1	Response Time Appropriate to Transaction	√		√	√	√	√
2.4.3-2	Response Time Appropriate to Tasks	√		√	√	√	√
2.4.3-3	Display Average System Response Time	n/a	Not affected by number of users.	n/a - not affected by number of users.	n/a - not affected by number of users.	n/a - not affected by number of users.	n/a - not affected by number of users.
2.4.3-4	Response Time Consistent with Requirements	√		√	√	√	√
2.4.3-5	Processing Delay	√		n/a - no processing delay	n/a - no processing delay	√ - predict finish time of scan	√
2.4.3-6	Indicating Completion of Processing	√		n/a - no processing delay	n/a - no processing delay	√ - give % complete	√
2.4.3-7	Response Time Induced Keyboard Lockout	n/a	Applications have keyboard buffer and multi threading.	n/a - have keyboard buffer and mutli thread apps	n/a - have keyboard buffer and mutli thread apps	n/a - have keyboard buffer and mutli thread apps	√
2.4.3-8	Keyboard Restoration	n/a	No keyboard lockout.	n/a -no keyboard lockout	n/a -no keyboard lockout	n/a -no keyboard lockout	√
2.4.3-9	Variability of Response Time	√		√	√	√	√
2.4.3-10	Maximum System Response Times	√		√	√	√	√
<b>2.5</b>	<b>Managing Displays</b>	<b>Title</b>		<b>Title</b>	<b>Title</b>	<b>Title</b>	<b>Title</b>
2.5.1	Display Selection and Navigation	Title		Title	Title	Title	Title
2.5.1.1	Orientation Features	Title		Title	Title	Title	Title
2.5.1.1-1	Organization of the Display Network	√		√	√	√	√
2.5.1.1-2	Cues to Display Network Structure	√		√	√	√	√

							A√ - CSS doesn't use display pages in the way NUREG seems to assume. The user's position and navigation barely corresponds with the concept of having a 'location.' The user can obtain an overview of the information space by viewing the 'CSS' menu.
2.5.1.1-3	Overview of Display Network	X	To be added to documentation	X	X	X - use shallow nesting	
2.5.1.1-4	Perceptual Landmarks	√		√	√	√	√
2.5.1.1-5	Location Cues	√		√	√	√	√
2.5.1.1-6	Directional Cues	√		√	√	√	√
2.5.1.1-7	Scales, axes, and grids	√		n/a - no spatial representations	n/a - no spatial representations	n/a - no spatial representations	√
2.5.1.1-8	Display Page Titles and Identification Codes	√		√	√	√	√
2.5.1.1-9	Orientation Coding	√		√	√	√	√
2.5.1.1-10	Display Overlap	√		√	√	√	√
2.5.1.1-11	Explicit Indication of Context	√		√	√	√	√
2.5.1.1-12	Understanding Successive Views	√		n/a - no hypertext	n/a - no hypertext	n/a - no hypertext	√
2.5.1.2	Retrieval Features	Title		Title	Title	Title	Title
2.5.1.2-1	Flexibility in Display System Interaction	√	Provided where appropriate.	√	n/a - app is simple	n/a - app is simple	√
2.5.1.2-2	Minimal Navigation Path Distance	√		√	√	√	√
2.5.1.2-3	Short Navigational Distances in Hierarchies	√		√	√	√	√
2.5.1.2-4	Relatedness of Successive Views	√		√	√	√	√

2.5.1.2-5	Time to Complete Navigation	√		√	√	√	√
2.5.1.2-6	Detection of Navigation Targets	√		√	√	√	√
2.5.1.2-7	Lateral Moves in a Hierarchy	√		√	√	√	√
2.5.1.2-8	Simultaneous Display of Related Items	√		√	√	√	√
2.5.1.2-9	Support for 'Top-Down' Strategies for Navigating Hierarchies	√		√	√	√	√
2.5.1.2-10	Support for 'Bottom-Up' Strategies for Navigating Hierarchies	√		√	√	√	√
2.5.1.2-11	Representation of Distance	√		√	√	√	√
2.5.1.2-12	Distortion-Based Orientation	√		n/a - no distorted views	n/a - no distorted views	n/a - no distorted views	√ - Landmarks (headings for views) are ensured to be visible by being automatically resized and/or reshuffled if space becomes limited.
2.5.1.2-13	Visually Identifying Hypertext Links	√		√	√	√	√
2.5.1.2-14	Typographically Identifying Hypertext Links	√		√	√	√	√
2.5.1.2-15	Identifying Hypertext Links by Cursor Coding	√		n/a - no hypertext	n/a - no hypertext	n/a - no hypertext	√
2.5.1.2-16	Evaluating Hypertext Links	√		n/a - no hypertext	n/a - no hypertext	n/a - no hypertext	√
2.5.1.2-17	Navigating Individual Hypertext Nodes	√		n/a - no hypertext	n/a - no hypertext	n/a	√

							X - No backtracking but hypertext is not used by any of the Alarm Handler components of CSS. Hypertext is generally an external link. Since the user is transferred to a browser, having a back button reverse that navigation is not desired. The applications are logically separate.
2.5.1.2-18	Backtracking Capabilities in Hypertext Interfaces	X		n/a - no hypertext	n/a - no hypertext	n/a	
2.5.1.2-19	Multiple Hypertext Navigation Methods	√		n/a - no hypertext	n/a - no hypertext	n/a	√
2.5.1.3	Navigation Features for Large Display Pages	Title		Title - large display pages not used	Title - large display pages not used	Title - large display pages not used	Title
2.5.1.3-1	Integrating Information within Large Display Pages	√		n/a	n/a	n/a	√
2.5.1.3-2	Consistent Framing for Pan and Zoom	√		n/a	n/a	n/a	√
2.5.1.3-3	Selecting the Center for Zoom and Pan Operations	√		n/a	n/a	n/a	n/a - no pan or zoom, only scrolling
2.5.1.3-4	Default Configuration for Zoom, Pan and Scroll	√		n/a	n/a	n/a	√
2.5.1.3-5	Size Compensation for Zoom	√		n/a	n/a	n/a	n/a - no zoom
2.5.1.3-6	Minimize Scrolling Demands	√		n/a	n/a	n/a	√
2.5.1.3-7	Column Width of Scrolled Text	√		n/a	n/a	n/a	√
2.5.2	Windows	Title		Title	Title	Title	Title
2.5.2-1	Window Identification	√		√	√	√	√

2.5.2-2	Window Selection and Display	√	KDE	√	√	√	√
2.5.2-3	Displaying Multiple Windows	√	KDE	√	√	√	√
2.5.2-4	Managing Open Windows	√	KDE	√	√	√	√
2.5.2-5	Window Demarcation	√	KDE	√	√	√	√
2.5.2-6	Distinction Between Window Types	√	KDE	√	√	√	√
2.5.2-7	Active Windows Priority	√	KDE	√	√	√	√
2.5.2-8	Caution and Warning Window Priority	√		√	√	√	√
2.5.2-9	Default Window Size	√		√	√	√	√
2.5.2-10	Minimum Height for Text Windows	√		n/a - no text windows	n/a - no text windows	n/a - no text windows	√
2.5.2-11	Minimum Width for Text Windows	√		n/a - no text windows	n/a - no text windows	n/a - no text windows	√
2.5.2-12	Consistent Window Control	√		√	√	√	√
2.5.2-13	Window Control Functions	√		√	√	√	√
2.5.2-14	Consistent Control Within Windows	√		√	√	√	√
2.5.2-15	Window Opening Methods	√		√	√	√	√
2.5.2-16	Closing Windows	√		√	√	√	√
2.5.2-17	Easy Shifting Among Windows	√		√	√	√	√
2.5.2-18	Activating a Previously Opened Window	√		√	√	√	√
2.5.2-19	Activation of Window Cursor	√		√	√	√	√
2.5.2-20	Multi-Modal Window Designation	√		n/a - no multi-modal windows	n/a - no multi-modal windows	n/a - no multi-modal windows	√
2.5.2-21	Movable Windows	√		√	√	√	√
2.5.2-22	Window Position	√		√	√	√	√
2.5.2-23	Smooth Window Movement	√		√	√	√	√
2.5.2-24	Indicate Active Window	√		√	√	√	√
2.5.2-25	Update of Hidden Windows	√		√	√	√	√
2.5.2-26	Alerting User to Information Availability	X√	Alarms for Facility app need to be	X - Facility alarms still to be coded	√	n/a - no critical info	√

			coded.				
2.5.2-27	Window Activates Upon Opening	√	KDE	√	√	√	√
2.5.2-28	Varying Window Size	√	KDE	√	√	√	√
2.5.2-29	Accessibility to Partially Removed Windows	√	KDE	√	√	√	√
2.5.2-30	Scrollable Windows	√		√	√	√	√
2.5.2-31	User Control of Automatic Update	√	Indirectly provided through screen capture	√	√	√	√
2.5.2-32	Multiple Views	√		√	√	√	√
2.5.2-33	Minimize Needs for Window Manipulation	√		√	√	√	√
2.5.2-34	Obscured Critical Information	√	Procedural controls are in place to keep critical information on separate displays.	√	√	n/a - no critical info	√
2.5.2-35	Positioning Critical Windows	X	Procedural controls are in place to keep critical information on separate displays.	√	√	n/a - no critical info	X - procedural controls are sufficient. Also, it is better not to restrict window position.
2.5.2-36	Default Window Location	√		√	√	√	√
2.5.2-37	Temporarily Obscured Display Data	√		√	√	√	√
2.5.2-38	Obscuring the Active Window	√		√	√	√	√
2.5.2-39	Number of Allowable Open Windows	X	Operational experience indicates this is not an issue.	X	X	X	X

2.5.2-40	Suppression of Window Objects	√		√	√	√	√
2.5.2-41	Separate Menu Bars for Applications	√		√	√	√	√
2.5.2-42	Conveying the Relationship Between Window, Icon and Action	√		√	√	√	√
2.5.2-43	Labeling Windows	√		√	√	√	√
2.5.2-44	Closing Main Window and Subordinate Objects	√		√	√	√	√
2.5.2-45	Matching Selection Items and Window Labels	√		√	√	√	√
2.5.2-46	Indication of All Open Windows	√		√	√	√	√
2.5.2-47	Window Automation Coordinated with Tasks	√		√	√	√	√
2.5.3	Display Control	Title		Title	Title	Title	Title
2.5.3-1	Display Control	A√	Instead screen layouts are reviewed with users as part of requirements and commissioning activities.	A√	A√	A√	√
2.5.3-2	Display of Control Options	√		√	√	√	√
2.5.3-3	Zooming for Display Expansion	A√	Instead screen layouts are reviewed with users as part of requirements and commissioning activities.	A√	A√	A√	√
2.5.3-4	Functional Labeling for Display Framing	√		√	√	√	√
2.5.3-5	Easy Paging	√		n/a - no paging	n/a - no paging	n/a - no paging	√

2.5.3-6	Show Changing Scale	√		n/a - display not expandable	n/a - display not expandable	n/a - display not expandable	√
2.5.3-7	Show Overview Position of Visible Section	√		n/a - no panning or expanding	n/a - no panning or expanding	n/a - no panning or expanding	√
2.5.3-8	Return to Normal Display Coverage	√		n/a - no panning or expanding	n/a - no panning or expanding	n/a - no panning or expanding	√
2.5.4	Display Update/Freeze	Title		Title	Title	Title	Title
2.5.4-1	Data Updated as Available	√		√	√	√	√
2.5.4-2	Readability of Changing Data	√		√	√	√	√
2.5.4-3	Visual Integration of Changing Graphics	√		√	√	√	√
2.5.4-4	Refresh Rate for Free-drawn Graphics	√		n/a - no free-drawn graphics	n/a - no free-drawn graphics	√	√
2.5.4-5	Display Freeze	A√	Users use screen capture.	A√	A√	A√	A√
2.5.4-6	Labelling Display Freeze	A√	Users note on screen capture.	A√	A√	A√	A√
2.5.4-7	Signaling Changes to Frozen Data	n/a	No freeze capability	n/a - no freeze capability	n/a - no freeze capability	n/a - no freeze capability	n/a - no freeze capability
2.5.4-8	Resuming Update After Display Freeze	n/a	No freeze capability	n/a - no freeze capability	n/a - no freeze capability	n/a - no freeze capability	n/a - no freeze capability
2.5.5	Display Suppression	Title		Title	Title	Title	Title
2.5.5-1	Temporary Suppression of Displayed Data	√	Minimize windows	√	√	√	√
2.5.5-2	Labeling of Display Suppression	√		√	√	√	√
2.5.5-3	Signaling Changes to Suppressed Data	X	Users do not suppress important displays	X	X	X	X
2.5.5-4	Resuming Display of Suppressed Data	√		√	√	√	√

2.5.5-5	Dedicated Function Key	√		n/a - no function key	n/a - no function key	n/a - no function key	n/a - no function key
2.5.6	Scrolling and Paging	Title		Title	Title	Title	Title
2.5.6-1	Continuous Text Data	√		n/a - no continuous text data	n/a - no continuous text data	√	n/a - no continuous text data
2.5.6-2	Consistent Orientation	√		√	√	√	√
2.5.6-3	Panning with Free Cursor Movement	√		√	√	√	√
2.5.6-4	Framing Applied to All Data	√		√	√	√	√
2.5.6-5	Paging Controls	√		n/a - no separate pages	n/a - no separate pages	n/a - no separate pages	√
2.5.6-6	Horizontal Scrolling	√		√	√	√	√
2.5.6-7	Appropriate Scrolling/Paging Structures	√		√	√	√	√
2.5.6-8	Common Display Structure	√		√	√	√	√
2.5.6-9	Scrolling/Paging Techniques	X	Only provided by mouse	n/a - no paging	n/a - no paging	n/a - no paging	√
2.5.6-10	One Structure for Vertical, One for Horizontal Movement	√		√	√	√	√
2.5.6-11	Labeling Scrolling Function	√		√	√	√	√
2.5.6-12	Evident Direction of Paging	√		n/a - no paging	n/a - no paging	n/a - no paging	√
2.5.6-13	Paging in One or Multiple Page Increments	A√		n/a - no paging	n/a - no paging	n/a - no paging	A√ - drag scroll bar for multiple paging.
2.5.6-14	Discrete Paging	√		n/a - no paging	n/a - no paging	n/a - no paging	n/a - no discrete control for multiple pages. Not necessary
2.5.6-15	Indicate Absolute and Relative Positions to User	√		n/a - no paging	n/a - no paging	n/a - no paging	n/a - not organized into numbered pages
2.5.6-16	Graphic Indication of Scroll Position	√		n/a - no paging	n/a - no paging	n/a - no paging	√
2.5.6-17	Scroll by Line or Display Unit	√		n/a - no paging	n/a - no paging	n/a - no paging	√
2.5.6-18	Display Window	√		n/a - no paging	n/a - no paging	n/a - no paging	√

2.5.6-19	Parameters Refer to Data not Window	√		n/a - no paging	n/a - no paging	n/a - no paging	√
2.5.7	Automated Actions	Title		Title - no automatic actions	Title - no automatic actions	Title - no automatic actions	Title
2.5.7-1	Anticipation of Automated Interface Management Actions	√		n/a	n/a	n/a	n/a
2.5.7-2	Observability of Automated Interface Management Actions	√		n/a	n/a	n/a	n/a
2.5.7-3	Distracting Automated Interface Management Actions	√		n/a	n/a	n/a	n/a
<b>2.6</b>	<b>Managing Information</b>	<b>Title</b>		<b>Title</b>	<b>Title</b>	<b>Title</b>	<b>Title</b>
2.6.1	Editing Documents	Title		Title - no documents	Title - no documents	Title - no documents	Title - no documents
2.6.1-1	Natural Units of Text	√		n/a	n/a	n/a	n/a
2.6.1-2	Text Displayed as Printed	√		n/a	n/a	n/a	n/a
2.6.1-3	Format Control by User	√		n/a	n/a	n/a	n/a
2.6.1-4	Establishing Predefined Formats	√		n/a	n/a	n/a	n/a
2.6.1-5	Storing User-Defined Formats	√		n/a	n/a	n/a	n/a
2.6.1-6	Consistent Word Spacing	√		n/a	n/a	n/a	n/a
2.6.1-7	Hyphenation by Users	√		n/a	n/a	n/a	n/a
2.6.1-8	Changing Physical Characteristics of Text	√		n/a	n/a	n/a	n/a
2.6.1-9	Tabs	√		n/a	n/a	n/a	n/a
2.6.1-10	Tab Control	√		n/a	n/a	n/a	n/a
2.6.1-11	Margins	√		n/a	n/a	n/a	n/a
2.6.1-12	Automatic Line Break	√		n/a	n/a	n/a	n/a
2.6.1-13	Automatic Pagination Aids	√		n/a	n/a	n/a	n/a
2.6.1-14	User Control of Pagination	√		n/a	n/a	n/a	n/a
2.6.1-15	Controlling Integrity of Text Units	√		n/a	n/a	n/a	n/a

2.6.1-16	Protecting Text During Page Overruns	√		n/a	n/a	n/a	n/a
2.6.1-17	Head- and Foot-of File	√		n/a	n/a	n/a	n/a
2.6.1-18	Inserting	√		n/a	n/a	n/a	n/a
2.6.1-19	String Search	√		n/a	n/a	n/a	n/a
2.6.1-20	Multiple Methods of Searching	√		n/a	n/a	n/a	n/a
2.6.1-21	Search for Line Numbers	√		n/a	n/a	n/a	n/a
2.6.1-22	Upper and Lower Case Equivalent in Search	√		n/a	n/a	n/a	n/a
2.6.1-23	Specifying Case in Search	√		n/a	n/a	n/a	n/a
2.6.1-24	Global Search and Replace	√		n/a	n/a	n/a	n/a
2.6.1-25	Case in Global Search and Replace	√		n/a	n/a	n/a	n/a
2.6.1-26	Moving Text	√		n/a	n/a	n/a	n/a
2.6.1-27	Pasting Text into a Graphical File and Vice Versa	√		n/a	n/a	n/a	n/a
2.6.1-28	Cutting Graphical Objects and Areas of Graphical Displays	√		n/a	n/a	n/a	n/a
2.6.1-29	Viewing Text Prior to Pasting	√		n/a	n/a	n/a	n/a
2.6.1-30	Placing Cut Text in Compatible Files	√		n/a	n/a	n/a	n/a
2.6.1-31	Placement of Pasted Text	√		n/a	n/a	n/a	n/a
2.6.1-32	Pasting the Same Text More than Once	√		n/a	n/a	n/a	n/a
2.6.1-33	Cutting Without a Gap in the Text	√		n/a	n/a	n/a	n/a
2.6.1-34	Storing Frequently Used Text	√		n/a	n/a	n/a	n/a
2.6.1-35	Vertical Scrolling When Selecting Text	√		n/a	n/a	n/a	n/a
2.6.1-36	Non-Contiguous Blocks of Text	√		n/a	n/a	n/a	n/a
2.6.2	Saving Files	Title		Title - don't edit files	Title - don't edit files	Title - don't edit files	Title - don't edit files
2.6.2-1	Saving to a Data File	√		n/a	n/a	n/a	n/a
2.6.2-2	Exit with Save	√		n/a	n/a	n/a	n/a

2.6.2-3	Exiting a File	√		n/a	n/a	n/a	n/a
2.6.2-4	Distinct Commands for Exit With and Without Save	√		n/a	n/a	n/a	n/a
2.6.2-5	Protection Against Exiting a File Without Saving	√		n/a	n/a	n/a	n/a
2.6.2-6	Recovery of Replaced File	√		n/a	n/a	n/a	n/a
2.6.2-7	Automatic Saving of a File	√		n/a	n/a	n/a	n/a
2.6.2-8	Automatic Backup	√		n/a	n/a	n/a	n/a
2.6.2-9	Access of Modified Information After Exit Without Save	√		n/a	n/a	n/a	n/a
2.6.3	Temporary Editing Buffer	Title		Title - no temporary edit buffer	Title - no temporary edit buffer	Title - no temporary edit buffer	Title - Temporary Editing Buffer (KDE's cut+paste)
2.6.3-1	Automatic Placement of Cut Data in Buffer	√		n/a	n/a	n/a	√
2.6.3-2	Contents of Temporary Buffer	√		n/a	n/a	n/a	√
2.6.3-3	Default Conditions of Buffer	√		n/a	n/a	n/a	√
2.6.3-4	Access to Contents of Temporary Buffer	√		n/a	n/a	n/a	√
2.6.4	Excerpt File	Title		Title - no excerpt files	Title - no excerpt files	Title - no excerpt files	Title - no excerpt file. A regular file in Linux can serve the purposes described in this section. This is outside of the scope of the alarm handler.
2.6.4-1	Accessing Information Across Applications	√		n/a	n/a	n/a	n/a
2.6.4-2	Excerpt File	√		n/a	n/a	n/a	n/a
2.6.4-3	Integrating Data	√		n/a	n/a	n/a	n/a

2.6.4-4	Copying Excerpt File	√		n/a	n/a	n/a	n/a
2.6.4-5	Saving Excerpt File	√		n/a	n/a	n/a	n/a
<b>2.7</b>	<b>User Assistance</b>	<b>Title</b>		<b>Title</b>	<b>Title</b>	<b>Title</b>	<b>Title</b>
2.7.1	General	Title		Title	Title	Title	Title
2.7.1-1	Standard Display Location	√		n/a - no system msgs	n/a - no system msgs	√	√
2.7.1-2	Consistent Format for System Messages	√		n/a - no system msgs	n/a - no system msgs	√	√ - Guidance messages are currently in paragraph form. This can be improved, perhaps by adding more line breaks, "Probable Cause" and "Action" standard fields.
2.7.1-3	Familiar Wording	√		n/a - no system msgs	n/a - no system msgs	√	√
2.7.1-4	Concise Wording of System Messages	√		n/a - no system msgs	n/a - no system msgs	√	√
2.7.1-5	Speaking Directly to Users	√		n/a - no system msgs	n/a - no system msgs	√	√
2.7.1-6	Only Necessary Information Displayed	√		n/a - no system msgs	n/a - no system msgs	√	√
2.7.1-7	Anthropomorphism	√		n/a - no system msgs	n/a - no system msgs	√	√
2.7.1-8	User Control of Automated Guidance/Help	n/a	Covered by operator training document: Operator Task Description and Validation Plan CLS Plan 0.12.1.1 Rev. 4	n/a - no system help	n/a - no system help	n/a - help on the wiki	√ - Guidance available upon request, in consistent locations (right click .) Help also available from task menu.

			Covered by operator training document: Operator Task Description and Validation Plan				
2.7.1-9	Content of Online Help	n/a	CLS Plan 0.12.1.1 Rev. 4	n/a - no system help	n/a - no system help	n/a - help on the wiki	√
2.7.1-10	Display of Online Help	√		n/a - no system help	n/a - no system help	√	√
			Covered by operator training document: Operator Task Description and Validation Plan				
2.7.1-11	Interaction Styles	n/a	CLS Plan 0.12.1.1 Rev. 4	n/a - no system help	n/a - no system help	n/a - Beamline scientist provides approp help.	√
2.7.2	Advisory Messages	Title		Title	Title	Title	Title
2.7.2-1	Distinctive and Consistent Advisory Messages	√		n/a - no advisory msgs	n/a - no advisory msgs	√	√
2.7.2-2	Redundant Display	√		√	√	√	√
2.7.2-3	Informing Users of Potential Data Loss	√		n/a - no pending data	n/a - no pending data	√	√
2.7.2-4	Time-consuming processes	√		n/a - no time consuming commands	n/a - no time consuming commands	√	√
2.7.3	Error Messages	Title		Title - no error msgs	Title - no error msgs	Title	Title
2.7.3-1	Informative Error Messages	√		n/a	n/a	√	√
2.7.3-2	Task-Oriented Error Messages	√		n/a	n/a	√	√

2.7.3-3	Neutral Wording for Error Messages	√		n/a	n/a	√	√
2.7.3-4	Non-Disruptive Error Messages	√		n/a	n/a	√	√
2.7.3-5	Invalid Action	√		n/a	n/a	√	√
2.7.3-6	Advisory Error Messages	√		n/a	n/a	√	√
2.7.3-7	Displaying Erroneous Entries	√		n/a	n/a	√	√
2.7.3-8	Cursor Placement Following Error	√		n/a	n/a	√	√
2.7.3-9	Indicating Repeated Errors	X	Operational experience indicates this is not needed.	n/a	n/a	X	√
2.7.3-10	Errors in Stacked Commands	√		n/a	n/a	√	√
2.7.3-11	Multilevel Error Messages	X	Users are trained to contact domain experts	n/a	n/a	X	X - Users are not expected to handle most error messages in CSS because if there is an error, it is likely a system administration issue that must be corrected. They are documented on the CLS Wiki.
2.7.3-12	Cautionary Messages	√		n/a	n/a	n/a	√
2.7.3-13	Multiple Error Messages	√		n/a	n/a	√	√
2.7.3-14	Error Message Placement	√		n/a	n/a	√	√
2.7.3-15	Documenting Error Messages	X	Operational experience indicates this is not needed.	n/a	n/a	X	X
2.7.4	Validating User Input	Title		Title	Title	Title	Title
2.7.4-1	Automatic Data Validation	√		√	√	√	√

2.7.4-2	Validation	√		√	√	√	√
2.7.4-3	Stroke-By-Stroke Echo	√		√	√	√	√
2.7.4-4	System Validation	A√	Instead, out-of-range data is rejected	A√	A√	√	√
2.7.4-5	Data Verification by User Review	√		n/a - nature of app	n/a - nature of app	√	√
2.7.4-6	Cross Validation of Related Data	A√	Instead, out-of-range data is rejected	A√	A√	√	√
2.7.4-7	Displaying Default Values	√		√	√	√	√
2.7.4-8	Non-Disruptive Error Messages	A√	Instead, fields are restricted to valid data, invalid data is rejected	A√	A√	√	√
2.7.4-9	Timely Validation of Sequential Transactions	√		n/a	n/a	n/a	n/a
2.7.4-10	Optional Item-by-Item Validation	n/a	Apps have atomic data entry	n/a	n/a	n/a	n/a
2.7.4-11	Deferral of Required Data Entry	n/a	Apps have atomic data entry	n/a	n/a	n/a	n/a
2.7.4-12	Reminder of Deferred Entry	n/a	Apps have atomic data entry	n/a	n/a	n/a	n/a
2.7.4-13	User Validation	√		√	√	√	√
2.7.5	Confirming Entries	Title		Title	Title	Title	Title
2.7.5-1	User Confirmation of Destructive Entries	X	Covered by user training	X	X	√	X
2.7.5-2	Informing Users of Potential Information Loss	√		n/a - nature of app	n/a - nature of app	√	√
2.7.5-3	Preventing Data Loss at Logoff	√		n/a - nature of app	n/a - nature of app	√	√

2.7.5-4	Displaying Data to be Changed	√		n/a - can only change displayed data	n/a - can only change displayed data	n/a - can only change displayed data	n/a - can only change displayed data
2.7.6	Protecting Data	Title		Title	Title	Title	Title
2.7.6-1	Protection from Computer Failure	√		√	√	√	√
2.7.6-2	Protection from Interrupts	√		n/a - cannot interrupt transaction	n/a - cannot interrupt transaction	n/a - interrupted transaction does not cause data loss	√
2.7.6-3	Protection from Data Change	√		√	√	√	√
2.7.6-4	Explicit Action to Select Destructive Modes	X		n/a - no destructive modes	n/a - no destructive modes	n/a - no destructive modes	X - However, the interface sufficiently intuitive such that users cannot unintentionally destroy the alarm configuration. Also, the alarm configuration data is configuration controlled and can be restored.
2.7.6-5	Safe Defaults	√		√	√	√	√
2.7.6-6	Protecting Physical Controls	√			n/a	n/a	√
2.7.6-7	Disabling Unneeded Controls	√		n/a - no function keys or other	n/a - no function keys or other	n/a - no function keys or other	√
2.7.6-8	Distinctive File Names	√		n/a - no function keys or other	n/a	√	√
2.7.6-9	Feedback for Mode Selection	√		n/a - overwriting	n/a - overwriting	n/a - overwriting	√
2.7.6-10	Protection from Interference by Other Users	√		√	√	√	√
2.7.6-11	Segregating Real from Simulated Data	√		n/a - no simulated data	n/a - no simulated data	n/a - no simulated data	n/a - no simulated data

2.7.6-12	Data Entry/Change Transaction Records	X√	We need to review areas that need to be improved	X	X	n/a - no unauthorized data changes possible	A√ - Changes to the alarm configuration can be tracked by comparing the current configuration to the version controlled file.
2.7.7	Correcting Information/Command Entries	Title		Title	Title	Title	Title
2.7.7-1	Acknowledging Corrections	√		√	√	√	√
2.7.7-2	UNDO to Reverse Control Actions	X	Instead for machine setup and configuration apps, there is an ability to save and restore configs.	n/a - nature of app	n/a - nature of app	n/a - nature of app	X - Undo of some database operations is impossible but an appropriate warning is given. Undo of alarm acknowledgement could be considered but is so far not necessary.
2.7.7-3	User Review and Editing of Entries	√		√	√	√	√
2.7.7-4	Immediate Error Correction	√		√	√	√	√
2.7.7-5	Editing Entries After Error Detection	√		√	√	√	√
2.7.7-6	Explicit Entry of Corrections	√		√	√	√	√
2.7.7-7	Automated Correction Aid	X	Nature of app	n/a - nature of app	n/a - nature of app	X	n/a
2.7.7-8	Flexible BACKUP for Error Correction	√		√	√	√	√
2.7.7-9	Errors in Stacked Commands	√		n/a - no stacked commands	n/a - no stacked commands	n/a - no stacked commands	n/a - no stacked commands
2.7.7-10	Partial Execution of Stacked Commands	√		n/a - no stacked commands	n/a - no stacked commands	n/a - no stacked commands	n/a - no stacked commands
2.7.7-11	Replacing Erroneous Commands	√		n/a - no command entry	n/a - no command entry	√	n/a - no command entry

2.7.7-12	Correcting Command Entry Errors	√		n/a - no command entry	n/a - no command entry	√	n/a - no command entry
2.7.8	User Guidance/Help	Title		Title - no online help	Title - no online help	Title	Title
2.7.8-1	On-Line Guidance	X√	Details being added to CLS wiki	X√	X√	√	√
2.7.8-2	Access to Guidance	X√	Details being added to CLS wiki	X√	X√	√	√
2.7.8-3	HELP Request	X√	Details being added to CLS wiki	X√	X√	√	√
2.7.8-4	HELP Guidance	X√	Details being added to CLS wiki	X√	X√	X√	√
2.7.8-5	Synonyms for Standard Terminology	X	Details being added to CLS wiki	n/a	n/a	X	√
2.7.8-6	Context-Sensitive HELP	X	Details being added to CLS wiki	n/a	n/a	X	√
2.7.8-7	Clarifying HELP Requests	X	Details being added to CLS wiki	n/a	n/a	X	√
2.7.8-8	Multilevel HELP	X	Details being added to CLS wiki	n/a	n/a	X	√
2.7.8-9	Browsing HELP	X	Details being added to CLS wiki	n/a	n/a	X	√
2.7.8-10	Return from HELP	X	Details being added to CLS wiki	n/a	n/a	X	√

2.7.8-11	Hardcopy Procedures	X	Details being added to CLS wiki	n/a	n/a	√	X - No hardcopies of alarm guidance. This would not be useful and be difficult to maintain.
2.7.8-12	Computer Systems Procedures	√	Details being added to CLS wiki	n/a	n/a	√	√
2.7.8-13	Display Indices	√	Details being added to CLS wiki	n/a	n/a	n/a	√
<b>2.8</b>	<b>Interface Flexibility</b>	<b>Title</b>		<b>Title</b>	<b>Title</b>	<b>Title</b>	<b>Title</b>
2.8-1	Appropriate Use of HSI Flexibility Features	√		√	√	√	√
2.8-2	Design for User Requirements	√		√	√	√	√
2.8-3	Scope of Flexibility	√		√	√	√	√
2.8-4	Limits of Flexibility	√		√	√	√	√
2.8-5	Default Configuration and HSI Flexibility Features	√		n/a - no default config	n/a - no default config	n/a - no default config	√
2.8-6	Changes to Display Characteristics	√		√	√	√	√
2.8-7	User Expertise and HSI Flexibility Features	√		√	√	√	√

Req. #	Requirement Title	CLS Compliance and CSS Alarm Handler Compliance
<b>4.2</b>	<b>Alarm System - Information Display</b>	<b>Title</b>
4.2.1	Display Functions	Title
4.2.1-1	Coordination of Alarm Alerting and Informing Functions	A√ - All of the criteria are not met by every alarm in the database but are met for many alarms.
4.2.1-2	Presentation of Alarm Priority with Detailed Alarm Information	√
4.2.1-3	Use of Spatially Dedicated, Continuously Visible Displays	A√ - The only "detailed alarm information" window is the Guidance window. This window does not obscure the priority and status indication from the alert window.
4.2.1-4	Alarm Coding Consistency	√ - SDCV alarm displays have been considered.
4.2.1-5	Multi-Unit Alarms	√
4.2.2	Display of High-Priority Alarms	Title
4.2.2-1	Precedence for Important Information	√
4.2.2-2	Simultaneous Display of High-Priority Alarms	√
4.2.2-3	Coding of Alarm Priority	√
4.2.3	Display of Alarm Status	Title
4.2.3-1	Indication of Alarm Status	√
4.2.3-2	Unacknowledged Alarm Indication	√
4.2.3-3	Notice of Undisplayed Unacknowledged Alarms	√
4.2.3-4	Acknowledged Alarm Indication	√
4.2.3-5	Clearing Alarm Ringback	X - No audible indication when an alarm clears.
4.2.3-6	Cleared Alarms That Re-Enter the Abnormal Range	√
4.2.4	Display of Shared Alarms	Title

4.2.4-1	Minimize Shared Alarms	√
4.2.4-2	Access to Shared Alarm Information	A√ - Related displays should be added for more alarms.
4.2.4-3	Shared Alarm Reflash	X - Alarms PVs are not so sophisticated to unacknowledge when new related alarms occur. Shared alarms are avoided and this level of capability is generally not required.
4.2.5	Alarm Contents	Title
4.2.5-1	Alarm Titles/Legends	√
4.2.5-2	Alarm Messages - SDCV Tile Format	√
4.2.5-3	Alarm Messages = List or Printer Format	√
4.2.5-4	Alarm Source	√
4.2.5-5	Alarm Priority	√
4.2.5-6	Setpoint Values	√
4.2.5-7	Parameter Values	√
4.2.5-8	Required Immediate Actions	√
4.2.5-9	Reference to Procedures	√
4.2.5-10	Reference to Other Panels	√
4.2.6	Coding Methods	Title
4.2.6.1	General	Title
4.2.6.1-1	Coding Effectiveness	√
4.2.6.1-2	Coding Dimension Discriminability	√
4.2.6.1-3	Single Coding Dimensions	√
4.2.6.1-4	Coding Complexity	√
4.2.6.2	Visual Coding for Importance	Title
4.2.6.2-1	Visual Coding for Importance	√
4.2.6.2-2	Redundant Priority Coding	√
4.2.6.2-3	Flash Rate	√
4.2.6.2-4	Brightness Levels for Transilluminated Displays	n/a - no transilluminated display

4.2.6.2-5	Brightness Levels for VDU Displays	n/a - no bright state vs normal state
4.2.6.2-6	Color Detectability	√
4.2.6.2-7	Spatial Coding	√
4.2.6.2-8	Suppressed Visual Codes	√
4.2.6.3	Audible Codes	Title
4.2.6.3-1	Audio Signals for Alarms	A√ - Audible alarm is configurable and used only for alarms requiring immediate action or that are critical in nature.
4.2.6.3-2	Auditory Coding of Remote Alarms	√
4.2.6.3-3	Distinguishable Auditory Signals	n/a - No SDCV
4.2.6.3-4	Audible Signals for Alarm States	√
4.2.6.3-5	Reminder Audible Signals	A√ - Certain critical alarms have repeating annunciation until acknowledged (done outside of CSS)
4.2.6.3-6	Reset of Auditory Alert	√
4.2.6.3-7	Interference Among Signals	√
4.2.6.3-8	Readily Identifiable Source	√
4.2.6.8-9	Signal Level	√
4.2.6.8-10	Design of Audio Signals	√
4.2.6.8-11	Manual Disable/Adjustment of Signal Intensity	√
4.2.6.8-12	Sound Sources	√
4.2.6.8-13	Auditory Signal Discriminability	√
4.2.6.8-14	Number of Tonal Signals	√
4.2.6.8-15	Frequency of Tonal Signals	√
4.2.6.8-16	Pulse Codes	√
4.2.6.8-17	Number of Frequency Modulated Signals	√
4.2.6.8-18	Center Frequency of Frequency Modulated Signals	√
4.2.6.8-19	Audio Pattern Codes	√
4.2.6.8-20	Compound Codes	√
4.2.6.8-21	Intensity Coding	√
4.2.6.8-22	Speech Presentation of Alarm Information	√

4.2.7	Organization of Alarms	Title
4.2.7.1	Spatially Dedicated, Continuously Visible Alarm Displays	Title
4.2.7.1-1	Functional Grouping of Alarms	√
4.2.7.1-2	Visual Distinctness of Functional Groups	√
4.2.7.1-3	Group Labels	√
4.2.7.1-4	Coordinate Designation Identifiers	√
4.2.7.1-5	Density of Alarm Elements	√
4.2.7.1-6	Logical Arrangement of Alarms	√
4.2.7.1-7	Consistent Ordering	√
4.2.7.1-8	Alarm Display Identification Label	√
4.2.7.2	Alarm Message Lists	Title
4.2.7.2-1	Listing by Priority	A√ - Operators can choose the list sort parameter at any time.
4.2.7.2-2	Message Listing Options	√
4.2.7.2-3	Blank Lines	X - No blank line between every few messages. It would seem out of place and be confusing.
4.2.7.2-4	Scrolling of Message List	X - Scrolling is used when there are many alarms.
4.2.7.2-5	Message Overflow	√