



Acquisition Management

SOFTWARE USABILITY EVALUATION GUIDE

The purpose of this pamphlet is to provide software and human factors evaluators the information needed to conduct the Air Force Operational Test and Evaluation Center's (AFOTEC) software usability evaluation.

SUMMARY OF CHANGES

AFOTEC Pamphlet 99-102 replaces AFOTEC Pamphlet 800-2, all volumes.

This volume is the fourth in a series of Software Operational Test and Evaluation volumes prepared by the Systems Analysis Directorate at Headquarters (HQ) AFOTEC. Local reproduction of all volumes in this series is authorized. Comments should be directed to the office of primary responsibility. The volumes in the series are:

AFOTEC Pamphlet 99-102, Volume 1 - Management of Software Operational Test and Evaluation

AFOTEC Pamphlet 99-102, Volume 2 - Software Support Life Cycle Process Evaluation Guide

AFOTEC Pamphlet 99-102, Volume 3 - Software Maintainability Evaluation Guide

AFOTEC Pamphlet 99-102, Volume 4 - Software Usability Evaluation Guide

AFOTEC Pamphlet 99-102, Volume 5 - Software Support Resources Evaluation Guide

AFOTEC Pamphlet 99-102, Volume 6 - Software Maturity Assessment Guide

AFOTEC Pamphlet 99-102, Volume 7 - Software Reliability Evaluation Guide

AFOTEC Pamphlet 99-102, Volume 8 - Software Operational Assessment Guide

1. General. This volume is divided into four parts. The first part describes the methodology for conducting software usability evaluations. The second part (attachment 1) is an index of items and source documents. The third part (attachment 2) contains a complete listing of software usability evaluation items. The fourth part (attachment 3) consists of a user's manual for the Software Usability Evaluator (SUE) computer program, an automated method of preparing, administering, and analyzing software usability evaluations.

2. Background.

2.1. The operator-software interface is becoming steadily more important in the systems the Air Force develops and fields. New software developments (e.g., windows, expert systems, and object-orientation) change the nature of the interaction between the human and computer. Software usability evaluations have been performed by AFOTEC over the past 15 years using two principal

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methodologies. Software usability was examined from the suitability perspective using a standardized question set called the Software Operator-Machine Interface Questionnaire (SOMIQ). The SOMIQ questionnaire provided a method for determining the adequacy of the software interface based on structured interviews conducted with experienced software users. The result of SOMIQ was a single standardized score which could be used to compare the relative usability of different software interfaces.

2.2. At the same time, software usability was also examined from a human factors/operational effectiveness perspective. This approach used custom operator-software interface questionnaires developed uniquely for each system under test, and performed as part of the human factors evaluation. The results of these questionnaires were descriptive statistics relating specific problems identified to instances of mission failure or degradation of system effectiveness.

2.3. In recognition of the overlap in the suitability and effectiveness evaluations of software usability and the potential for conflicting findings, these two approaches were ultimately combined into a single methodology under the auspices of the Human Factors and Training Analysis Team, HQ AFOTEC/SAH. The results of this consolidation are documented in the present volume.

2.4. There is a great deal of literature on the subject of "software usability engineering," but relatively few texts on the evaluation of software usability for developed systems. One of the most frequently cited source documents is that of Smith and Mosier (1986). Smith and Mosier developed a comprehensive set of design guidelines organized around six functional areas. Each of the functional areas represents a feature or function of a software interface such as data entry, data display, and user guidance. Similar to Smith and Mosier, Military Standard (MIL-STD)-1472D outlines software interface functions that fall into 11 categories. These categories overlap with those of Smith and Mosier and also provide guidelines for some additional functions. MIL-STD-1801 also contains design guidelines organized according to interface functions and

uses essentially the same categories used by Smith and Mosier.

2.5. A somewhat different approach was taken by another frequently cited work, Ravden and Johnson (1989). Ravden and Johnson present design guidelines organized around a set of nine usability characteristics or "criteria." These characteristics include features such as visual clarity, consistency, and compatibility. This approach is very similar to the AFOTEC SOMIQ questionnaire described earlier. Both approaches use ratings of the degree to which individual instances of these characteristics or features are present or absent as their method of evaluating the usability of a given software configuration item.

2.6. As described above, the literature on software usability evaluation can be roughly divided into two approaches, one focusing on the functions or tasks software interfaces must perform and the other organized around a number of usability characteristics that are independent of function. The approaches are orthogonal in that they form two independent dimensions along which usability can be evaluated. The present software usability evaluation methodology described in this volume has been aligned with both of these approaches.

3. Software Usability Evaluation Method.

3.1. Methodology Overview.

3.1.1. The software usability evaluation methodology contains a database of 177 questions or evaluation items that cover the entire spectrum of usability characteristics and interface functions. Each evaluation item is cross-indexed with the Ravden and Johnson and SOMIQ features as well as individual sections of MIL-STD-1472D, MIL-STD-1801, and Smith and Mosier that address specific interface functions. The process of creating and administering a software usability evaluation can be performed either manually, with hard copy forms, or by computer, using the SUE software tool.

3.1.2. Performing a software usability evaluation for a specific system or software configuration item is based on a subset of

questions selected from the 177 evaluation items. Based on a description or profile of the software to be tested, applicable questions are drawn from the SUE database and administered to system operators. Operators rate not only whether or not the usability elements are present or absent (as with the SOMIQ and Ravden and Johnson methods), but also the degree of mission impact of any usability problems. This second rating reflects the legacy to the operational effectiveness approach to usability evaluations and is an important link in establishing the criticality or relative importance of any adverse findings. In addition to identifying the mission impact of usability problems, respondents are also asked to provide a brief example of the problem.

3.1.3. The evaluation then proceeds by ranking the usability problems by frequency of occurrence and ratings of mission impact. For reporting purposes, the problem areas and the examples can then be linked back to the applicable design standards associated with each evaluation item. An index relating each item to its referents in each of the above source documents is provided in attachment 1.

3.1.4. In summary, the current software usability evaluation methodology has important links to previous AFOTEC usability evaluations and to external usability standards. Accompanied with a computer tool to efficiently generate and administer the evaluation questionnaires and analyze the resulting data, the SUE methodology is a powerful, state-of-the-art technique for evaluating the usability of software interfaces.

3.2. Planning the Evaluation.

3.2.1. In preparing to conduct a software usability evaluation for a specific operational test and evaluation (OT&E), the effort begins by selecting an appropriate question set from the database of evaluation items. This is performed either by the test team member responsible for conducting the evaluation or by HQ AFOTEC/SAH personnel (depending on manpower limitations and test timing). In either case, the selection of a question set requires knowledge about the system interface, the functions, equipment, and operator or maintainer tasks associated with the

interface. This sort of information is commonly obtained from system training materials, position handbooks, task and skill analyses, notes taken from direct observation at site visits, or through interviews with system experts.

3.2.2. The selection process begins by defining a system profile in terms of the interface functions and associated support equipment. Completing the profile definition procedure in the SUE software will identify a set of evaluation items that will form the basis of the evaluation question set. Note that separate item sets may be required for crew members who use different types of software applications (e.g., operators versus maintainers). The next step is to review the evaluation items selected, one by one, and remove any questions that are inappropriate to the system under test, or appear redundant with other items in the set. The number of items in the questionnaire will of course depend on the size and scope of the software interface being tested. Our experience is that the average size question set for an OT&E has been approximately 100 items.

3.2.3. Once an item set has been selected, it should be reviewed with a system expert to further refine the question set and to add explanatory notes that accompany each question. Explanatory notes are used to tailor each question to the interface under test by adding unique nomenclature and terminology used by the system. The explanatory notes (along with definitions and examples) appear alongside each question in the hard copy format and at the bottom of the screen for the on-line administration format. Note that each of the steps described above can be completed either manually or by using the SUE software tool. The next step, however, preparing the questionnaire for administration, should be accomplished using the SUE software.

3.2.4. Preparing the questionnaire for either hard copy or on-line administration is simply a matter of reproducing the appropriate number of questionnaires to ensure that each crew member to be included in the evaluation will have access to the questionnaire. In the case of hard copy administration, the questionnaire is printed and reproduced (along with a cover sheet and instructions) so that

one paper copy is available for each crew member. In the case of on-line administration multiple computers running copies of SUE should be made available to minimize excessive queuing or waiting to complete the questionnaire.

3.3. Conducting the Evaluation.

3.3.1. The process of conducting a software usability evaluation is much like conducting any other evaluation based on questionnaire data. The chief considerations are the number of subjects to include, when to administer the questionnaire, and instruction to the respondents. The Operational Test and Evaluation Questionnaire Handbook (AFOTEC Technical Paper 7.2) provides detailed information on these and related subjects. For the purposes of the software usability evaluation, however, these considerations will be briefly reviewed in the following paragraphs.

3.3.2. The first consideration involves deciding on the number of respondents (personnel completing the questionnaire) to include in the evaluation. The evaluation process aims to describe the significant features of the software interface rather than produce a pass/fail grade for software usability. As such, the goal is to obtain a representative sample of software users to rate the interface features as they relate to the respondents' duties. Thus, the sample size should be driven by the number of personnel required to accurately represent a cross-section of the types of personnel who will use the operational software, rather than being driven on the basis of statistical requirements for reliability or confidence levels. For a large system with multiple operator positions or crew members simultaneously using the system, a sample size of 15 to 20 is not an unreasonable goal. Smaller systems such as a piece of test equipment may require as few as five to seven respondents. Once again, the goal is to obtain an operationally representative sample of users across the spectrum of Air Force specialty codes (AFSC), experience levels, and training.

3.3.3. Second, the issue of when to administer the usability questionnaires is driven by the number of items in the question set. Because of the length of time required to complete a

100 item questionnaire, it is not appropriate to expect crew members to complete the questionnaire at the end of their duty shift. Administration of the usability questionnaire should be scheduled to occur on duty time and will thus require permission and official release by their supervisors as a part of scheduled test activities. In order to avoid any adverse mission interference, crew members may have to be scheduled to take the questionnaire one at a time or in small groups of two or three. In some cases, the questionnaire can be completed across multiple days, 30 to 40 questions at a time, using either the interrupt and resume option of the SUE software or hard copy forms. The questionnaire administration should be scheduled to occur during the latter part of the test effort, after the respondents have been exposed to most of key aspects of the software under test. A lengthy question set should be administered only once during the test; shorter versions of the usability questionnaire can be administered repeatedly to capture different scenarios or test conditions.

3.3.4. The third and final consideration in collecting data for the usability evaluation is providing instructions to the respondents. If possible, the respondents should be prebriefed as to the method and purpose for conducting the evaluation well in advance of actually completing the questionnaire. These prebriefings can occur as a part of the test orientation or overview given to crews participating in the test effort or can be provided separately as a part of a shift change or stand-up briefing. The prebrief is important so that the participants will know why they are being asked to complete the questionnaire, when and where it will be administered, what aspects of the software they will be asked about, and how the results will be used. Information on these aspects, provided in addition to the instructions that accompany the actual questionnaire, will increase the cooperation and thoughtfulness the respondents will put into their questionnaire answers.

3.4. Analyzing the Results.

3.4.1. The analysis effort is directed toward identification of the software interface features most frequently rated as problems and,

in particular, those features that adversely affect mission accomplishment. In order to efficiently accomplish the above, the following analysis path is recommended: The first step is to rank questions by the number of respondents, identifying them as a problem. Once grouped by number of respondents, the individual questions should be rank ordered according to their impact ratings (by totaling the impact score assigned by each respondent). The SUE software package will perform this analysis for you by selecting the "Responses Grouped by Number of Not Always Responses" menu option (see the users' guide in Attachment 3 for details).

3.4.2. The second step in the analysis is to group the results by related characteristics and functions of the software interface. This is accomplished by sorting the ratings according to the interface characteristics (e.g., clarity, consistency, and compatibility) and software functions. For example, if the most frequently reported and highest impact question was evaluation item number 1, the characteristic of "descriptiveness" and function "data entry" apply. Grouping results by characteristic and function will enable the analyst to identify interrelated problems.

3.4.3. Once the results are grouped so that a list of related problem areas and questions has been developed, the comments provided by the respondents should be examined to refine further the grouping into problem areas. This can be accomplished by simply reading the hard copy questionnaires or by selecting the "All Responses" option on the SUE software. The result of this step should be a list of evaluation items and interrelated software problems ranked by the number of times they were selected and degree of mission impact.

3.4.4. Unlike the SOMIQ evaluations of years past, an overall score for the evaluation is not calculated. Instead, descriptive statistics are calculated for the responses and the results are described in a narrative format in accordance with AFOTEC Instruction (AFOTECI) 99-101 (see also AFOTEC Policy Update (27 January 1994)). Other analysis techniques being explored include a calculation of a normalized index of the number of mission-critical problems identified for each system and the percentage of respondents

identifying mission-critical flaws. At this time, these remain potential analysis techniques to be used in the future; they are not recommended for use as test criteria.

3.5. Reporting.

3.5.1. The principal goal of the analysis procedure described above is the development of a narrative describing the key software usability problems in terms of their impact on mission effectiveness. The general format is to present the key results, ranked by mission impact and organized by system functions and characteristics. The amount of detail to be presented in the report should be driven by the reporting space available and the criticality of the software system.

3.5.2. An example of this narrative reporting style is provided below in the following software usability evaluation as reported for an actual OT&E effort (although the narrative has been shortened and the name of the program has been changed for purposes of distributing this pamphlet).

3.5.2.1. A total of eight crew members completed detailed Software Usability Evaluations for the initial OT&E (IOT&E) of the Advanced Generic Support Equipment (AGSE) system in accordance with AFOTEC PAM 99-102, volume 4. The evaluators showed very high agreement and consistency in their ratings; all eight crew members were unanimous in their independent selections of the top six problem areas. The results of the survey indicated a few problems in the software usability areas of software simplicity, descriptiveness, responsiveness, and error abatement. Each of the problem areas identified was ranked in terms of their impact on mission accomplishment. The most significant problems are presented below, beginning with the areas identified as having the greatest mission impact.

3.5.2.1.1. The attribute rated as having the greatest adverse mission impact was the inability to reverse or undo commands. Inputs were executed immediately without an opportunity to back up or make changes. Any incorrect entries required the user to restart the program from the entry point menu. For example, once a sequence of self-test proce-

dures was entered, there was no opportunity to verify the selection prior to their execution. A second area of adverse mission impact was associated with unanticipated system halts and the lack of any information on how to recover from them. According to the rater's, system "lockups" were fairly frequent and were not accompanied with any on-screen information on system status or recovery procedures.

3.5.2.1.2. The third, fourth, and fifth areas identified were related to the manual for the AGSE. Specifically, the manual contained substantial amounts of material that was unnecessary and irrelevant to the completion of specific tasks. Further, even routine operations required the crew members to consult the manual. For example, entering data codes, loading test program sets (TPS), and responding to system lockups, all required repeated, frequent consultation of the manual. Finally, the lack of system prompts for user inputs required the users to consult the manual for completion of nearly every task.

3.5.2.1.3. The sixth problem identified by the raters concerned the inability to interrupt action sequences and processes once initiated. Once begun, processes could not be terminated. For example, some tests such as infrared (IR) seekers have a time limit (44 minutes) that may require early test termination; the AGSE will not allow interruption or early termination. Similarly, the AGSE delay mode cannot be interrupted when changes to testing are required.

3.5.2.2. Finally, for purposes of submitting system design reviews/product quality deficiency reports (SDR/PQDR) or a stand-alone software usability report, more detailed results and recommendations are sometimes

desirable. To support this level of analysis, the evaluation items corresponding to the problem areas identified can be referenced back to the source documentation on software usability guidelines and MIL-STDs. Attachment 1 provides an index of evaluation items and design standards for the purpose of this cross-referencing.

4. How to Recommend Changes. If you have comments or suggestions for future additions of this evaluation guide, please contact Samuel G. Charlton, Deputy Chief, Human Factors and Training Analysis, HQ AFOTEC/SAH, 8500 Gibson Blvd SE, Kirtland AFB, NM 87117-5558, DSN number 246-1375 (commercial (505) 846-1375), or by e-mail at CHARLTONSG@HQ.AFOTEC.AF.MIL.

5. References:

AFOTEC P 800-2, Volume 4, *Software Usability Evaluator's Guide*, 23 November 1987.

MIL-STD-1472D *Human Engineering Design Criteria for Military Systems, Equipment, and Facilities*, 14 March 1989.

MIL-STD-1801 (USAF) *User/Computer Interface*, 29 May 1987.

Ravden, S.J. & Johnson, G.I. *Evaluating Usability of Human Computer Interfaces: A Practical Approach*. Chichester, England: Ellis Horwood, Limited, 1989.

Smith, S.L. & Mosier, J.N. *Guidelines for Designing User Interface Software*. (ESD-TR-86-278, MTR 10090),. USAF Electronic Systems Division, 1986.

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3 Attachments

1. Index of Evaluation Items and Design Guidelines
2. Software Usability Evaluation Question Set
3. SUE Software Tool Users' Manual

Index of Evaluation Items and Design Guidelines

A1.1. This attachment contains an index of each of the 177 software usability evaluation items. For each evaluation item, the evaluation item number in the database is followed by the wording of the item (the software attribute to be rated) and its qualifier (in brackets). The item qualifier is used when selecting items based on a system profile (see paragraph 3.2.2).

A1.2. For each item, the function, the characteristic, and paragraph number for each of the usability evaluation source documents are also listed. Functions and characteristics are used to group the evaluation items and responses in terms of similar capabilities or design features (see paragraphs 2.6 and 3.4.2). Definitions for each of the five usability characteristics (as adapted from AFOTEC P 800-2, volume 4) are as follows:

A1.2.1. Error Abatement. Aids in validating data and avoiding or correcting errors.

A1.2.2. Responsiveness. Allows the user to effectively direct system operation.

A1.2.3. Descriptiveness. Provides the user with adequate explanations of every function he/she is required to perform and every function the system performs.

A1.2.4. Consistency. The behavior of the software corresponds to the expectations of the user.

A1.2.5. Simplicity. Information presented to the user is grouped into short, readily understandable structures.

A1.3. Finally, at the far right of the listing, the item number corresponding to the SOMIQ found in AFOTEC P 800-2, volume 4 is presented.

N	ATTRIBUTE & Qualifier	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTEC P 800-2 Vol 4
1	The user is adequately prompted when data entry is required.	Data entry	Descriptiveness	4.1.3.5	2.1.1.3	4.03		
2	The user is adequately prompted as to where on the display data are to be entered.	Data entry	Descriptiveness		2.1.1.3	1.03	1.0.6	
3	The user is adequately prompted as to what kind of data are required to be entered.	Data entry	Descriptiveness		3.7.10; 6.3; 6.4	1.03	1.0.24	
4	Where data entry requires fixed or maximum allowable character lengths, there is appropriate prompting on entry size.	Data entry	Descriptiveness	4.1.3.3		8.03	1.0.6; 1.4.11	
5	Input devices (e.g., keyboard, cursor, mouse, joystick) are appropriate for the tasks being performed.	Data entry	Responsiveness			6.10		
6	The cursor returns to a HOME position that is consistent across all display screens. [CURSOR]	Data entry	Consistency	4.1.2.2	2.1.8.3	2.05	1.1.20	9
7	The cursor is easy to locate. [CURSOR]	Data entry	Simplicity		2.1.8.2		1.1.21	
8	The cursor can be quickly and accurately positioned. [CURSOR]	Data entry	Responsiveness	4.1.2.3	2.1.8; 2.1.8.1	2.09	1.1.22	
9	Requirements for cursor movement from one field to another are minimized.	Data entry	Simplicity	4.1.2.5				
10	Data fields are adequately labeled.	Data entry	Descriptiveness		3.1.9		1.4.5	

N	ATTRIBUTE [& Qualifier]	FUNCTION	CHARACTERISTIC	MIL-STD-1801		MIL-STD-1472D		Ravden & Johnson		Smith & Mosler		APOTTECP 800-2 Vol4
				4.1.1.5	4.1.1.8	2.1.1	2.2.4; 2.2.7	1.0.4; 1.0.8	1.0.15	1.4.22	1.0.16	
11	Data entry is user-paced, rather than system-paced.	Data entry	Responsiveness									48
12	The system minimizes requirements for keyboard and keypad data entry. (KEYBOARD)	Data entry	Simplicity									31
13	Data are entered in familiar units of measurement.	Data entry	Simplicity									
14	Data inputs can be easily verified before entry or execution.	Data entry	Responsiveness									7
15	Text inputs are easy to edit.	Data entry	Responsiveness									
16	Where abbreviations and specialized words are required for data entry, these terms are easily associated with normal language or well-known job terminology.	Data entry	Simplicity									
17	Long alphanumeric items are partitioned for easy data entry.	Data entry	Simplicity	4.1.1.7		3.1.7					1.0.16	
18	Data entry requires a minimal amount of shift or control key inputs. (KEYBOARD)	Data entry	Simplicity	4.1.1.3		2.2.8					1.0.26	
19	Data are entered in a logical order.	Data entry	Simplicity			3.1.4					1.4.27	
20	Formats for data entry are consistent across different displays.	Data entry	Consistency					2.07				
21	Formats for data entry are compatible with formats for data display outputs.	Data entry	Consistency	4.1.4.1		3.2.4			3.07		1.4.24	

N ATTRIBUTE [& Qualifier]	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTTECP 800-2 Vol4
22 Where data are entered from source documents, the format for data entry corresponds to that of the documents.	Data entry	Consistency		3.1.1.b		1.4.2.5	
23 The user is not required to enter data already available to the software.	Data entry	Simplicity	4.1.1.11	2.1.6		1.0.1	46
24 The system provides quick, positive feedback on the acceptance or rejection of data entry.	Data entry	Responsiveness		2.1.2		1.0.3; 1.0.12	70
25 The system validates user inputs before processing them.	Data entry	Error abatement		2.1.5; 8.3	8.01	1.7.1	8
26 Where the system requires substantial time to process a data entry, there is an adequate "PROCESSING" or "WORKING" message.	Data entry	Responsiveness	4.1.1.10	2.1.3; 5.2			
27 There are adequate safeguards against deleting or overwriting protected data.	Data entry	Error abatement	4.5.4.4; 4.6.4			6.2.3; 4.3.18	1
28 The system provides adequate notification when it detects a data entry error.	Data entry	Error abatement		4.1.14	8.02		2
29 Data entry error messages are specific to the detected error condition.	Data entry	Error abatement	4.6.4.1	8.5		4.3.2	
30 Data entry error messages provide explanations sufficient to understand the cause of the error condition.	Data entry	Error abatement	4.6.4.2		8.14	4.3.1	3

31	When a data entry error is detected, the system provides adequate guidance on how to correct the error.	Data entry	Error abatement	8.7	4.14		4
32	Data entry errors are easy to correct.	Data entry	Error abatement	8.1	8.06	1.7.6	5
33	The system provides adequate prompts when sequence control actions are required.	Interactive control	Descriptiveness				56
34	Sequence control actions are user-paced rather than system-paced.	Interactive control	Responsiveness			3.0.17	
35	The system responds quickly and accurately to sequence control actions.	Interactive control	Responsiveness	4.1.13		3.0.18	
36	Sequence control requires minimal user actions.	Interactive control	Responsiveness			3.0.2	36
37	Sequence control actions employ consistent terminology.	Interactive control	Consistency			3.0.10	
38	Sequence control actions are consistent in form and results.	Interactive control	Consistency		2.12	3.0.6	65
39	Sequence control can be performed without reference to user's or control operations manuals.	Interactive control	Simplicity				35
40	Where sequence control actions must be delayed because of computer processing, the system effectively identifies that delay to the user.	Interactive control	Descriptiveness		4.12	3.0.20	

N	ATTRIBUTE (& Qualifier)	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTTECP 800-2 Vol4
41	System response times for sequence control actions are control consistent with operational requirements.	Interactive	Responsiveness		4.1.1			48
42	The system informs the user when a requested sequence control function completed, either successfully or unsuccessfully.	Interactive control	Descriptiveness			4.11		
43	Sequence control actions can be easily interrupted by the operator when necessary.	Interactive control	Responsiveness	4.2.3				12
44	The system provides adequate protection against accidental activation of sequence control functions.	Interactive control	Error abatement		4.1.3		3.1.5.25	
45	The system gives adequate warning before active sequence control functions are terminated.	Interactive control	Error abatement	4.2.4.8				1
46	The system gives adequate warning before destructive sequence control functions are executed.	Interactive control	Error abatement	4.2.4.5	4.5.12; 6.1b	8.10	3.5.7.8; 4.3.18	
47	When a sequence control error is detected, there is adequate explanation as to the nature of the error.	Interactive control	Error abatement	4.2.4.2	5.7	4.13		
48	When a sequence control error has been detected, the system provides adequate guidance on how to remedy the error condition.	Interactive control	Error abatement	4.6.4.2		4.14		

49	Incorrect and unintended sequence control actions are easy to reverse or correct.	Interactive control	Error abatement	4.2.4.2; 4.2.4.7		3.1.5.23
50	Where multiple users interact with the same data, there are adequate provisions for protecting one user's data from actions by the other user. (MULTIPLE USERS)	Interactive control	Error abatement	4.5.6.3		3.0.22
51	Where there are several possible modes of operation (e.g., EDIT, MONITOR), the user knows what mode he is currently in.	Interactive control	Descriptiveness		4.15	
52	Menus and menu selection options are appropriately labeled. (MENU)	Interactive control	Descriptiveness			4.2.8
53	Menu selection options are readily understandable. (MENU)	Interactive control	Descriptiveness		5.03	
54	Menu selection options are logically organized by similarity of function and/or by order of use. (MENU)	Interactive control	Simplicity	4.2.1.3.n; 4.2.1.3.o	5.08	3.1.3.21
55	Menu selection options are organized to allow rapid access to frequent commands. (MENU)	Interactive control	Responsiveness	4.2.1.3.n	5.08	
56	The system defaults to menu that are most frequently used or options logically related to current operations. (MENU)	Interactive control	Simplicity			

N	ATTRIBUTE [& Qualifier]	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTTECP 800-2 Vol4
57	Menu options are consistent in wording, order, and format. (MENU)	Interactive control	Consistency	4.2.1.3.m	4.2.4			
58	Wording of menu options is consistent with the functions and processes they control. (MENU)	Interactive control	Consistency	4.2.1.3.i			3.1.3.19	
59	It is easy to activate the desired menu options. (MENU)	Interactive control	Simplicity					
60	It is easy to locate desired menu options within the menu hierarchy. (MENU)	Interactive control	Simplicity					
61	Inactive or unavailable menu selections are either omitted from display or de-emphasized to indicate that they may not be selected. (MENU)	Interactive control	Descriptiveness					
62	The system responds quickly and accurately to menu commands. (MENU)	Interactive control	Responsiveness	4.2.1.3.g			3.1.3.9	
63	When you are operating within the menu hierarchy, it is easy to determine where you are within that hierarchy. (MENU)	Interactive control	Simplicity		4.2.12	5.04		
64	The menu hierarchy is organized so that critical or frequently used options are easy to select. (MENU)	Interactive control	Responsiveness	4.2.1.3.q	4.2.5		3.1.3.23; 3.1.3.28	
65	It is easy to move among different levels of the menu hierarchy. (MENU)	Interactive control	Responsiveness			7.08		

66	The menu hierarchy is organized so that movement up and down levels of the hierarchy is minimized. (MENU)	Interactive control	Simplicity	4.1.7	3.1.3.27	
67	Function keys are adequately labeled. (FUNCTION KEYS)	Interactive control	Descriptiveness	4.2.1.4.a	2.3.9	3.1.4.4
68	Function key locations are appropriate to their frequency of use. (FUNCTION KEYS)	Interactive control	Simplicity	4.2.1.4.f	2.3.6	3.1.4.17
69	The assignment of functions to function keys is consistent across different operations. (FUNCTION KEYS)	Interactive control	Consistency	4.2.1.4.e	2.3.2; 2.3.3	2.11 3.1.4.14
70	The system responds quickly and accurately to function key commands. (FUNCTION KEYS)	Interactive control	Responsiveness			70
71	The system provides adequate feedback when function key commands are initiated. (FUNCTION KEYS)	Interactive control	Descriptiveness	4.2.1.4.c	2.3.8	3.1.4.10
72	Command language is easy to remember and use. (COMMAND LANGUAGE)	Interactive control	Simplicity	4.2.1.5.d; 4.2.1.5.f	4.5.4; 4.5.9	3.1.5.5
73	Command language entry areas are consistent across different displays. (COMMAND LANGUAGE)	Interactive control	Consistency	4.2.1.5.a	4.5.7	2.10 3.1.5.2
74	Wording of command language is consistent with the functions control being controlled. (COMMAND LANGUAGE)	Interactive control	Consistency	4.2.1.5.d	4.5.2	

N	ATTRIBUTE [& Qualifier]	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTEC P 800-2 Vol4
75	Wording of command language is consistent across different functions. (COMMAND LANGUAGE)	Interactive control	Consistency	4.2.1.5.e	4.5.6		3.1.5.7	66
76	Command language is easy to edit. (COMMAND LANGUAGE)	Interactive control	Simplicity	4.2.1.4	4.5.11		3.1.5.19	
77	The user is advised of command language errors. (COMMAND LANGUAGE)	Interactive control	Error abatement	4.2.4.2	5.7			
78	The system responds quickly and accurately to light pen inputs. (LIGHT PEN)	Interactive control	Responsiveness		2.5.4a; 2.5.4b			70
79	It is easy to locate and reach the appropriate screen locations for touch screen inputs. (TOUCH SCREEN)	Interactive control	Responsiveness					
80	The system responds quickly and accurately to touch screen inputs. (TOUCH SCREEN)	Interactive control	Responsiveness					70
81	It is easy to position the track ball pointer on desired selections. (TRACK BALL)	Interactive control	Responsiveness					
82	The system responds quickly and accurately to track ball selection button presses. (TRACK BALL)	Interactive control	Responsiveness					
83	It is easy to position the mouse pointer on desired selections. (MOUSE)	Interactive control	Responsiveness				1.6.3	

84	The system responds quickly and accurately to mouse selection button presses. (MOUSE)	Interactive control	Responsiveness				
85	The system minimizes shifting from mouse to keyboard inputs. (MOUSE)	Interactive control	Responsiveness	3.6.6		1.6.1	
86	Objects used in direct manipulation dialogues are easy to see and recognize. (DIRECT MANIPULATION)	Interactive control	Simplicity				
87	Where the same object is used to represent multiple entities (e.g., computer files, directories), the objects are accompanied by distinctive text labels. (DIRECT MANIPULATION)	Interactive control	Descriptiveness				
88	Manipulation of objects does not require excessively fine pointing or manual adjustment. (DIRECT MANIPULATION)	Interactive control	Responsiveness				
89	There is adequate access to overlapping objects. (DIRECT MANIPULATION)	Interactive control	Responsiveness				
90	The status of manipulated objects (e.g., active, selected, unavailable) is clearly displayed. (DIRECT MANIPULATION)	Interactive control	Descriptiveness				
91	Query language commands are easy to learn and remember. (QUERY LANGUAGE)	Interactive control	Simplicity	4.2.1.6	4.7.3	3.1.6.2	

N ATTRIBUTE [& Qualifier]	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosler	AFOTTECP 800-2 Vol 4
92 Query language allows the user to access desired data quickly and accurately. (QUERY LANGUAGE)	Interactive control	Simplicity					
93 Password procedures for LOG-ON easy to use. (LOG-ON)	Interactive control	Simplicity	4.5.2.1	8.13.6	6.1.1		
94 Information is easy to find on the screen.	Data display	Simplicity			1.15		
95 The amount of data presented at one time is appropriate.	Data display	Simplicity					39
96 It is easy to follow data that are displayed over multiple pages.	Data display	Simplicity	4.3.3.2	3.1.1.1; 3.2.2.3		2.7.2.4	
97 Data are displayed in a logical manner.	Data display	Simplicity	4.3.2.3	3.2.2.2; 3.5.6	1.05	2.1.23	83
98 Important data are prominently displayed.	Data display	Simplicity		3.1.4.1			
99 In any given display, all necessary data are displayed.	Data display	Simplicity	4.3.1.1		6.03	2.0.1	39
100 Information is presented to the user at a comfortable rate.	Data display	Responsiveness					38
101 Unless requested by the user, only necessary data appear on the display.	Data display	Simplicity	4.3.1.1	3.2.2	1.13	2.0.2; 4.0.5	81
102 Data are displayed in a readily usable form.	Data display	Simplicity		3.1.3	6.02	2.0.3	83
103 Display update rate is fast enough to keep pace with user and system actions.	Data display	Responsiveness	4.3.5.1	3.6.3			71

104 Display update rate is not so fast as to impair readability or utility of the data.	Data display	Responsiveness					
105 Data displays minimize the requirement for memorization or interpretation.	Data display	Simplicity	4.3.1.7	3.2.5		2.0.11	
106 Data display formats are consistent with the method of data entry.	Data display	Consistency	4.3.2.4	3.2.4	3.07	2.0.7	
107 Data displays use familiar language and notation.	Data display	Simplicity	4.3.1.8	3.2.1	3.04	2.0.12	
108 Data display formats are consistent across the system.	Data display	Consistency		3.1.1; 3.1.6; 3.5.2	2.06	2.0.4; 2.0.6	
109 Data displays use a minimal number of abbreviations and special characters.	Data display	Simplicity	4.3.1.9	3.2.3	3.04	2.0.16	82
110 Wording is consistent across displays.	Data display	Consistency	4.3.1.8		2.02	2.0.14	
111 Units of measurement are consistent across different displays.	Data display	Consistency	4.3.2.9	3.5.11	3.06		
112 Display grouping is consistent with system functions.	Data display	Consistency	4.3.1.2				
113 Data fields are distinctively separated.	Data display	Simplicity	4.3.2.5	3.1.5; 3.5.8		1.4.8	
114 Rows and columns of tabular data are adequately separated.	Data display	Simplicity	4.3.2.14	3.1.5	1.07	2.3.12	
115 Long strings of alphanumeric data are partitioned for easy readability.	Data display	Simplicity	4.3.2.6	3.1.5	1.06	1.0.16	

N ATTRIBUTE [& Qualifier]	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTTECP 800-2 Vol4
116 Data displays are organized in a logical, functionally useful manner. (TABLES)	Data display	Simplicity	4.3.2.11	3.1.4.2		2.3.2	
117 Data displays are appropriately labeled.	Data display	Descriptiveness	4.3.1.3	3.5.9; 3.5.11	1.01	2.2.3	
118 Text displays are easy to read.	Data display	Simplicity	3.1.3	1.12			
119 There is adequate highlighting (e.g., reverse video, color, flash, bold face) of information requiring user attention.	Data display	Simplicity	4.3.4.1	3.6.20	1.02	2.6.1	69
120 Display coding methods (e.g., reverse video, color, flash, bold face) are consistent across displays.	Data display	Consistency	4.3.4.3		2.01	2.6.7	
121 Windows and window overlays are appropriate for the type of information displayed and controlled in this system. (WINDOWS)	Data display	Simplicity				2.7.5.1	
122 The method for controlling windows is consistent across displays. (WINDOWS)	Data display	Consistency				2.7.5.4	
123 Windows are easy to open and close manually. (WINDOWS)	Data display	Simplicity				2.7.5.4	
124 Where windows are opened and closed automatically by the software, they are available when needed and suppressed when not needed. (WINDOWS)	Data display	Descriptiveness				2.7.5.4	

125 Window overlays are situated so that they do not obscure important information. (WINDOWS)	Data display	Descriptiveness		
126 Windows are adequately labeled as to the nature of the data presented or the type of operation to be performed in that window. (WINDOWS)	Data display	Descriptiveness	2.7.5.6	
127 Where several windows are displayed simultaneously, it is easy to see which windows are active and inactive at any given time. (WINDOWS)	Data display	Descriptiveness	2.7.5.7	
128 Where several windows are displayed simultaneously, it is easy for the user to shift among them to select which window is to be made active. (WINDOWS)	Data display	Simplicity	2.7.5.8	
129 It is easy to scroll within windows. (WINDOWS)	Data display	Simplicity	2.7.5.9	
130 When scrolling across or through windows, the system provides adequate indication of the position of the current view in relation to the area as a whole. (WINDOWS)	Data display	Descriptiveness		
131 Schematic and pictorial displays are clearly drawn and labeled. (GRAPHICS)	Data display	Descriptiveness	1.14	
132 Multiple, simultaneous display graphics do not interfere with one another. (GRAPHICS)	Data display	Simplicity	4.3.2.16	3.6.28

N	ATTRIBUTE [& Qualifier]	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTECp 800-2 Vol4
133	Display shapes and symbols conform to accepted operational conventions. (GRAPHICS)	Data display	Simplicity	4.3.4.6	3.3.8; 3.6.24	3.03	2.6.16	
134	Graphic symbology is appropriate for the information it represents. (GRAPHICS)	Data display	Simplicity	4.3.2.15				
135	Icons and graphic symbols are used consistently across different displays. (GRAPHICS)	Data display	Consistency	4.3.2.15		2.03	2.4.12	
136	All graph axes and scales are adequately labeled. (GRAPHICS)	Data display	Descriptiveness		3.6.4; 2.6.25		2.4.1.3	
137	Colors used in displays are easy to distinguish from one another. (COLOR)	Data display	Simplicity				2.6.27	
138	Display colors are consistent with operational conventions. (COLOR)	Data display	Consistency	4.3.4.10		3.01	2.6.32	
139	Color coding is used consistently across different displays. (COLOR)	Data display	Consistency	4.3.4.10			2.6.31	
140	The use of color enhances the readability and utility of displays. (COLOR)	Data display	Simplicity			1.10		
141	The system provides an adequate amount of feedback on the status of peripheral devices. (PERIPHERAL DEVICES)	User guidance	Descriptiveness					
142	The system provides adequate feedback when an internal fault is detected.	User guidance	Descriptiveness					15

16

143 The causes of system halts are adequately explained. User guidance Descriptiveness

78

144 System messages to the user are informative and concise. User guidance Descriptiveness

4.1.1

User guidance Descriptiveness 4.6.1.3

145 Throughout all phases of operation there is adequate feedback on system status. User guidance Descriptiveness

52

146 The system provides an adequate amount of on-line user guidance. [ONLINE GUIDANCE] User guidance Descriptiveness 4.4.17

4.6.5.4

147 On-line user guidance provides useful information. [ONLINE GUIDANCE] User guidance Descriptiveness

148 On-line user guidance is readily understandable. [ONLINE GUIDANCE] User guidance Simplicity

4.0.16

37

149 Critical on-line user guidance is adequately highlighted. [ONLINE GUIDANCE] User guidance Descriptiveness

4.0.12

69

150 Formats for on-line user guidance are consistent across different functions. [ONLINE GUIDANCE] User guidance Descriptiveness

4.6.1.4

68

4.0.7

4.6.1.8

151 Wording is consistent across different types of on-line user guidance messages. [ONLINE GUIDANCE] User guidance Consistency

4.0.13

152 The user's or operator's manual provides complete descriptions of operating procedures. [MANUAL] User guidance Descriptiveness

9.02

61

N ATTRIBUTE [& Qualified]	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTTECP 800-2 Vol4
153 The user's or operator's manual provides only necessary information. (MANUAL)	User guidance	Descriptiveness					45
154 The user's or operator's manual is easy to use. (MANUAL)	User guidance	Simplicity		9.02			44
155 Guidance in the user's or operator's manual is consistent with how the system actually works. (MANUAL)	User guidance	Consistency					72
156 Advisory messages are relevant to the tasks being performed.	User guidance	Descriptiveness		4.02			
157 Advisory messages are short and to the point.	User guidance	Simplicity		4.01			78
158 Alarms are distinctive and easy to notice. (ALARMS)	User guidance	Descriptiveness	4.2.5.1			3.6.2	
159 The meaning of alarms is clear. (ALARMS)	User guidance	Descriptiveness					
160 The user knows what to do when an alarm is presented. (ALARMS)	User guidance	Descriptiveness					
161 It is easy to acknowledge and turn off an alarm after its alerting purpose has been served. (ALARMS)	User guidance	Responsiveness	4.2.5.2			3.6.3	
162 Auditory cues (e.g., computer-generated button "click", tones) provide appropriate feedback for user inputs. (AUDITORY)	User guidance	Responsiveness		3.8.1			

CHARACTERISTIC

FUNCTION

N ATTRIBUTE & Qualifier

2.6.39

3.8.3;
3.8.4

4.3.4.12

Simplicity

User guidance

163 Auditory alarms are effective in directing the user's attention to critical conditions, but do not interfere with other operations. (AUDITORY)

3.13

Consistency

Mission performance

164 System functions are organized in a manner that is consistent with the tasks they are designed to perform.

3.14

Simplicity

Mission performance

165 System functions are organized in a manner that is compatible with how the user thinks of his tasks.

3.11

Descriptiveness

Mission performance

166 The system provides the user with all of the information needed to perform required tasks.

5.4.2

4.4.3.2

Descriptiveness

Mission performance

167 The user is provided adequate status information on transmitted messages.

11.2

Descriptiveness

Mission performance

168 On-line training and training data are readily distinguishable from operational information. (TRAINING)

6.0.1

4.5.1.1

Error abatement

Mission performance

169 The system provides adequate protective measures to ensure data security. (SECURITY)

6.0.2

4.5.1.3

Error abatement

Mission performance

170 The system provides adequate warning when data security is threatened. (SECURITY)

N ATTRIBUTE (& Qualifier)	FUNCTION	CHARACTERISTIC	MIL-STD-1801	MIL-STD-1472D	Ravden & Johnson	Smith & Mosier	AFOTTECP 800-2 Vol4
171 Security safeguards and procedures do not impede efficient and effective system operation. (SECURITY)	Mission performance	Simplicity					
172 The system can be operated without resorting to manual calculations or processing.	Mission performance	Simplicity					11
173 The system can be operated without special workarounds.	Mission performance	Simplicity					
174 Routine operations can be performed without reference to user's or operator's manuals. (MANUALS)	Mission performance	Simplicity					35
175 The system allows operator functions to be performed in an optimal manner.	Mission performance	Simplicity					
176 Operator workload is appropriate (i.e., neither too much to handle, not too little to maintain concentration).	Mission performance	Simplicity					47
177 Functions that the user has not performed for a period of time are easily re-learned.	Mission performance	Simplicity					

Software Usability Evaluation Question Set

This attachment contains a listing of the 177 software usability evaluation items along with the examples and definitions associated with each item. The listing is formatted as it would appear in hard copy format as generated by the Software Usability Evaluator (SUE) software tool. It is not, however, intended for use in an evaluation as is. A software usability questionnaire used in an evaluation must first be tailored to the system to be tested as described in section 3.2 of the pamphlet. This listing is provided as a reference guide to the complete list of evaluation items, the accompanying explanatory information, and the appropriate format for a hard copy questionnaire. The instructions to subjects at the beginning of the listing are representative of instructions that could be used for any evaluation; the SUE software does not provide a hard copy instruction page.

SOFTWARE USABILITY EVALUATOR

INSTRUCTIONS TO RESPONDENTS

This questionnaire contains a series of questions about the usability of the software in the system you have been testing. In general, "usability" simply means how easy the software is to use. In this questionnaire, usability will be assessed in terms of the presence or absence of a set of software quality features that are indicative of good interface design. For each assessment item, you will be asked to indicate whether or not the listed design feature is consistently implemented in the software interface being evaluated.

Responses are to be made by darkening the circle adjacent to the descriptor that best expresses your opinion. The initial response is to indicate whether the design feature is either *Always* or *Not Always* present in the software interface you are evaluating. The additional choices of *Don't Know* and *Not Applicable* may also be selected, if appropriate.

Where a design feature is lacking (i.e., your response is *Not Always*), please provide an estimate of the difficulty caused by the absence of that feature. These ratings are expressed in terms of the impact on operational effectiveness, ranging from *Very Low* to *Very High*.

Where a design feature is lacking, you are also asked to provide an example of where or how that feature is lacking. Such an example might be: "The cursor is difficult to locate on the data base screen".

Many of the assessment items are accompanied by clarifying information in the form of one or more of the following: (1) A *Note* on the intent of the question and how it relates to the system under evaluation; (2) A *Definition* of key terms in the question; and (3) An *Example* of successful implementation of the referenced design feature. This information appears on the facing pages, aligned with the question to which the information applies. Use this information whenever it can help your understanding of the questions.

Please answer all question at your own pace. If you have any uncertainty about the meaning of terms or the intent of the questions, please feel free to consult the questionnaire administrator.

Thank you for your assistance!

NOTE:

DEFINITION:

EXAMPLE: A process requiring specific data cannot be initiated until the appropriate data have been input.

=====

NOTE:

DEFINITION:

EXAMPLE: There is a blinking cursor or other prompt at the location on the screen into which data are required to be entered.

=====

NOTE:

DEFINITION:

EXAMPLE: The system gives an indication as to the nature of the data (e.g., numbers, letters, dates) that must be entered.

=====

QUESTION/STATEMENT

1. The user is adequately prompted when data entry is required.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

2. The user is adequately prompted as to where on the display data are to be entered.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

3. The user is adequately prompted as to what kind of data are required to be entered.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

NOTE:

DEFINITION:

EXAMPLE: If a social security number were required to be entered, it would be prompted as: nnn-nn-nnnn.

NOTE:

DEFINITION: A device is "appropriate" if it minimizes the time and effort required for data input and it minimizes the likelihood of input error.

EXAMPLE:

NOTE:

DEFINITION: A "cursor" is a graphical image showing where keyboard-entered text will appear or where a selection can be made. HOME position is where the cursor first appears on a new screen.

EXAMPLE: After a command is executed, the cursor always appears in the upper left-hand corner of the display.

QUESTION/STATEMENT

4. Where data entry requires fixed or maximum allowable character lengths, there is appropriate prompting on entry size.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

5. Input devices (e.g., keyboard, cursor, mouse, joystick) are appropriate for the tasks being performed.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

6. The cursor returns to a HOME position that is consistent across all display screens.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A "cursor" is a graphical image that shows where keyboard-entered text will appear or where a selection can be made.

EXAMPLE: The cursor is never obscured or camouflaged by other images on the screen. Nor does the cursor move "off the screen" without some indication of where it is or how to retrieve it.

=====

NOTE:

DEFINITION: A "cursor" is a graphical image that shows where keyboard-entered text will appear or where a selection can be made.

EXAMPLE:

=====

NOTE:

DEFINITION: A "cursor" is a graphical image that shows where keyboard-entered text will appear or where a selection can be made.

EXAMPLE: The system groups similar or successive activities in adjacent fields. Alternatively, the system may automatically move the cursor to the next field when an appropriate input is made.

=====

QUESTION/STATEMENT

7. The cursor is easy to locate.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

8. The cursor can be quickly and accurately positioned.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

9. Requirements for cursor movement from one field to another are minimized.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE: Rows, columns, and boxes have labels that are easy to see and understand.

NOTE:

DEFINITION:

EXAMPLE: You are neither forced to speed up nor slow down data entry because of the response time of the computer.

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

10. Data fields are adequately labeled.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

11. Data entry is user-paced, rather than system-paced.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

12. The system minimizes requirements for keyboard and keypad data entry.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE: Data inputs can be reviewed by the operator before the system processes them.

NOTE:

DEFINITION:

EXAMPLE: The system allows simple, selective editing, and minimizes the requirement to re-enter inputs that do not require changes.

QUESTION/STATEMENT

13. Data are entered in familiar units of measurement.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

14. Data inputs can be easily verified before entry or execution.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

15. Text inputs are easy to edit.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE: There are spaces or line feeds between long strings of
alphanumerics.

NOTE:

DEFINITION: "Shift or control key inputs" are inputs that require you to
press two keys simultaneously (e.g., the CONTROL key along
with an alphabetic key) to enter the data.

EXAMPLE:

QUESTION/STATEMENT

16. Where abbreviations and specialized words are required for data entry, these terms are easily associated with normal language or well-known job terminology.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

17. Long alphanumeric items are partitioned for easy data entry.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

18. Data entry requires a minimal amount of shift or control key inputs.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE: Data entry is consistent with the way the task is sequenced or the way in which you normally think of the task.

=====

NOTE:

DEFINITION:

EXAMPLE: If dates are entered as MM/DDD/YY (e.g., 01/JAN/93) in one instance, then the same format is used wherever a date is required to be entered by the operator.

=====

NOTE:

DEFINITION:

EXAMPLE: If the system were to display the rank "SGT", it should require you to enter the rank as "SGT", rather than "SERGEANT".

=====

QUESTION/STATEMENT

19. Data are entered in a logical order.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

20. Formats for data entry are consistent across different displays.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

21. Formats for data entry are compatible with formats for data display outputs.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE: If the source document were a subscriber list, the data entry display would also look like a subscriber list.

=====

NOTE:

DEFINITION:

EXAMPLE: If you have already entered your date of birth, you should not be required to enter your age.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

22. Where data are entered from source documents, the format for data entry corresponds to that of the source documents.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

23. The user is not required to enter data already available to the software.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

24. The system provides quick, positive feedback on the acceptance or rejection of data entry.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A system "validates" a user input when it performs a check for acceptable values or characters.

EXAMPLE: If a number is required to be entered, an alphabetic character will be rejected by the system.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE: The system asks "ARE YOU SURE?" before executing a destructive data entry command.

=====

QUESTION/STATEMENT

25. The system validates user inputs before processing them.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

26. Where the system requires substantial time to process a data entry, there is an adequate "PROCESSING" or "WORKING" message.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

27. There are adequate safeguards against deleting or overwriting protected data.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A "data entry error" is an incorrect alphanumeric input.
"Adequate notification" is timely and easy to notice.

EXAMPLE: If a data entry error is made, the system will not proceed unless
the entry is corrected or deleted.

=====

NOTE:

DEFINITION: A "data entry error" is an incorrect alphanumeric input.

EXAMPLE: The timing and content of data entry error messages make it clear
that it is a data entry action, as opposed to a system state or
external event, that has triggered the error message.

=====

NOTE:

DEFINITION: A "data entry error" is an incorrect alphanumeric input.

EXAMPLE: A message such as "TOO MANY CHARACTERS FOR FILENAME" would be
preferable to "ERROR".

=====

QUESTION/STATEMENT

28. The system provides adequate notification when it detects a data entry error.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

29. Data entry error messages are specific to the detected error condition.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

30. Data entry error messages provide explanations sufficient to understand the cause of the error condition.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A "data entry error" is an incorrect alphanumeric input.

EXAMPLE: A message such as "FILENAME ERROR: MAXIMUM FILENAME LENGTH IS 8 CHARACTERS" would be preferable to "FILENAME ERROR".

=====

NOTE:

DEFINITION: A "data entry error" is an incorrect alphanumeric input.

EXAMPLE: The system allows easy retrieval, editing, and verification of entries that need to be corrected.

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: The system displays "PRESS VERIFY TO CONFIRM" when it requires confirmation of a delete command.

=====

QUESTION/STATEMENT

31. When a data entry error is detected, the system provides adequate guidance on how to correct the error.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

32. Data entry errors are easy to correct.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

33. The system provides adequate prompts when sequence control actions are required.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: You are neither forced to speed up or slow down your commands to the system because of system response time.

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: There is a visible or audible response to each sequence control command within 2-3 seconds, so you are not forced to wonder whether the system has received your command.

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE:

=====

.....

- ☐ ALWAYS ☐ NOT ALWAYS ☐ DON'T KNOW ☐ NOT APPLICABLE

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

VERY LOW 0	LOW 0	MEDIUM 0	HIGH 0	VERY HIGH 0
------------------	----------	-------------	-----------	-------------------

- | CONTROL ACTIONS: | | | |
|------------------|------------|------------|----------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| 0 | 0 | 0 | 0 |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

VERY LOW 0	LOW 0	MEDIUM 0	HIGH 0	VERY HIGH 0
------------------	----------	-------------	-----------	-------------------

- | ALWAYS
O | NOT ALWAYS
O | DON'T KNOW
O | NOT APPLICABLE
O |
|-------------|-----------------|-----------------|---------------------|
| | | | |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

VERY LOW 0	LOW 0	MEDIUM 0	HIGH 0	VERY HIGH 0
------------------	----------	-------------	-----------	-------------------

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: If the command "RUN" were used to initiate an action in one instance, then the same command should be used elsewhere, as opposed to, for example, "GO" or "BEGIN".

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: If a query of a subscriber list produced names in alphabetical order, all similar query results should be in alphabetical order.

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE:

=====

QUESTION/STATEMENT

37. Sequence control actions employ consistent terminology.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

38. Sequence control actions are consistent in form and results.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

39. Sequence control can be performed without reference to user's or operations manuals.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: A sequence control delay might be communicated to the user through a "PROCESSING" or "WORKING" message. Alternatively, the delay might be communicated as an icon such as an hour glass.

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: If a MODEM has a 40-second timeout for initialization, then the sequence control actions for selecting the initialization parameters should be less than 40 seconds.

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE:

=====

QUESTION/STATEMENT

40. Where sequence control actions must be delayed because of computer processing, the system effectively identifies that delay to the user.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

41. System response times for sequence control actions are consistent with operational requirements.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

42. The system informs the user when a requested sequence control function is completed, either successfully or unsuccessfully.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE:

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE:

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: The system displays "TERMINATE TAPE BACKUP, Y OR N" when a command is issued during execution of an earlier command to perform tape backup.

QUESTION/STATEMENT

43. Sequence control actions can be easily interrupted by the operator when necessary.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

44. The system provides adequate protection against accidental activation of sequence control functions.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

45. The system gives adequate warning before active sequence control functions are terminated.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: The system provides an "ARE YOU SURE?" prompt before the destructive command is executed.

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: The message "CANNOT COPY A FILE ONTO ITSELF" would be preferable to the message "FILE COPY ERROR".

=====

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: The message "MODEM IN USE, AVAILABLE MODEMS ARE 2, 4, AND 5" provides the information necessary to correct the sequence control command.

=====

QUESTION/STATEMENT

46. The system gives adequate warning before destructive sequence control functions are executed.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

47. When a sequence control error is detected, there is adequate explanation as to the nature of the error.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

48. When a sequence control error has been detected, the system provides adequate guidance on how to remedy the error condition.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: "Sequence control" refers to operator actions that initiate, terminate, or interrupt a system process.

EXAMPLE: The system possesses an "UNDO" option that reverses the preceeding command.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE: There is a reserved field in which the mode (e.g., EDIT, MONITOR, COMMAND) is always displayed.

=====

QUESTION/STATEMENT

49. Incorrect and unintended sequence control actions are easy to reverse or correct.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

50. Where multiple users interact with the same data, there are adequate provisions for protecting one user's data from actions by the other user.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

51. Where there are several possible modes of operation (e.g., EDIT, MONITOR), the user knows what mode he is currently in.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE: All file manipulation options (e.g., create, delete, copy, move) are grouped together.

- ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
☐ ☐ ☐ ☐

VERY LOW 0	LOW 0	MEDIUM 0	HIGH 0	VERY HIGH 0
------------------	----------	-------------	-----------	-------------------

- | | | | |
|---------------|-------------------|-------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| O | O | O | O |

VERY LOW 0	LOW 0	MEDIUM 0	HIGH 0	VERY HIGH 0
------------------	----------	-------------	-----------	-------------------

- | ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
|--------|------------|------------|----------------|
| 0 | 0 | 0 | 0 |

VERY LOW 0	LOW 0	MEDIUM 0	HIGH 0	VERY HIGH 0
------------------	----------	-------------	-----------	-------------------

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

=====

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE: The defaults for successive levels of the menu hierarchy might be: "FILE", "SAVE", "CURRENT DIRECTORY".

=====

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

=====

QUESTION/STATEMENT

55. Menu selection options are organized to allow rapid access to frequent commands.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

	VERY				VERY
	LOW	LOW	MEDIUM	HIGH	HIGH
	☐	☐	☐	☐	☐

=====

56. The system defaults to menu options that are most frequently used or logically related to current operations.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

	VERY				VERY
	LOW	LOW	MEDIUM	HIGH	HIGH
	☐	☐	☐	☐	☐

=====

57. Menu options are consistent in wording, order, and format.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

	VERY				VERY
	LOW	LOW	MEDIUM	HIGH	HIGH
	☐	☐	☐	☐	☐

=====

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

QUESTION/STATEMENT

58. Wording of menu options is consistent with the functions and processes they control.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

59. It is easy to activate the desired menu options.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

60. It is easy to locate desired menu options within the menu hierarchy.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE: Unavailable options are shown in gray, while available options are shown in black.

NOTE:

DEFINITION: A "menu" is a list of available selections that a user may activate by keypress or pointing devices.

EXAMPLE:

NOTE:

DEFINITION: The "menu hierarchy" refers to a tree-like structure of menus in which a given menu selection leads to a related set of new menu items, each of which may lead to additional menu items.

EXAMPLE: The system displays an overlay or diagram that shows the user where he is in the menu hierarchy.

QUESTION/STATEMENT

61. Inactive or unavailable menu selections are either omitted from display or de-emphasized to indicate that they may not be selected.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

62. The system responds quickly and accurately to menu commands.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

63. When you are operating within the menu hierarchy, it is easy to determine where you are within that hierarchy.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: The "menu hierarchy" refers to a tree-like structure of menus in which a given menu selection leads to a related set of new menu items, each of which may lead to additional menu items.

EXAMPLE:

NOTE:

DEFINITION: The "menu hierarchy" refers to a tree-like structure of menus in which a given menu selection leads to a related set of new menu items, each of which may lead to additional menu items.

EXAMPLE: The system does not require the user to sequentially back out of long menu hierarchies in order to access menu options that might reside within a different branch of the hierarchy.

NOTE:

DEFINITION: The "menu hierarchy" refers to a tree-like structure of menus in which a given menu selection leads to a related set of new menu items, each of which may lead to additional menu items.

EXAMPLE:

The menu hierarchy is organized so that critical or frequently used options are easy to select.

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

It is easy to move among different levels of the menu hierarchy.

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking:

66. The menu hierarchy is organized so that movement up and down levels of the hierarchy is minimized.

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking:

	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
What is the overall impact of this feature on operational effectiveness?	0	0	0	0	0

NOTE:

DEFINITION: "Function keys" are individual buttons that permit control of the system by direct selection of labeled functions, as opposed to selection from displayed menus.

EXAMPLE:

NOTE:

DEFINITION: "Function keys" are individual buttons that permit control of the system by direct selection of labeled functions, as opposed to selection from displayed menus.

EXAMPLE:

NOTE:

DEFINITION: "Function keys" are individual buttons that permit control of the system by direct selection of labeled functions, as opposed to selection from displayed menus.

EXAMPLE: Where function keys are defined with on-screen legends, similar function keys are always in the same place.

QUESTION/STATEMENT

67. Function keys are adequately labeled.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

68. Function key locations are appropriate to their frequency of use.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

69. The assignment of functions to function keys is consistent across different operations.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: "Function keys" are individual buttons that permit control of the system by direct selection of labeled functions, as opposed to selection from displayed menus.

EXAMPLE:

NOTE:

DEFINITION: "Function keys" are individual buttons that permit control of the system by direct selection of labeled functions, as opposed to selection from displayed menus.

EXAMPLE: The system provides a visible or audible response to function key inputs within 2-3 seconds.

NOTE:

DEFINITION: "Command language" is a dialogue format in which the user specifies desired actions through messages he composes (in either natural language or code) and transmits to the

EXAMPLE: Command language uses English or English-like expressions.

QUESTION/STATEMENT _____

- | key commands. | | DON'T KNOW | | NOT APPLICABLE |
|---------------|------------|------------|--|----------------|
| ALWAYS | NOT ALWAYS | | | |
| 0 | 0 | 0 | | 0 |

feature is lacking.

=====

- | commands are initiated. | | | |
|-------------------------|------------|------------|----------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| 0 | 0 | 0 | 0 |

feature is lacking. _____

=====

- | | | | |
|---------------|-------------------|-------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ○ | ○ | ○ | ○ |

feature is lacking: _____

NOTE:

DEFINITION: "Command language" is a dialogue format in which the user specifies desired actions through messages he composes (in either natural language or code) and transmits to the

EXAMPLE:

NOTE:

DEFINITION: "Command language" is a dialogue format in which the user specifies desired actions through messages he composes (in either natural language or code) and transmits to the

EXAMPLE:

NOTE:

DEFINITION: "Command language" is a dialogue format in which the user specifies desired actions through messages he composes (in either natural language or code) and transmits to the

EXAMPLE:

QUESTION/STATEMENT

73. Command language entry areas are consistent across different displays.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
What is the overall impact of this feature on operational effectiveness?	☐	☐	☐	☐	☐

=====

74. Wording of command language is consistent with the functions being controlled.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
What is the overall impact of this feature on operational effectiveness?	☐	☐	☐	☐	☐

=====

75. Wording of command language is consistent across different functions.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
What is the overall impact of this feature on operational effectiveness?	☐	☐	☐	☐	☐

=====

NOTE:

DEFINITION: "Command language" is a dialogue format in which the user specifies desired actions through messages he composes (in either natural language or code) and transmits to the

EXAMPLE: Where a command string is input, and an error is recognized by the user, the system permits non-destructive backspacing to correct the error.

=====

NOTE:

DEFINITION: "Command language" is a dialogue format in which the user specifies desired actions through messages he composes (in either natural language or code) and transmits to the

EXAMPLE:

=====

NOTE:

DEFINITION: "Command language" is a dialogue format in which the user specifies desired actions through messages he composes (in either natural language or code) and transmits to the

EXAMPLE: The system provides a visual or audible response to light pen inputs within 2-3 seconds.

=====

QUESTION/STATEMENT

76. Command language is easy to edit.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

77. The user is advised of command language errors.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

78. The system responds quickly and accurately to light pen inputs.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

NOTE:

DEFINITION: A "touch screen" is a video display in which the user indicates selections by touching specific areas on the screen.

EXAMPLE:

NOTE:

DEFINITION: A "touch screen" is a video display in which the user indicates selections by touching specific areas on the screen.

EXAMPLE: The system provides a visual or audible input to touch screen inputs within 2-3 seconds.

NOTE:

DEFINITION: A "track ball" is a moveable socket-mounted ball used to control the system pointer. A "pointer" is a graphical image that represents the current position of the track ball.

EXAMPLE:

QUESTION/STATEMENT

79. It is easy to locate and reach the appropriate screen locations for touch screen inputs.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

80. The system responds quickly and accurately to touch screen inputs.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

81. It is easy to position the track ball pointer on desired selections.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A "track ball" is a moveable socket-mounted ball used to control the system pointer. A "pointer" is a graphical image that represents the current position of the track ball.

EXAMPLE: The system provides a visual or audible response to track ball selection button presses within 2-3 seconds.

=====

NOTE:

DEFINITION: A "pointer" is a graphical device that represents the current position of a mouse, track ball, or other pointing device.

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE: The system provides a visual or audible response to mouse selection button presses within 2-3 seconds.

=====

QUESTION/STATEMENT

82. The system responds quickly and accurately to track ball selection button presses.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

83. It is easy to position the mouse pointer on desired selections.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

84. The system responds quickly and accurately to mouse selection button presses.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION: "Direct manipulation" is a dialogue technique in which the user directly acts upon objects by selecting, moving, or modifying them, usually by pointing, clicking, or dragging.

EXAMPLE: A direct manipulation "object" might be displayed circuit card, which when selected and rotated, would reveal the underside of the card.

NOTE:

DEFINITION:

EXAMPLE: An icon of a computer disk might be used to represent a computer file, but the icon would be accompanied by the printed file name.

QUESTION/STATEMENT

85. The system minimizes shifting from mouse to keyboard inputs.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

86. Objects used in direct manipulation dialogues are easy to see and recognize.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

87. Where the same object is used to represent multiple entities (e.g., computer files, directories), the objects are accompanied by distinctive text labels.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE: If one object overlaps another, there is an easy way of bringing the lower object to the foreground.

NOTE:

DEFINITION:

EXAMPLE: When data on a particular satellite are being displayed, the picture of that satellite goes from gray to blue.

QUESTION/STATEMENT

88. Manipulation of objects does not require excessively fine pointing or manual adjustment.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

89. There is adequate access to overlapping objects.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

90. The status of manipulated objects (e.g., active, selected, unavailable) is clearly displayed.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: "Query language" is a form of command language used to request information from the computer.

EXAMPLE: Query language uses English or English-like expressions.

=====

NOTE:

DEFINITION: "Query language" is a form of command language used to request information from the computer.

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

91. Query language commands are easy to learn and remember.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

92. Query language allows the user to access desired data quickly and accurately.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

93. Password procedures for LOG-ON are easy to use.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE: There is neither too much nor too little information presented at one time.

NOTE:

DEFINITION:

EXAMPLE: When a "PAGE DOWN" command is issued, the last row on the first page appears again as the first row on the second page.

QUESTION/STATEMENT

94. Information is easy to find on the screen.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

95. The amount of data presented at any one time is appropriate.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

96. It is easy to follow data that are displayed over multiple pages.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

97. Data are displayed in a logical manner.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

98. Important data are prominently displayed.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

99. In any given display, all necessary data are displayed.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE: The system allows the user to limit the number of decimal places displayed in numeric data.

NOTE:

DEFINITION:

EXAMPLE: The data require no translation or manipulation by the user.

QUESTION/STATEMENT

100. Information is presented to the user at a comfortable rate.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

101. Unless requested by the user, only necessary data appear on the display.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

102. Data are displayed in a readily usable form.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

NOTE:

DEFINITION:

EXAMPLE: Responses to one user input are displayed before the user has completed his next input.

NOTE:

DEFINITION:

EXAMPLE: Where a system is displaying real-time telemetry data, it "freezes" the values for 10-second intervals to allow the user time to scan those values.

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

103. Display update rate is fast enough to keep pace with user and system actions.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

104. Display update rate is not so fast as to impair readability or utility of the data.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

105. Data displays minimize the requirement for memorization or interpretation.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE: Where the user is required to enter data from a paper form, the labels and sequence of items on the paper form correspond with the data prompts on the computer screen.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

106. Data display formats are consistent with the method of data entry.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0
=====

107. Data displays use familiar language and notation.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0
=====

108. Data display formats are consistent across the system.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0
=====

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

109. Data displays use a minimal number of abbreviations and special characters.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

110. Wording is consistent across displays.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

111. Units of measurement are consistent across different displays.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

NOTE:

DEFINITION:

EXAMPLE: A satellite control system displays all health and status monitoring displays within a single screen.

=====

NOTE:

DEFINITION:

EXAMPLE: Boxes or lines are used to emphasize the separation between different data fields.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

112. Display grouping is consistent with system functions.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

113. Data fields are distinctively separated:

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

114. Rows and columns of tabular data are adequately separated.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE: The credit card number 6011256219870020 is displayed as: 6011
2562 1987 0020.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

115. Long strings of alphanumeric data are partitioned for easy readability.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

116. Data displays are organized in a logical, functionally useful manner.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

117. Data displays are appropriately labeled.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE: The display avoids uncomfortable color contrasts (e.g., yellow on orange).

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

118. Text displays are easy to read.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY				VERY
	LOW	LOW	MEDIUM	HIGH	HIGH
	☐	☐	☐	☐	☐

=====

119. There is adequate highlighting (e.g., reverse video, color, flash, bold face) of information requiring user attention.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY				VERY
	LOW	LOW	MEDIUM	HIGH	HIGH
	☐	☐	☐	☐	☐

=====

120. Display coding methods (e.g., reverse video, color, flash, bold face) are consistent across displays.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY				VERY
	LOW	LOW	MEDIUM	HIGH	HIGH
	☐	☐	☐	☐	☐

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown. A "window overlay" is a superimposed window that temporarily displays menu choices or information.

EXAMPLE:

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE:

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE: In the upper left corner of each window is a small box that may be "double clicked" to close the window.

=====

QUESTION/STATEMENT

121. Windows and window overlays are appropriate for the type of information displayed and controlled in this system.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

122. The method for controlling windows is consistent across displays.
- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| ALWAYS | NOT ALWAYS | DON'T KNOW | NOT APPLICABLE |
| ☐ | ☐ | ☐ | ☐ |

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

123. Windows are easy to open and close manually.

ALWAYS	NOT ALWAYS	DON'T KNOW	NOT APPLICABLE
☐	☐	☐	☐

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
	☐	☐	☐	☐	☐

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE:

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown. A "window overlay" is a superimposed window that temporarily displays menu choices or information.

EXAMPLE:

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE:

=====

QUESTION/STATEMENT

124. Where windows are opened and closed automatically by the software, they are available when needed and suppressed when not needed.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

125. Window overlays are situated so that they do not obscure important information.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

126. Windows are adequately labeled as to the nature of the data presented or the type of operation to be performed in that window.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE: The border around a window is highlighted when that window becomes active.

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE:

=====

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE: A scroll bar is used to move up or down within a window.

=====

QUESTION/STATEMENT

127. Where several windows are displayed simultaneously, it is easy to see which windows are active and inactive at any given time.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

128. Where several windows are displayed simultaneously, it is easy for the user to shift among them to select which window is to be made active.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

129. It is easy to scroll within windows.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: A "window" is a display frame within which a set of data or menu options are shown.

EXAMPLE: A word processor provides a scroll bar "elevator" whose position within the scroll bar corresponds to the position of the current line relative to the entire document.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

130. When scrolling across or through windows, the system provides adequate indication of the position of the current view in relation to the area as a whole.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

131. Schematic and pictorial displays are clearly drawn and labeled.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

132. Multiple, simultaneous display graphics do not interfere with one another.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness?

VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE: Operational conventions might include circle for friendly track
and cross for hostile.

=====

NOTE:

DEFINITION:

EXAMPLE: An image of a file folder is used to represent a sub-directory in
a computer disk.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

133. Display shapes and symbols conform to accepted operational conventions.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

134. Graphic symbology is appropriate for the information it represents.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

135. Icons and graphic symbols are used consistently across different displays.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE: Operational conventions might include red for "danger" and yellow for "caution".

=====

QUESTION/STATEMENT

136. All graph axes and scales are adequately labeled.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

137. Colors used in displays are easy to distinguish from one another.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

138. Display colors are consistent with operational conventions.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION: "Peripheral devices" are devices connected to, but not an integral part of the computer system (e.g., printer, modem, fax).

EXAMPLE: The system informs the user when a printer is not on line.

QUESTION/STATEMENT

139. Color coding is used consistently across different displays.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

140. The use of color enhances the readability and utility of displays.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

141. The system provides an adequate amount of feedback on the status of peripheral devices.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

142. The system provides adequate feedback when an internal fault is detected.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

143. The causes of system halts are adequately explained.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

144. System messages to the user are informative and concise.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION: "On-line user guidance" consists of explanatory information (e.g., indexes, definitions, "HELP" functions) provided to the user by the computer while an application program is running.

EXAMPLE: The system provides user-selectable levels of HELP or definitions.

=====

NOTE:

DEFINITION: "On-line user guidance" consists of explanatory information (e.g., indexes, definitions, "HELP" functions) provided to the user by the computer while an application program is running.

EXAMPLE:

=====

QUESTION/STATEMENT

145. Throughout all phases of operation, there is adequate feedback on system status.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

146. The system provides an adequate amount of on-line user guidance.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

147. On-line user guidance provides useful information.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

NOTE:

DEFINITION: "On-line user guidance" consists of explanatory information (e.g., indexes, definitions, "HELP" functions) provided to the user by the computer while an application program is running.

EXAMPLE: On-line user guidance is "standalone", in that it requires no additional written support to be of use.

=====

NOTE:

DEFINITION: "On-line user guidance" consists of explanatory information (e.g., indexes, definitions, "HELP" functions) provided to the user by the computer while an application program is running.

EXAMPLE: Warnings and caution messages within on-line user guidance are printed in bold face.

=====

NOTE:

DEFINITION: "On-line user guidance" consists of explanatory information (e.g., indexes, definitions, "HELP" functions) provided to the user by the computer while an application program is running.

EXAMPLE:

=====

QUESTION/STATEMENT

148. On-line user guidance is readily understandable.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

149. Critical on-line user guidance is adequately highlighted.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

150. Formats for on-line user guidance are consistent across different functions.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION: "On-line user guidance" consists of explanatory information (e.g., indexes, definitions, "HELP" functions) provided to the user by the computer while an application program is running.

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

151. Wording is consistent across different types of on-line user guidance messages.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

152. The user's or operator's manual provides complete descriptions of operating procedures.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

153. The user's or operator's manual provides only necessary information.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

154. The user's or operator's manual is easy to use.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

155. Guidance in the user's or operator's manual is consistent with how the system actually works.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

156. Advisory messages are relevant to the tasks being performed.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

157. Advisory messages are short and to the point.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

158. Alarms are distinctive and easy to notice.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

159. The meaning of alarms is clear.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE: Once acknowledged, an auditory alarm will remain silent until the next alarm condition occurs.

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

QUESTION/STATEMENT

160. The user knows what to do when an alarm is presented.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

161. It is easy to acknowledge and turn off an alarm after its alerting purpose has been served.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

162. Auditory cues (e.g., computer-generated button "click", tones) provide appropriate feedback for user inputs.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

163. Auditory alarms are effective in directing the user's attention to critical conditions, but do not interfere with other operations.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

164. System functions are organized in a manner that is consistent with the tasks they are designed to perform.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

165. System functions are organized in a manner that is compatible with how the user thinks of his tasks.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION:

EXAMPLE:

=====

NOTE:

DEFINITION: "On-line training" is instructional programming that is presented through the operational hardware (as opposed to instruction provided through a training simulator).

EXAMPLE:

=====

QUESTION/STATEMENT

166. The system provides the user with all of the information needed to perform required tasks.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

167. The user is provided adequate status information on transmitted messages.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

168. On-line training and training data are readily distinguishable from operational information.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

- For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

=====

- For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

[illegible]

- For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

.....

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

172. The system can be operated without resorting to manual calculations or processing.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

173. The system can be operated without special workarounds.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

174. Routine operations can be performed without reference to user's or operator's manuals.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
0 0 0 0

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
0 0 0 0 0

=====

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

NOTE:

DEFINITION:

EXAMPLE:

QUESTION/STATEMENT

175. The system allows operator functions to be performed in an optimal manner.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

176. Operator workload is appropriate (i.e., neither too much to handle, not too little to maintain concentration).

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

177. Functions that the user has not performed for a period of time are easily re-learned.

ALWAYS NOT ALWAYS DON'T KNOW NOT APPLICABLE
O O O O

For a response of "NOT ALWAYS", please provide an example of where the feature is lacking: _____

What is the overall impact of this feature on operational effectiveness? VERY LOW LOW MEDIUM HIGH VERY HIGH
O O O O O

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SUE Software Tool Users' Manual

This attachment contains the users' guide for installation and operation of the Software Usability Evaluator (SUE) software tool Version 2.6. This users' guide can be used as a stand-alone document for operating the SUE, but it does not provide any information regarding the procedures used by AFOTEC to plan, conduct, analyze, and report a software usability evaluation for OT&E. If this copy of AFOTEC PAM 99-102, volume 4 did not contain diskettes with the SUE, please contact your local software usability point of contact, or call or write the Human Factors and Training Analysis Team, HQ AFOTEC/SAH, 8500 Gibson Blvd SE, Kirtland AFB, New Mexico, 87117-5558, DSN 246-1375 or (505) 846-1375.

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SOFTWARE USABILITY EVALUATOR, VERSION 2.6

USER'S GUIDE

SECTION 1 INTRODUCTION

1.1 BACKGROUND

The Software Usability Evaluator (SUE) is a microprocessor-based tool for the generation, administration, analysis, and reporting of questionnaires on software usability. SUE was developed by the Air Force Operational Test and Evaluation Center (AFOTEC) for the assessment of usability in an operational test and evaluation environment. SUE is therefore intended to be used on relatively mature software interfaces, where trained and experienced users may be asked to evaluate both the interface and its effectiveness in an overall mission context.

SUE is designed for both office and field applications. While it is advisable to have a test administrator present to initialize the software and manage the data, SUE may be self-administered with no external guidance when necessary. Although SUE may be applied as a stand-alone evaluation tool, it is highly recommended that SUE results be accompanied by performance data (e.g., task speed or accuracy) that provide objective measures of software effectiveness.

1.2 EVALUATION METHODOLOGY

As an operational test tool, SUE is intended to provide descriptive, as opposed to normative, data on software usability. The evaluation methodology employs a set of software usability attribute statements which characterize good software-operator interfaces (e.g., "The cursor is easy to locate."). Each respondent is asked to indicate whether the attribute is either universally present (i.e., a response of "Always") or not universally present (i.e., a response of "Not Always") in the interface being evaluated. Where the attribute is judged to be Not Always present, the respondent is further asked to provide: (1) an example or instance in which the

attribute is lacking; and (2) a rating, on a 5-point scale, of the operational impact of this interface deficiency.

Since the SUE is designed to be applicable to a wide variety of systems and software interfaces, the set of usability attributes is quite large and varied. One of the key features of SUE is the ability it provides the analyst or administrator to tailor the attribute set for a specific system. Tailoring is generally a two-step process. The first step is an automated query of the attribute list based on the presence or absence of 24 system features comprising what is referred to as a "System Profile." An example of such a feature is "Light Pen." If, for example, the system under evaluation did not possess a light pen, all usability attribute statements referencing a light pen would be eliminated from the questionnaire tailored for that system.

The second, and optional, step of questionnaire tailoring is an item-by-item review of the list of attribute statements remaining after initial tailoring by system feature. At this point, the analyst or administrator further culls from the list of attribute statements those items that do not pertain to the system under consideration and those items that are of lesser interest to him.

Each attribute statement may be accompanied by amplifying information, in the form of a Note, Definition, or Example, that is intended to clarify the meaning of the attribute statement. Definitions and Examples are self-contained in SUE files, but Notes are generated by the questionnaire analyst or administrator after the attribute list has been appropriately tailored.

SUE may be administered on-line to a respondent interacting directly with a microcomputer. In this case, all responses, examples, and impact ratings are input directly by the respondent. Where a microcomputer is unavailable for administration, SUE can generate a paper analog of the on-line questionnaire. Once completed, the analyst may score the results manually, or he may use SUE routines to input the data into a microcomputer for automated analysis and report generation.

A typical progression of SUE use proceeds as follows:

- 1) The analyst identifies and describes the system under study.
- 2) The analyst defines a system profile.

3) A set of attribute statements (or "questions") is generated by SUE based on the System Profile.

4) The analyst reviews and edits out additional questions that are irrelevant or not of interest to him.

5) The analyst creates customized notes to accompany the questions he has selected for the questionnaire.

6) The questionnaire is administered on-line to one or more respondents.

7) The analyst selects response files for analysis.

8) The analyst selects and prints a report format.

1.3 SYSTEM REQUIREMENTS

The system requirements for running SUE are listed below:

1) 100% IBM-compatible, protected mode capable, 386 or above PC (either Desktop or Laptop/Notebook).

2) A hard disk and floppy disk drive (3 1/2" or 5 1/4").

3) Minimum of 2 MB RAM required for Paradox 4.0 Runtime (4 MB preferred).

4) Minimum of 2.5 MB free disk space.

5) DOS 3.0 or higher.

6) Mouse control is supported but not required; Keyboard entry is required.

7) Monochrome or color monitor - compatible MDA, CMGA, CGA, EGA, VGA or SVGA monitor with adapter.

- 8) Compatible with most widely used printers.

1.4 INSTALLATION AND STARTUP

1.4.1 Installing Paradox 4.0 Runtime

NOTE: If PARADOX 4.0 RUNTIME is already installed on your computer, skip this step, and go on to installing the SUE software.

- 1) Insert the PARADOX 4.0 RUNTIME 3.5-inch diskette into your computer's disk drive.
- 2) Make your hard disk drive the current drive (if your hard disk is drive C, make sure the system prompt is C:\>).
- 3) Type a:install (or b:install for drive B) and press Enter.
- 4) Follow the onscreen instructions. If you have trouble reading the text on the screen, press ESC to exit the program. Restart the program with the command a:install -b&w
- 5) If the installation program changed your Config.sys file, remove the PARADOX diskette and reboot your computer before proceeding.

1.4.2 Installing the SUE Application Software

- 1) Insert the SUE Application diskette into drive A (or B).
- 2) At the C:\> prompt, type the following:

```
C:\> copy a:sue.bat c:
```

- 3) Change directories to the PARADOX 4.0 RUNTIME directory with the following command from the DOS prompt:

```
C:\> cd pdoxrun
```

4) Copy the files into the PARADOX RUNTIME directory with the following command:

```
C:\PDOXRUN > xcopy a:*.*
```

1.4.3 Starting the SUE Application

To start the SUE application, type the following:

```
C:\ > sue
```

[You can also start the application manually by changing directories to the PARADOX RUNTIME directory and typing the following: C:\PDOXRUN > **PDOXRUN MAIN**]

Once you have entered this command, the Main Menu will appear.

1.4.4 Running the Application from an MS-Windows Environment

Although it is not recommended, you can run the SUE application software from within Windows. If you are running the SUE applications from MS-Windows, you first select the MS-DOS icon to exit the windows shell. Then, follow the steps below:

```
<<winshell>> C:\windows > CD\
```

```
<<winshell>> C:\ > CD \PDOXRUN
```

```
<<winshell>> C:\PDOXRUN > PDOXRUN MAIN
```

1.5 FUNCTIONAL ORGANIZATION

SUE functions are organized in a hierarchical menu structure. A Main Menu appears at the top level of the hierarchy. Five paths emanate from the Main Menu, which provide capabilities for questionnaire construction, hardcopy administration, online administration, analysis/report generation, and performance of various SUE utilities. The menu hierarchy is listed below:

Main Menu

Questionnaire Construction

- Create New Profile**

 - Edit Questionnaire**

 - Print Question List**

 - Print System Profile**

- Edit Questionnaire or Profile**

 - Question Set**

 - Print the Question List**

 - System Profile**

- Delete Profile**

- Copy Profile**

- Print Profile**

- Print Question List**

- Print Questionnaire Form**

Online Administration

- Read Instructions**

- Begin the Questionnaire**

- Resume the Questionnaire**

Analysis & Reports

- Use Full Data Set**

- Custom Notes**

- Use Subset of Data**

Utilities

- Enter Data from Hard Copy**

- Data Management**

 - Verify Respondent Data**

 - Create a Full Data Set**

 - Create a Specific Data Subset**

 - Delete a Respondent File**

The balance of this manual is organized by the main functional levels within SUE, corresponding to the first-level selections within the menu hierarchy.

SECTION 2

MAIN MENU

The Main Menu appears upon startup of the SUE software. The screen is illustrated below:

SOFTWARE USABILITY EVALUATOR VERSION 2.6
--

MAIN MENU	
Questionnaire Construction	>
Print Questionnaire Form	
On-line Administration	
Analysis & Reporting	
Utilities	>
Exit	

Use arrow keys to highlight your choice, then press ENTER; or use the mouse to click on your choice.

Create or edit Profile of System Features to tailor SUE

Highlighted selections (shown here as bold type) indicate the selected option (i.e., the option that will be activated when "Enter" is pressed). The information at the bottom of the screen provides additional detail on the functions of the highlighted selection. Selections are made either by pointing and clicking on the desired option with a mouse or by highlighting the selection using the down and up cursor keys and then pressing "Enter."

SECTION 3

QUESTIONNAIRE CONSTRUCTION

The Questionnaire Construction option is used for the creation and modification of questionnaires. This is normally performed by a combination of selection by system feature and item-by-item deletion of unwanted questions (see Section 1.2). Selection of the Questionnaire Construction option produces the cascaded menu of options shown below:

SOFTWARE USABILITY EVALUATOR

VERSION 2.6

MAIN MENU

Questionnaire Construction

Create New Profile

Edit Questionnaire or Profile

Delete Profile

Copy Profile

Print Profile

Print Question List

Cancel

Use arrow keys to highlight your choice, then press ENTER;
or use the mouse to click on your choice.

Create a New System Profile

The function of each of these options is as follows:

Create New Profile: Create a new System Profile.

Edit Questionnaire or Profile: Make changes to an existing system profile or question set.

Delete Profile: Erase an existing system profile.

Copy Profile: Copy and rename an existing system profile.

Print Profile: Print a listing of the system profile.

Print Question List: Print a condensed listing of questions making up a questionnaire.

Cancel: Return to the Main Menu.

3.1 CREATING A NEW PROFILE

A new profile must be created any time a new questionnaire is to be written. Creation of a new profile requires naming and description of the new questionnaire, followed by an enumeration of hardware and interface features possessed by the system being evaluated. Selection of the Create New Profile option produces the screen shown below:

CREATE NEW SYSTEM PROFILE

SYSTEM INFORMATION:

Profile Name:

Description:

Author:

Type in System information

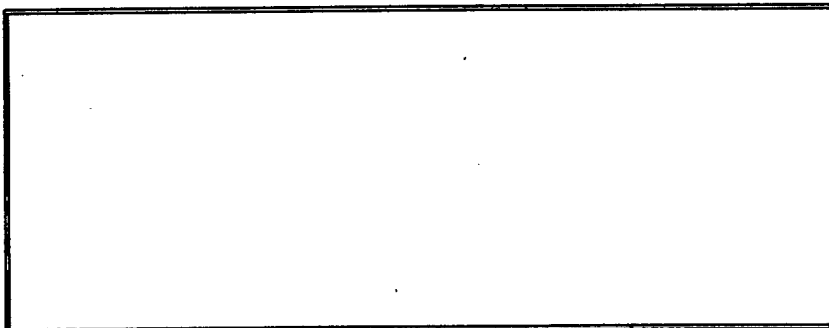
Press F2 to Save and Continue
Press ESC to Cancel

The Profile Name must be a unique 7-character string, with no spaces or punctuation. This is the name by which a particular profile and subsequent questionnaire will be identified in all other transactions. The Description field is optional and may be used to provide additional information on the purpose or target system for the questionnaire. The Author field is also optional, but it is advised that questionnaire authors provide this information for archival purposes. Pressing F2 saves the system information and leads the user to the feature list by which the user characterizes the system for questionnaire tailoring. The feature list screen is shown on the following page.

NEW SYSTEM PROFILE NAME: ALPHA12
FEATURES:

- | | | |
|-----------------------|--------------------|----------------------|
| > Alarms | > Keyboard | > Peripheral Devices |
| > Auditory | > Light Pen | > Query Language |
| > Color | > Log-On | > Security |
| > Command Language | > Manual | > Tables |
| > Cursor | > Menu | > Touch Screen |
| > Direct Manipulation | > Mouse | > Trackball |
| > Function Keys | > Multiple Users | > Training |
| > Graphics | > On-line Guidance | > Windows |

Move to a FEATURE, then press F4 to see its definition below:



Next to each feature
type Y if the system has
that feature or N if it
does not.
Blank also equals Y.

Press F2 to save.
Press ESC to cancel.

To complete the profile, enter a Y (if the feature is present in the system to be evaluated) or N (if the feature is not present in the system) for each of the items on the features list. Features marked "Y" will have their associated questions included in the questionnaire; those marked "N" will cause questions associated with those features omitted from the questionnaire. Note that a blank entry is equivalent to a "Y" for the purposes of this screen.

If you are unsure of the meaning of a particular feature, press F4 for a definition. That definition will remain on the screen until you ask for the definition of another feature. When you have completed your responses to the feature list, press F2 to save and continue, or ESC to cancel and return to the Main Menu.

Pressing F2 will save the system profile and lead you to the Options menu shown on the following page.

OPTIONS for System Profile: ALPHA12

Edit Question List
Print Question List
Print System Profile
Return to the Main Menu

Edit questionnaire by deleting items for this profile

The questionnaire at this point contains questions included by virtue of the system profile provided in the previous screen. You may now:

- 1) Edit the questionnaire through item-by-item review.
- 2) Print the question list associated with the current system profile.

3) Print the system profile (i.e., the collection of Ys and Ns entered in the previous screen).

4) Return to the Main Menu.

Selection of Edit Question List produces the following screen:

DELETE SUE QUESTIONS FROM SET: ALPHA12

1 of 122

Item ID	Question/Statement
1	The user is adequately prompted when data entry is required.

Press DEL to delete question from this set.

Press PgDn to view next question.

Press PgUp to view previous question.

Press F2 to Save Question Set and return to Main Menu.

Press ESC to cancel all deletions and return to Options Menu.

From this screen, you review each of the attribute statements included in the questionnaire by virtue of the system profile. Delete any attribute statement that you wish to omit from your SUE questionnaire. Each item in the profile set will appear sequentially. Once attribute statements are deleted and the questionnaire is saved (i.e., by pressing F2), these items are permanently removed from the question set.

To Review and Edit a Question List:

- Scroll through items in the question set using the Page Up/Page Down keys.
- To Delete the item on the screen, press DELETE.
- To Save the Question Set after deletions have been made, Press F2.
- Press ESC to Cancel all item deletions and Return to the Options menu.

If you select the Print Question List option, all items belonging to your question set will be printed out. You may interrupt printing once a question set print has started by pressing the Up arrow (or any other key). This will bring up the message: "Printing interrupted - Press C to Cancel and R to Resume ." To stop printing, Press C.

To Print the System Profile:

- Select Print System Profile.
- Highlight your menu choice by moving arrow keys UP or DOWN, or click on option with mouse.
- Press ENTER to select option.

3.2 EDITING A QUESTION SET OR PROFILE

Existing questionnaires or profiles may be edited by selecting Edit Questionnaire or Profile from the Questionnaire Construction menu.

SOFTWARE USABILITY EVALUATOR

VERSION 2.6

MAIN MENU

Questionnaire Construction
Create New Profile
Edit Question Set or Profile
Questionnaire
Custom Notes
System Profile
Cancel

Use arrow keys to highlight your choice, then press ENTER;
or use the mouse to click on your choice.

Edit a Questionnaire by deleting items from the question set.

From this menu, you continue the questionnaire construction process with one of the following options:

- Questionnaire - Make changes to a question set by deleting items.
- Custom Notes - Write customized notes to accompany individual questions.
- System Profile - Make changes to the Profile Information or system feature list associated with a system profile

3.2.1 Editing a Questionnaire

Once you press Questionnaire, you need to specify the system profile that you wish to edit. The screen shown on the following page allows you to select the system profile.

EDIT QUESTIONNAIRE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To edit a Questionnaire:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

This screen presents the list of system names (i.e., system profiles) that have already been created and are available to edit. While only six are visible on the screen, you may scroll to view additional system names.

You edit a questionnaire by eliminating individual questions from the questionnaire associated with an existing profile. To select the system name whose questionnaire you wish to edit from this list, highlight the desired system name, then press ENTER or click the OK button. Press or click on CANCEL to return to the Main Menu.

Once a questionnaire is selected, editing by deletion is performed in the same manner as that explained on pages 11 and 12 under Edit Questionnaire in the Questionnaire Construction path. Pressing F2 ends questionnaire editing and saves the edited questionnaire. Options at this point are:

Print Question List: Prints the question list, as described on page 11.

Return to the Main Menu: Presents the Main Menu screen.

To Edit a Questionnaire:

- Select Questionnaire from the Edit Question Set or Profile menu.
- Review and delete individual questions as desired.
- Press F2 to save.
- Press ESC to return to the previous menu without saving edits.

3.2.2 Customizing Notes

Notes are used to make the attribute statements more understandable to the respondent. You may use the notes to direct the respondent's attention to a particular aspect of the software interface, or you may use notes to restate the attribute statement in terms specific to the system being studied. For example a note might be: "For this questionnaire, consider Milstar terminal 'viewports' mean the same thing as the term 'windows'." Selecting the Custom Notes option produces the following screen:

EDIT QUESTIONNAIRE NOTES

System Name	Author	Last Modified On
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To edit a Questionnaires Notes:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

On this screen you select the system profile for which you want to customize the notes. The next screen displays the individual attribute statements associated with the system profile, and allows the input of up to approximately 3 lines of customized notes to accompany each attribute statement. This screen is shown on the following page:

Question/Statement 1 of 86

The user is adequately prompted when data entry is required.

Type in the text of the note to be shown with the Question/Statement shown:
above:

(DATA ENTRY AREA)

Press PGDN to view the next question and note.
Press PGUP to view the previous question and note.
Press F2 to save all notes and Return to the Main Menu.
Press ESC to abandon all notes and return to the Main Menu.

From this screen you are able to customize the notes associated with SUE items. You type in notes in the data entry area, then use the arrow keys to move to the next SUE question. After completing your custom notes, save by pressing F2.

To Customize Notes:

- Select the desired system profile.
- Scroll the question list, adding notes as desired.
- Press F2 to save.
- Press ESC to return to the previous menu without saving notes.

3.2.3 Editing a System Profile

Selecting System Profile from the Edit Questionnaire or Profile menu allows the user to edit the system profile, i.e., the collection of Ys and Ns made in response to the list of potential system features. The Edit System Profile screen appears on the following page:

EDIT SYSTEM PROFILE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To select a System Profile to edit:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

This screen presents the list of System Profiles that have already been created and are available to edit. While only six names are listed on the screen, you may scroll through the list to view additional profile names by pressing the DOWN arrow. To select the system profile you wish to edit from this list, highlight the desired system profile name, then press ENTER or click the OK button. Press or click on CANCEL to return to the Main Menu.

Once a system profile has been selected, you may edit the profile information using the screen that appears below:

EDIT SYSTEM PROFILE INFORMATION

SYSTEM INFORMATION:

System Name: ALPHA12
Press ESC to Cancel and Return to Main Menu.
Description: Adv Radar Detect Sys
Author: MDB

Use the Up and Dn arrow keys to move cursor to the information you want to edit.

Use the Backspace key to Delete; then Type new entry.

Press F2 to Save and Continue.

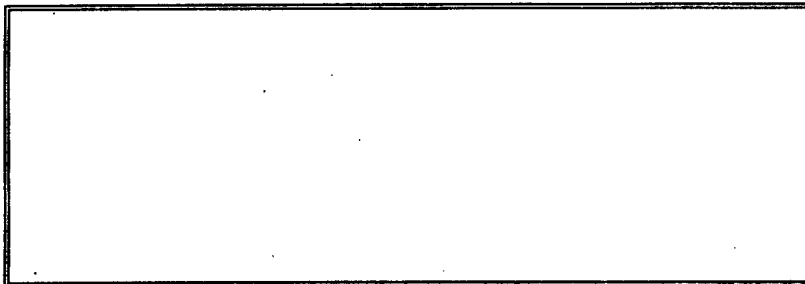
Press ESC to Cancel and Return to the Main Menu.

When you are in the Edit System Profile menu you may want to edit an existing profile in one of two ways - either by assigning new system identifiers (Editing System Profile Information) and/or by changing the system features that you have designated for a system profile (Editing System Profiles List). The first of these edits is handled with the screen shown above. Changes are made by moving to the appropriate field, backspacing to delete the appropriate characters, and typing in the desired substitutions. If there are no additional changes to be made in the system profile information, press F2 to proceed to the Edit System Profile screen, shown below:

Editing System Profile: ALPHA12
FEATURES:

Alarms	Y	Keyboard	Y	Peripheral Devices
Auditory	N	Light Pen	Y	Query Language
Color	N	Log-On	Y	Security
Command Language	N	Manual	Y	Tables
Cursor	Y	Menu	Y	Touch Screen
Direct Manipulation		Mouse	Y	Trackball
Function Keys	Y	Multiple Users	Y	Training
Graphics	N	On-line Guidance	Y	Windows

Move to a FEATURE, then press F4 to see its definition below:



Next to each feature
type Y if the system
has that feature or
N if it does not.
Blank also equals Y.

Press F2 to save.
Press ESC to cancel.

The Editing System Profile screen functions in the same manner as the Create New System Profile screen used to create the original system profile, except that the blanks have been replaced with the Ys and Ns provided during system profile creation. To change those Ys and Ns, position the cursor alongside the response to be changed, use the backspace key to delete the Y or N, then type in Y or N as necessary. When all desired changes have been made, press F2 to save and continue.

To Edit a System Profile:

- Select the desired system profile
- Make desired changes in the system profile information
- Make desired changes in the system profile
- Press F2 to Save and Continue.
- Press ESC to cancel and return to the Main Menu.

Special Note:

- Since question editing (i.e., deletion of individual questions) and customized notes are tied to specific system profiles, any changes made to the system profile will cancel those edits and customized notes.
- After editing a system profile, it will be necessary to repeat the question editing and custom notes processes.

After you Press F2, the system provides a warning screen to remind you that any changes made in the system profile will require you to re-edit the question set and re-enter customized notes. Select Save and Continue to acknowledge this warning or Cancel Editing to abort the system profile edit. Selecting Save and Continue leads to the Options screen shown below:

OPTIONS for System Profile: ALPHA12

Edit Questionnaire

Print Question List

Print System Profile

Return to the Main Menu

Edit the questionnaire by deleting items for this profile

These are the same options that were available after the system profile was first created. From the Options screen, you may select one of the following functions:

Edit Question List - Edit questionnaire by deleting items for this profile.

Print Question List - Print the question list defined by the current system profile.

Print System Profile - Print the system profile (i.e., the collection of Ys and Ns).

Return to the Main Menu.

The meaning and uses of these options are discussed on pages 12 and 13.

3.3 DELETING A PROFILE

Profiles are deleted by selecting the Delete Profile option from the Questionnaire Construction menu. Note that deleting a profile will delete the questionnaire associated with that profile, including any tailoring (i.e., question set tailoring and/or customized notes) that has been done on the question set. The initial Delete Profile screen is shown below:

DELETE SYSTEM PROFILE AND ASSOCIATED QUESTIONNAIRE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To delete a System Profile and its associated Questionnaire:

Use the UP and DOWN arrows to highlight the system name; then press ENTER or click on the OK button.

On this screen, you are presented with a scrollable list of system profile names. From this list, you select a profile to delete. Then, on the following screen, you will be asked to confirm

the deletion. (This gives you the chance to review the system features associated with the profile to be sure it is the Profile that you want to delete.)

After a system profile is selected for deletion, the system information and feature set belonging to that profile are shown to give you another opportunity to cancel the deletion command if you determine that you have selected the wrong system profile to delete. If the system profile displayed is the one you wish to delete, press DELETE to finalize the deletion. (Note: A delete action will delete both the system profile and its associated questionnaire.) To abort the deletion and return to the Main Menu, Press ESC.

To Delete a System Profile:

- Highlight the desired profile name.
- Press ENTER or click on OK to delete.
- Click on Cancel or press ALT-C to cancel the delete and return to the Main Menu.
- At the confirmation screen, press DELETE to confirm deletion; press ESC to abort deletion.

Special Note:

- Before deleting a system profile, you should delete any data files (i.e., response files) that might have been obtained using the questionnaire associated with that profile. This is done on the Utilities-Data Management path.
- If you do not first delete the data files, these files will be unusable and impossible to delete after the system profile has been deleted. Moreover, even though they are inaccessible to you, the data file names will remain reserved and cannot be re-used. The only way to clear this condition is by using the Paradox application program available at AFOTEC headquarters.

3.4 COPYING A PROFILE

A system profile may be copied to facilitate the creation of a new questionnaire similar to an existing questionnaire. Selecting Copy Profile from the Questionnaire Construction menu produces the screen shown on the following page:

COPY A SYSTEM PROFILE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To select a System Profile to copy:

Use the UP and DOWN arrows to highlight the system name; then press ENTER or click on the OK button.

From this screen, you select an existing system profile to copy from the list of system profiles, by highlighting and selecting the desired profile. The screen resulting from selecting a system profile is shown below:

System Name: ALPHA12 <- You MUST Change the System Name!

Description: F-16 Helmet Display

Author: MDB

Use the UP and DN arrow keys to move cursor to the information that you want to edit.

Use the Backspace key to Delete; then Type new entry.

Press F2 to Save and Continue.

Press ESC to Cancel and Return to the Main Menu.

You are required on this screen to assign a new name to the system profile you are copying. You may also change the system description and/or the author name, but these are not required data entry fields.

To Copy a System Profile:

- Select the System Profile you wish to copy.
- Use the UP and DN arrow keys to move cursor to the information you want to edit.
- Use backspace key to delete; then type new entry.
- Press F2 to save and continue.
- Press ESC to cancel and return to Main Menu.

If you Press F2, you will continue on to the Options screen below:

Edit Question List - Edit questionnaire by deleting items for this profile.

Print Question List - Print the question list defined by the current system profile.

Print System Profile - Print the system profile (i.e., the collection of Ys and Ns).

Return to the Main Menu.

These are the same options that appeared after the original system profile was created. Their meaning and use are discussed on pages 12 and 13.

SECTION 4
PRINTING A QUESTIONNAIRE FORM

The Print Questionnaire Form option which is selected from the Main Menu prints a questionnaire that has been tailored by system profile and by optional question editing. The printed questionnaire is suitable for administration of the SUE in cases where computers may not be available for administration or may be precluded for some other reason (e.g., security considerations). Selecting Print Questionnaire Form produces the following screen:

SELECT QUESTIONNAIRE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

For a hard copy printout of a Questionnaire:

Use the UP and DOWN arrows to highlight the system name; then press ENTER or click on the OK button.

From this screen, you select the system profile to generate a hard copy questionnaire. Once you have selected the profile name, the hard copy SUE questionnaire will begin printing. You may interrupt printing once a profile print has started by pressing the UP arrow (or any other key). This will bring up the message: "Printing interrupted - Press C to Cancel and R to Resume." To stop printing, Press C.

To Generate a Printed Questionnaire:

- Select the system profile from which to generate a hard copy SUE questionnaire:
- Press ENTER or click on OK to select.
- After you have completed your hard copy SUE generation, you may return to the
- Main Menu by pressing ESC, and Exit the System.

Special Note:

- When SUE prints a questionnaire, it first prints all question pages, numbered 1-n
- Next, it prints all of the additional information (i.e., Notes, Definitions, & Examples) associated with those questions on pages numbered 1A-nA.
- For administration, these pages need to be collated so that page 1A faces page 1,
- page 2A faces page 2, and so on.
- This will ensure that questions are properly aligned with their additional information.

SECTION 5

ON-LINE ADMINISTRATION

The On-line Administration option, selected from the Main Menu, leads the administrator through the selection and initialization of on-line administration, and then leads the respondent through the questionnaire itself. The administration process begins with identification of the profile name of the questionnaire to be administered, selected through the following screen:

ON-LINE SOFTWARE USABILITY EVALUATOR

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To select a Questionnaire and begin collecting data:

Use the UP and DOWN arrows to highlight the system name; then press ENTER or click on the OK button.

Once the desired questionnaire has been selected, on-line software usability evaluation is turned over to the system evaluator, or "respondent," who proceeds through one of the following interactive steps:

Read Instructions: Provides instructions on using the automated SUE.

Begin the Questionnaire: Starts administration of the questionnaire.

Resume the Questionnaire: Resumes an administration session that has been previously started and interrupted.

Return to Main Menu.

On-line questionnaire administration begins with a welcome screen, displaying options available to the respondent as shown below:

```
*****  
WELCOME  
*****  
Thank you for participating in this data  
collection effort  
Press Enter to read the instructions or  
Arrow to another choice and press Enter
```

Read Instructions Begin the Questionnaire Resume the Questionnaire Return to Main Menu
--

Read instructions before starting the questionnaire

The respondent may select the first menu item on this screen to read SUE instructions. Or, if he is already familiar with the instructions, he may go directly to the first item of the software usability evaluation. A third option from this screen is to resume to an evaluation in progress that had previously been interrupted.

5.1 READ INSTRUCTIONS

The first page of respondent instructions is shown below:

```
*****  
SOFTWARE USABILITY EVALUATION INSTRUCTIONS  
*****  
- INTRODUCTION -
```

This questionnaire contains a series of questions about the usability of the software in the system you have been testing. In general, "usability" simply means how easy the software is to use. In this questionnaire, usability will be assessed in terms of the presence or absence of a set of software quality features.

Potential quality features will be presented to you one at a time. Your task is to indicate if the feature described is always present or not always present in the software being evaluated. Responses of "DON'T KNOW" or "NOT APPLICABLE" may also be selected, if appropriate.

PAGE 1 of 4

Press Page Down to continue with the instructions.

Press ESC to continue with the questionnaire.

The respondent is presented with four pages of instructions about how to take the on-line Software Usability Evaluator Questionnaire. The instruction pages are organized as follows:

Page 1. Introduction

Page 2. Questionnaire Layout

Page 3. How to Respond to the Questionnaire

Page 4. How to Respond to the Questionnaire

5.2 BEGINNING THE QUESTIONNAIRE

Selecting **Begin Questionnaire** begins the sequence that collects identification data from the respondent and then administers the questionnaire.

5.2.1 Entering Respondent Information

In the first step of questionnaire administration, the respondent identifies himself with the following screen:

RESPONDENT INFORMATION

Name: (optional)
ID Number: (numbers only)
Rank:
Duty Position:
Years of Experience: (optional)

Enter the information above and Press F2 to Continue.

Press F1 for Help with data entry format.

On this screen, the respondent enters information identifying him and his duty position. The following information is required: ID Number (Enter from 1 to 7 numbers; no spaces or special characters allowed); Rank (1 to 5 alphanumeric characters); and Duty Position (10 or fewer characters). Entries for Name and Years of Experience are optional. If the respondent attempts to an ID Number that already exists, the following message appears, and you must enter a new ID number:

Duplicate Identification Code

Type in a new identification Code: _____
Please use only numbers.

5.2.2 Questionnaire Administration

The questionnaire requires several types of responses, as described in the following sections.

5.2.2.1 Frequency Rating

The first response is a rating of the frequency with which a given usability attribute is found in the software being evaluated. The screen for this response is shown below :

*** Question 1 of 84 ***
The user is adequately prompted when data entry is required.

NOTE: This question addresses the points in time during which data entry is required.

EXAMPLE: 

5.2.2.3 Operational Impact Ratings

After he has entered his system-specific example of where the usability attribute is believed to be lacking, the respondent is asked to provide a rating of the operational impact of the usability deficiency. This is done with a 5-point impact rating scale that appears after the respondent completes entry of his example.

The user is adequately prompted when data entry is required.

[Continue](#)
[Previous Question](#)
[EDIT Example](#)

Example Text xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

===== ADDITIONAL INFORMATION =====

NOTE: This question addresses the points in time during which data entry is required.

[illegible]

The respondent uses the Left and Right Arrow keys to move across the rating scale and the TAB key to toggle between Continue, Previous Question, and EDIT Example options. Alternatively, the respondent may point and click with the mouse to indicate his rating and continue.

The "Continue" option is the default (that is, by pressing ENTER after positioning the cursor on the desired impact rating, you will continue to the next questionnaire item). The respondent may return to previous items (e.g., to review or change a response, or add examples that come to mind later) by pressing the Previous Question option on the rating scale. This moves the respondent back to the previous question, where he may change or add to an item example from this screen by tabbing over to the EDIT Example button, and then pressing ENTER.

Once the impact rating is selected and entered, the program moves to the next attribute statement, if any. If the respondent has just answered the last question, the program terminates that respondent's session and returns to the Main Menu.

5.2.2.4 Interrupting and Resuming the Questionnaire

Selecting Interrupt data entry from the basic question screen interrupts the questionnaire, saves the data, and returns the program to the Main Menu. Where this has been done by one or more respondents, the questionnaire may be resumed from the point of interruption by selecting Resume the Questionnaire from the Begin Questionnaire menu. The software then displays a list of interrupted response files, listed by ID number, as shown below:

RESUME QUESTIONNAIRE

Respondent ID List

123
1234
33444
34567
45627
8765023

OK

CANCEL

To resume the questionnaire from where you left it:

Use the UP and DOWN arrows to highlight the Respondent's ID
then press Enter or click on the OK button.

Select the appropriate respondent ID to resume an interrupted questionnaire. The program will automatically move to the item following the last completed item of the interrupted questionnaire.

On this screen, the OK command button is the default, and is activated through a keyboard ENTER key press, once the cursor is positioned on the desired respondent ID field. To activate the CANCEL command, click it with the mouse.

To Complete the Questionnaire:

- Select a frequency rating ("Always," "Not Always," "Don't Know," or "Not Applicable" and Continue
- If "Always," "Don't Know," or "Not Applicable," proceed with the next question
- If "Not Always," input a system-specific example of where the attribute is lacking and then provide a rating of the operational impact of the usability deficiency

SECTION 6

ANALYSIS AND REPORTING

SOFTWARE USABILITY EVALUATOR

VERSION 2.6

MAIN MENU

Questionnaire Construction	>
Print Questionnaire Form	
On-line Administration	
Analysis & Reporting	
Utilities	>
Exit	

Use arrow keys to highlight your choice, then press ENTER; or use the mouse to click on your choice.

Analyze the collected questionnaire data and print reports

When you are ready to perform data analyses and generate reports for a completed questionnaire set, you select the Analysis and Reporting option from the Main Menu. However, prior to performing an analysis, you will need to have created a full data set (combine all respondent data files for a given system test) or a subset (combine selected data files for a given system test). You do this through the Utilities > Data Management path (See Section 7).

6.1 SELECTING A QUESTIONNAIRE FOR ANALYSIS

Questionnaires are selected for analysis using the screen shown below on the following page:

SELECT QUESTIONNAIRE FOR DATA ANALYSIS

System Name	Author	Last Modified On
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To select a Questionnaire for analysis:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

From this screen, you select a questionnaire for data analysis. While only six questionnaires are visible in the window list, you may scroll to view the other questionnaires.

6.2 DATA SETS AND SUBSETS

Analysis may be performed on either all of the response files to a particular questionnaire (i.e., "Full Data Set") or on a subset of the data (i.e., "Data Subset"), partitioned by the analyst. The following screen is used to indicate which of these two types of analysis is desired:

DATA FILE OPTIONS FOR QUESTIONNAIRE: ALPHA12

Use Full Data Set
Use Data Subset
Return to the Main Menu

Perform analyses using the full data set

6.2.1 Full Data Sets

A full data set is made up of all respondent files for a given questionnaire. Prior to requesting an analysis on the full data set, it is necessary to use the Create a Full Data Set option in the Utilities > Data Management menu path (see Section 7.2.2). Upon execution of the Create Full Data Set, the software will inform you how many files were included in the full data set.

6.2.2 Data Subsets

A data subset is a collection of respondent files selected for analysis. The subset may be based on duty position (e.g., analyze results for all Gunners) on rank (e.g., analyze results for all Capts) or on a user-defined subset of files selected by the analyst (e.g., analyze results for respondent ID numbers 1, 3, 4, and 7). The type of subset to analyze is selected from the Analysis & Reports menu using the screen shown below:

DATA FILE OPTIONS FOR QUESTIONNAIRE: APLHA12

Use Full Data Set
Use Subset of Data
Duty Position
Rank
User Defined

Perform analyses using one Duty position

For subsets of duty position or rank, SUE will provide a list of available duty positions or rank. You select which of these you wish to use for the desired subset. User defined subsets require that the analyst select the desired respondent files individually by ID number. This must be done using the Create a Specific Data Subset option in the Utilities > Data Management menu path (see Section 7.2.3) prior to selecting User Defined from the above screen.

6.3 SELECTING AN ANALYSIS OPTION

If full or subset data files have not been previously created using the Utilities > Data Management option, appropriate error messages will be generated. If such files have been

created, the following screen will appear after the selection of either the Use Full Data Set or Use Data Subset options:

ANALYSIS OPTIONS FOR SYSTEM PROFILE: ALPHA12

NOT ALWAYS Responses Only

All Responses

Return to Main Menu

Analyze the questions with NOT ALWAYS Responses

This screen presents two different options for displaying results:

1) NOT ALWAYS Responses Only: Processes data only for attribute statements receiving one or more responses of "Not Always." This option will process only the "Not Always" responses and impact ratings. Comments will not be displayed.

2) All Responses: Displays data for all attribute statements in a questionnaire, including those receiving responses of "Always," "Not Applicable," and "Don't Know." This option will display the frequency rating, comment, and impact rating for every respondent and each question.

Where NOT ALWAYS Responses Only is selected, the analyst must also select the manner in which results are to be grouped. The choices are:

1) Responses Grouped by Number of Not Always Responses: Attributes are grouped by number of "Not Always" responses, with the attributes receiving the greatest number presented first. Attribute statements with the highest number of "Not Always" responses are grouped and presented at the top of the listing, followed by groups of attribute statements with successively smaller numbers of "Not Always" responses. Each attribute

b) **Interactive Control.** User actions and the resultant computer responses that control the activities of the system.

c) **Data Display.** Software-programmable output of data presented to the user.

d) **User Guidance.** On-line displays and hard-copy materials which provide instruction and/or system information to the user.

e) **Mission Performance.** Special-purpose tasks that support the specific functions for which the system has been designed.

Within a given function, results are ordered by the sum of the impact ratings across respondents.

After selecting a data reporting format, you will be presented another screen with the Analysis Report Options (i.e., to specify where to send summary analyses). These options are discussed in the following section.

6.4 ANALYSIS AND REPORT OPTIONS

The Analysis Report Options screen is shown below:

ANALYSIS REPORT OPTIONS:

View the Report on the Screen
Print the Report to the Printer
Print the Report to a File
Return to Main Menu

Scroll through report on the screen

statement is accompanied by a frequency distribution showing the frequency with which that attribute statement received each of the five impact ratings. Within groups receiving equal numbers of "Not Always" responses, attribute statements are ordered by the total impact rating for that attribute statement across respondents, using the scale: Very Low=1, Low=2, Moderate=3, High=4, and Very High=5.

2) Results Grouped by Usability Characteristic: Groups each attribute into one of 5 system characteristics, which describe a general usability trait. These characteristics are:

a) Simplicity. Minimization of mental and/or physical workload by designing toward user capabilities, limitations, and expectations.

b) Consistency. Similarity and predictability of form and function across different, but related elements of the interface.

c) Descriptiveness. Completeness and understandability of labels, prompts, instructions, and messages.

d) Responsiveness. Speed and precision with which the software responds to user actions, and provides the user with a feeling of "control" over the software.

e) Error Abatement. Provisions for avoiding and correcting user errors, and for mitigating the impact of errors that have occurred.

Within a given characteristic, results are ordered by the sum of the impact ratings across respondents.

3) Results Grouped by System Function: Groups each attribute into one of 5 system functions, which describe general elements of the software interface and mission. These functions are:

a) Data Entry. Manual input of information, including alphanumeric, positional, and graphic data, and computer responses to such inputs.

These Analysis Report Options define the destination of your analysis file. They are as follows:

a. View Report on the Screen - Scroll through generated report on the screen. To exit the on screen report, click on Cancel or on the small solid box in the upper left corner of the screen.

If you select the View Report on the Screen option, you see the report on the screen with 3 pull down menu choices:

Goto Search Cancel

These menu choices and their options are described below:

Goto

Page: Move to a specified page number of the report.

End of Report: Move to the end of the report.

Search

Find: Search for the first occurrence of a specific value in the report.

Next: Search for the next occurrence of a specific value.

Cancel

No: Continue screen viewing of report.

Yes: End screen viewing of report.

b. Print Report to the Printer - Send report output to the printer.

c. Print Report to a File - Save the report results as an ASCII file.

If you select the Print the Report to a File option, you will need to assign an output file name. The following form will appear for you to enter an output file name.

Output File Name

Enter file name for print output:

OK CANCEL

SECTION 7

UTILITIES

The Utilities option, which is selected from the Main Menu, provides a variety of program and data management capabilities. The Utilities screen is shown below:

Software Usability Evaluator
Version 2.6

MAIN MENU

System Profile
Hard Copy Administration
On-line Administration
Analysis and Reports
Utilities
 Custom Notes
 Enter Data from Hard Copy
 Data Management
 Diskette Setup
 Printer Setup
 Cancel

Edit the Notes associated with each Question

The following utilities and data management functions are available from this screen:

Enter Data from Hard Copy - Enter respondent data from hard-copy into on-line SUE.

Data Management - Manage data files and sets of data.

Diskette Setup - Copies questionnaire files from a host computer to floppy diskette.

Transfer Data Files - Transfers data files from computer to diskette and from diskette to computer.

Printer Setup - Select the type of printer for hard-copy questionnaires and reports.

Cancel - Cancel and return to the Main Menu.

7.1 ENTERING DATA FROM HARD COPY

This utility allows you to take data that were obtained through hard copy administration and enter them into the computer for processing and report generation. Once entered, data input with the Enter Data From Hard Copy utility are equivalent to data that are entered directly into the computer via on-line administration. The screen produced by this selection is shown below:

SELECT QUESTIONNAIRE FOR HARD COPY INPUT

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To select a Questionnaire for hard copy data entry:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

Once you have selected the system profile for which you are entering hard copy data, the respondent information screen comes up, and you are required to enter respondent data. This is done in the same manner as if you were the respondent completing the questionnaire on-line.

RESPONDENT INFORMATION

Name:	(optional)
ID Number:	(numbers only)
Rank:	
Duty Position:	
Years of Experience:	(optional)

Press F2 to Continue.
Press F1 for HELP with data entry format.

Once you have entered the required respondent information, you will enter the respondents ratings just as if you were taking an on-line SUE. The instructions relating to taking an on-line Software Usability Evaluation apply here. (See Section D of this Guide.)

After the hard copy data entry is complete for the first respondent, the following screen will appear:

OPTIONS for Hard Copy Data Entry:

Input Data

Select New System Profile
Return to Main Menu

Once you have completed the data entry for one respondent in a given test, you may either continue entering data from the same system usability test (Input Data), enter hard copy data for a different system test (Select New System Profile), or return to the Main Menu.

7.2 DATA MANAGEMENT

The Data Management option allows you to perform a variety of data and file manipulations. The screen is shown below:

Software Usability Evaluator
Version 2.6

MAIN MENU

Questionnaire Construction
Print Questionnaire Form
On-line Administration
Analysis and Reports
Utilities

Enter Data from Hard Copy
Data Management
Verify Respondent Data
Create a Full Data Set
Create a Specific Data Subset
Delete a Respondent File
Cancel

Check the Respondent's input for Duty Position and Rank.

This screen presents you with all of the data management functions. They are:

Verify Respondent Data - Check respondent duty position and rank.

Create a Full Data Set - Gather all response files for a given questionnaire.

Create a Specific Data Subset - Gather selected response files for a given questionnaire.

Delete a Respondent File - Exit Utilities and return to the Main Menu.

Cancel - Check respondent duty position and rank.

7.2.1 Verifying Respondent Data

Sometimes, it is desirable to be able to review a respondent's description of his duty position and rank to be certain that the respondent is consistent in terminology with others taking the questionnaire. This is particularly true when the analyst wishes to partition results by one of these variables (e.g., to analyze results of all Gunners, Pilots, etc.). The Verify Respondent Data screen is shown below:

SELECT QUESTIONNAIRE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
	OK	CANCEL

To select a Questionnaire:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

Selecting a questionnaire presents a list of respondent files for that questionnaire, as shown below:

VERIFICATION OF RESPONDENT'S DATA FOR SYSTEM PROFILE: ALPHA12

ID	NAME	RANK	DUTY POSITION
1	RESPONDENT 1	SGT	GUNNER
3	RESPONDENT 3	CPT	PILOT
		OK	CANCEL

Selecting one of the respondents produces the screen shown below:

VERIFICATION OF RESPONDENT INFORMATION	
ID Number: 1	Name: RESPONDENT 1
Rank:	SGT
Duty Position:	GUNNER

Edit the Rank and Duty Position information above.
Press F2 to Save and Continue. Press ESC to Cancel.

7.2.2 Creating a Full Data Set

Prior to executing analysis and report options, it is necessary to indicate whether you wish to perform the analysis on all respondent files for a given questionnaire or only on selected files for that questionnaire. The Create Full Data Set option is used to select all respondent files for a questionnaire. The screen is shown below:

CREATE A DATA SET FOR DATA ANALYSIS

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To select a Questionnaire for analysis:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

After you select a questionnaire, the system responds with the following screen, which shows the questionnaire selected and the number of respondent files found for that questionnaire.

2 response data file(s) found for
Questionnaire: ALPHA12

Full Data File will now be created.

PRESS ANY KEY TO CONTINUE

The full data set is now created. Pressing any key will exit and return the program to the Main Menu.

7.2.3 Creating a User-Defined Data Set

If you wish to perform a selective analysis of respondent files, you may partition files by selecting the individual files you wish to analyze. This is performed with the Create a Specific Data Set option, whose initial screen is shown below:

CREATE A DATA SET FOR DATA ANALYSIS

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
OK		CANCEL

To select a Questionnaire for analysis:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

Selecting a questionnaire presents a list of respondent files for that questionnaire, as shown below:

CREATE A DATA SUBSET FROM THE RESPONDENT IDs

List of Data Files for System Profile: ALPHA12

123
1234
3344
345
12

Available IDs:

921

IDs to be Used:

ADD>>

OK

CANCEL

To select Respondent Files for the subset data file:

Use the UP and DOWN arrows to highlight the IDs. Then click on the ADD button. When the new list is complete, press Enter or click on the OK button.

To create any subset of the available respondent files, highlight the IDs, one at a time, and click on the ADD button. The selected ID will move from the left list to the list on the right. The file names can only be added to the list; if you add one by mistake, you must click on the CANCEL button and start over. When the list is complete, click on the OK button and the subset will be created. The subset can be used under the analysis and reports option of the Main Menu.

7.2.4 Deleting a Respondent File

This option is selected to delete the response files of one or more respondent to a given questionnaire. The first screen of this option requires you to identify the questionnaire to which the to-be-deleted files belong. This screen is shown below:

DELETE RESPONDENT FILE FOR SPECIFIC QUESTIONNAIRE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
Test 3	MDB	4/29/92
Test 4	MDB	4/29/92
Delta	BHT	10/11/93
	OK	CANCEL

To select a Respondent's file for a particular Questionnaire:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

The next screen displays the available respondent files, listed by respondent ID, for the selected questionnaire:

DELETE RESPONDENT FILE	
Respondent ID List	
1	
2	
DELETERCANCEL	

To delete a Respondent's data file:

Use the UP and DOWN arrows to highlight the Respondent's ID then press ENTER or click on the DELETE button.

If you select DELETE, the software will ask you to confirm the deletion as follows:

DELETE RESPONDENT FILE

*** **

You are about to delete the data set for respondent ID: nn

Press ENTER to confirm deletion or
Press ESC to cancel

*** **

To delete a Respondent's data file:

Use the UP and DOWN arrows to highlight the Respondent's ID then press ENTER or click on the DELETE button.

7.3 DISKETTE SETUP

The Diskette Setup option allows you to copy to diskette all the files necessary to administer a particular questionnaire. This option assumes that the target computer already possesses a copy of Paradox Runtime and the basic SUE software. Thus the Diskette Setup option is simply designed to allow you to place a copy of an assembled, edited questionnaire on one or more remote computers. The screen is shown below:

CREATE A DISKETTE FOR FIELD ADMINISTRATION

DISKETTE DRIVE

What is the destination drive
for the files?

(*) Drive A

() Drive B

OK Cancel

NOTE:

This action copies only the files associated with the selected Questionnaire. The SUE software and Runtime Paradox will not be copied; they must already be installed on the field computer system. Instruct the user to copy this diskette into their SUE directory.

The next step in this process is to identify the questionnaire you wish to copy, using the screen below:

SELECT QUESTIONNAIRE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
	OK	CANCEL

To select a Respondent's file for a particular Questionnaire:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

Make sure there is a blank diskette in the drive selected. After OK is selected, the software will copy to that diskette all files required for the questionnaire you identified. Following this, the program will return to the Main Menu.

7.4 TRANSFERRING DATA FILES

The Transfer Data Files option allows you to copy to diskette respondent files that may have been collected on one or more computers. These files, which are called "field data files" may then be transferred back to a central computer for collective analysis. The Transfer Data Files option provides for both of these transfers (i.e., from distributed computers to diskettes and from diskettes to a centralized computer). The menu selections are shown below:

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MAIN MENU

- Questionnaire Construction
- Print Questionnaire Form
- On-line Administration
- Analysis and Reports
- Utilities**
 - Enter Data from Hard Copy
 - Data Management
 - Diskette Setup**
 - Transfer Field Data Files to Diskette
 - Transfer Diskette Data to Computer
 - Cancel

Check the Respondent's input for Duty Position and Rank.

Selecting the Transfer Field Data Files to Diskette option indicates that you wish to transfer respondent files from a field (i.e., "distributed") computer to diskette. After selecting this option, you are required to indicate the destination drive for the files. Additionally, since the questionnaire file is required for data analysis, you are required to indicate whether or not the analysis ("centralized") computer already possesses that file. If it does have the file, it saves diskette space to omit the questionnaire file from the transfer process. If the analysis computer does not contain the questionnaire file, the transfer will include a copy of that file. The screen for these selections is shown below:

TRANSFER DATA FILES TO DISKETTE

OPTIONS

What is the destination drive
for the files?

- (*) Drive A
- () Drive B

Does the analysis computer
need the Questionnaire file?

- (*) Yes, copy the file
- () No, don't copy the file

OK

Cancel

To transfer response data files to diskette:

Use the arrows or click on the drive to copy files to and indicate if the questionnaire file should also be copied.

Press Enter or click on OK to begin copying files.

After you have pressed Enter or OK, the system will prompt you to make sure you have placed a formatted diskette in the target drive. Note: If this is not done, the program will abort and return you to the C/> prompt; to recover, type SUE to re-initialize the program.

The last step in the data transfer process is to indicate which questionnaire respondent files you wish to transfer. This is done with the following screen:

SELECT QUESTIONNAIRE

<u>System Name</u>	<u>Author</u>	<u>Last Modified On</u>
ALPHA12	BHT	9/01/93
Test 1	TW	10/13/93
Test 2	MDB	4/29/92
	OK	CANCEL

To select a Questionnaire for data transfer:

Use the UP and DOWN arrows to highlight the system name, then press ENTER or click on the OK button.

When you have selected the desired questionnaire, the respondent files and the questionnaire file (if this option was chosen in the previous screen) will be copied to diskette and the program will return to the Main Menu.

Selecting the Transfer Diskette Data to Computer option from the Transfer Data Files submenu performs the reverse operation to that described above. Here, files that have been copied to diskette via the Transfer Field Data Files to Diskette option are placed into the centralized computer for analysis and report generation. The screen for this procedure is shown below:

DISKETTE DRIVE

What is the source drive
for the files?

(*) Drive A
() Drive B

OK Cancel

After you have pressed Enter or OK, the system will prompt you to make sure you have placed a formatted diskette in the target drive. Note: If this is not done, the program will abort and return you to the C/> prompt; to recover, type SUE to re-initialize the program.

Unlike the sequence for transferring files to diskette, the transfer of diskette files to computer does not require you to indicate the questionnaire from which to draw files. It is assumed that the diskette possesses files from only one questionnaire. Pressing Enter or OK in response to the confirmation screen described above will start the transfer from disk to computer. If the computer already contains respondent or questionnaire files with the same

name, you will be queried as to whether you wish to skip the transfer of the duplicate file or overwrite the existing file on the computer.

7.5 PRINTER SETUP

The Printer Setup option allows you to load the printer driver software appropriate to your printer. In SUE, the choices are: (1) laser or dot matrix printer; and (2) Postscript printer. Selecting the Printer Setup option from the Utilities submenu produces the screen shown below:

SELECT PRINTER

What type of printer will be
used the reports?

(*) Laser printer or dot matrix
() Postscript printer

OK Cancel

Use the cursor keys or mouse to make your selection, then press Enter or OK to activate the desired printer driver. Note that Laser printer or dot matrix is the default driver. No printer selection is ever required if you intend to use these printers. However, if you are using a Postscript printer, the Postscript printer driver will need to be selected each time you use the SUE.