CHECKLIST: USER-COMPUTER INTERFACE					
	CRITERIA	YES	NO	N/A	COMMENTS
1.	Is a keyboard used to enter alphabetic, numeric, and special characters into the system?				
2.	Is the slope of the keyboard between 0º and 15º, with a slope below 10º if possible?				
3.	Is the range of height adjustment of an adjustable keyboard support surface not less than 23 in. to 28 in. (585 mm to 710 mm)?				
4.	When the keyboard support is not adjustable is the height set so that the seated user can adopt a posture with the forearm between 70 + Y/2º and 90 + Y2º from the superior frontal plane, where Y is the seat back angle from the vertical in degrees?				
5.	Does the keyboard height allow adequate knee and thigh clearance?				
6.	Does the design of movable keyboards permit them to be easily positioned on the work surface?				
7.	Are alphanumeric characters on the keys a minimum of 0.1 in. (2.6 mm) in height with a minimum luminance contrast ratio of 3:1?				
8.	Is the keyboard stable during keying operations?				
9.	Is the actuation of a key accompanied by either tactile or auditory feedback or both?				
10.	Is data entered via keyboard displayed as it is keyed?				
11.	Where feasible do keyboards contain only those keys which are used by the keyboard operator?				
12.	Is the amount of keying required minimized?				
13.	Is the use of key shifting functions minimized during data entry transactions?				
14.	In keyed data entry is the user provided with a way to allow previous entries to be changed?				
15.	Are cursor movement keys arranged in a spatial configuration reflecting the direction of actual cursor movement?				
16.	Are fixed function keys used for time-critical, error-free, or frequently used control inputs?				
17.	Are fixed function keys standardized throughout the system?				
18.	Once a key has been assigned a given function does the design prevent reassignment to a different function for a given user?				
19.	Are fixed function keys selected to control functions that are continuously available?				
20.	Are function keys which are not used for current inputs temporarily disabled under computer control are is the use of mechanical overlays avoided for this purpose?				
21.	Are non-active fixed function keys replaced by a blank key on the keyboard?				
22.	Are fixed function keys logically grouped and placed in distinctive locations on the keyboard?				
23.	Do fixed function keys require only a single actuation to accomplish their function except when used to toggle between two opposing states?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
24. When fixed function key activation does not result in an immediately observable natural response is the user given an acknowledgement indication by the system?				
25. Are key assignments displayed at all times with priority given to direct marking?				
26. When the effect of a function key varies is the status of the programmable key displayed?				
27. Are programmable keys automatically relabeled as a change to software effecting labels is initiated?				
28. When keys with labeled default functions are reprogrammed or turned off does a visual warning alert the user that the standard function is not currently accessible via that key?				
29. Has provision been made for easily, relabeling variable function keys?				
30. Is the use of shift keys avoided as a requirement to operate variable function keys?				
31. Where the function assigned to a set of function keys change as a result of user selection is the user given an easy means to return to the initial base-level functions?				
32. When precise input functions are required is a joystick, trackball, or similar device used?				
33. Is a discrete mechanism provided to allow the user to activate/deactivate directional controllers?				
34. When positioning accuracy is more critical than positioning speed are displacement joysticks selected over isometric joysticks?				
35. In rate control applications, which allow the follower to transit beyond the edge of the display are indicators provided to aid the operator in bringing the follower back onto the display?				
36. Are displacement joysticks that are used for rate control spring-loaded for return to center when the hand is removed?				
37. Is the use of displacement joysticks which have a deadband near the center or hysteresis avoided with automatic sequencing of a CRT follower?				
38. Upon termination of an automatic sequencing routine is the joystick center again registered to scope center?				
39. Is the movement of hand-operated displacement joysticks less than 45º from the center position?				
40. Is the movement of hand-operated displacement joysticks smooth in all directions while positioning of a follower is obtained without noticeable backlash, cross-coupling, or need for multiple corrective movements?				
41. When using hand-operated displacement joysticks do control ratios, friction, and inertia meet the dual requirements of rapid gross positioning and precise fine positioning?				
42. When using hand-operated displacement joysticks for generating free-drawn graphics is the refresher rate for the follower on the CRT sufficiently high to give the appearance of a continuous track?				
43. When using hand-operated displacement joysticks is the delay between control movement and the confirming display response minimized and less than 0.1 second?				

CHECKLIST: USER-COMPUTER INTERFACE					
	CRITERIA	YES	NO	N/A	COMMENTS
44.	When using hand-operated displacement joysticks is the hand grip length in the range of 110-180 mm?				
45.	When using hand-operated displacement joysticks is a clearance of 100 mm to the side and 50 mm to the rear provided?				
46.	When using hand-operated displacement joysticks is the joystick mounted to provide forearm support?				
47.	When using hand-operated displacement joysticks is the joystick: mounted to allow actuation without slippage, movement, or tilting of the mounting base?				
48.	When finger-operated displacement joysticks are used for free-drawn graphics is the resistance sufficient to maintain the handle position when the hand is removed?				
49.	Is the movement of finger-operated displacement joysticks less than 45º from the center position?				
50.	Is the movement of finger-operated displacement joysticks smooth in all directions while positioning of a follower is obtained without noticeable backlash, cross-coupling, or need for multiple corrective movements?				
51.	When using finger-operated displacement joysticks do control ratios, friction, and inertia meet the dual requirements of rapid gross positioning and precise fine positioning?				
52.	When using finger-operated displacement joysticks for generating free-drawn graphics is the refresher rate for the follower on the CRT sufficiently high to give the appearance of a continuous track?				
53.	When using finger-operated displacement joysticks is the delay between control movement and the confirming display response minimized and less than 0,1 second?				
54.	When using finger-operated displacement joysticks is the joystick mounted to provide forearm support?				
55.	When using finger-operated displacement joysticks is the joystick mounted to allow actuation without slippage, movement, or tilting of the mounting base?				
56.	When using thumbtip/fingertip operated joysticks is the handgrip prevented from simultaneously functioning as a joystick controller?				
57.	When using thumbtip/fingertip operated joysticks is movement prevented from exceeding 45º from the center position?				
58.	When using thumbtip/fingertip operated joysticks is the joystick mounted to provide wrist or hand support?				
59.	When using thumbtip/fingertip joysticks is the joystick mounted to allow actuation without slippage, movement, or tilting of the mounting base?				
60.	Are isometric joysticks used for applications that require precise return to center after each use?				
61.	Are isometric joysticks used for applications where operator feedback is primarily visual rather than tactile feedback from the control?				
62.	Are isometric joysticks used for applications where there is minimal delay and tight coupling between control and input and system reaction?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
63. Are isometric joysticks not used for applications where it would be necessary for the operator to maintain a constant force on the control for a long period of tome?				
64. Are isometric joysticks not used for applications where there is no definitive feedback when maximum control inputs have been exceeded?				
65. When positioning speed is more critical than positioning accuracy are isometric joysticks selected over displacement joysticks?				
66. In rate control applications, which allow the follower to transit beyond the edge of the display are indicators provided to aid the operator in bringing the follower back onto the display?				
67. When using isometric joysticks is the maximum force for full output less than 27.7 pounds?				
68. Are ball controls used only as position controls?				
69. Are the smaller diameter ball controls used only where space availability is very limited and there is no need for precision?				
70. While manipulating the control is neither backlash nor cross-coupling apparent to the operator?				
71. Do control ratios and dynamic features meet the dual requirement of rapid gross positioning and smooth precise fine positioning?				
72. When trackball controls are used to make precise or continuous adjustments are wrist or arm supports or both provided?				
73. Is a mouse used for zero order control only where generation of x and y outputs by the controller result in proportional displacement of the follower?				
74. Is the design of the controller (mouse) and placement of the maneuvering surface such to allow the operator to consistently orient the controller to within 10º of the correct orientation without visual reference to the controller?				
75. Is the controller easily movable in any direction without a change of hand grasp and results in a smooth movement of the follower in the same direction?				
76. In any applications, which allow the follower to transit beyond the edge of the display are indicators provided to aid the operator in bringing the follower back onto the display?				
77. Are free-moving x-y controllers shaped to fit the hand (rectangular or oval) with no sharp edges?				
78. Are light pens used only when non-critical, imprecise input functions are required and item selection is the primary type of data entry?				
79. When used as a two-axis controller do light pen dynamic characteristics conform to the same requirements as ball controllers?				
80. Is the length of the light pen between 120-180 mm with a diameter between 7-20 mm and is it equipped with a convenient clip?				
81. Is the light pen equipped with a discrete actuating/de-actuating mechanism?				
82. Is the user provided with feedback concerning the position of the light pen and informed the system is recognizing the presence of the pen?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
83. Is the user provided feedback that the light pen has actuated and that the input has been received by the system?				
84. When grid-and-stylus devices are used for data pickoff from a CRT is a follower presented on the display at the coordinate values selected by the stylus?				
85. When grid-and-stylus devices are used for data pickoff from a CRT are they used only for zero order control functions?				
86. Does discrete placement of the stylus at any point on the grid cause the follower to appear at the corresponding coordinates and to remain steadily in position provided the stylus is not moved?				
87. Does the movement of the stylus in any direction on the grid surface result in smooth movement of the follower in the same direction?				
88. Is the refresh rate for the follower sufficiently high to ensure the appearance of a continuous track whenever the stylus is used for generating of free-drawn graphics?				
89. When transparent grids are used as display overlays do they conform to the size of the display?				
90. When transparent grids are used as display overlays are displaced from the display do they approximate the size and directional relationship of the display?				
91. When remote grids are used are they placed at an orientation that maximally preserves the directional relationship between them and the display without violating any anthropometric considerations?				
92. Are touch-sensitive screens or panels used where direct visual reference access and optimum direct control access are desired?				
93. Is a positive indication of touch-screen actuation provided to acknowledge the system response to the control action?				
94. Does the force requirement to operate the touch-screen conform to the alphanumeric resistance limits for keyboards and keypads?				
95. Is the vocabulary used for spoken data entry and computer control structured so that only a minimum number of options are needed for any transaction?				
96. Are spoken entries needed for transactions phonetically distinct from one another and have they been tested on the system?				
97. Are feedback and simple error correction procedures provided for speech input?				
98. Is the contrast ratio maintained at 3:1 minimum; 5:1 to 10:1 preferred; and 15:1 maximum?				
99. Is the regeneration rate for a particular CRT display above the critical frequency of fusion so that the occurrence of disturbing flicker is not perceptible?				
100. Is the contrast ratio maintained at 3:1 minimum; 5:1 to 10:1 preferred; and 15:1 maximum?				
101. Are the background levels 15 to 20 cd/m^2?				
102. Are the display luminances maintained at 45 cd/m^2 minimum with 80 to 160 Cd/m^2 preferred?				
103. Is the display luminance maintained at 10 cd/m^2 minimum average level?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
104. Is a green phosphor used?				
105. Is a medium persistence phosphor used?				
106. Is the screen positioned so that sources of light and/or bright objects do not reflect into the expected viewing position?				
107. Is the surface of the VDT screen modified to reduce specular glare?				
108. Regardless of whether the display is raster scanned or directly addressed, does the screen maintain the illusion of a continuous image?				
109. Is the cursor easily seen but does not obscure the reading of the character or symbol it marks?				
110. Is the cursor easy to move from one position to another?				
111. Does the cursor blink at about 3 Hz if it is used to attract the operator's attention on a monitoring task?				
112. Is the cursor designed to not be so distracting as to impair the searching of the display for information unrelated to the cursor?				
113. Is a consistent format maintained from one display to another?				
114. Is prose displayed conventionally, in mixed upper and lower case?				
115. Are displayed paragraphs separated by at least one blank line?				
116. Does every sentence end with a period in a textual display?				
117. Are short, simple, concise sentences used in a textual display?				
118. Do labels convey the basic information needed for proper identification, utilization, actuation, or manipulation of the item?				
119. Are labels consistent with the accuracy of identification required?				
120. Is time available for recognition or other responses?				
121. Are labels consistent with the distance at which the labels must be mad?				
122. Are labels consistent with illuminance level and color?				
123. Are labels consistent with the criticality of the function labeled?				
124. Are labels consistent with the vibration/motion environment of the user?				
125. Are the labels horizontal and read from left to right?				
126. Are the labels placed on or very near the items which they identify?				
127. Is the label placed to the left of the data field, for single data fields?				
128. Is the label placed above the data fields, for repeating data fields?				
129. Do the labels primarily describe the functions of items?				
130. Does control labeling indicate the functional result of control movement (e.g. increase ON OFF)?				
131. Do control and display labels convey verbal meaning in the most direct manner by using simple words and phrases. Abbreviations may be used when they are familiar to operators (e.g. psi km)?				
132. Are words chosen on the basis of operator familiarity whenever possible provided the words express exactly what is intended?				
133. Are similar names for different controls and displays avoided?				
134. Are the units of measurement (e.g. volts meters) labeled on the screen or panel?				
135. Are the labels printed in all capitals with periods not used after abbreviations?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
136. When dealing with mechanical labeling to reduce confusion and operator search time, are labels graduated inside?				
137. Are label names easily discriminated from surrounding labeled fields or messages?				
138. Are labels for data fields distinctively worded or highlighted so that they will not be readily confused with data entries, labeled control options, guidance messages, or other displayed material?				
139. Where entry fields am distributed across a display, is a consistent format adopted for relating labels to entry areas?				
140. Where a dimensional unit (gpm cm deg) is consistently associated with a particular data field, is it part of the fixed label not entered by the user?				
141. Is the computer capable of providing two levels of detail?				
142. Are messages strictly factual and informative?				
143. Is the message dialogue non-hostile to the user?				
144. Are messages constructed using short, meaningful, and common words?				
145. Does the message consider the prior knowledge of the user and the user's context?				
146. Are sentences kept as simple in structure as possible?				
147. Do messages require no transformations, computing interpolation, or reference searching?				
148. Are messages stated in the affirmative and preferably in the active voice?				
149. Are items to be remembered by the user placed at the beginning of the message?				
150. Are items to be recalled by the user placed at the end of the message?				
151. Are items of lesser importance placed in the middle of the message?				
152. Are only standard and commonly accepted abbreviations used?				
153. Are abbreviations short, meaningful and distinct?				
154. Does the system permit abbreviations of inputted commands?				
155. Whenever possible, are experienced users provided with a set of abbreviations for frequently used commands?				
156. Are abbreviations consistent in form?				
157. Is a dictionary of abbreviations available for on-line user reference?				
158. Do abbreviations and acronyms not include punctuation?				
159. Does the computer system contain prompting and structuring features by which an operator can request corrected information when an error is detected?				
160. Are error messages worded as specifically as possible?				
161. Is the wording of error messages appropriate to a user's task and level of knowledge?				
162. When a data entry or a control entry must be made from a small set of alternatives, are those correct alternatives indicated in the error message displayed in response to a wrong entry?				
163. Are error messages stated in polite but neutral wording without implications of blame to the user without personalization of the computer and without attempts at humor?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
164. Following the output of simple error messages, does the user have the option of requesting more detailed explanation for errors (i.e., successively deeper levels of explanation provided in response to repeated user requests for HELP)?				
165. When multiple errors are detected in a combined user entry, is some indication given to the user even though complete messages for all errors cannot be displayed together?				
166. Are error messages outputs within 2 seconds after a user's entry has been completed?				
167. Does system documentation include as a supplement to on-line guidance, a listing and explanation of all error messages?				
168. Following error detection, are users prompted to reenter only the portion of a data/command entry that is not correct?				
169. In addition to a clear text error message, does an error identification number (ID) precede each message?				
170. Do the error messages always state or clearly imply at least a minimum of which error has been detected and what corrective action to take?				
171. If an error is detected in a group of stacked entries, does the system process correct commands until the error is displayed?				
172. When using alphanumeric codes, is a consistent convention adopted that all letters should be either uppercase or lowercase?				
173. When codes combine letters and numbers, are characters of each type grouped together rather than interspersed?				
174. Are meaningful codes adopted in preference to arbitrary codes (e.g., a three-letter mnemonic code (DIR = directory) is easier to remember than a three-digit numeric code)?				
175. When arbitrary codes must be remembered by the user, do they contain no longer than four to five characters?				
176. Is code length and format constant throughout any single category?				
177. Do the codes contain predictable letter sequences?				
178. Are long codes (seven or more characters) broken into three- or four character groups; i.e., separate groups by a hyphen or blank space?				
179. Is displayed data tailored to user needs, providing only necessary and immediately usable information at any step in a transaction sequence?				
180. Is data displayed to the user in directly usable form?				
181. Is data consistent, following standards and conventions familiar to the user?				
182. When protection of displayed data is essential, is the system designed to prevent the user changing controlled items?				
183. In general, is the system designed to not require the user to rely on memory, but recapitulate needed items on the succeeding display?				
184. Is the detailed, internal format of frequently used data fields consistent from one display to another?				
185. Are long data items of arbitrary alphanumeric characters displayed in groups of three or four separated by a blank?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
186. In tabular displays, are columns and rows labeled following the same guideline's proposed for labeling the fields of data forms?				
187. In tabular displays, are the units of displayed data consistently included in the column labels or following the first row of entry?				
188. Are columns of numeric data without decimals displayed right-justified; numeric data with decimals justified with respect to the decimal point?				
189. Are lists of alphabetic data vertically aligned with left- justification to permit rapid scanning; indentation can be used to indicate subordinate elements in hierarchic fists?				
190. Are data lists organized in some recognizable order, whenever feasible, to facilitate scanning and assimilation; e.g., dates may be ordered chronologically, names alphabetically?				
191. Is listed data distinctive from lists of menu options?				
192. When listed items are labeled by number, does the numbering start with I and not 0?				
193. For hierarchic lists with compound numbers, are the complete numbers used, rather than omitting the repeated elements; i.e.,				
194. In dense tables with many rows, is a blank line (or some other distinctive feature) inserted after every fifth row as an aid for horizontal scanning?				
195. When data are displayed in more than one column, are the columns separated by at least three to four spaces if right-justified and by at least five spaces otherwise?				
196. When tables are used for referencing purposes such as an index, is the indexed material displayed in the left column, the material most relevant for user response in the next adjacent column, and associated but less significant material in columns further to the right?				
197. Are longer series of strings or lists of data organized in columns to provide better legibility and faster scanning?				
198. If data are to be entered from paper forms, the design of the input screen and the layout of the paper form correspond. This helps the user to find and keep a location while looking back and forth from the form to the terminal?				
199. Does each list of selections have a heading that reflects the question for which an answer is sought?				
200. In a list of options, is the most frequently used options placed at the top of the list?				
201. Are selection numbers separated from text descriptors by at least one space?				
202. When lists or data tables "tend beyond one display page, is the user informed when a list is or is not complete?				
203. Are labels for single data fields located to the left of the data field and separated from the data field by a unique symbol (such as a colon) and at least one space?				
204. When caption sizes are relatively equal, are both captions and data fields justified left?				
205. When caption sizes vary greatly, are captions right-justified and the data fields left-justified?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
206. Is a field group heading centered above the captions to which it applies and is it completely spelled out and related to the captions?				
207. When section headings are located on the line above related screen fields, are the captions indented a minimum of five spaces from the start of the heading?				
208. When section headings are placed adjacent to the related fields, are they located to the left of the top most row of related fields and are the column of captions separated from the longest heading by a minimum of three blank spaces?				
209. Do at least five spaces appear between the longest data field in one column and the right most caption in an adjacent column?				
210. Where space constraints exist, are vertical lines substituted for spaces for separation of columns of fields?				
211. For multiple-occurrence fields without group headings, are at least three spaces exist between the columns of fields?				
212. For multiple-occurrence fields with group headings, are at least three spaces appear between columns of related fields and at least five spaces appear between groupings?				
213. When form filling, is the user allowed to RESTART, CANCEL, or BACKUP and change any item before taking a final ENTER action?				
214. Whenever possible, are multiple data items entered without the need for special separators or delimiters, either by keying into predefined entry fields or by including simple spaces between sequentially keyed items?				
215. When a field delimiter must be used for data entry, is a standard character adopted for that purpose (a slash 1/1 is recommended)?				
216. For all dialogue types involving prompting, are data entries prompted explicitly by displayed labels for data fields and/or by associated user guidance messages?				
217. Do field labels consistently indicate what data items are to be entered?				
218. Are field labels protected and transparent to keyboard control so that the cursor skips over them when spacing or tabbing?				
219. Are special characters used to delineate each data field?				
220. Does implicit prompting by field delineation indicate a fixed or maximum acceptable length of the entry; e.g.,				
221. Do input prompts indicate which entries are mandatory and which are optional?				
222. When item length is variable, does the user not have to justify an entry either right or left and not have to remove any unused underscores?				
223. When multiple items (especially those of variable length) will be entered by a skilled touch typist, does each data field end with an extra (blank) character space and is the software designed to prevent keying into a blank space, and an auditory signal provided to alert the user when that happens?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
224. Are labels for data fields distinctively worded so that they will not be readily confused with data entries, labeled control options, guidance messages, or other displayed material?				
225. When displayed data forms are crowded, is auxiliary coding adopted to distinguish labels from data?				
226. In labeling data fields, are only agreed terms, codes, and/or abbreviations used?				
227. Does the label for each entry field end with a special symbol, signifying that an entry may be made?				
228. Do labels for data fields incorporate additional cueing of data formats when that seems helpful?				
229. When a measurement unit is consistently associated with a particular data field, it displayed as part of the fixed label rather than entered by the user?				
230. Is data entered in units dim are familiar to the user?				
231. When data entry involves transcription from source documents, does the sequence of entry match the data sequence in source documents?				
232. If no source document or external information is involved, does the ordering of multiple-item data entries follow the logical sequence in which the user is expected to think of them?				
233. When a form for data entry is displayed, is the cursor positioned automatically in the first entry field?				
234. When sets of data items must be entered sequentially in a repetitive series, is a tabular format where data sets are keyed row by row used?				
235. Is justification of tabular data entries handled automatically by the computer?				
236. Is it possible for the user to make numeric entries (e.g., dollars and cents) as left-justified, but they are automatically justified with respect to a fixed decimal point when a display of the data is subsequently regenerated for review by the user?				
237. For dense tables (those with many row entries), are some extra visual cues provided to guide the user accurately across columns?				
238. Is software for automatic data validation incorporated to check any item whose entry and/or correct format or content is required for subsequent data processing?				
239. In a repetitive data entry task, is data validation for one transaction completed and the user allowed to correct errors before another transaction begins?				
240. When helpful values for data entry cannot be predicted by user system interface (USI) designers, which is often the case, does the user (or perhaps some authorized supervisor) have a special transaction to define, change, or remove default values for any data entry field?				
241. On initiation of a data entry transaction, are currently defined default values displayed automatically in their appropriate data fields?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
242. Is user acceptance of a displayed default value for entry accomplished by simple means, such as by a single confirming key action or simply by tabbing past the default field?				
243. Is a user not required to enter bookkeeping data that the computer could determine automatically?				
244. Is a user not required to enter redundant data already accessible to the computer?				
245. Whenever needed, is automatic cross-file updating provided so that the user does not have to enter the same data twice?				
246. When data entry requirements change, which is often the case, is some means provided for the user (or an authorized supervisor) to make necessary changes to data entry procedures, entry formats, data validation topic, and other associated data processing?				
247. Are areas of the screen not containing entry fields (i.e., protected fields) inaccessible to the operators and not require repeated key depressions to step through?				
248. Are space lines incorporated where visual breaks or spaces occur on the source document?				
249. Is a section heading located directly above its associated fields?				
250. Is the user able to alter input during and after entry?				
251. In a variable-length entry, is the user required to enter only the relevant input data?				
252. Does the system recognize common misspellings of a command and execute the command as if it had been spelled correctly?				
253. Does misspelling of similar commands not cause errors?				
254. Is keying minimized?				
255. Is the user not required to reenter parameters that have not changed since the previous interaction?				
256. Are words in instructions meaningful to the user?				
257. Are short words used in instructions?				
258. Is active voice and the affirmative case used in instructions?				
259. Are instructions patterned?				
260. Are illustrations appropriate for the type of information to be conveyed?				
261. Are illustrations placed close to the corresponding text?				
262. Is wording on illustrations minimized?				
263. Are tables and graphs captioned?				
264. When instructions must be rapidly accessed, is a table of contents and/or an index provided?				
265. Is the literary style of a set of instructions appropriate to its intended use?				
266. Do instructions have a clearly stated beginning and a well-developed summary?				
267. Are paragraphs of text short and contain a single idea?				
268. Are instructions simple?				
269. Do instructions state important items more than once?				
270. Do instructions contain only essential information?				
271. Is the amount of detail appropriate to the experience of the user?				
272. Does the sequence of the instructions follow the sequence of actions required?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
273. Does the main topic of the instruction appear at the beginning of the sentence?				
274. Are all instructions tested on naive users before being finalized?				
275. Do many-step instructions use a two-column format?				
276. In a list of specifications for service or supply, is more than a part number given?				
277. Are warning and caution notices accurate and concise and contain only the information relevant to the warning or caution?				
278. Do warnings and cautions immediately precede the steps to which they refer?				
279. In designing a visual display character set, is each character designed so that fine differences in stroke length, curvature, etc., are preserved in order to avoid similarity?				
280. Is the character height between 16 min of arc to 26.8 min of arc, with 20 min of arc preferred?				
281. Is the ratio between character height and width from 1:1 to 5:3?				
282. Is the ratio between character height and stroke width from 5:1 to 8:1?				
283. Is the minimum spacing between characters one stroke width?				
284. Is the minimum spacing between words one character width?				
285. Is spacing between lines from 50 to 150% of the character height?				
286. Are labels or statements in upper case?				
287. Is text displayed in both uppercase and lowercase?				
288. Is the screen the smallest size which will allow required information to be seen clearly and easily by the viewer?				
289. Does the screen take into account the distance of the operator from the screen (e.g., large screen overviews)?				
290. Is information that is continually being transmitted or received sequentially grouped?				
291. Is information grouped in the order of its frequency of use?				
292. If frequency of use is not a major concern, is information functionally grouped?				
293. When some items are more critical than others to the success of the systems, is the information grouped by Importance?				
294. Are grouped data arranged in the display with consistent placement of items so that user detection of similarities, differences, trends and relationships is facilitated?				
295. When there is no appropriate logic for grouping data (sequence. function, frequency, or importance) is some other principle adopted, such as alphabetical or chronological grouping?				
296. Is similar information displayed in groups according to the left-to-right or top-to-bottom rules?				
297. Is all displayed data necessary to support an Operator activity or sequence of activities grouped together?				
298. Do screens provide cohesive groupings of screen elements so that people perceive large screens as consisting of smaller identifiable pieces?				
299. Does screen packing density not and preferably less than 25%?				
300. Are display screens perceived as uncluttered?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
301. Do screens provide information that is only essential to making a decision, or performing an action?				
302. Is all data related to one task placed on a single screen?				
303. For critical task sequences, is screen packing density minimized?				
304. Where user information requirements cannot be accurately determined in advance of interface design or are variable, are on-line user Options Provided for data selection display coverage, and suppression?				
305. Are screens divided into windows that are clearly perceptible to the user?				
306. On large uncluttered screens, are windows separated using three to five rows or columns of blank space?				
307. Are specific areas of the screen reserved for information such as commands, status messages, and input fields, and are those areas consistent on all screens?				
308. When a display window must be used for data scanning, is the window size greater than one line?				
309. Is the screen not divided into a large number of small windows?				
310. When the body of the display is used for data output, is the screen coherently formatted and not partitioned -into several small windows?				
311. Is the number of overlapping windows minimized?				
312. If possible, are program windows' size expandable by the user?				
313. Are specific areas of the screen reserved for information such as commands status messages and input fields, and are those areas consistent on all screens?				
314. Are both the items on display and the displays themselves standardized?				
315. Is an invariant field including the page title an alphanumeric designator, the time, and the date, placed at the top of each display page?				
316. Are the last four lines (at least) of each display page reserved for variant fields?				
317. Does each display frame have a unique identification (ID)?				
318. Does every frame have a tide on a line by itself?				
319. Is status information displayed near the top-right comer of the screen?				
320. Is location coding employed to reduce operator information search time?				
321. Is all data relevant to the user's current transaction included in one display page (or frame)?				
322. When the requested data exceed the capacity of a single display frame, is the user provided easy means to move back and forth among relevant displays either by paging or scrolling?				
323. When a list of numbered items exceeds one display page and must be paged/scrolled for its continuation, are items numbered continuously in relation to the first item in the first display and indicate the present maximum location?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
324. 333.When lists or tables are of variable length and may extend beyond the limits of a single display page, is their continuation and ending explicitly noted on the display?				
325. When display output contains more than one page, does the notation "page x of y" appear on each display?				
326. Do the parameters of roll/scroll functions refer to the data being reviewed, not to the window?				
327. When the user may be exposed to different systems adopting different usage, does any reference to scroll functions consistently use functional terms such as forward and back (or next and previous) to refer to movement within a displayed data set rather than words implying spatial orientation (e.g., up and down)?				
328. When using a menu system, does the user at all times have access to the main menu?				
329. Do displays indicate how to continue?				
330. Are user-terminal interaction tasks that are repetitive, time-consuming, or complex assigned dedicated functions?				
331. Are required or frequently used data elements included on the earliest screens in the application transaction?				
332. Does page design and content planning minimize requirements for operator memory?				
333. When pages are organized in a hierarchical fashion containing a number of different paths choices available upon operator request?				
334. Are sectional coordinates used when large schematics must be panned or magnified?				
335. If the message is a variable option list, do common elements maintain their physical relationship to other recurring elements?				
336. Is a message available that provides explicit information to the user on how to move from one frame to another or how to select a different display?				
337. When the operator must step through multiple display levels, is priority access provided to the more critical display levels?				
338. When the operator must step through multiple display levels, is he or she provided with information identifying the current position within the sequence of levels?				
339. Is a similar display format used at each level of a multiple-level display?				
340. When the operator is required to accurately comprehend previously learned items appearing with a new list, is the list kept small (about four to six items)?				
341. Are frequently appearing/disappearing commands/subcommands placed in the same place on the screen?				
342. Does the system not allow for more than three applications to be run at a time?				
343. Once you quit a program (application), does that window close promptly?				
344. Are windows consistent in their use of drop-down menus and/or icons?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
345. Do windows give the user feedback whenever he/she is in the process of combining applications?				
346. Are dialogue boxes provided when necessary to assist in defining menu options?				
347. Are actions necessary for changing the size of a window consistent between windows?				
348. Are active windows so labeled?				
349. Are window labels located at the top of the window border?				
350. Does keyboard input only affect the active window?				
351. Is color used as a formatting aid to assist in structuring a screen and as a code to categorize information or data?				
352. Does color coding not create unplanned or obvious new patterns on the screen?				
353. Is color coding applied as an additional aid to the user on displays that have already been formatted as effectively as possible on a single color?				
354. When color coding is used, is it redundant with some other feature in data display, such as symbology?				
355. Is the unit as a minimum provided with a foreground intensity control separate from the background intensity control?				
356. Is the unit as a minimum provided with a capability for making grid lines half as intense as the rest of the display?				
357. Is the unit as a minimum provided with enough intensity control variable to accommodate very low ambient illumination and the higher levels (5 to 150 fc)?				
358. Are color meanings consistent with traditional color expectancies?				
359. Is color coding consistent within a frame, from frame to frame and with other color-coded systems in the control room?				
360. Do color codes conform to color meanings that already exist in the user's job?				
361. Are the most generally used colors Ted green yellow and blue. Other acceptable colors are orange yellow-green blue-green and violet?				
362. Are blue headings numbers or alphabetic characters not used on a black background?				
363. Is yellow not used on a white background because of the very low contrast.?				
364. Is yellow not used on a green background due to a vibrating effect to the eye?				
365. Do the selected colors yield satisfactory color contrast for color deficient users?				
366. Is the user able to discriminate the selected color on an absolute basis?				
367. Are selected colors usable in all control room applications (e. g., panel surfaces, labels, CRTs indicator light bulbs or filters console surfaces)?				
368. Is blue used only for background features in a display, not for critical data?				
369. Whenever possible, are red and green not be used in combination?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
370. Is the use of red symbols/characters on a green background especially avoided?				
371. If a pattern of color is intended to display a function, do the selected colors indicate the state of the system?				
372. Are colors with high contrast selected for parameters and features that must "catch" the operator's attention?				
373. Are backgrounds not brighter than foregrounds?				
374. Are extreme color contrasts avoided?				
375. Are colors specified as a precise wavelength rather than a hue (red, green, violet, etc.)?				
376. If difference in brightness (intensity) is used as a coding mechanism, is perceived brightness used rather than absolute brightness?				
377. Does each color represent only one category of displayed data?				
378. If color discrimination is required, are less than eight colors used with alpha-numeric screen displays using no more than four colors at one time?				
379. Is colored ambient lighting not used in conjunction with color-coded CRTs?				
380. Is brightness coding employed only to differentiate between an item of information and adjacent information?				
381. Are high brightness levels used to signify information of primary importance and lower levels to signify information of secondary interest?				
382. Is brightness coding not used in conjunction with shape or size coding?				
383. When an operation is to be performed on a single item on a display, is the item highlighted?				
384. In a list, are the option(s) selected by the user highlighted?				
385. Is maximum contrast provided between those items highlighted and those not?				
386. When graphical items are close together on the screen, is successive brightening of graphical items and user selection by button activation considered?				
387. Is blink coding limited to small fields?				
388. Does the blink rate lie in the range of 0.1 to 5 Hz, with 2 to 3 Hz preferred?				
389. Is the minimum "on" time 50 ms?				
390. To avoid interference with reading performance, is the blink rate such that the user can match the operator's scan rate to the blink rate?				
391. If difference in blink rate is used as a coding method, is no more than two steps used?				
392. When two blink rates are used, does the fast blink take approximate four per second and the slow rate one blink per second?				
393. When two blink raw are used, does the higher rate apply to the most critical information?				
394. When two blink rates are used, is the "on-off" ratio approximate 50%?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
395. Is a means provided for suppressing the blink action once the coded data have been located?				
396. Is an "off" condition never used to attract attention to a message?				
397. Is blinking reserved for emergency conditions or similar situations requiring immediate operator action?				
398. When blink coding is used to mark a data item that must be read, is an extra symbol (such as an asterisk) added as a blinking marker rather than blinking the item itself?				
399. Is blink coding used for target detection tasks, particularly with high density displays?				
400. Is blink coding not used with long-persistence phosphor displays?				
401. Is image reversal (e.g., dark characters on a light background) used primarily for highlighting in dense data field?				
402. Is image reversal can be used to code annunciator information that requires immediate response?				
403. Is maximum contrast provided between highlighted and non-highlighted items?				
404. Is audio displays provided when the information to be processed is short, simple, and transitory, requiring immediate or time-based response?				
405. Is an audio display used if the common mode of visual display is restricted by overburdening; ambient light variability or limitation; operator mobility; degradation of vision by vibration, high g-forces, hypoxia, or other environmental considerations; or anticipated operator inattention?				
406. Does the criticality of transmission response makes supplementary or redundant transmission desirable?				
407. Does the system warn, alert, or cue the operator to subsequent additional response?				
408. Are graphic coding methods used to present standardized qualitative information to the operator or to draw the operator's attention to a particular portion of the display?				
409. Is extra spacing, horizontal and vertical lines of differing widths, and perhaps color used to set Off and highlight data?				
410. Special symbols (e.g., bullets or arrows) used to indicate position and to direct attention?				
411. Are other methods of coding which considered for graphic displays and computer-generated drawings include motion, focus, distortion, and line orientation on the display surface?				
412. Is a border used to improve the readability of a single block of numbers or letters?				
413. If several labels or messages are clustered in the same area, are distinctive borders placed around the critical ones only?				
414. When a special symbol is used to mark a word, is it separated from the beginning of the word by a space?				
415. Are auxiliary methods of line coding considered for graphics applications, including variation in line type (solid, dashed, dotted) and width (boldness)?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
416. When a line is added simply to mark or emphasize a displayed item, is it placed under the designated item?				
417. Are visual dimensions for special display coding applications include variation in texture, focus, and motion?				
418. Are related data which are distributed about the screen and data to be updated, etc., highlighted in white?				
419. Is the speed of a graphic showing fluid flow in a pipe greater than 7.28 mm/s (029 in/s) but less than 295 mm/s (11.8 in/s)?				
420. Are changing values which the operator uses to identify rate of change or to read gross values not updated faster than 5 s nor slower than 2 s when the display is to be considered as real time?				
421. Is a display freeze mode provided to allow close scrutiny of any selected frame?				
422. Are display formats designed to optimize information transfer to the operator by means of information coding, grouping, and appropriate information density?				
423. Does the rate of motion not exceed 60 deg/s of visual angle change with 20 deg/s preferred?				
424. Do numerals not follow each other faster than 2/s when the operator is expected to read the numerals consecutively?				
425. Are changing digital values which the operator must reliably read not updated faster than l/s, with a 2/s minimum time preferred?				
426. Are analog displays not being used when quick, accurate readings are a criterion?				
427. Do numbers increase clockwise, left to right, or bottom to top, depending on the display design and orientation?				
428. For one-revolution circular scales, is zero at 7 o'clock and the maximum value at 5 o'clock, with a 10-degree break in the arc?				
429. When check-reading positive and negative values, is the zero or null position at 12 o'clock or 9 o'clock?				
430. Are all numbers oriented upright?				
431. Are zones color coded by edge lines or wedges with red, yellow, and green used?				
432. Is shape coding or striping used when red lighting or blackout station conditions prevail?				
433. Is information in a directly usable form (for example, percent, RPM)?				
434. Does each digital display have a label to identify its meaning?				
435. Do digital displays include the appropriate number of significant figures for the required level of accuracy?				
436. Do digital displays accommodate the fun range of the variable (ie. highest and lowest values)?				
437. Do digital displays change slowly enough to be readable?				
438. Are digital displays provided with arrows to indicate the direction of change (if that is likely to be needed)?				
439. If more than four digits are required, are they grouped and the groupings separated as appropriate by commas, a decimal point, or additional space?				
440. Are multidigit counters oriented to read horizontally from left to right'?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
441. Are simple character fonts used?				
442. Is horizontal spacing between numerals between one-quarter and one-half the numeral width?				
443. Are binary indicators clearly labeled and understood?				
444. For quantitative measurements, are binary indicators used only for check-reading purposes?				
445. Where meaning is not apparent, is labeling provided close to the status indicator?				
446. When monochrome is not used, is the color of the indicator clearly identifiable?				
447. Are symbolic legends clear and unambiguous as to their meaning?				
448. Is the legend text short, concise, and unambiguous?				
449. Are legend nomenclature and abbreviations standard and consistent with usage throughout the control room and in the procedures?				
450. Are legends worded to tell the status indicated by the display?				
451. Are the legends of illuminated indicators readily distinguishable from legend push buttons by form, size, or other factors?				
452. Does each bar on the display have a unique identification label?				
453. Do bar charts contain reference(s) to the normal operating condition(s)?				
454. Are column charts used when the direction of change of the measurement is to be emphasized or when time is represented by one of the axes of the chart?				
455. Are stroke type charts used as alternatives to conventional full bars?				
456. Are all items on a band chart related to the total?				
457. Is a horizontal line representing normal operating conditions superimposed on the display?				
458. Is the area below the profile line shaded to provide a more distinguishable profile?				
459. Are labels provided along the bottom to identify each parameter')				
460. Are linear profile charts used in applications where detection of abnormal events is important?				
461. Is the chart designed so that it forms recognizable geometric patterns for specific abnormal conditions?				
462. Are differential line widths used to code flow paths (eg., significance, volume, level)?				
463. Do mimic lines not overlap?				
464. Are flow directions clearly indicated by distinctive arrowheads?				
465. Are all mimic origin points labeled or begin at labeled components?				
466. Are all mimic destination or terminal points labeled or end at labeled components?				
467. Are component representations on mimic lines identified?				
468. Are symbols used consistently?				
469. Is an indication of control activation provided (e.g., snap feel, audible click, or associated or integral light)?				
470. Is the force required for key displacement 0.25 to 1.5 N?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
471. Is the force required for key displacement 0.3 lo 0.75 N for repetitive keying tasks?				
472. Is a n-key rollover capability implemented for the reduction of keying errors?				
473. Is key displacement 0.03 to 0.19 in. for numeric keys and 0.05 to 0.25 in. for alphanumeric keys?				
474. Is displacement variability between keys minimized?				
475. Are all controls appropriately and clearly labeled in the simplest and most direct manner possible?				
476. Is functional highlighting of the various key groups accomplished through the use of color-coding techniques?				
477. Are key symbols etched to resist wear and colored with high contrast lettering?				
478. Is the color of alphanumeric keys neutral (e.g., beige, grey) rather than black or white or one of the spectral colors (red, yellow, green, or blue.)				
479. Are the keys matte finished?				
480. Are keys labeled with a non-stylized font?				
481. Does the linear dimensions of the key tops from 0.385 to 0.75 in., with 0.5 in. preferred?				
482. Is the separation between adjacent key tops 0.25 inch?				
483. Is a push-button height for decimal entry keypads from 1/4 to 3/8 inch?				
484. Does key height for alphanumeric keyboards from 3/8 to 1/2 inch?				
485. Do keyboards have a slope of 15 to 25 degrees from the horizontal, with 12 to 18 degrees preferred?				
486. Is the keyboard slope adjustable?				
487. Is the thickness of the keyboard, i.e., base to the home row of keys, less than 50 mm (acceptable) with 30 mm or less preferred?				
488. When dedicated controls are used to initiate/activate functions, are the keys grouped together?				
489. Are function controls easily distinguished from other types of keys on the computer console?				
490. Is each function control clearly labeled to indicate its function to the operator?				
491. When function keys are included with an alphanumeric keyboard, are the function keys physically separate?				
492. Are keys with major or total effects located so that inadvertent operation is unlikely?				
493. Are commands consistent throughout PDP procedures?				
494. Does the system use blink coding when there is an urgent need for the subject's attention?				
495. Does the system allow users to step backward or forward through menus or procedures?				
496. Are PDPs not used in complex applications such as the sole display and control, e.g., use in conjunction with CRT?				
497. Are PDPs used as the sole device with simple applications such as camera control?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
498. Do PDPs contain abbreviations which are easily recognized by the user (in many cases there is a six letter limit on a button for labels)?				
499. Are terminals which are often used as calculators provided with an auxiliary numeric key set?				
500. Is the configuration of a keyboard used to enter solely numeric information a 3 x 3 x I matrix with the zero digit centered on the bottom row?				
501. Is the layout of keyboard numeric pads either telephone or calculator style?				
502. Are light pens used for cursor placement text selection and command construction?				
503. Do tasks involving light pens not require frequent alternating use of the light pen and the keyboard?				
504. Do tasks involving light pens not require long continuous intervals of light pen use?				
505. Is the light pen 12 to 18 cm (4.7 to 5.1 in.) long and 0.7 to 2 cm (0.3 to 0.8 in.) in diameter9?				
506. Are convenient clips provided at the lower right side of the CRT to hold the pen when it is not in use?				
507. Does the movement of the pen in any direction on the screen result in smooth movement of the follower in the same direction?				
508. Does discrete placement of the stylus at any point on the screen cause the follower to appear at that point and remain steady in position so long as the pen is not moved?				
509. Is refresh rate for the follower sufficiently high to ensure the appearance of a continuous track whenever the pen is used for generation of free-drawn graphics?				
510. Are joystick controls used for tasks that require precise or continuous control in two or more related dimensions?				
511. In rate-control applications which allow the follower to transit beyond the edge of the display, are indicators provided to aid the operator in bringing the follower back onto the display?				
512. Are isotonic joysticks which are used for rate control spring-loaded for return to center when the hand is removed?				
513. Are isotonic joysticks not used in connection with automatic sequencing of a CRT follower unless they are instrumented for null return or are zeroset to the instantaneous position of the stick at the time of sequencing?				
514. Are isotonic/displacement joysticks 1/4 to 5/8 inch in diameter and 3 to 6 inches long?				
515. Is the resistance force of the joystick 12 to 32 ounces?				
516. Does the full displacement of the joystick not exceed 45 degrees?				
517. Are isotonic/displacement joysticks provided with the following clearances: display to stick-15-3/4 in., around stick-4 in., stick to shell front- 4-3/4 in. to 9-7/8 in?				
518. Is the movement smooth in all directions, and rapid positioning of the follower on the display attainable without noticeable backlash cross-coupling or need for multiple corrective movements?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
519. Do control ratios friction and inertia meet the dual requirements of rapid gross positioning and precise line positioning?				
520. Are recessed mounting or pencil attachments utilized to provide greater precision of control?				
521. When used for generation of free drawn graphics, is the refresh rate for the follower on the CRT sufficiently high to ensure the appearance of a continuous track?				
522. Is delay between control movement and the confirming display response minimized and not exceed 0.1 s?				
523. When positioning accuracy is more critical than positioning speed, are isotonic displacement joysticks selected over isometric joysticks?				
524. Is an isotonic displacement joystick used for such functions as data pickoff and generation of free-drawn graphics?				
525. Is the isometric joystick used for such functions as data pickoff?				
526. Are isometric joysticks ordinarily not used in any application where it would be necessary for the operator to maintain a constance/force on the stick to generate a constant output over a sustained period of time?				
527. Do finger-grasped isometric joysticks comply with the same dimensional criteria isotonic joysticks?				
528. Are hand-grasped isometric joysticks used when integral switching is required between 4.3 to 7.1 inch long and have a maximum grip diameter of 2 inches?				
529. Do hand-grasped isometric joysticks have minimum clearances of 4 in. at the sides and 2 in. at the rear?				
530. Do hand grasped isometric joysticks have a maximum resistance force of 26.7 lb for full output?				
531. Does the isometric stick deflect minimally in response to applied force but deflect perceptibly against a stop at full applied force?				
532. Is the X and Y output proportional to the magnitude of the applied force as perceived by the operator?				
533. Is a ball control used for such tasks as data pickoff?				
534. When tracker ball controls are used to make precise or continuous adjustments, are wrist support or win support or both provided?				
535. Is the tracker ball control capable of rotation in any direction so as to generate any combination of X and Y output values?				
536. When moved in either the X or Y directions alone, is there no apparent cross-coupling (follower movement in the orthogonal direction)?				
537. While manipulating the control, are neither backlash nor cross-coupling apparent to the operator?				
538. Do control ratios and dynamic features meet the dual requirement of rapid press positioning and smooth precise line positioning?				
539. Are tracker balls used in graphic applications requiring position and selection?				
540. Are grid and stylus devices used for data pickoff entry of points on a display generation of free-drawn graphics and similar control applications?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
541. Do transparent grids which are used as display overlays conform to the size of the display?				
542. Do grids which are displaced from the display approximate the display size and are they mounted below the display in an orientation to preserve directional relationships to the maximum extent?				
543. Does movement of the stylus in any direction on the grid surface result in smooth movement of the follower in the same direction?				
544. Does discrete placement of the stylus at any point on the grid cause the follower to appear at the corresponding coordinates and to remain steady in position so long as the stylus is not moved?				
545. Is the refresh rate for the follower sufficiently high to ensure the appearance of a continuous track whenever the stylus is used in generation of free-drawn graphics?				
546. Is the mouse controller used for main item selection scrolling data retrieval, and data entry?				
547. Does the controller have physical dimensions of 1.5 to 3 in. width 3 to 5 in. length and I to 2 in. thickness?				
548. Does the design of the controller and placement of the maneuvering surface allow the operator to consistently orient the controller to within ±175 mrad (10º) of the correct orientation without visual reference to the controller?				
549. Is the controller easily movable in any direction without a change of hand grasp and result in smooth movement of the follower in the same direction ±175 mrad (10º)?				
550. Is automatic speech recognition (voice input devices) limited to relatively simple input tasks?				
551. Are touch screens used for main item selection scrolling data retrieval and data entry?				
552. Does the terminal recognize a person's touch in approximately 100 ms?				
553. Does the system accept only one command at a time indicate that the command has been accepted and respond in a time commensurate with the activity?				
554. Are the sensitive areas large enough to allow entry using fingers and allow for parallax due to CRT screen curvature?				
555. To avoid alteration of color codes, are touch screens toned with a neutral tint?				
556. Are touch screens are not recommended if task requires holding arm up to the screen for long periods of time?				
557. Are discriminable audible beeps used to supply feedback when more than one touch screen will be installed at more than one work station?				
558. Is a question-and-answer dialogue used primarily for routine data entry tasks where the user has little or no training?				
559. Are the data items known and their ordering constrained?				
560. Is the computer response moderately fast?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
561. Is selection accomplished by keyed entry of corresponding codes or by other means such as programmed multifunction keys labeled in the display margin?				
562. When menu selection is accomplished by code, is that code keyed into a standard command entry area (window) in a fixed location on all displays?				
563. When control entries will be selected from a discrete set of options, are those options displayed at the time of selection?				
564. Are displayed options worded in terms of recognized commands or command elements?				
565. If menu selections must be made by keyed codes, does each code the initial letter (or letters) of the displayed option label rather than an arbitrary number?				
566. If letter codes are used, are those codes used consistently in designating options at different steps in a transaction sequence?				
567. Are menus used to minimize training needs?				
568. Are menus used when users have little or no typing skills?				
569. Are menus used when the system has a limited keyboard?				
570. Does each menu display require just one selection by the user?)				
571. Are displayed menu options listed in a logical order, if no logical structure is apparent then options displayed in order of their expected frequency of use with the most frequent listed first?				
572. Are displayed menu lists formatted to indicate the hierarchic structure of logically related groups of options rather than as an undifferentiated string of alternatives?				
573. If menu options are grouped in logical sub-units, are those groups displayed in order of their expected frequency of use?				
574. Is the same color for menus used within the same group?				
575. When hierarchic menus are used, is the user given some displayed indication of current position in the menu structure?				
576. When hierarchic menus are used, does a single key action permit the user to return to the next higher level?				
577. Are menus provided in different displays designed so that option lists are consistent in terminology and ordering?				
578. Are experienced users provided means to bypass a series of menu selections and make an equivalent command entry directly?				
579. When a user can anticipate menu selections before they are presented, is a means provided to enter several stacked selections at one time?				
580. Do menu displays for a system still under development indicate future options not yet implemented?				
581. When command language is used for control entry, is an appropriate entry area provided in a consistent location on every display preferably at the bottom?				
582. Are the words chosen for a command language reflect the user's point of view and not the programmer's?				
583. Is abbreviation of entered commands (ie. entry of the first I to 3 letters) permitted to facilitate entry by experienced users?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
584. Is the user able to request display of a file by name alone without having to enter any further information such as file location in computer storage?				
585. Is the user able to request prompts as necessary to determine required parameters in a command entry or to determine available options for an appropriate next command entry?				
586. Is the user able to enter commands without punctuation?				
587. Does neither the user nor the computer program have to distinguish between single and multiple blanks in a command entry?				
588. Is the computer programmed to recognize common misspellings of commands and to display inferred correct commands for user confirmation rather than requiring reentry?				
589. When a command entry is not recognized, does the computer initiate a clarification dialogue rather than rejecting the command outright?				
590. Does the system accept user input without discriminating between upper and lower case?				
591. Does command language assume highly experienced users?				
592. Is query language dialogue used as a specialized subcategory of general command language for tasks emphasizing unpredictable information retrieval (as in many analysis and planning tasks)?				
593. Does the organization of the query language match the data structure perceived by users to be natural?				
594. Is one single representation of the data organization established for use in query formulation, rather than multiple representations?				
595. Is the need for quantificational terms in query formulation minimized or eliminated?				
596. Is the use of terms subject to frequent semantic confusion, such as "or more" and for less," minimized?				
597. Does the system make it easy and natural for a user to inquire about any details desired?				
598. Does the system support a flexible dialogue that permits either the user or the expert system to initiate an action or request for information without canceling an ongoing transaction?				
599. Is the user-expert system dialogue flexible in terms of the type and sequencing of user input it will accept?				
600. Is the system capable of supporting speculative analysis (e.g., what if scenarios) by providing a "reconnoiter mode" that allows the user to investigate the effects of an action without actually implementing the action?				
601. Is the knowledge required to perform all functions allocated to the expert system directly accessible by the expert system?				
602. Is the capability for the user to supersede the current request for information from the expert system in order to input information related to a different transaction provided?				
603. Does the expert system have the capability to graphically represent its rules network?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
604. Does the expert system automatically record all rules invoked during a consultation? Following a consultation the explanation facility capable of recalling each involved rule and associating it with a specific event (ie. question or conclusion) to explain the rationale for the event?				
605. Is the expert system able to respond to user requests to clarify or restate questions and assertions?				
606. At any point during a transaction, is the expert system able to explain which problem-solving strategy is being employed why a particular strategy was selected and the current status of the application?				
607. Is the level of detail of information presented as part of an explanation or justification under the control of the user. As a minimum the user able to specify three levels of detail: rules only brief explanations arid detailed explanations?				
608. Are update raw for continuous real-time tracking tasks not exceed 0.5 s?				
609. Do update rates not exceed 3 s?				
610. Are response time deviations less than one-half the mean response time?				
611. Is an indication that the computer or control panel is functioning normally provided on the CRT display'?				
612. When system functioning requires the operator to standby, is periodic feedback provided to the operator to indicate normal system operation and the mason for the delay?				
613. When a process or sequence is completed by the system, is positive indication presented to the operator concerning the outcome of the process and requirements for subsequent operator actions?				
614. If at any time the keyboard is locked or the terminal is otherwise disabled, is that condition signaled by disappearance of the cursor from the display and (especially if infrequent) by some more specific indicator such as an auditory signal?				
615. Is status information available indicating current load (multiple users assumed) and/or current system performance?				
616. Is relevant status information for external systems available to the user?				
617. When time tagging information is important, are date-time signals available to users as an annotation on displays?				
618. Does every user input consistently produce some perceptible response output from the computer?				
619. Is computer response to user entries rapid, with consistent timing as appropriate to different types of transactions?				
620. Following user interrupt of data processing, is an advisory message displayed assuring the user that the system has returned to its previous status?				
621. Is specific user guidance information available for display at any point in a transaction sequence?				
622. To serve as a home base or consistent starting point at the beginning of a transaction sequence, is a general menu of control options always be available for user selection?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
623. Are hierarchic menus organized and labeled to guide the user within the hierarchic structure?				
624. Are control options that are generally available at any step in a transaction sequence treated as implicit options, i.e., need not be included in a display of step-specific options?				
625. Is the computer programmed to provide prompting, i.e., to display advisory messages to guide users in entering required data and/or command parameters?				
626. When users vary in experience, is prompting an optional guidance feature that can be selected by novice users but can be omitted by experienced users?				
627. When the results of a user entry are contingent upon context established by previous entries, is some indication of that context displayed to the user?				
628. Are implicit cues for data entry provided by consistent and distinctive formatting of data fields?				
629. Following computer generation of display output, is the cursor automatically be positioned on the display in a location consistent with the type of transaction?				
630. Is reference material available for on-line display to the user describing system capabilities and procedures?				
631. In applications where a user may employ command entry, does the computer provide an on-line command index to help guide user selection and composition of commands?				
632. Is a complete dictionary of abbreviations used for data entry, data display, and command entry available for on-line user reference and in system documentation?				
633. When codes are assigned special meaning in a display, is a definition provided at the bottom of the display?				
634. In system applications where it is warranted, is the user able to request a displayed record of past transactions in order to review prior actions?				
635. In addition to explicit aids (labels, advisory messages), and implicit aids (cuing) provided in user interface design, is there also a capability for a user to request further on-line guidance by a request for HELP?				
636. When an initial HELP display provides only summary information, is more detailed explanations available in response to repeated user requests for HELP?				
637. Are novice users able to browse on-line HELP displays, just like a printed manual, to gain familiarity with system functions and operating procedures?				
638. For many system applications, is an online training capability provided to introduce new users to system capabilities and to permit simulated hands-on experience in data handling tasks?				
639. Is data security protected by automatic measures whenever possible, rather than by administrative procedures?				
640. Does the user interface design provide consistent procedures for data transactions, including data entry and error correction, data change, and deletion?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
641. Do inputs to the computer, including data entries and control entries, require explicit user actions?				
642. When the result of user action is contingent upon prior selection among differently defined operational modes, is mode selection continuously indicated to the user, particularly when user inputs in that mode might result in unintended data loss?				
643. Does the user interface design deal appropriately with all possible control entries, correct and incorrect, without introducing unwanted data change?				
644. For both data entry and control entry, is the user able to edit composed material before initial entry and also before any required reentry?				
645. For both data entry and control entry, is the user required to resolve any detected ambiguity requiring computer interpretation?				
646. Is the user warned of potential threats to data security by appropriate messages and/or alarm signals?				
647. Are computer security procedures understood by all staff?				
648. Are computer security policies strongly supported by management?				
649. Does design documentation explicitly delegate controls to be used?				
650. Is the policy established whereby employees do not discuss security procedures outside of the job environment?				
651. Unbeknownst to the user, does the computer automatically log the user ID and keeps record of file access and work performed?				
652. Is the system is kept five of "Shareware" and other programs which may contain viruses?				
653. Are appropriate personnel conspicuous by virtue of the fact that they are required to wear a badge?				
654. Are visitors are required to wear identification?				
655. Are passwords are employed by all users?				
656. Are passwords are changed every 90 days?				
657. Are passwords are changed every two weeks (high security access)?				
658. Are physical key locks are provided?				
659. Are internal and external security audits are conducted on a regular basis?				
660. Commensurate with review of security, is reliability of the system as a whole calculated?				
661. Are data conversion procedures are subject to scrutiny?				
662. Are standards are in place which call for the use of controls?				
663. Do construction practices promote a fireproof and waterproof environment?				
664. Is the keyboard base height for a seated workplace from 56 to 77 cm (22 to 30 in.)?				
665. Is the keyboard base height for a standing or a sitting/standing workplace from 90 to 93 cm (35.5 to 36.5 in.)?				
666. Is the working level height for a sitting workplace from 66 to 81 cm (26 to 32 in.)?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
667. Is the working level height for a standing workplace from 90 to 107 cm (35.5 to 42 in.),				
668. Is the working level height for a sitting/standing workplace from 90 to 102 cm (35.5 to 40 in.)?				
669. Is the working level width from 61 to 76.5 cm (24.4 in. to 30.6 in), 76.5 cm preferred?				
670. Is the working level depth from 41 to 64 cm (16.4 in. to 25.6 in.), 64 cm preferred?				
671. Is the keyboard home row height 66 to 78 cm (26 to 30.5 in.)?				
672. Is the screen height for a seated workplace from 15 to 117 cm (6 to 46 in.), with 99 cm (39 in.) preferred?				
673. Is the screen height for a standing workplace from 104 to 178 cm (41 to 70 in.)?				
674. Is the screen viewing angle within 35 degrees of the horizontal line of sight, with about 15 degrees below the horizontal line of sight preferred?				
675. Is the viewing distance 33 to 80 cm (13 to 30 in.), with 46 to 61 cm (18 to 24 in.) preferred?				
676. Is the footrest 18 in. below the level of the seat and adjustable in 2-in. increments of height?				
677. Are rectangular footrests 30 cm (12 in.) deep by 41 cm (16 in.) wide?				
678. Do circular footrests have a diameter of 18 in?				
679. Is the footrest circular if it is part of the chair?				
680. Is the functional reach envelope from 64 to 88 cm (252 to 34.6 in.)?				
681. Is the normal inclination angle of the head from 16 to 22 degrees?				
682. Is a document holder provided to reduce head movement while keying data from a document?				
683. Is screen orientation no greater than 45 degrees away from or toward the operator, with 15 degrees away from the operator preferred?	1.			
684. Is screen orientation adjustable?				
685. Does the chair design allow the user to maintain the following posture: knees flexed at an angle > 90º, elbows flexed at an angle 90º, and torso at an angle slightly greater than 90º (100º to 155º)?				
686. Is seat height adjustable from 35 to 55 cm (14 to 22 in.)?				
687. When the chair is provided with a footrest, is it adjustable from 51 to 76 cm (20 to 30 in.). with the footrest a constant 46 cm (18 in.) below the seat?				
688. Is the seat width 43 to 51 cm (17 to 20 in.)?				
689. Is the seat depth 38 to 46 cm (15 to 18 in.)?				
690. Is the backrest height 15 to 23 cm (6 to 9 in.)?				
691. Is the backrest- width 30 to 36 cm (12 to 14 in.)?				
692. Is the seat cushion at least 1-in. thick?				
693. Are the armrests 5 cm (2 in.) wide, 20 cm (8 in.) long, and 19 to 28 cm (7.5 to 11 in.) above the compressed sitting surface?				
694. Is hard-finish, matte paper used to avoid smudged copy and glare?				

CHECKLIST: USER-COMPUTER INTERFACE				
CRITERIA	YES	NO	N/A	COMMENTS
695. Is there a positive indication of the remaining supply of recording materials?				
696. Are instructions for reloading paper, ribbon, ink, etc. appear on an instruction plate attached to the printer?				
697. Are printers part of the process computer system and be located in the primary operating area?				
698. Are control room printers provide the capability to record alarm data, trend data, and plant status data?				
699. Is the system designed to provide hard copy of any page appearing on the CRT at the request of the operator?				
700. Does printer operation not alter screen content?				
701. Is a take-up device for printed materials provided which requires little or no operator attention and which has a capacity at least equal to the feed supply?				
702. Is it possible to annotate the print copy while it is still in the machine?				
703. Is the operator always able to read the most recently printed line?				
704. Does printed material have an adequate contrast ratio to ensure easy operator reading?				
705. When the printer is down during reloading, is data and information which would normally be printed not lost?				
706. Is the recorded matter not obscured, masked, or otherwise hidden in a manner which prevents direct reading of the material?				
707. If the copy will be printed remote to the operator, is a print confirmation or denial message displayed?				
708. Is printed information presented in a directly usable form with minimal requirements for decoding, transposing, and interpolating?				
709. Does a printer used for recording trend data, computer alarms, and critical status information have a high-speed printing capability of at least 300 lines a minute to permit printer output to keep up with computer output?				
710. Is the VDT provided with implosion safeguards?				