



# THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

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MURRAY R. EDELMAN  
VICE PRESIDENT  
NUCLEAR

May 4, 1983

PY-CEI/NRR-0040 L

Mr. B. J. Youngblood, Chief  
Licensing Branch No. 1  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Perry Nuclear Power Plant  
Docket Nos. 50-440; 50-441  
SER Outstanding Issue No. 7  
Control Room Design Review

Dear Mr. Youngblood:

This letter is in response to the NRC Human Factors In-Progress Audit Report dated November 12, 1982. Attachment 1 is CEI's response to each NRC Human Engineering Discrepancy (HED). The response for each HED is divided into two sections; first, the "Proposed Action"; second, the "Details/Justification".

The "Proposed Action" section provides a description of the action to be taken with each HED. The actions are divided into four categories:

1. Fix - CEI agrees with the HED and plans to correct the condition as described under the Details/Justification Section.
2. Modify - CEI agrees with the HED and plans to improve, not totally correct, the condition as described under the Details/Justification Section.
3. None - CEI agrees with the HED but modifications are not warranted based on other design features as described under Details/Justification Section.
4. Disagree - After further review it was determined that the HED does not violate Human Factors Criteria. Justification is provided under the Details/Justification Section.

The resolution of these HED's was performed by a team of CEI personnel and an independent Human Factors Consultant, Dr. Paul Nicholson, Nicholson Nuclear Science and Engineering-MIT. Implementation of the fixes and modifications outlined in Attachment 1 has begun.

Boo!

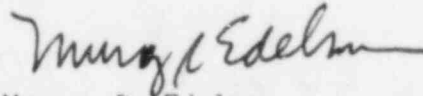
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Mr. B. J. Youngblood, Chief

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CEI will conduct a supplemental Human Factors Review once the Perry Emergency Operating Instructions have been written. Additional HED's identified in this supplemental review will be reviewed and implemented on a separate time table. These additional HED's will be included in the final detailed Control Room Design Review Report (DCRDR) to be submitted six months prior to fuel load.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Murray R. Edelman", with a long horizontal flourish extending to the right.

Murray R. Edelman  
Vice President  
Nuclear Group

MRE:kh

cc: Jay Silberg, Esq.  
John Stefano  
Max Gildner

# ATTACHMENT 1

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
A.1.1	Fix	Operator movement and pathways will be considered in the redesign of P805, and administrative controls will be used to limit the number of personnel in operating areas.
A1.2	Fix	Emergency lighting levels will be increased to provide a minimum of 10 footcandles at emergency work stations.
A1.3d	Fix	Nameplates will be added to clarify.
A1.4	Fix	Systems will be reviewed with the Perry standards and corrected where necessary.
A1.5	None	Changes to process computer logs are not anticipated. Should this become necessary, programs can and will be modified.
B1.1	Fix	Reactor level and pressure are provided to determine changes in reactor conditions, and ERIS will provide additional information on ECCS status. Prior to leaving the Control Room, the reactor operator will verify that the reactor has scrammed. Control of DIV 2 or DIV 3 are not part of the design basis of the remote shutdown panel. (Pump indication for DIV 2 and DIV 3 are located nearby should action be required.)
B1.2	Fix	Instrumentation and controls will be reviewed via walk-through when instructions for the remote shutdown panel are complete.
B1.3	None	The DIV 1 diesel generator can be started from a nearby panel. The control of the DIV 1 diesel generator is not part of the design basis of the remote shutdown panel.
B1.4	None	Sufficient indications (valve position, pump amps and flow) is provided to determine proper system operation.
B1.5	Fix	The plant data book will have relevant charts and graphs, and ERIS will have capabilities to compare and plot parameter vs. parameter.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B1.6	None	A wide range recorder is provided on P601, and a wide range indicator is provided on P680. ERIS will also provide additional indication.
B1.7	None	Reactor temperature is available to the operator on Panel P614, ERIS and the process computer.
B1.8	None	Suppression Pool level indication is provided on P601 and ERIS. The Suppression Pool level recorders are located on P883 (near the open end of the horseshoe).
B1.9	Fix	Containment level indication will be provided if required to meet the Emergency Procedure Guidelines. This issue is still under review by the EPG Committee of the BWR Owner's Group.
B1.10	None	Panel P680 is constructed such that by standing, the reactor operator can see the alarm sections of the off-gas and radiation monitoring panels. Alarm windows on P680 also indicate the status of the satellite panels. The process computer and ERIS will provide additional information.
B1.11	Fix	Furnishing will be provided at the remote shutdown panel.
B1.12	None	The support column cannot be moved due to building seismic design. Slight operator reposition allows panels to be viewed.
B1.13	Fix	Operator movements and pathways will be considered when incorporating storage space for procedures and reference materials into the Control Room.
B1.14	Fix	Storage space will be provided at the remote shutdown panel.
B1.15	Fix	Storage space for spare parts will be considered in the design of the Unit Supervisor's desk, storage areas and the selection of rolling carts.
B1.16	None	The primary means of communications will be voice between the reactor operator and the Unit Supervisor at the Unit Supervisor's desk. If necessary, the Shift Supervisor can be paged.
B1.17	Fix	Protective covers will be added to the corners of the panel inserts and the edges of the guardrails.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B1.18a	Modify	A false floor will be added to bring the controller closer to recommended limits.
B1.19	Modify	See B1.18a.
B1.20	None	Switches were reviewed and found acceptable due to infrequent use or nonsafety implications.
B1.21	None	Switches and indicators were reviewed and found acceptable due to infrequent use or non-safety implications.
B1.22	Modify	See B1.18a.
B1.23	None	The keyboard on Panel P680 is not intended for long durations of interfacing between operator and computer, so the operator can reposition himself to use the keyboard and CRTs (see B7.9).
B1.24	Fix	A rolling stand will be provided for procedure lay-down, and the operator's auxiliary control console (P805) behind P680 will be provided with a work space.
B1.25	None	This was found not be a problem. Glare is found only on the upper third of the meter faces above the normal range of operation. Parallax is not experienced when meters are read from a normal viewing position.
B1.26	None	See B1.25.
B1.27	Modify	A false floor will be added in front of Panel P001 which will reduce the glare. Room lighting is also being upgraded which will help reduce glare.
B1.28	None	Personnel in the kitchen can be paged from the Control Room.
B3.1	None	The annunciator indicates an abnormal condition. Instrumentation is available to the operator on the panel to verify actual plant condition. Annunciators with multiple inputs alarm at the first stage of parameter deviation and do not alarm setpoints of automatic system response or required immediate operator action.
B3.2	None	The LPCS Pump Discharge Pressure HI/LO annunciator indicates an abnormal condition. Instrumentation is available to the operator on the panel to verify actual plant condition.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B3.3	Fix	When the EPGs are finalized and plant specific emergency instructions are written, a review will be conducted to ensure adequate annunciators exist.
B3.4	None	With the change to symptom based procedures, use of the first out function is not required. First out information for post-trip analysis is available on the printout from the sequence of events recorder which is part of the annunciator system.
B3.5	Fix	A detailed review of Control Room annunciator windows is being conducted. Alarm prioritization, location, alarm logic, readability, terminology and adherence to standard abbreviations is being reviewed to aid immediate operator response. At the completion of this review, recommended changes will be identified and, where beneficial, implemented.
B3.6	None	Alarm windows are provided at the operator normal station, P680, to indicate which satellite panel has received an alarm. Prioritization is achieved through position coding and color coding of annunciators.
B3.7	Fix	See response for B3.5.
B3.8	Fix	Annunciator panels will be provided with labels.
B3.9	Fix	See response for B3.5.
B3.10	Fix	See response for B3.5.
B3.11	Fix	See response for B3.5.
B3.12	Fix	Procedures will be written to ensure correct replacement of annunciator windows.
B3.13	Fix	Procedures will be written to have annunciators tested each shift.
B3.14	Fix	All active annunciator points will have engraved windows.
B3.15	Fix	See response for B3.5.
B3.16	Fix	See response for B3.5.
B3.17	Fix	See response for B3.5.
B3.18	Fix	See response for B3.5.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B3.19	Fix	Annunciator panels will be provided with X-Y coordinates.
B3.20	Fix	The lettering size for annunciator windows on Panel P680 will be increased.
B3.21	Fix	The font size and style for annunciator windows on Panel P680 will be consistent.
B3.22	Fix	All active annunciators will have engraved windows.
B3.23	Fix	The annunciator system will be enhanced to include a three-function joy stick with separate silence, acknowledge and reset functions. The test function will remain on a separate push button.
B3.24	Fix	The three-function joy stick will be located at all annunciator stations.
B3.25	Fix	This P680 insert is being reconfigured to hold the ERIS keyboard. Installation of a joy stick will be considered.
B3.26	None	Procedures are sufficient as written.
B4.1	Fix	The DIV 3 diesel generator voltage regulator control switch will be installed in insert P601-16C.
B4.2	Fix	The reactor mode switch will be installed.
B4.3	Fix	A different switch handle will be used on the transfer switches on the remote shutdown panel.
B4.4	Fix	Covers will be provided to prevent inadvertent actuation.
B4.5	Fix	This P680 panel insert is being reconfigured to include the redundant reactivity control system. The switches will be location coded with this modification.
B4.6	None	Moving the thumbwheel switch down results in a decrease in parameters. Familiarity and use of the controllers will limit the confusion factor. This is an industry wide problem with these controllers.
B4.7	Fix	Switches will be changed to be in accordance with Perry standards.
B4.8	Fix	A Perry standard coding method will be used to distinguish switch functions (e.g., pumps, throttle valves, etc.).

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B4.9	None	Manual initiation push buttons are red and located on the vertical sections of the panels away from other switches (location coded).
B4.10	Fix	See response for B3.23.
B5.1	Fix	Meter scale will be corrected.
B5.2	None	The diesel indications are of a different design and manufacture. Familiarity and use of the diesel controls and indications will limit the confusion factor.
B5.3	None	See response for B5.2. Frequency meter for DIV 3 diesel generator is sufficient for operation.
B5.4	Fix	The water level system is being upgraded to improve accuracy and readout. Two additional Fuel Zone level transmitters calibrated for transient conditions with Control Room indication and recording for each transmitter will be added.
B5.5	Fix	Suppression Pool level will be referenced to the bottom of the Suppression Pool.
B5.6	Fix	The water level recorder at the remote shutdown panel meets the design basis of the shutdown panel. Additional indication of reactor level will be provided with the ERIS system.
B5.7	Fix	See response for B1.2.
B5.8	None	HPCS CST suction valve will auto open on an initiation signal if both suction valves are closed. The LPCS Suppression Pool suction valve is normally key-locked open. At each shift change, ECCS system operability will be verified. An alarm indicates when the suction valve is closed.
B5.9	None	Adequate system controls and indication are provided at the remote shutdown panel to accomplish the required design functions. Key system parameter indications are provided to assess proper system operation. In addition an ERIS display will be provided to enhance operations.
B5.10	Fix	Meters will be provided with labels and scales.
B5.11	Fix	Meters will be identified and reviewed for function. Proper labels and scales will be provided.



<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B5.12	Fix	Pressure sensors have been added to provide positive indication of valve position. Indication will be provided on Panel P601.
B5.13b	Fix	Vacuum indication in the Control Room is to be in PSI VAC.
B5.13e	Fix	Indicator will be scaled in process units.
B5.14	Fix	The Suppression Pool Level System has been upgraded to include an expanded range. The remote shutdown panel Suppression Pool level indication is adequate for design basis shutdown. The remote shutdown panel will be reviewed for proper indication required to respond to operator instructions (see B1.2).
B5.15	Fix	The meter will be supplied with a scale.
B5.16	Fix	Instrument scales and setpoints will be made consistent.
B5.17	Fix	Meters will be changed to reference the bottom of the Suppression Pool with expanded range.
B5.18	Fix	Scales will be made consistent.
B5.19	None	It is not anticipated that such low RHR flows would be achieved at the remote shutdown panel.
B5.20	None	Indication, as in the Control Room, is accurate enough for intended purposes.
B5.21	Fix	Bulk Suppression Pool temperature and average Drywell atmosphere temperature will be provided to the operator via the ERIS system.
B5.22	None	The scale is correct.
B5.23	Fix	SRM period meters will be increased in size and an investigation into adding digital displays for reactor level and pressure is being performed.
B5.24	Fix	Process units will be added where applicable.
B5.25	Fix	Proper scales and units will be added where applicable.
B5.26	Fix	Proper scales and units will be added where applicable.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B5.27	Fix	All the vessel level indications will be referenced to the top of active fuel.
B5.28	Fix	Proper scales and units will be added where applicable.
B5.29	Fix	Proper scales and units will be added where applicable.
B5.30	Fix	Meter scales will be made consistent.
B5.31	Fix	Push buttons will be reviewed with respect to the Perry standard and changed where necessary.
B5.32	None	The use of colors on CRT displays will be in accordance with the Perry standard. There is presently no guidance provided in NUREG-0700 to address the problem of color blindness. Inability to differentiate colors does not affect the interpretation of the display.
B5.33	Fix	Indicators will be reviewed for consistent and meaningful application of color banding to indicate normal, marginal and abnormal ranges. Where meaningful, the indicators will be marked with these ranges.
B5.34	None	Two bulbs are provided in almost all control applications (on-off, open-close). Neither light being lit is an indication of a burned out bulb or loss of control power. Valve mid-travel is indicated by both lights on.
B5.35	None	See response for B5.34.
B5.36	Fix	Engraved tiles will be provided.
B5.37	None	Operator training will be provided to ease bulb replacement.
B5.38	None	The system status panels have a push to test function.
B5.39	Fix	Pressure sensors have been added to provide positive indication of valve position. Indications will be provided on Panel P601 (see B5.12).
B5.40	Fix	Illumination levels are bright enough to distinguish between off and on.
B5.41	Fix	Procedures will be written to govern the removal and replacement of indicator tiles.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B5.42	Fix	The corners of push buttons will be etched to distinguish them from indicators.
B5.43	Fix	Paper with proper scales will be installed in the recorders.
B5.44a	None	The minitrend recorders also display the points by color and required tracking can be obtained.
B5.44b	Fix	The glass will be changed.
B5.45	Fix	Dual speed recorders will be uniquely identified.
B5.46	None	Important parameters are available elsewhere if required. Some recorders have been provided with multipoint capability.
B5.47	Fix	A system will be established to indicate proper chart paper for each recorder.
B5.48	Fix	This P680 panel insert is to be reconfigured to include the redundant reactivity control system. The bypass switches will be relocated to eliminate interference problems (see B4.5).
B5.49	Fix	Abnormal ranges will be added to the recorder indicator scales where meaningful (see B5.33).
B5.50	Fix	The scale will be corrected.
B5.51	Fix	Limits or action levels will be added to the recorder and indicator scales (see B5.49 and B5.33).
B5.52	Fix	See response for B5.51.
B5.53	Fix	Recorders will be reviewed and paper will be replaced where necessary.
B5.54	None	Present design is acceptable. Sufficient information is available to identify short-term trends. Pulling the recorder out to review longer trend is easily accomplished without any special tools and is a familiar procedure to the operator.
B5.55	Fix	Limits or action levels will be added to recorder and indicator scales (see B5.49 and B5.33).
B5.56	Fix	Panel P680 is currently being reviewed for the addition of larger digital displays of level and pressure.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B5.57	None	The indicators do not require precise reading, and the operator can momentarily reposition himself to read the scale.
B5.58	None	See response for B5.57.
B6.1	Fix	Nameplates will be provided where necessary.
B6.2	Fix	Nameplates will be provided where necessary.
B6.3	Fix	System labels will be provided where possible.
B6.4	Fix	Panel numbers and function labels will be provided where necessary.
B6.5	Fix	The level indicator will be provided with a label and proper scale.
B6.6	Fix	The recorders will be provided with labels or nameplates which identify the parameters.
B6.7	Fix	The escutcheons will be corrected.
B6.8	None	Information presented is sufficient. Space allotted is not sufficient for additional wording. The window does give the panel number for isolation valve indication.
B6.9	Fix	The level indicators will be provided with labels.
B6.10	Fix	Switches to be moved to Unit Supervisor's desk and nameplates will be supplied.
B6.11	None	The present label describes the function of the switch.
B6.12	Fix	The switch on P630 will be provided with a label.
B6.13	Fix	The switches on P883 will be provided with labels.
B6.14	Fix	The switches on F881 and P883 will be provided with labels.
B6.15	Fix	The switch on P604 will be provided with a label.
B6.16	Fix	The switches on P680-8C will be provided with labels.
B6.17	Fix	Panels will be reviewed and heirarchial labeling will be used where beneficial.
B6.18	Fix	Hierarchial labeling will be implemented where it is found beneficial.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B6.19	Fix	The labels on the "C" inserts of Panel P680 can be read from a seated position; and if necessary, the operator can momentarily reposition himself to read labels. The vertical panels will be reviewed and labels will be moved to permit easier reading.
B6.20	None	The label location is consistent with the standard used throughout the Control Room for location of labels. For indicators, mount labels below and for controllers mount labels above. The purpose of this is so the nameplate will not be obscured during use.
B6.21	Fix	Additional nameplates will be added to the top of the recirculation controllers.
B6.22	Disagree	The label location is consistent with Perry standards.
B6.23	Fix	Labels will be corrected.
B6.24	Fix	The switch labels on P601 and P631 will be made consistent.
B6.25	Fix	The annunciator windows will be reviewed and made consistent (see B3.5).
B6.26a	None	The present nameplates are concise and clearly labeled.
B6.26b	Fix	Nameplate will be corrected.
B6.26c	Fix	Nameplates will be corrected.
B6.26d	Fix	Nameplates will be corrected.
B6.26e	None	Present nameplates are clearly labeled and concise.
B6.26f	None	Information presented is sufficient. Space allotted is not sufficient for additional wording (see B6.8).
B6.26h	Fix	Nameplate will be reviewed and made consistent with the Perry standard (see B6.27).
B6.26i	Fix	Nameplate will be corrected.
B6.26j	Fix	Nameplate will be corrected.
B6.26k	Fix	Nameplate will be corrected.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B6.26l	Fix	Nameplate will be corrected.
B6.26m	Fix	Nameplates will be corrected.
B6.26n	Fix	Nameplate will be corrected.
B6.26o	Fix	Nameplate will be corrected.
B6.26q	Fix	Nameplates will be corrected.
B6.26r	Fix	Nameplates will be corrected.
B6.26s	Fix	Nameplates will be corrected.
B6.26t	Fix	Nameplates will be corrected.
B6.26u	Fix	Nameplates will be corrected.
B6.26v	Fix	Nameplates will be corrected.
B6.26w	Fix	Nameplates will be corrected. Control switch on P870-5 has been deleted so escutcheon will be removed. Control switch on P680-3 is now installed.
B6.27	Fix	A standard format has been established for nameplate nomenclature. All nameplates have been reviewed, and a program is underway to make them consistent.
B6.28	Fix	Labels will be made consistent (see B6.24).
B6.29	Fix	Control Room abbreviations will be reviewed with Perry standard abbreviation list and made consistent.
B6.30	Fix	See B6.27 and B3.5. Component labels are being reviewed and corrected where necessary.
B6.31	Fix	Nameplates will be corrected.
B6.32	Fix	See B6.27. Nameplates will be reviewed and corrected where necessary.
B6.33	Fix	Nameplates for Valves 1N27-F140 and 1N-F11B are presently correct. 1N33-F110 will be changed to normal; 1N27-C005A will be changed to standby.
B6.34	None	The design intent is to have white letters on a black background which is in the fair range of NUREG-0700.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B6.35	Fix	The panels will be reviewed for use of demarcation, hierarchial labeling, etc., and improvements will be made where beneficial.
B6.36	Fix	Panel P001 will be supplied with mimics and labeling.
B6.37	Fix	The panels will be reviewed for use of demarcation and improvements made where beneficial.
B6.38	Fix	See B6.35.
B6.39	Fix	Demarcation of subgroups will be implemented, where beneficial, on systems identified to improve operations.
B6.40	Fix	Demarcation or other visual cluing will be implemented, where beneficial, to aid location of important instruments.
B6.41	Fix	Lines of demarcation will be added to divide the DIV 3 diesel controls from the HPCS controls.
B6.42	Fix	The push buttons and collars will be reviewed with the Perry standard and corrected where necessary.
B6.43	Fix	The mimic of the bypass will be made smaller relative to the main flowpaths of P970.
B6.44	Fix	The main flowpaths for RHR will be accentuated, and lines of demarcation or color patches will be added to P904 and P800 to highlight systems.
B6.45	Fix	Panel P601-19 is being reconfigured to include the indication of the SRV position pressure switches. The mimic will be reviewed during this redesign work.
B6.46	Fix	The main flowpaths for the ECCS systems will be accentuated.
B6.47	Fix	The mimics will be reviewed with the Perry standard and corrected where necessary.
B6.48	Fix	All mimics will be made complete and correct.
B6.49	Fix	Panels will be reviewed with the Perry standard and corrected where necessary.
B6.50	Fix	The blue mimic and brown panel contrast is acceptable. The gray mimic will be highlighted using color patches.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B6.51	Fix	Mimic lines with better contrast will be used.
B6.52	Fix	The mimic for the feedwater injection lines will be changed to conform to the Perry standard.
B6.53	Fix	The mimic of the air intake symbols will be made consistent with the remaining mimic.
B6.54	None	The design intent is to have dark panels, black label background and white label lettering which is in the fair range of NUREG-0700.
B6.55	Fix	See response to B6.56.
B6.56	Fix	Additional flow arrows will be added where beneficial.
B6.57	Fix	All mimics will be made complete and correct (see B6.48).
B6.58	Fix	A new Suppression Pool symbol will be used.
B6.59	Fix	Lines of demarcation or color patches will be added to identify systems.
B7.1	Fix	Procedures will be written to govern software changes.
B7.2	Fix	Storage for the operating system will be provided.
B7.3	Fix	This concern will be corrected with the revised operating package.
B7.4	Fix	When the computer signal and alarm list are complete, the list will be reviewed and made consistent with the plant standard.
B7.5	None	Only one style of keyboard is available from the manufacturer of the process computer system and one style for the ERIS system. Familiarity and use will limit any confusion factor.
B7.6	Fix	The process computer keyboard will be provided with engraved keys.
B7.7	Fix	A system and procedures will be developed to restart the process computer system.
B7.8	Fix	Cross-references of computer points and point IDs will be provided.



<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B7.9	None	The process computer keyboard and CRTs will be moved from P680 to the operator's auxiliary control console. This new mounting will eliminate viewing angle problems. The ERIS keyboard (then installed in P680) is not intended for long durations of interfacing between operator and computer, so the operator can reposition himself to use the keyboard and CRTs (see B1.23).
B7.10	Fix	Proper calibration and convergence will make the letters easier to distinguish.
B7.11	Fix	This concern will be addressed and corrected in the revised operating package.
B7.12	Fix	This concern will be addressed and corrected in the revised operating package.
B7.13	Fix	The process computer displays and mimics in the revised operating package will conform to the GE standards for CRT displays.
B7.14	Fix	See B7.13.
B7.15	Fix	This concern will be addressed and corrected in the revised operating package.
B7.16	None	The necessary information is available to the operator on CRTs. The sequence of events recorder provides a printout of events for post-transient analysis.
B7.17	Disagree	A denial message is displayed and the operator is prompted to re-request the printout.
B7.18	Fix	Procedure will be written to govern the replacement of paper.
B7.19	None	This does not appear to be a problem.
B7.20	Fix	Techniques will be developed to allow paper replacement with the printer running.
B7.21	Fix	Procedures will be written to govern the replacement of paper and ribbons.
B8.1	None	The HPCS and RCIC pump suction automatically switches from the CST to the Suppression Pool on low CST level or high Suppression Pool level. CST level indication is provided in the main control area on P870.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B8.2	None	Reactor level indication is provided on recorders and indicators on Panel P601 a short distance from the HPCS controls (located on P601).
B8.3	Fix	Panel P680 is currently being reviewed for the addition of larger digital displays of level and pressure.
B8.4	None	Modifications to the reactor water level system eliminates the need for the Drywell temperature adjacent to the reference legs.
B8.5	Fix	Lines of demarcation and system mimics will be provided.
B8.6	Fix	The Isolation Panels are being reviewed for possible regrouping of indications.
B8.7	None	The small meters for water level and pressure are used more for verification than actual control of the plant (which should occur from the much larger recorders). The RFPT control valve and speed indicators are required for normal operations of the RFPTs and were the only style available from the vendor.
B8.8	Fix	Additional panel mimic and labels will be added to clarify operating order.
B8.9	Fix	Labels will be made consistent among the panels (see B6.24).
B8.10	Fix	The order of the switches will be made consistent.
B8.11	None	The Division 1 and 2 power displays on P601 are arranged to be consistent with the Division 1 and 2 controls located on P601.
B8.12b	None	The "C" chiller is manual backup for "A" and "B" chillers; mimic reflects actual plant physical arrangement.
B8.12c	None	The arrangement on P601 provides association between relief valves and main steam lines. This information is not required for manual operation on back panels.
B8.12d	None	These switches are infrequently operated and of no safety concern. They are not required to be operated during emergency situations.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
B8.13	None	The arrangement of the out service matrices is acceptable as designed.
B8.14	None	This arrangement is part of the design intent and better reflects actual plant layout.
B8.15a	None	See response for B8.12c.
B8.15b	Fix	Lines of demarcation will be used to segregate systems on P881/P882.
B8.15c	None	The controls for SLCS are located in side by side divisionally separated panel inserts.
B8.15d	None	Indicators are grouped by parameter.
B8.15e	Fix	Mimics and lines of demarcation will be provided to improve the operability of P001.
B.8.16	Fix	Lines of demarcation will be provided to divide the strings of meters by systems.
B8.17	Fix	Lines of demarcation will be provided to panels where beneficial.
B9.1	Disagree	Once the reactor is brought critical and the reactor pressure is raised above the pressure setpoint, the turbine throttle pressure is used to bring the turbine online. The necessary indications are on the turbine and steam bypass section.
B9.2	Fix	Labels will be added to clarify switch functions.
B9.3	Fix	Labels will be added to clarify switch functions.
B9.4	None	Reactor pressure is located on a recorder on P601 a short distance from the SRV controls (on P601). The addition of a digital pressure indicator to P680 is being reviewed.
C1.1	Disagree	No suppression chamber on BWR6/MARK 3 containments.
C1.2	None	The panels are already built and installed. The operator can momentarily reposition himself to reach controls or read indicators.
C1.3	None	Congestion on panels makes it impossible to move indicators. The operator can momentarily stand to read indicators.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
C1.4b	None	The controllers are close to recommended limits. The controllers are for vent systems which are used infrequently.
C1.5	None	Close to recommended guidelines and does not appear to cause a problem. The switch is located next to the out of service indicators for association and location coding.
C1.6	None	Close to recommended guidelines and review conducted did not appear to cause any problems for the smallest team member.
C1.7	None	Kitchen and toilets are located as close to the main control area as possible.
C4.1	None	Simulator feedback may not reflect actual conditions. Changes will be made if found necessary during start-up testing.
C4.2	None	This was not found to be a problem (see B3.23).
C5.1a	Fix	Unit will be made consistent.
C5.1c	None	Present design is correct.  (Note: No C5.2 finding listed.)
C5.3	Fix	Meter scales will be reviewed and corrected where necessary.
C5.4	None	The operator can review either special displays for rod position and scram valve position on RC&IS or process computer displays and printouts to determine which rods are different.
C5.5C	None	Location is required due to separation requirements. The reading can be obtained. The recorder is close to recommended limits.
C5.6	None	The recorder was reviewed and found to have the proper scale.
C6.1	None	The correct switch was installed for the switch escutcheon.
C6.2g	Fix	More clearer labeling will be applied.
C6.2p	Fix	Labels will be corrected.

<u>Finding</u>	<u>Proposed Action</u>	<u>Details/Justification</u>
C6.3	None	Panel labels were reviewed and were found to be acceptable.
C6.4	Fix	The panels will be reviewed for use of mimics and lines of demarcation.
C6.5	Fix	The panels will be reviewed for use of lines of demarcation.
C7.1	None	The number of process computer inputs has been reviewed and found to be adequate for intended purposes. (ERIS has greatly expanded computer displayed information.)
C7.2	None	The process computer is not required for plant operation. Automatic switch over is not required.
C7.3	None	See response for B7.21.
C8.1	None	The controls for the diesel backed electrical busses and the diesel controls are located together on P877. The remainder of the controls for the electrical systems (nonsafety busses) are grouped together on P680 and P870.
C8.2	None	The subsystems between units are slightly different which result in slightly different panel arrangements for the controls.
C8.3a	None	Controls reflect actual plant layout.