

Brunswick Steam Electric Plant
Unit Nos. 1 and 2

APPENDIX R - FIRE PROTECTION

ALTERNATIVE SHUTDOWN CAPABILITY ASSESSMENT
QUARTERLY REPORT
NOVEMBER 1983

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I. INTRODUCTION

In our May 2, 1983 submittal to NRC, Carolina Power & Light Company (CP&L) described our plan to proceed with an Alternative Shutdown Capability Assessment (ASCA) for the Brunswick Steam Electric Plant (BSEP) Unit Nos. 1 and 2. Subsequent to a June 10 meeting at BSEP and follow-up discussions with CP&L, NRC issued their July 27, 1983 letter which set forth conditions and a schedule for conducting and completing the ASCA. The conditions included monthly progress meetings with NRC staff members (held on September 7 and October 6, 1983) and the submittal of written quarterly progress reports on the ASCA program. This document is the first quarterly report to NRC and provides a formal summary of ASCA progress to date.

II. SUMMARY

Carolina Power & Light Company's ASCA project for BSEP is progressing near schedule and all project-related NRC commitments are being scrutinized to ensure they are being met. The ASCA project derives benefit from our active participation in the Nuclear Utilities Fire Protection Group (NUFPG) and monthly project status meetings with NRC. Through participation in the NUFPG, we are using near "state-of-the-art" industry practices in achieving solutions for compliance with Appendix R. Our participation in the NUFPG also allows us to receive current NRC guidance, clarification, and feedback on Appendix R matters. We also actively participate in a NUFPG sub-task force which analyzes and determines the effects of current and future regulatory actions on Appendix R. Topics such as station blackout, shutdown decay heat removal requirements, and equipment qualification are reviewed by the sub-task force to determine potential impact on the industry.

Under the alternative shutdown approach, there are currently two major work efforts in progress: identification of alternative equipment required to achieve and maintain hot and cold shutdown regardless of where a fire occurs and identification of penetrations. The ASCA approach will enable us to identify the cables and their routing which are linked to equipment required to achieve and maintain the plant in a cold shutdown condition. In addition, the ASCA program will identify penetrations which will aid in determining which barriers can be qualified as rated fire barriers.

To effectively manage the implementation of the ASCA approach at BSEP, we have formulated an Appendix "R" Project Matrix Organization which provides both management oversight and technical support to the project effort (see Attachment I).

The identification of both units' Appendix R safe shutdown functions, systems, and components, and the identification of Appendix R safe shutdown cables have been completed. Completion of this task required the review of over 1100 drawings and 16 itemized data base printouts. This review by our plant staff has consumed approximately 700 man-hours.

Should new activities be identified during the ASCA project, they will be incorporated into the project plan as necessary.

Through monthly status meetings, the NRC staff has been kept well apprised of our progress. Because the status meetings promote a working atmosphere and serve to provide a forum for information exchange, we expect that the ASCA final report will be acceptable to the staff.

III. TECHNICAL PROGRESS

The present ASCA approach to determine the best possible solution to compliance with 10CFR50 Appendix R started in May 1983. Two fire protection modifications, unrelated to ASCA, were also initiated at that time. These are the sprinkler installation in the Cable Spreader Room and the Diesel Generator Equipment Hatch Cover Modification. Tasks being performed to complete these activities are progressing within the anticipated schedule tolerances and should be completed within the times shown in the attached MANAGEMENT OVERVIEW SCHEDULE (Attachment II). A brief description of these tasks and the progress toward their completion is provided in this section.

As with most large activities, the ASCA can be divided into Tasks and Sub-tasks for ease of control and to ensure that each major activity is addressed in sufficient detail. To this end, the ASCA is divided into five tasks: shutdown analysis and computer data base development, identification and documentation of supporting analyses, field verification and development of alternatives, documentation of deviation resolution, and final report generation.

The project began with an analysis to determine Appendix R safe shutdown functions after they were identified in train related schemes. A detailed analysis to identify components and auxiliary components was performed. This task consisted not only of determining components required to accomplish the functions, but also of determining those components that can affect system boundary and operation by malfunction or spurious operation. After all components and sub-components were identified, a 100 percent review was completed to assure that the scheme developed met the requirements of the functions and the operational requirements.

Another sub-task accomplished to support Appendix R safe shutdown analysis and computer data base development was the identification of all electrical cables and sources of power necessary for the operation of the components identified. All of this information was reviewed to ensure all support cables were identified, associated circuit considerations were adequately addressed, and all the requirements of Appendix R were considered in this initial data base development. Lastly, the routing of the cables will be shown on cable tray drawings. This data base development has consumed a total of 8,500 manhours (1) to consider 1100 drawings, (2) to develop 16 separate detailed and comprehensive data bases that can be manipulated to display and analyze the information stored, and (3) to conduct the plant review/verification of (1) and (2). A side benefit is that the information gathered will be used in the maintenance of the Appendix R program.

Throughout the project additional supporting analyses required to support the ASCA will be identified and addressed. Presently, of 12 operational issues identified, 10 have been resolved by investigative analysis, and 2 are on hold pending receipt of additional information prior to analysis. None of the operational analyses identified to date have adversely impacted schedule or disturbed the main flow of the project. This activity will continue until the project is complete. Therefore, any further impact will be determined as the analyses needed are identified. However, because the Appendix R safe shutdown functions, systems, and components have been selected, and because the related cables and cable routing have been identified, we believe that the majority of this work is over.

The field verification and task began toward the completion of the Appendix R safe shutdown analysis and computer data base development. Identification of raceways and conduits which contain the Appendix R safe shutdown cables are being identified, separation of as-built conduits and raceways are being verified, and the feasibility of the installation of fire barriers are being documented.

The information contained in the data base and that gathered during the field verification task are now being utilized to identify deviations to Appendix R and to assist in proposing plant modifications, administrative procedures, and/or exemptions (i.e., a listing of alternatives, or an option table) which will meet or provide equivalent protection to the specific requirements of Appendix R. The table will show where and how the present configuration deviates from the requirements of Appendix R and will provide a listing of several alternatives of how compliance may be achieved.

The entire ASCA project has been directed toward achieving compliance with Appendix R by identifying and selecting alternatives. In mid-November, CP&L will initiate the decision process of selecting alternatives to accommodate each Appendix R deviation. The work tasks are developed to complete the documentation of deviation resolutions. The final report generation for the decision process will involve the

development of detailed shutdown scenarios which show how compliance is achieved by fire area. A listing of compliance by modification, procedure, or exemption will be developed.

The two Appendix R plant modifications previously identified and committed to by CP&L are the diesel generator building equipment hatch covers and the control building's cable spreader room suppression system.

The diesel generator building equipment hatches design basis document and plant modification package are complete and are currently in the multiple review process required by site procedures. It is expected that the modification package will be approved and issued to construction in mid-November 1983, and the actual installation will begin prior to February 1, 1984 (our commitment date).

The cable spreader room fire suppression modification will be accomplished through the joint effort of a contract vendor and CP&L's site engineering and construction organization. The preliminary design basis document has been completed. The request for outside assistance to design, prefabricate, and provide a manually operated sprinkler system has been generated and issued, and a contract award is expected by mid-November 1983. Due to site administrative controls, the vendor's design package will be incorporated into a plant modification and the multiple review process will be initiated by CP&L engineering. After the modification issuance, the installation will begin by February 1, 1984 (our commitment date). This work will be accomplished by both the vendor and our construction organization.

IV. FORECAST

The Appendix R safe shutdown analysis and computer data base development is near completion. The identification of additional analyses will continue through the decision process. The field verification and option table development is in progress. The entire project to date has been devoted to compiling information.

The next major activity, documentation of deviation resolution, will result from a detailed selection of alternatives available to achieve compliance. Presently, there are two tasks in progress to support the decision process: the verification of penetrations in prospective fire barriers and the high-low pressure interface study. During the selection process, fire hazards analyses may also be conducted to provide information needed to support select exemptions. The major categories of means of compliance are: compliance by procedure, modification, or exemption. The primary selection criteria are to maintain the present plant operational configuration and life cycle cost.

Accomplishment of the process of selecting alternatives will result in the development of a preliminary listing of modifications necessary to achieve compliance with Appendix R. This preliminary listing is scheduled to be submitted to NRC in February 1984 in the next quarterly report. In conjunction with developing the listing of modifications,

detailed shutdown scenarios and tables showing method of compliance by fire area, utilizing modification, procedure or exemption will be developed. While the tables are being developed, a final field walkdown "cleanup" of the intermediate work package described in Section III Technical Progress, and this section will ensue. All this information will then be brought together in the final alternative shutdown capability assessment report.

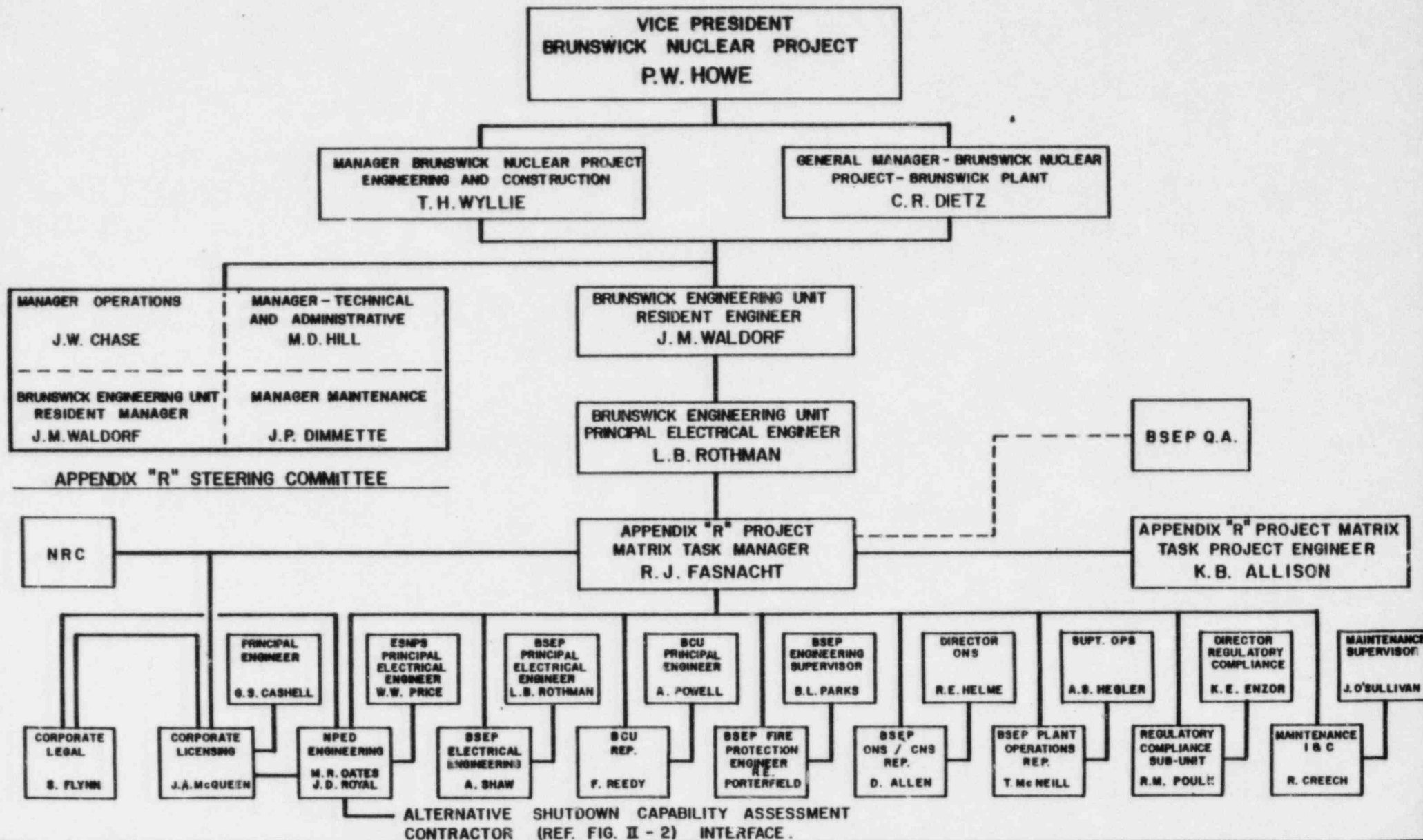
V. SCHEDULE

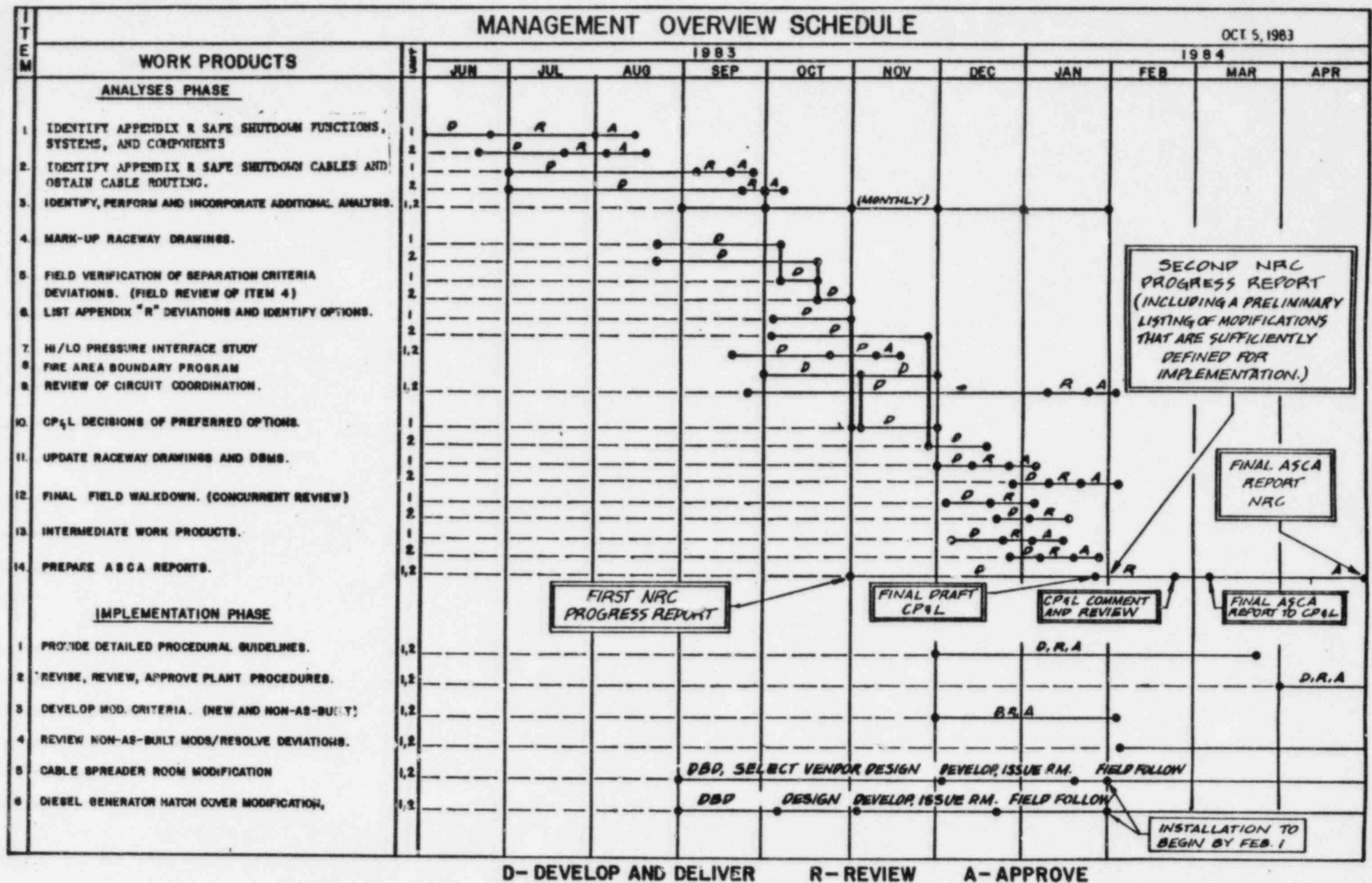
A Management Overview Schedule (see Attachment II) is provided which shows the major tasks that will be addressed during the ASCA program. In addition, Attachment III provides a Schedule Status Summary for the ASCA project.

VI. ISSUES UNDER DISCUSSION WITH NRC

Presently, there are several issues that are identified as important to the successful completion of the project. The workability of our present approach to Appendix R depends on how well these issues are developed in support of the ASCA project.

APPENDIX "R" PROJECT MATRIX ORGANIZATION





ATTACHMENT III
BRUNSWICK PLANT
ALTERNATIVE SHUTDOWN CAPABILITY ASSESSMENT
SCHEDULE STATUS SUMMARY

Analyses Phase

<u>Item</u>	<u>Product</u>	<u>Unit</u>	<u>Code*</u>	<u>Approx. Schedule*</u>	<u>Status</u>
1	Identify App. R Safe Shutdown Functions, Systems, and Components	1 2	A A	8-15-83	Approx. 95% complete; pending resolution of ~ 5% of work product still outstanding.
2	Identify App. R Safe Shutdown Cables and Obtain Cable Routing	1 2	A A	9-25-83 10-5-83	Same as Item 1.
3	Identify, Perform and Incorporate Additional Analysis	1/2	N/A	2-1-84	12 identified; 10-preliminary analysis complete; 2 pending input.
4	Mark-up Raceway Drawings	1 2	D D	10-5-83 10-20-83	Same as Item 1.
5	Field Verification of Separation Criteria Deviations (Field Review of Item 4)	1 2	D D	10-20-83 11-1-83	Should be complete by 12-5-83.
6	List Appendix "R" Deviations and Identify Options	1 2	D D	11-1-83 11-28-83	Initial portion of first unit's product due to CP&L 11-7-83; first unit product to be complete 11-14-83. Second unit completion on schedule.
7	H1/Lo Pressure Interface Study	1/2	D	10-24-83	Initial portion of product due 10-31-83; complete package due 11-28-83.
8	Fire Area Boundary Program	1/2	D	12-1-83	No variance.
9	Review of Circuit Coordination	1/2	D	1-10-84	No variance.
10	CP&L Decisions of Preferred Options	1 2	D D	12-1-83 12-15-83	Refer to Item 6 (~ 2 weeks slippage).
11	Update Raceway Drawings and DBMS	1 2	D D	12-15-83 1-10-84	Future.
12	Final Field Walkdown (Concurrent Review)	1 2	D D	12-20-83 1-3-84	Future.

* From Attachment II

<u>Item</u>	<u>Product</u>	<u>Unit</u>	<u>Code</u>	<u>Approx. Schedule</u>	<u>Status</u>
13	Intermediate Work Products	1	D	12-20-83	Future.
		2	D	1-10-84	
14	Prepare ASCA Reports	1/2	D	11-1-83	This report.

Implementation Phase

<u>Item</u>	<u>Product</u>	<u>Unit</u>	<u>Code</u>	<u>Approx. Schedule</u>	<u>Status</u>
1	Provide Detailed Procedural Guidelines	1/2	A	3-20-84	Future.
2	Revise, Review, Approve Plant Procedures	1/2	A	Future	Long term item.
3	Develop Mod. Criteria (New and Non-As-Built)	1/2	A	2-5-84	Future.
4	Review Non-As-Built Mods/ Resolve Deviations	1/2	A	Future	Long term item.
5	Cable Spreader Room Modification	1/2	Instl.	2-1-84	Preliminary Design Basis Document is complete; request for quotation sent to 3 vendors; bids being received and evaluated.
6	Diesel Generator Hatch Cover Modification	1/2	Instl.	2-1-84	Design Basis Document complete; plant modification package in review.