

Approved
J. Beckhold
Date
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Vogtle Electric Generating Plant
NUCLEAR OPERATIONS



Georgia Power

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FOR INFORMATION ONLY

05-100-90

PLANT DESIGN CONTROL

MANUAL SET
NO. 90

1.0 PURPOSE

- 1.1 This procedure establishes the responsibilities and requirements for maintaining Plant Design Control at the Vogtle Electric Generating Plant (VEGP).
- 1.2 This procedure establishes the minimum requirements for initiating and processing Request for Engineering Review (RER), Request for Engineering Assistance (REA), Design Change Request (DCR), Minor Departure from Design (MDD), As Built Notice (ABN), Facilities Indices Change Request (FICR) and Field Change Request (FCR).

NOTE

Design changes to the plant will be initiated as a final alternative to a plant condition. Methods of correcting a plant condition while maintaining plant configuration and function will be exhausted prior to initiating design change activities.

2.0 DEFINITIONS

2.1 DESIGN MODIFICATION

- 2.1.1 A design modification is a permanent physical change which alters the function of a structure, system or component as described in the FSAR, impacts the Plant Design Bases or impacts the Security Plan. A design modification either directly or indirectly impacts safe plant operation or plant reliability.

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NOTES

- a. Plant reliability is impacted by those structures, systems or components which are directly involved in power generation (i.e., main turbine generator, stator cooling, etc.).
 - b. Physical changes to ancillary buildings such as the Service Building, Administration Building, Maintenance Building, Production Warehouse or to facilities outside the protected area which are not part of a system involved in power generation are excluded from the requirements of this procedure. Impact to power generation will be determined by the General Manager-Nuclear Plant (GMNP).
- 2.1.2 Any physical changes made outside the protected area, within the site boundaries, shall have an environmental review per Procedure 00056-C, 'Safety and Environmental Evaluations. These changes include, but are not limited to, changes in withdrawal and usage of surface water, changes in withdrawal and usage of ground water, changes in the contour of the land, changes in discharges, etc.
- 2.2 SAFETY RELATED
- 2.2.1 Plant structures, systems, and components necessary to assure:
- a. the integrity of the reactor coolant pressure boundary,
 - b. the capability to shut down the reactor and maintain it in a safe shutdown condition, or

- c. the capability to prevent or mitigate the consequences of accidents which could result in offsite exposures that exceed the guidelines established in 10 CFR 100.

2.2.2 Systems, components, or instrumentation designated as nuclear safety class 0, 1, 2, or 3 and listed in FSAR Table 3.2.2-1; and instrumentation designated category 1 or 2, as listed in FSAR Table 7.5.2-1; Fire Protection systems/components as described in Procedure 92000-C "Fire Protection Program"; Radwaste systems/components having a Project Classification of XX7, where XX are safety class and seismic class, respectively.

NOTE

Procedure 11850-C, "Safety-Related Equipment Classification" contains the information listed in FSAR Table 3.2.2-1 and FSAR Table 7.5.2-1.

2.3 DESIGN BASES

Information which identifies the specific functions to be performed by a structure, system or component of a facility and the specific design values or ranges which have been chosen for design controlling parameters as reference bounds. These values may be

- a. restraints derived from generally acceptable "state of the art" practices for achieving functional goals, or
- b. requirements derived from design analysis (based on calculation and/or experiment) of the effects of a postulated accident for which a structure, system, or component must meet to achieve its functional goal.

2.4 CRITICAL DRAWINGS

Drawings which are utilized for safe operations or shutdown of the plant. These drawings are limited to one-lines, elementary, and P&ID drawings.

2.10 DESIGN CHANGE PACKAGE (DCP)

A package which contains the complete details of a design modification. The package includes, but is not limited to, the DCR which initiated the change, a narrative summary of the change, a safety evaluation of the change, list of materials required for the change, and details of the change including drawing changes and any special installation instructions. DCPs are generated by the Architect/Engineering (A/E) organizations.

2.11 FACILITIES INDICES CHANGE REQUEST (FICR)

A document generated by the Engineering Support Department to detail required changes to the Plant Equipment Index, Instrument Index, Valve Designation List, Line Designation List, Penetration Seal Designation List or Power, Vent, Drain and Root Valve List.

2.12 AS BUILT NOTICE (ABN)

A document generated by the Engineering Support Department to detail required changes to plant design documents.

2.13 SITE DESIGN CHANGE PACKAGE (SDCP)

A Design Change Package which is generated by the Engineering Support Department to accomplish a design modification.

2.14 MINOR DEPARTURE FROM DESIGN (MDD)

A MDD is a design change generated by the Engineering Support Department. A minor departure is a design change of very limited scope. A minor departure from design is a change which will be incorporated into permanent plant design.

2.15 TEMPORARY MODIFICATION (TM)

A Temporary Modification is a temporary physical change which alters the function of a structure, system or component as described in the FSAR, impacts the Plant Design Bases, or impacts the Security Plan. A Temporary Modification either directly or indirectly impacts safe plant operation or plant reliability.

2.16 EQUIVALENCY DETERMINATION

NOTE

An equivalency determination may not be used to effect a change in parts or materials involving: a non-compliance to an A/E specification, a new design, a major material change, or a major change to a system/component support interface (i.e., adding pneumatic or electrical connections, mounting changes, etc.).

A technical evaluation performed to confirm that an alternative item, which is not identical to the original item, will satisfactorily perform its intended function once in service.

3.0 RESPONSIBILITIES

3.1 MANAGER ENGINEERING SUPPORT

The Manager Engineering Support (MES) will ensure the following:

- 3.1.1 Technical assistance is provided to disposition Request for Engineering Review.
- 3.1.2 Development of departmental procedures to control physical changes to the plant. These procedures will ensure the following:
 - a. All Design Modifications are processed as either a DCP, or SDCP or MDD.

- b. Design Modifications which are extensive or complex are processed as DCPs.
- c. Equivalency determinations are used to verify that an alternative item, which is not identical to the original item will satisfactorily perform its intended function once in service.

NOTE

The MES will ensure an equivalency determination is not used to effect a change in parts or materials involving a non compliance to an A/E specification, a new design, a major material change, or a major change to a system/component support interface.

- 3.1.3 Developing department procedures for processing DCRs, DCPs, SDCPs, MDDs, FCRs, ABNs, REAs, FICRs and Equivalency Determinations.
- 3.1.4 Assignment of control numbers and tracking of site generated RERs, REAs, DCRs, MDDs, FCRs, FICR and Equivalency Determinations.
- 3.1.5 Processing of Design Change Packages, Site Design Change Packages and Minor Departure from Design Packages in accordance with approved department procedures that include as applicable:
 - 3.1.5.1 Coordinating with the Financial Services Department to verify budget availability and proper budget documentation.
 - 3.1.5.2 Ensuring design modifications are reviewed by qualified reviewers.
 - 3.1.5.3 Coordinating with the Outages and Planning Department to develop an implementation schedule when required.
 - 3.1.5.4 Conducting constructability, maintainability, operability and ALARA with affected departments.
 - 3.1.5.5 Developing required Safety Evaluations and Equipment Environmental Qualification Statements when required, in accordance with Procedure 00056-C, "Safety and Environmental Evaluations".

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- 3.1.5.6 Initiating required Licensing Document Change Request (LDCR) in accordance with Procedure 00402-C, "Licensing Document Change Request".
- 3.1.5.7 Verifying compliance with the FSAR, applicable codes, standards and regulatory requirements.
- 3.1.5.8 Providing design change narrative summaries and other necessary support documentation to other department heads as notification of a pending design modification for use in determining if procedure revisions or additional training are required.
- 3.1.5.9 Initiating procurement requisitions with supporting documentation when non-stock equipment/parts are required.
- 3.1.5.10 Notifying materials section when new items are added or items are made obsolete in accordance with Procedure 00852-C, "New Or Obsolete Parts".
- 3.1.5.11 Developing functional test requirements.
- 3.1.5.12 Ensuring adherence to ALARA Program requirements from a design and design implementation viewpoint.
- 3.1.5.13 Initiating Maintenance Work Orders in accordance with Procedure 00350-C, "Work Request Program".
- 3.1.5.14 Establishing clearances in accordance with Procedure 00304-C, "Equipment Clearance and Tagging" to ensure the structure, system or component is not returned to service until the applicable design modification installation is completed, tested, applicable procedures revised, required training completed, ABNs issued for appropriate "critical drawings", and appropriate labeling installed.
- 3.1.5.15 Providing technical support when requested during implementation of design modifications.
- 3.1.5.16 Initiating and obtaining appropriate approvals on FCRs for DCPs/SDCPs or MDDs when required.
- 3.1.5.17 Verifying validity and acceptability of functional test results.
- 3.1.5.18 Initiating ABNs when required.

- 3.1.5.19 Ensuring FCRs for DCPs/SDCPs are reviewed by the A/E prior to returning the associated system to service.
- 3.1.5.20 Verifying the modification is properly installed, properly tested, critical drawings revised, procedures revised and training completed and appropriate labeling installed prior to notifying the Manager Operations that a system/component is available for return to service.
- 3.1.5.21 Reviewing closure documentation for completed design modifications and transmitting closure documentation to Document Control for storage as lifetime Quality Assurance Records.
- 3.1.5.22 Ensuring Site Design Change Packages which affect safety related structures, systems or components are reviewed by the A/E prior to implementation.
- 3.1.5.23 Ensuring Safeguards information used in connection with modifications of security system/components is processed in accordance with Procedure 00650-C, "Safeguards Information Control".
- 3.1.5.24 Maintaining a brief description of plant modifications and associated safety evaluations, as applicable, in order to comply with the annual reporting requirements to 10CFR 50.59(b) in accordance with Procedure 00152-C, "Federal And State Reporting Requirements".

3.2 MANAGER TECHNICAL SUPPORT

The Manager Technical Support will ensure the following:

- 3.2.1 Processing licensing document change requests in accordance with Procedure 00402-C to support design modifications.
- 3.2.2 Revising applicable Technical Support and Plant Administrative Procedures to reflect design modifications and associated licensed document change when notified by the MES.

3.3 MANAGER OPERATIONS

The Manager Operations will ensure the following:

- 3.3.1 Revising applicable operating procedures to reflect design modifications and associated licensing document amendments when notified by the MES.
- 3.3.2 Participating in DCP/SDCP walkdowns, when required.
- 3.3.3 Installing/removing plant identification tags as necessary to identify equipment/components added or removed as a result of design modifications.
- 3.3.4 Declaring the system/component operable and restoring it to service after notification by the MES.

3.4 MANAGER MAINTENANCE

The Manager Maintenance will ensure the following:

- 3.4.1 Notifying the MES and the Work Planning Group when an installation cannot be performed as designed.
- 3.4.2 Participating in DCP/SDCP walkdowns, when required.
- 3.4.3 Revising applicable maintenance procedures and preventive maintenance procedures to reflect design modifications and associated licensing document changes when notified by the MES.
- 3.4.4 Ensures design modifications which affect ASME Class 1, 2, and 3 systems or components are in compliance with the VEGP ASME Section XI Repair/Replacement Program, as applicable.

3.5 MANAGER HEALTH PHYSICS AND CHEMISTRY

The Manager Health Physics and Chemistry will ensure the following:

- 3.5.1 Reviewing design modifications to ensure adherence to ALARA Program requirements.
- 3.5.2 Participating in DCP/SDCP walkdowns, when required.
- 3.5.3 Revising of applicable Health Physics and Chemistry procedures to reflect design modifications and associated licensing document changes when notified by the MES.

3.6 FINANCIAL SERVICES SUPERINTENDENT

The Financial Services Superintendent will ensure budget account numbers are assigned to approved design modifications.

3.7 MANAGER PLANT TRAINING AND EMERGENCY PREPAREDNESS

The Manager Plant Training And Emergency Preparedness will ensure the following:

3.7.1 Developing and conducting training programs, as necessary, to train personnel on the changes that will result from implementation of design modifications when notified by the MES.

3.7.2 Revising of applicable Plant Training and Emergency Preparedness Department procedures to reflect design modifications and associated licensing document changes when notified by the MES.

3.8 MANAGER PLANT ADMINISTRATION

The Manager Plant Administration will ensure the following:

3.8.1 Maintaining Quality Assurance records associated with modifications and associated licensing document changes in accordance with Procedure 00100-C, "Quality Assurance Records Administration".

3.8.2 Assigning ABN control numbers, maintaining ABN logs, posting ABNs against control drawings, transmittal of ABNs to the Architect/Engineer (A/E) for incorporation into the design drawings and closure of ABNs following receipt of revised design drawings.

3.8.3 Distributing controlled or working copies of DCPs, MDDs, SDCPs and FCRs to support field installation and inspection activities.

NOTE

- Engineering Support will provide a copy of the DCP/SDCP, MDD (Implementation Package) and FCRS to Document Control for use as the "original" for controlled distribution. Personnel, performing field work or inspections, must obtain a working copy of the package from Document Control.

- 3.8.4 Revising applicable Administration Department procedures as necessary to reflect design modifications and associated licensing document changes when notified by the MES.
- 3.8.5 Processing procurement documents associated with design modifications in accordance with plant procedures.
- 3.9 MANAGER OUTAGES AND PLANNING
The Manager Outages and Planning will ensure the following:
 - 3.9.1 Processing of Maintenance Work Orders to implement design modifications in accordance with Administrative Procedure 00350-C.
 - 3.9.2 Updating NPRDS and NPMIS when required to reflect design modifications.
 - 3.9.3 Procuring stock materials for implementation of DCP/SDCP.
 - 3.9.4 Developing, when required, implementation schedules for DCPs/SDCPs and notifying the appropriate departments of the schedule.
 - 3.9.5 Participating in DCP/SDCP constructability walkdowns when required.
 - 3.9.6 Revising applicable Outages and Planning Department procedures to reflect design modifications and associated licensing document changes when notified by the MES.

3.10 MANAGER ENGINEERING, MAINTENANCE AND OUTAGE PLANNING

The Manager Engineering, Maintenance and Outage Planning (SONOPCO) or designee acting as the design agent GPC interface with the Architect Engineer (A/E) will ensure the following:

- 3.10.1 Providing A/E engineering support for development of DCPs.
- 3.10.2 Providing A/E Engineering Support when requested by a REA.
- 3.10.3 Ensuring the A/E develops modifications in accordance with the FSAR and all applicable regulations, codes and standards.
- 3.10.4 Ensuring the A/E updates design documents to reflect ABNs and performs all necessary reviews for ABNs.
- 3.10.5 Ensuring the A/E reviews FCRs submitted for review and approval.

3.11 PLANT REVIEW BOARD (PRB)

The PRB shall ensure the following for design modifications:

- 3.11.1 Reviewing proposed design modifications to safety related structures, systems or components and recommending approval/disapproval to the General Manager - Nuclear Plant.
- 3.11.2 Reviewing proposed MDDs to safety-related components/ systems to make determinations if the requested change can be processed as a minor departure from design.
- 3.11.3 Ensure copies of Safety Evaluations associated with safety related design modifications are transmitted to the Safety Review Board in accordance with Technical Specifications.

4.0 INSTRUCTIONS AND REQUIREMENTS FOR PROCESSING RERs,
DCRs, SDCRs, MDDs, FCRs, ABNs, FICRs and REAs

4.1 PROCESSING RERs

4.1.1 If technical assistance is required from the Engineering Support Department, the requester should complete Part 1 (Problem Identification) of the Request for Engineering Review (RER) form shown in Figure 1. A RER may be used for, but is not limited to, requesting an engineering evaluation, requesting technical information, or requesting a design modification. When completing the form the requester must:

- 4.1.1.1 Provide a system identification number and component identification number as applicable, in the space provided, to clearly define the structure, system or component in question.
- 4.1.1.2 Describe the problem in detail in the "Detailed Description of Problem" section. Enough information must be provided to determine if an engineering evaluation is necessary.
- 4.1.1.3 Provide recommended or potential solutions and justification for the review of the problem in the "Proposed Solution and Justification" section. This should include details of the benefits if a plant modification requested and an estimated cost, if available.
- 4.1.1.4 List any special commitments or requirements detailing the need for fulfilling the request. These may be regulatory requirements, NRC commitments, commitments to other organizations, ALARA concerns, Industrial Safety concerns, or other special circumstances. The source of a commitment should also be identified.
- 4.1.1.5 Provide a requested completion date in the space provided. This should be based on any commitments or requirements or the impact of the problem on plant or personnel safety, health and welfare of the public or plant operational efficiency.
- 4.1.1.6 Provide an estimated cost in the space provided, if known.
- 4.1.2 The RER must be reviewed by the originator's superintendent and after approval, the RER should be forwarded to the Engineering Support Department.

- 4.1.3 The MES will assign the RER a tracking number and send a copy to the originator with a target completion date.
- 4.1.4 The MES will assign the RER to appropriate personnel for evaluation and final disposition.
- 4.1.5 The MES will ensure the RER is dispositioned by the target completion date. The disposition must include technical justification to support the disposition and may result in generation of additional documents including a DCR, MDD, FICR, ABN, REA, MWO or other documents.
- 4.1.6 A copy of the dispositioned RER will be returned to the originator with the original being transmitted to Document Control as a permanent record.

4.2 PROCESSING DESIGN CHANGE REQUEST

NOTE

A DCR must be unit specific. If the same modification is to be implemented in both units, a separate DCR shall be initiated for each unit.

- 4.2.1 A Design Change Request will be generated by the MES when a design modification is required.
- 4.2.2 The Design Change Request shall identify the Design Objective, specify a suggested change if one is available and provide the source document (if applicable) which necessitated the change (i.e., RER, REA, etc.).
- 4.2.3 The MES shall assign a DCR Control number and maintain a log to track DCRs through design development, implementation and closure.
- 4.2.4 The MES will determine if a DCR will be processed on site as a SDCR or if offsite design engineering support is required to generate a DCP. This determination will be based on the following:
- 4.2.4.1 If the requested design modification is complex or extensive and affects the facility as described in the FSAR, the DCR will be processed as a DCP.
- 4.2.4.2 If the requested design modification is not complex or extensive or does not affect the facility as described in the FSAR, the DCR may be processed as a SDCR.

- 4.2.5 If a DCR is to be developed as a DCP then the DCR must be approved by the General Manager - Nuclear Plant to authorize budget expenditures.
- 4.2.6 The MES in conjunction with Financial Services will establish budgets and accounting charge numbers as appropriate for the DCR.
- 4.2.7 DCRs for DCPs will be transmitted to the Manager Engineering, Maintenance and Outage Planning or designee.
- 4.2.8 DCRs for SDCPs will be processed in accordance with approved Engineering Support Department procedures.
- 4.3 PROCESSING DCRs/DCPs
- 4.3.1 The MES will ensure DCPs and SDCPs:
- 4.3.1.1 Contain an approved Safety Evaluation and Environmental Evaluation.
- 4.3.1.2 Have Licensing Document Change Request (LDCR) initiated and approved, if applicable, in accordance with 00402-C, "Licensing Document Change Request".
- 4.3.1.3 Comply with the FSAR, applicable codes, standards, and regulatory requirements.
- 4.3.1.4 Contain a narrative summary detailing the design objective and method of achievement.
- 4.3.1.5 Are reviewed by qualified reviewers
- 4.3.1.6 Have constructability, maintainability, operability and ALARA walkdowns performed by affected departments prior to implementation, if appropriate.
- 4.3.1.7 Adhere to ALARA program requirements from a design and design implementation viewpoint.
- 4.3.2 The MES must ensure initiation of procurement requisitions for DCP/SDCP specific equipment/parts and provide supporting documentation to specify procurement requirements.
- 4.3.3 The MES must notify the materials section when new items are added or items are made potentially obsolete by a DCP/SDCR in accordance with 00852-C.

- 4.3.4 The MES must coordinate with the Manager Outages and Planning Manager to develop an implementation schedule when required.
- 4.3.5 The MES must ensure the DCP/SDCP specifies functional test requirements and after implementation that the functional test results adequately verify/prove the capability of the system/component to perform its design function.
- 4.3.6 The MES will ensure SDCPs for safety related equipment are reviewed by the A/E prior to implementation.
- 4.3.7 The MES shall ensure safety related SDCPs and DCPs are reviewed and approved by the Plant Review Board (PRB) prior to implementation.
- 4.3.8 The MES will initiate Maintenance Work Orders for DCPs/SDCPs in accordance with 00350-C.
- 4.3.9 The MES must establish clearances in accordance with Procedure 00304-C to ensure the structure, system or component is not returned to service until the applicable design modification installation is complete, appropriate procedures revised, required training complete and critical drawings revised.
- 4.3.10 The MES will provide technical support when requested during implementation of design modifications.
- 4.3.11 The MES will initiate and obtain approvals on FCRs for DCPs/SDCPs when changes are required to DCPs/SDCPs after the DCPs/SDCPs has been approved for implementation. FCR approval shall be by the same organization which approved the original DCP/SDCP. (See Section 4.10)
- 4.3.12 After completion of a DCP/SDCP the MES will review all supporting documentation and verify the structure, system or component is ready for return to service.
- 4.3.13 For return to service, the MES shall:
- a. Complete a verification walkdown to ensure that the modification was implemented according to final design.

- b. Verify that new procedures and procedure revisions required as a result of the modifications are approved and issued.
 - c. Verify that ABNs or marked up drawings (TABNs) have been issued to Control Room files for affected P&ID, single-line electrical drawings, and elementary diagrams.
 - d. Verify that training required as a result of the modification has been completed and cognizant operating personnel are aware of the effects of the modification.
 - e. Verify that functional test and surveillance test requirements have been successfully completed.
 - f. Verify appropriate labeling is installed.
- 4.3.14 The MES will notify the Manager Operations when a system/component is ready for return to service.
- 4.3.15 The Manager Operations will return the structure, system or component to service in accordance with applicable procedures.
- 4.3.16 The MES will verify all closure documentation and note this on the DCP/SDCP.
- 4.3.17 After appropriate approvals, the MES will transmit the DCP/SDCP to Document Control for storage as a permanent record in accordance with Procedure 00100-C, "Quality Assurance Records Administration".
- 4.4 REVISING DCR/DCP/SDCP
- 4.4.1 If the intended scope of a DCR/DCP/SDCP increases, or the Safety Evaluation changes after approval for design or implementation, the DCR will be revised by generating a new DCR with the original number but a new revision number. Portions of the original DCR/SDCP/DCP may be utilized in the revision but must be clearly annotated with the revision number.

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4.4.2	The old DCR/DCP/SDCP should be marked or stamped "Revised" and submitted as a permanent record with the revised DCP after completion of the DCP/SDCP implementation. The revision will be processed in accordance with the requirements of this procedure.	
4.4.3	The revised DCR/DCP/SDCP must be approved by the same groups as the original DCR prior to implementation of the work added by the revision.	
4.4.4	If a DCP/SDCP is in progress when the need for a revision is identified, the MES will determine if in-process work should be suspended until the revision can be processed.	
4.5	SEQUENTIAL DCP/SDCP	
<p>Portions of DCPs/SDCPs may be issued as a sequence to facilitate installation and tracking. These portions may also be revised independently so long as each page is clearly noted with the sequence number and revision level.</p>		
4.6	CANCELLING DCR/DCP/SDCP	
4.6.1	A DCR/DCP/SDCP which requires cancelling and has been approved by the GMNP will be returned to the GMNP, via the PRB if Safety Related by the MES with an explanation of the request to cancel. If the DCR/DCP/SDCP has not been approved by the GMNP, the MES may cancel the DCR. The DCR/DCP/SDCP is cancelled by writing "cancelled" next to the last approval signature and then signing/dating.	
4.6.2	For DCPs/SDCPs in progress which are to be cancelled, the MES will ensure:	
<ul style="list-style-type: none"> a. Notification of any department manager or who received the narrative summary, that the DCP has been cancelled. b. Closure of associated MWO(s) and listing of each on the DCP/SDCP form, c. Coordination of restoration of the plant to the approved design configuration, d. Coordination of development and approval of functional test(s), as appropriate, to ensure that the affected plant systems/components have been returned to the design configuration. 		

- 4.6.3 The MES will transmit cancelled DCRs/DCPs/SDCPs to Document Control for storage of in accordance with Procedure 00100-C.
- 4.7 PROCESSING MINOR DEPARTURES FROM DESIGN (MDD)
- 4.7.1 A minor departure from design will be generated by the MES for design changes of very limited scope.
- 4.7.2 The MDD will include a detailed description of the change and the reason the change is necessary.
- 4.7.3 The MES will assign a MDD control number and maintain a log to track MDDs through implementation and closure.
- 4.7.4 The MDD package will be assembled and processed in accordance with Engineering Support Department procedures.
- 4.7.5 The MES will ensure the MDD package contains an approved Safety Evaluation, PRB Review Checklist (Figure 2), and Human Factors Checklist.
- 4.7.6 The MES shall ensure that all safety-related MDDs are reviewed by the Plant Review Board (PRB) prior to implementation.
- 4.7.7 The MES shall ensure that all non-safety related MDDs with a "Yes" answer on the PRB Review Checklist are reviewed by the PRB prior to implementation.

NOTE

Non-Safety Related MDDs with the answer "No" to all questions on the PRB Review Checklist do not require PRB review prior to implementation.

- 4.7.8 The PRB will review MDDs submitted prior to implementation to determine if the change can be accomplished as a minor departure. The PRB recommendations will be forwarded to the GMNP for approval prior to implementation.
- 4.7.9 The MES will initiate Maintenance Work Orders (MWOs) for MDDs in accordance with 00350-C.
- 4.7.10 The MES will initiate and obtain approvals on FCRs for MDDs when changes are needed on MDDs that have been approved for implementation. (See Section 4.10)

- 4.7.11 After completion of the MDD the MES will review documentation and verify the structure, system or component is ready for return to service.
- 4.7.12 For return to service the MES will verify that:
- a. ABNs are issued for posting against plant drawings.
 - b. New procedures and/or revisions as a result of the MDD are approved and issued.
 - c. Functional tests are successfully completed.
- 4.7.13 The MES will notify the Manager Operations when a component/system is ready for return to service.
- 4.7.14 The Manager Operations will return the structure, system or component to service in accordance with applicable procedures.
- 4.7.15 After reviews and approvals for MDD closure are completed, the MES will issue a Drawing Change Only DCR to Design Engineering. The MES will include the MDD package with the drawing change only DCR.
- 4.7.16 Design Engineering will revise the plant drawings and reference the MDD control number in the drawing revision block.
- 4.7.17 Design Engineering will notify the MES upon completion of the revision to plant drawings. The MDD package will be kept with design engineering.
- 4.7.18 The MES will verify that the Drawing Change Only DCR has been incorporated within one year of the MDD implementation. The one year time limit may be extended with the written permission of the GMNP and the Vice President Nuclear - Vogtle Project. (Figure 3)

NOTE

If the MDD affects critical drawings, the MES will ensure the A/E incorporates the revisions on a priority basis.

- 4.7.19 The MES will resolve any problems that the A/E may have during review for incorporation the MDD into plant drawings. A Field Change Request (FCR) or revision to the MDD will be used to resolve problems with the drawing change only DCR.

4.8 REVISING MDDs

4.8.1 If the intended scope of the MDD increases or the Safety Evaluation changes after the MDD is approved for implementation, the MDD will be revised by generating a new MDD with the original number but a new revision number. Portions of the original MDD may be utilized in the revision but must be clearly annotated with the revision number.

4.8.2 The old MDD should be marked or stamped "revised" and kept with the MDD package. The revision should be processed in accordance with Section 4.7.

4.8.3 If a MDD is in progress when the need for revision is identified, the MES will determine if in-process work should be suspended until the revision is approved.

4.9 MINOR DEPARTURE CANCELLATION OR VOIDING

4.9.1 Prior to implementation, if it is determined that the MDD is no longer required or needs cancelling, the MES will void the MDD by writing "VOID" on the MDD cover page and signing and dating. The MES will update the MDD log to reflect the voided MDD.

4.9.2 For MDDs in progress which are to be cancelled or voided the MES will ensure:

- a. Closure of associated MWOs and listing of each on the MDD package.
- b. Coordination of restoration of the plant to the approved design configuration.

4.9.3 The MES will transmit cancelled or voided MDDs to Document Control in accordance with Procedure 00100-C.

4.10 PROCESSING FCRs

4.10.1 Field Change Requests may be used to perform the following:

4.10.1.1 Describe and obtain approval for any changes to DCPs, MDDs and SDCPs which have been approved for implementation.

4.10.1.2 Describe and obtain approval of design information in DCPs and SDCPs submitted for review but not approved for implementation.

NOTE

FCRs associated with DCPs/SDCPs or MDDs may only be used if the FCR does not alter the intended scope the DCP/SDCP or MDD or invalidate the approved Safety Evaluation.

- 4.10.2 The MES will develop departmental procedures for processing FCRs.
- 4.10.3 Procedures for processing FCRs for DCPs/SDCPs or MDDs shall require the following:
 - 4.10.3.1 FCRS may only be used if the change does not alter the intended scope of the DCP/SDCP or MDD or change the Safety Evaluation.
 - 4.10.3.2 FCRs shall be approved prior to implementation by the same organization which performed the original design for the DCP/SDCP or MDD.
 - 4.10.3.3 Verbal approval may be obtained prior to implementation of the FCR but written approval shall be obtained prior to closure of the associated DCP/SDCP or MDD.
 - 4.10.3.4 PRB review is required prior to implementation of the FCR if the FCR is considered major by the MES and affects safety related equipment.
- 4.11 PROCESSING ABNs
 - 4.11.1 An ABN is generated by the MES to detail required changes to plant design documents.
 - 4.11.2 The MES will develop departmental procedures for processing ABNs. The procedure will identify the individuals responsible for reviewing and approving ABNs.
 - 4.11.3 ABNs are be used for, but are not limited to, the following:
 - 4.11.3.1 Update design documents to reflect As-Found conditions.
 - 4.11.3.2 Make changes to design documents that result from implementation of Design Modifications and minor departures from design (MDDs).
 - 4.11.3.3 Update design documents to reflect addition or revision of plant identification numbers on a structure, system or component.

- 4.11.3.4 Update design document to reflect additional or revised nomenclature on a structure system or component (i.e. change switch labels, annunciator window engravings, etc.)
- 4.11.3.5 Revise design documents to reflect equivalent parts replacement information.
- 4.11.3.6 Revise design documents to reflect modifications which do not require a DCP/SDCP or MDD. (i.e. changes to ancillary buildings)
- 4.11.4 The MES may issue temporary ABNs (TABNs) to reflect transient plant conditions such as temporary modifications. These shall not be incorporated into the design drawings.
- 4.11.5 The Document Control Supervisor should ensure ABNs and TABNs on critical drawing (P&IDs, one lines and elementaries) (8-1/2 x 11 size) are distributed to the control room within 24 hours of receipt.
- 4.11.6 Document Control will distribute appropriate ABNs in accordance with Procedure 00101-C, "Drawing Control".
- 4.11.7 As Built Notices will remain open until Document Control has received revised drawings from Design Engineering showing the ABN has been incorporated on the drawing.
- 4.11.8 Upon receipt of the revised drawing(s) Document Control personnel shall perform the following:
- a. Distribute revised drawings in accordance with Procedure 00101-C.
 - b. Indicate that the ABN is closed, and
 - c. Maintain the ABN as a lifetime Quality Assurance record in accordance with Procedure 00100-C.
- 4.12 PROCESSING FICRS
- 4.12.1 A FICR is generated by the MES to detail required changes to facility indices, specifically the Plant Equipment Index, Instrument Index, Valve Designation List, Line Designation List, Penetration Seal Designation List or Power, Vent, Drain and Root Valve List.

- 4.12.2 The MES will develop departmental procedures for processing FICRs.
- 4.12.3 Completed FICRs shall be transmitted to Document Control for storage as permanent records.
- 4.13 EQUIVALENCY DETERMINATION
- 4.13.1 The MES will develop procedures for performing Equivalency Determination.
- 4.13.2 An Equivalency Determination shall verify that the alternative item will satisfactorily perform its intended function once in service.
- 4.13.3 Equivalency Determinates shall not be used to effect a change in parts or materials involving; a non-compliance to an A/E specification, a new design, a major material change, or a change to a system component support interface.
- 5.0 REFERENCES
- 5.1 Title 10CFR 50, Appendix B, Criterion III
- 5.2 Title 10CFR 50.59
- 5.3 U.S. NRC Regulatory Guide 1.33-1978, "Quality Assurance Program Requirement (Operation)"
- 5.4 U.S. NRC Regulatory Guide 1.64-1976, "Quality Assurance Requirements for the Design of Nuclear Power Plants"
- 5.5 ANSI N45.2.11-1974, "Quality Assurance for Design of Nuclear Power Plants"
- 5.6 ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants"
- 5.7 Vogtle Electric Generating Plant FSAR Sections 1.9.33, 1.9.64, 17.2.3, and 3.2
- 5.8 Technical Specifications, Section 6.0

- 5.9 PROCEDURES
- 5.9.1 00053-C, "Temporary Procedures"
 - 5.9.2 00056-C, "Safety And Environmented Evaluations"
 - 5.9.3 00100-C, "Quality Assurance Records Administration"
 - 5.9.4 00101-C, "Drawing Control"
 - 5.9.5 00152-C, "Federal and State Reporting Requirements"
 - 5.9.6 00304-C, "Equipment Clearance And Tagging"
 - 5.9.7 00307-C, "Temporary Modifications"
 - 5.9.8 00350-C, "Work Request Program"
 - 5.9.9 00650-C, "Safeguards Information Control"
 - 5.9.10 00852-C, "New Or Obsolete Parts"
 - 5.9.11 00910-C, "ALARA Program"

END OF PROCEDURE TEXT

REQUEST FOR ENGINEERING REVIEW

RER NO. _____

UNIT _____

PART 1: Problem Identification

(1) System No. _____ Component No. _____

(2) Detailed Description of Problem: _____

(3) Proposed Solution and Justification:

- Personnel Safety Plant Safety Regulatory Requirement
 ALARA* Other

(4) Requested Completion Date: _____ Estimated Cost: _____

Point of Contact _____ Phone: _____

Initiator / Date _____ Department Manager/Supt. / Date _____

Engr. Supv. Assigned _____ Target Completion Date _____

* Copy to Manager Health Physics and Chemistry

FIGURE 1

RER NO _____

PART 2: Engineering Support Department Review

(5) Disposition: _____

Safety Related No [] Yes []

Document Generated No [] Yes [] No. _____

Eng. Manhours Required for Review _____

Approvals:

Design Engr. _____ / _____ Responsible Engr. _____ / _____
(if applicable) Date Date

Engr. Supv. _____ / _____ Mgr./Engr. Support _____ / _____
Date Date

MDD # _____
 REV # _____

PRB REVIEW CHECKLIST
 (FOR MDD)

INSTRUCTIONS

If all questions can be answered with a "No" and the MDD is non-safety related, then the minor departure may be implemented prior to PRB approval. If any question is answered "Yes" or the MDD is safety-related, the PRB must review and approve the MDD prior to implementation. If any licensing document requires changing as a result of the MDD the LDCRs associated with that change are to be included with the MDD for PRB review.

All supporting information and calculations are to be included in an engineering calculation package in accordance with Engineering Support Department procedures.

Identify the Structures, Systems, _____
 or Components involved. _____

1. Does the Minor Departure change the basic function of the structure, system or component involved? Yes No

2. Does the Minor Departure change the function of other plant structures, systems, or components associated with the structure, system, or component involved? Yes No

3. Could the Minor Departure adversely affect the conduct of operations of plant programs such as:

Emergency Plan	<input type="checkbox"/> Yes <input type="checkbox"/> No
Primary/Secondary Chemistry	<input type="checkbox"/> Yes <input type="checkbox"/> No
Radiological Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No
Environmental Qualification	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fire Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No
Security	<input type="checkbox"/> Yes <input type="checkbox"/> No
Other: _____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	<input type="checkbox"/> Yes <input type="checkbox"/> No

FIGURE 2

MDD # _____
 REV # _____

4. Could the Minor Departure cause degradation of performance characteristics or adversely affect operating/design parameters such as:

- | | | |
|--|------------------------------|-----------------------------|
| System Pressure | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| System Temperature | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| System Flow and/or Capacity | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Voltage and/or Current Carrying Capability | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Response Time | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Structural Support, Stress, or Seismic Qualification | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Materials Compatibility | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Other: _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

5. Could a failure of the structure, system or component changed by the Minor Departure result in operating in a degraded or an unanalyzed condition, or cause subsequent failure in associated structures, systems, or components?

Yes No

6. Does the Minor Departure deviate from established industry standards and accepted plant practices?

Yes No

7. Does the Minor Departure require a change to the Technical Specifications?

Yes No

8. Does the Minor Departure require a change to any licensing document?

Yes No

List applicable LDCR Numbers

FIGURE 2 (CONT'D.)

MDD / _____
REV / _____

9. Does the Minor Departure deviate from identified applicable design codes? Yes No NA

List applicable codes considered:

10. Does the Minor Departure, if installed as specified, deviate from applicable installation codes and specifications? Consider material, pressure rating, support types, support span, separation criteria, size etc. Yes No NA

List applicable codes and specifications considered:

Prepared By _____ Date _____

MES _____ Date _____

PRB Chairman _____ Date _____

(N/A if PRB review is not required)

MINOR DEPARTURE COMPLETION EXTENSION REQUEST

MINOR DEPARTURE # _____ DATE _____

REV # _____

SUBJECT _____

INITIALLY APPROVED ESTIMATED COMPLETION DATE _____

PREVIOUSLY APPROVED REVISED ESTIMATED COMPLETION DATES _____

REQUESTED REVISED ESTIMATED COMPLETION DATE _____

REASON FOR EXTENSION _____

SUBMITTED BY _____ DATE _____

MYS _____ DATE _____

APPROVED BY _____ DATE _____

GENERAL MANAGER-NUCLEAR PLANT

APPROVED BY _____ DATE _____

VICE PRESIDENT NUCLEAR-VOGTLE PROJECT

FIGURE 3

ORIGINAL
REVISION FOR IDENTIFICATION REVIEW

SHEET 1 of 12

FOR INFORMATION ONLY

RER NO. 90-0127

UNIT 2

PART 1: Problem Identification

(1) System No. 500 kV Component No. PCB161520, 620

(2) Detailed Description of Problem: CT winding of 3000 to 5 should have been 2000 to 5 in the above breakers

(3) Proposed Solution and Justification:

- Personnel Safety Plant Safety; Regulatory Requirement
- ALARA* Other

Change taps at the above breakers

(4) Requested Completion Date: 3/21/90 Estimated Cost: —

Point of Contact Kaplan Phone: 3242

B Kaplan 3/21/90
Initiator Date

B Kaplan for 3/21/90
Department Superintendent Date

Engr. Supv. Assigned Kaplan Target Completion Date 3/21/90

* Copy to Manager Health Physics and Chemistry

9
ORIGINAL

SHEET 2 of 12

RER NO 90-0127

PART 2: Engineering Support Department Review

5) Disposition: Change tap settings on
breakers PCB161530 and PCB
1615630 per attached. Breaker data
sheet requires the relay to be set for
a 2000 to 5 winding however the
wiring diagrams AX30-CA-L73T and
AX30-CA-L73P show a 3000 to 5
condition. The relay was set to the
2000 to 5 winding however the
taps were set to 3000 to 5.

Safety Related No Yes

Document Generated No Yes No.

Eng. Manhours Required for Review 5

Approvals:

F THOMPSON
 Design Engr. B. Kaplan for 13/21/90 Responsible Engr. B. Kaplan 13/21/90
(if applicable) Date Date

R. MORE
 Engr. Supv. B. Kaplan for 13/21/90 Engr. Support Supt. B. Kaplan 13/21/90
Date Date
 R. MARKFIELD
for
per Kaplan

Project	ORIGINAL	Prepared By	Date
Subject Title		Reviewed By	Date
		Calculation Number	Sheet

BRUCE,

ENCLOSED ARE SKETCHES FOR THE CHANGES REQUIRED ON THE 500KV MAIN CIRCUIT BREAKER CT'S AND A TABLE FROM AX3D-CA-L73P SHOWING DATA FOR THE 3000'S CT'S.

A TOP SHEET AND PAGE 2 FROM DESIGN MANUAL D.C.-1823 IS INCLUDED AS WE DISCUSSED TO VERIFY THAT THE GEORGIA POWER COMPANY SYSTEM PROTECTION SECTION WAS THE RESPONSIBILITY FOR SELECTION AND APPLICATION OF RELAYS AND OTHER PROTECTING DEVICES.

IF YOU NEED ADDITIONAL INFORMATION TO COMPLETE THIS RER, PLEASE CALL ME AT 7123.

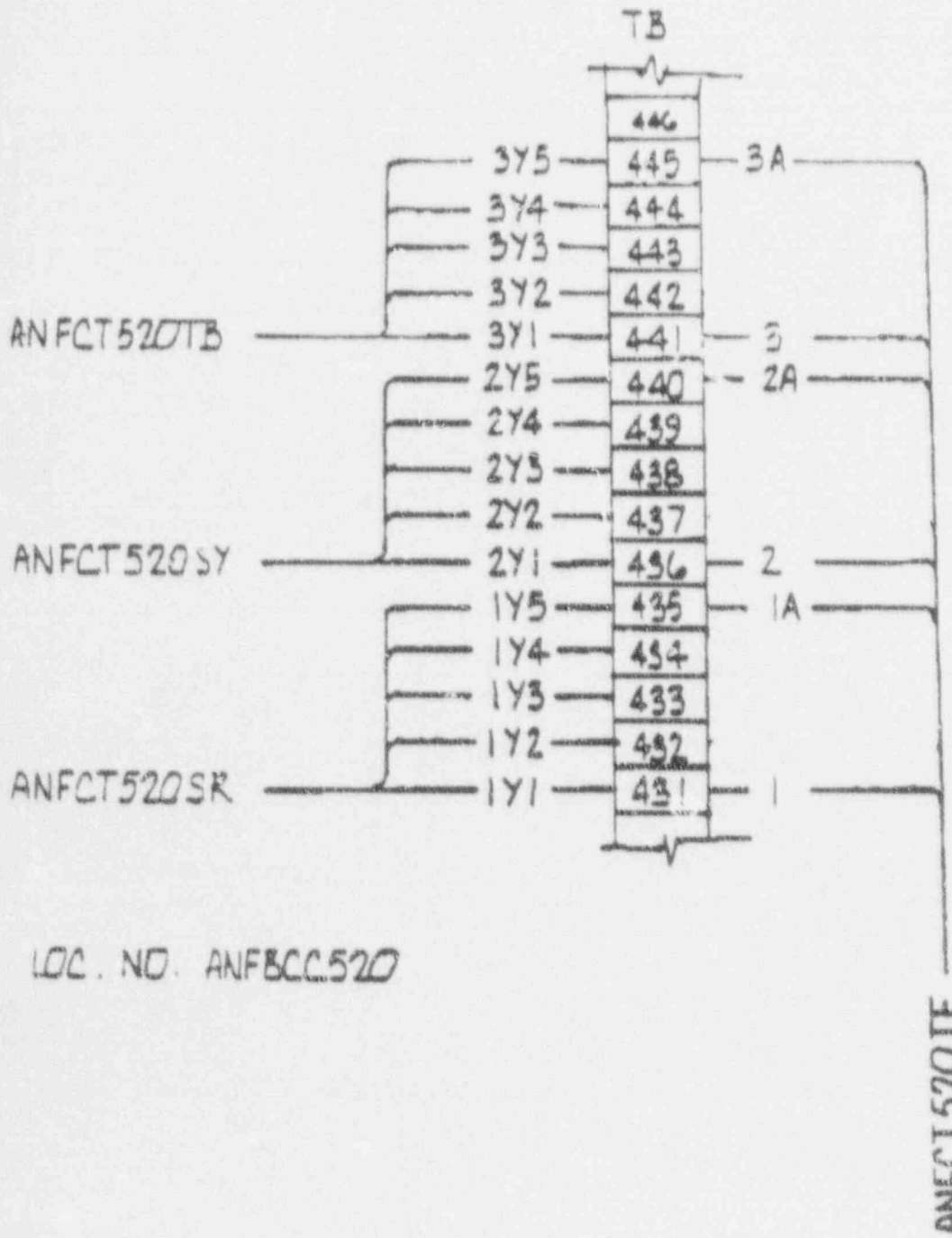
Bill Nickerson

Project	VOGTLE	Designed By	DAVID WHITEHURST	Date	3-21-90
Subject	500KV MAIN BREAKER CT CONNECTIONS	Reviewed By		Sheet	4
		Calculation Number			

500KV PCB CONTROL CAB REAR PANEL

WAS:

RIGHT



LOC. NO. ANFBCC520

JWG NO. AX3D-CA-L623

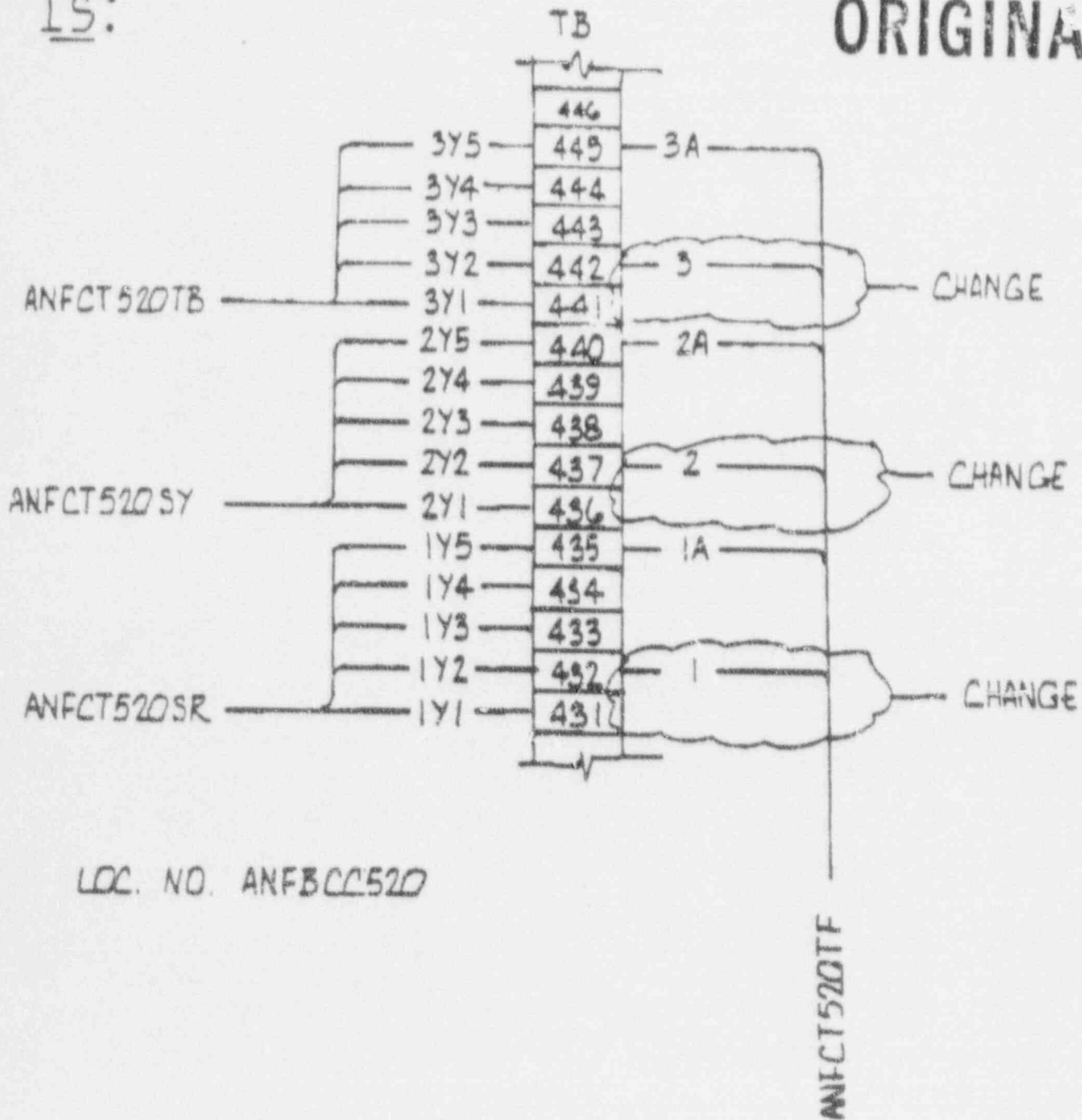
3

Project VOGTLE	Prepared By DAVID WHITEHURST	Date 3-21-90
Subject Title 500 KV MAIN BREAKER CT CONNECTIONS	Reviewed By	Date
	Calculation Number	Sheet 2 of 4

500 KV PCB CONTROL CAB REAR PANEL

IS:

ORIGINAL



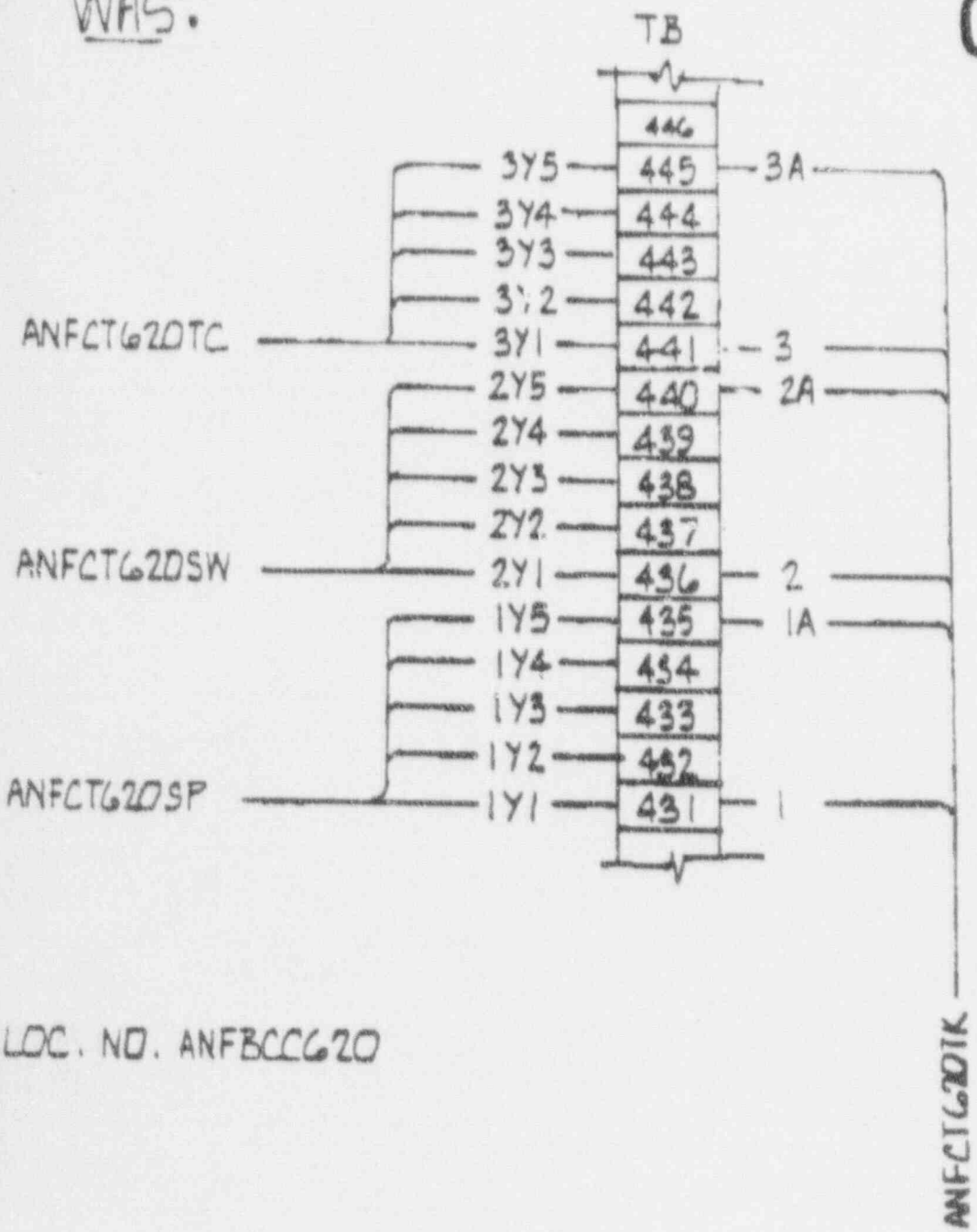
LOC. NO. ANFBCC520

PROJECT: VOGTLE	Prepared By: DAVID WHITEHURST	Date: 3-21-90
SUBJECT: 500KV MAIN BREAKER CT CONNECTIONS	Reviewed By:	Sheet: 3 of 4

500KV PCB CONTROL CAB REAR PANEL

WAS:

ORIGIN



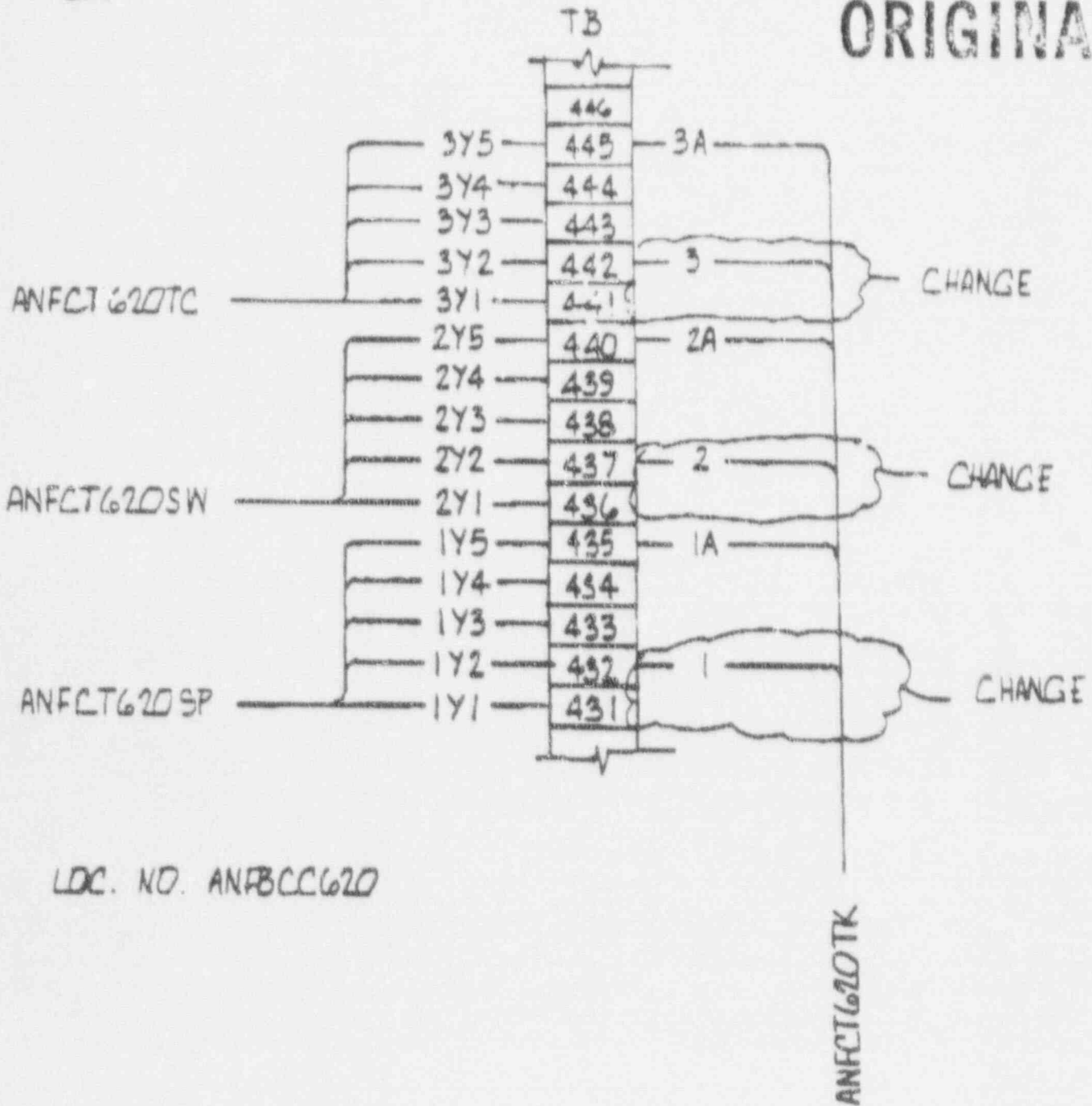
LOC. NO. ANFBCC620

Project VOGTLE	Prepared by DAVID WHITEHURST	Date 3-21-90
Subject Title 500KV MAIN BREAKER CT CONNECTIONS	Reviewed by	Date
	Calculation Number	Sheet 4 of 4

500KV PCB CONTROL CAB REAR PANEL

IS:

ORIGINAL



LDC. NO. ANFBCC620

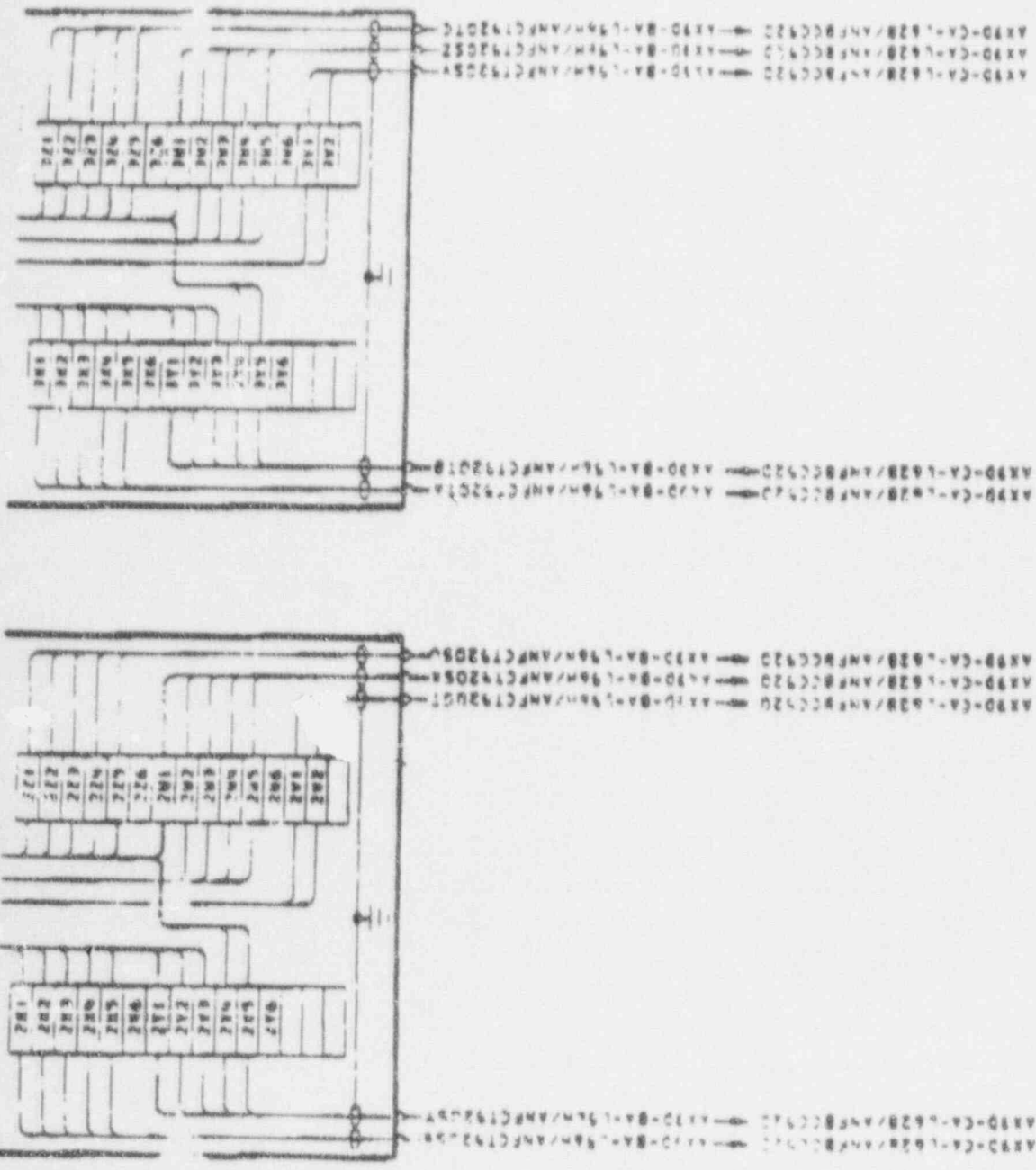
REF 90-127
Pg 2 of 12

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ORIGINAL

REFERENCES:
AK20 BA-5567 CE & PE CONNECTIONS
AK10 BA-5501 SINGLE LINE DIAGRAM
INDEX DRAWING

CURRENT RATINGS AMPERES	TURN RATIOS	SECONDARY TAPS
700:5	60:1	87-89
500:5	100:1	85-87
800:5	160:1	83-85
1000:5	200:1	81-83
1500:5	300:1	77-81
2000:5	400:1	72-76
2700:5	540:1	67-71
3000:5	600:1	61-65



AKS-2

Southwestern Company Division, Inc.

GEORGIA POWER COMPANY

ALVIN W. VOGTLE NUCLEAR PLANT
THREE LINE DIAGRAM
700 KV SUBSTATION
PCB 161520

REV: ALL
DATE: 11/12/85
BY: [Signature]
CHKD: [Signature]

NO.	REV.	DATE	BY	CHKD	DESCRIPTION
1	0	7-12-85	[Signature]	[Signature]	ISSUED FOR CONSTRUCTION
2	1	6-3-88	[Signature]	[Signature]	REVISED PER FIELD CHANGE DATED 4-9-88

REF 90-127
Pg 7 of 12

9

DM Change Notice 1823
Dated 7-17-



ALVIN W. VOSTLE NUCLEAR PLANT
DESIGN BASES
JOB NO. 8310

VNP DESIGN MANUAL

REV. 3 DATE 2-3-84

DESIGN CONTROL NO. DC-1823 TITLE ELECTRICAL PROTECTION CRITERIA
PRINCIPAL RESPONSIBILITY BECHTEL - ELECTRICAL @ LIST YES NO
SYSTEM CLASSIFICATION SAFETY RELATED SAFETY IMPACT OTHER

1.0 PRINCIPAL FUNCTION

The electrical protection criteria shall serve as a guide to determine the electric protection required for both Class 1E and non-Class 1E electrical equipment.

This protection criteria will cover all electrical protection systems for both Class 1E and non-Class 1E equipment installed in the plant, with the exclusion of reactor protection, switchyard, transmission lines, diesel generators, and utility substation systems.

SAFETY CLASS 1, 6 SEISMIC CATEGORY 1, 2
REG 1.2, 1.32, 1.43, 1.75, 1.106, 1.108, 1.118
SBC 10 CFR 50 Section 50.55c, Appendix A Criteria 17, 18, 20
SRP 2.3.1, 2.3.2
STP SR-1
W CRITERIA None

REFERENCES:
PSAN SECTION 2.3.1.2.5, 2.11
ER SECTION None
SYSTEM DRAWINGS All rev 1 class

APPROVAL SIGNATURES
EEL (ORIGIN) [Signature] EES (ORIGIN) [Signature] [Signature] [Signature]
MECH EES _____ ELET EES _____ CIVIL/STRUCTURAL EES _____
RUC EES _____ ARCH EES _____ PLANT DESIGN EES _____
ASSIST. PE _____ ASSIST. PE _____ PE

LEVEL OF APPROVAL 1, 2, 3, 4, 5, 7 DATE OF ORIGIN 9-11-73

INDICATE EES AND ASSIST. PE APPROVALS APE SYSTEMS

DATE(S) OF ALL CHANGES 1-2-77 12-6-79 2-3-84

CONCURRENCE
SIGNATURE [Signature] RESPONSE DATE 2-3-84

APPROVAL LEGEND

1 EEL	4 NO C.
2 EES (ORIGIN)	5 EES
3 CHIEF	7 NO C.
...	...

ORIGINAL

REV 40-127
Pg 10 of 12 (8)

DM Change Notice 1823-2
Dated 7-17-85

VMP DESIGN MANUAL

DC-1823

REV 3 DATE 2-3-84

3.0 PROTECTION DESIGN CRITERIA

A. Electrical protection schemes shall be designed to assure maximum continuity of service with minimum damage to equipment. Protective devices will constantly monitor the electrical system to detect abnormal conditions and automatically initiate isolation of affected equipment.

B. Georgia Power Company System Protection Section has the responsibility for selection and application of relays and other protective devices, and the determination of settings for coordination of protective relays to limit equipment damage and/or system disturbances.

C. The protection criteria covers requirements to prevent damage to all electrically operated equipment, and should not be considered as protection necessary for the safe shutdown of the reactor. Specific relay types shall be selected from GB 1019 dated June 24, 1977 (base document) and only those subsequent revisions issued by Georgia Power Company which are identified in paragraph 6D.

D. The electrical protective system, except for systems having limited available short circuit current such as systems utilizing inverters and regulating transformers shall be designed such that the following features will be provided:

1. Quickly isolate the faulted portion of the system while maintaining normal service for the rest of the electrical system.
2. The protective device nearest to the fault will operate first with backup, by the next protective device in the system.
3. Minimize effects of short-circuit in terms of system dislocation and damage.

E. Protective and auxiliary relays connected to the 125 VDC system shall have capability for continuous operation between 100 and 140 volts.

F. Georgia Power Company's differential relaying convention is "any fault occurring within the protective zone, sensed by the current transformer shall flow to the relay."

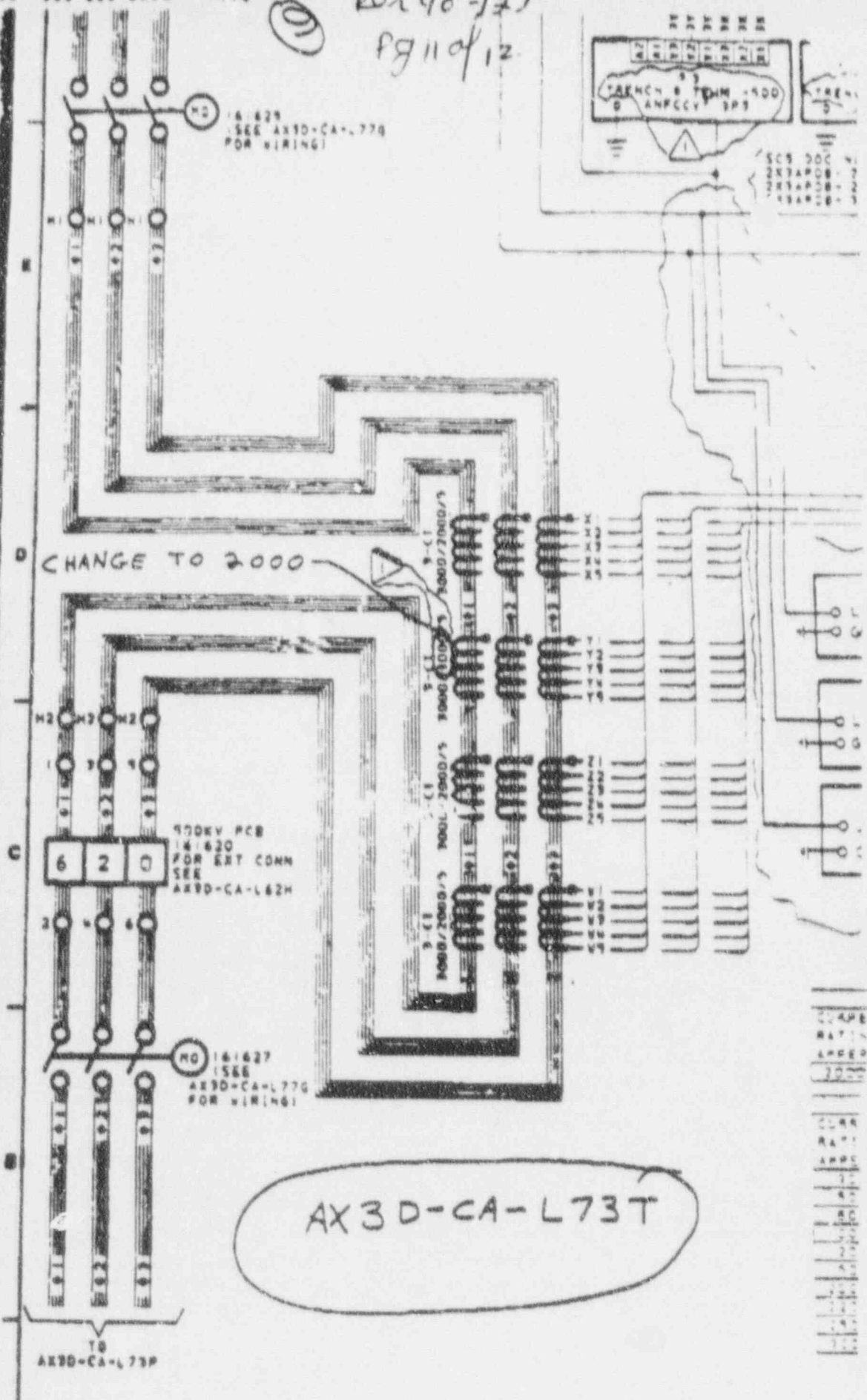
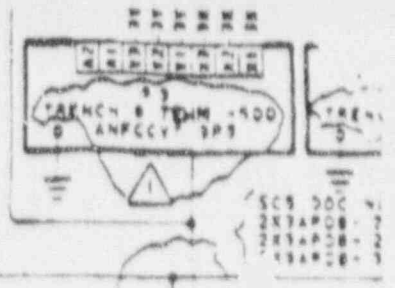
G. Based on the above, a low voltage breaker sizing criteria is issued as Attachment A titled, Low Voltage Breaker Sizing Criteria for the Georgia Power Company, Units 1 and 2, Burke County, Georgia, Revision 1, January 1, 1983. Deviation from this criteria shall only be allowed for breakers utilized for non safety related systems outside the nuclear island (SCE scope) when approved by GPC.

3.1 SAFETY DESIGN BASES

Protection for the redundant, safety related, Class 1E AC and DC power systems shall be designed to minimize loss of power to all safety-related loads during plant normal operation, anticipated operational occurrences, and during accident conditions.

Cor 90-127
Pg 11 of 12

ORIGINAL

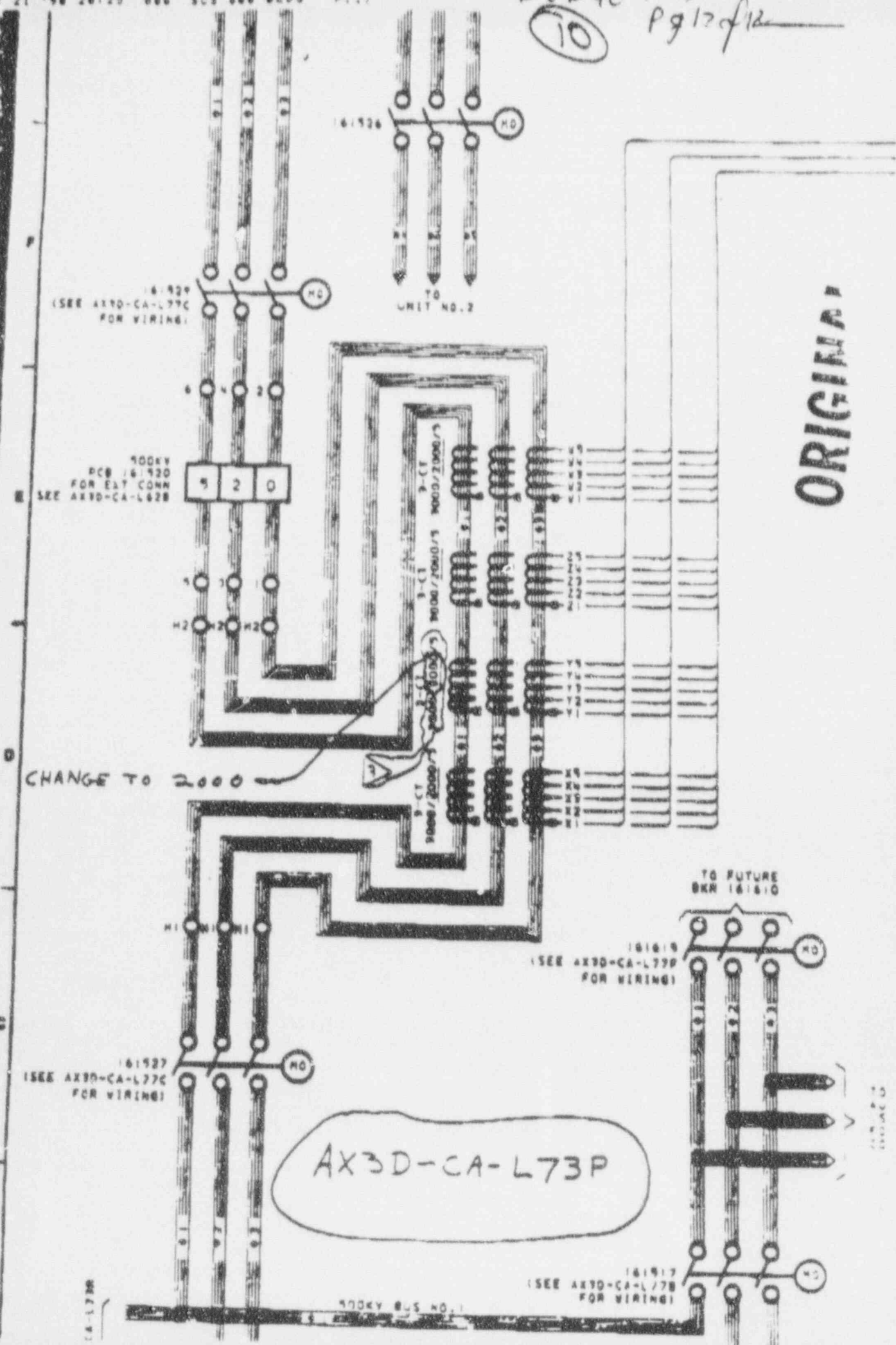


AX3D-CA-L73T

CLASS	
RATE	
ANNO	
2000	
CLASS	
RATE	
ANNO	
2000	
CLASS	
RATE	
ANNO	
2000	

REVISION	DATE	BY	NO	DESCRIPTION

LEK 40
Pg 12 of 12
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ORIGINAL

AX3D-CA-L73P

TO FUTURE BKR 161610

161919
(SEE AX3D-CA-L77B FOR WIRING)

161927
(SEE AX3D-CA-L77C FOR WIRING)

161929
(SEE AX3D-CA-L77C FOR WIRING)

900KV BUS NO. 1

161917
(SEE AX3D-CA-L77B FOR WIRING)

CA-L73B

REVISED

0010h/8

Mr. H. E. Bradley

05-102-90

Relaying Data - GEORGIA POWER COMPANY

Division Augusta

Procedure 55030-1

Sheet U2-1 of

Name of Line or Equipment and Rating in MVA (Relay Target Nos.)	OCB Number	Kilo-volts	RELAY SETTINGS			TEST VALUES			Relay Name Plate Model No. and Range	Set and Checked By and Date	Recloser Model and Time in Seconds (P. 1)	Station Battery	REMARKS:
			C.Y. Ratio to One	Relay on Tap	Primary Ampe	Volts/Amps to Operate, MVA to Trip	Time to Trip						
							At % of Tap	Cycles to Close					
Gen. No. 2 Main Bk. Primary Differential (51, 52, 53)	161520	500	400/1.73	25% 13x		P.U. = A 500 100	Inst.	(1) RADSE Mod. # RK626006-LP (5A, 60Hz) (20% - 50%) (Variable Slope)		587U1 (P.U.P)		Trips 161520, 161620 2NAA03, 2NAB03, 2NA0103, 2NA0403, 2NA0503, Bank No. 2NXM1 and Gen No. 2 Stator Cooling, Turbine Electrical and Mechanical, and Gen. Field Removal. (586T1)	
Gen. Neutral	-	-	7000x 0.66/1			P.U. = A 500 100	Inst.						
S.S. Bk. 2NXAA	13.8	13.8	800x 18/1.73			P.U. = A 500 100	Inst.						
S.S. Bk. 2NXAA	4.16	4.16	1000x 48/1.73			P.U. = A 500 100	Inst.						
(25% x = 1.25; 13 x = 65, x = 5A.)													
Gen. No. 2 Main Bk. Secondary Differential (51, 52, 53)	H.S. Bk. 2NXM1	500	600/1.73	Top Tap 2.9	Tap	Stud 13 P.U. = A 500		(3) HU-4#292B804A22 (2.9-8.7) (Variable Slope)		587U2 (P. 1)		Trips same as Gen. No. 2 Main Bk. Primary Diff. (586T2)	
Gen. Neutral	-	-	7000	2nd. Tap 2.9	Tap	Stud 5 P.U. = A 500							
S.S. Bk. 2NXAA	25	25	400x 10/1	3rd. Tap 5	Tap	Stud 7 P.U. = A 500							
S.S. Bk. 2NXAB	25	25	400x 10/1	Bot. Tap 5	Tap	Stud 9 P.U. = A 500							
Gen. No. 2 Main Bk. 2NXM1								(3) G.E. Model 900-1		563 (Transf.)		Trips same as Gen. No. 2 Main Bk. Primary Diff. Except Gen. Stator Cooling (586T3)	
Mult Pressure										Target Relay 530D (P. 1)			

FOR INFORMATION ONLY

INITIAL AND DATE SETTINGS WHEN COMPLETED

PRELIMINARY

RETURN TO PROTECTION ENGINEERING MANAGER

k No. 2NXM1; KV Pri. 500, Sec. 25; MVA 1212/1356 Fuse Type _____ Amps _____
 k No. _____; KV Pri. _____, Sec. _____; MVA _____/_____ Fuse Type _____ Amps _____
 k No. _____; KV Pri. _____, Sec. _____; MVA _____/_____ Fuse Type _____ Amps _____

Date 05-19-87
 By U.C.R./A.H.A.
 Location PLANT Vogtle

FOR INFORMATION ONLY

Event Report No. 1-90-003
Report: Page of

Sequence of Events
Chronology

03-103-90

SITE AREA EMERGENCY
3/20/90

*
Source
of Info.

EST

TIMELINE

9	0900	Fuel truck entered protected area
1,2,3,4	0920	Loss of 1A & 2B RAT due to switchyard accident because fuel truck backed into insulator support
1,2,3,4	0920	Unit 2 Trip - Unit stable Unit 1 D/G-1A started, tripped 1 minute 20 seconds after breaker closure. PEO dispatched to investigate D/G trip, SRO dispatched to investigate sequencer.
6	0921	Security Diesel started and loaded properly.
5,7	0940	Site Area Emergency (SAE) declared due to loss of all AC power to Unit 1.
1,3	0941	A train sequencer reset and D/G 1A Auto started and tripped 1 minute 10 seconds after breaker closure.
8	0945	Core exit T/C temperature was 118 degrees F, increasing approximately 1 degree per minute.
1,3,5	0956	Local start of D/G-1A - power to 1E Bus, NSCW and CCW pumps on A Train. Onsite power restored.
12	0957	Start initial notification of SAE using SC Backup ENN.
10	0958	NRC operations center notified of SAE.
1,3,8	1000	Started A Train RHR pump and placed it in the shutdown cooling mode. At this time RHR inlet was 136 degrees F.
5	1001	Page announcement to site (Site Area Emergency Announcement).
6	1002	Security commenced accountability.
6	1002	Security (PESB) notified by ED via communicator.
15	1005	General Office Operations Center (GOOC), Birmingham activated.
16	1009	Visitors Center initial notification (Public Information).

* - See Source Index attached

Sequence of Events
Chronology

SITE AREA EMERGENCY
3/20/90

Source
of Info. EST

TIMELINE

17	1011	GPC Public Information in Atlanta notified by Ray Harris.
5	1013	Completed initial notifications to Aiken, Allendale, Barnwell, SRS, S.C. (GEMA and BCEMA not notified).
18	1013	TSC ENN communicator conducts roll call to test TSC equipment.
18	1015	Called GEMA on commercial phone numbers, did not transmit message due to confusion by communicators.
3, 5	1015	George Bockhold relieves John Hopkins as Emergency Director. #2 Emergency Notification form approved by ED.
5, 7	1015	Site Area Emergency downgraded to Alert. Diesel Generator maintaining load.
13	1016	Initial notification made to Burke County EMA on commercial telephone.
13	1017	Alert Plant Page announcement made.
26	1020	OSC Activated
18	1022	EOF ENN communicator test ENN equipment from EOF.
7	1026	TSC Activated.
27	1030	Personnel dispatched to Met Tower to relay data.
3	1034	Steam generator Primary manways secured.
28	1035	EOF Standby Status.
20	1035	Message #3 started by communicator in Control Room (using BUENN)
11	1035	GEMA received notification message #1 from South Carolina EPD via FAX.

~~*Time not confirmed from available data~~

Sequence of Events
Chronology

SITE AREA EMERGENCY
3/20/90

Source
of Info EST

TIMELINE

19	1038	Message #2 complete to all South Carolina Agencies.
13	1040	Initial Notification completed to GEMA.
1,3,5,7	1042	Containment Equipment Hatch bolted.
29	1046	Met Data from MET Tower building 10 meter height, 8-9 mph; 340 degrees; Delta T = -3.0.
29	1050	Radiation monitors information received from PERMS; all normal.
19	1050	Message #2 completed to Georgia.
20	1050	Message #3 completed to all South Carolina agencies.
5	1055	ED departs Control Room to TSC.
5,19,30	1056	Message #2 and #3 completed to Burke County. ED at TSC and assumes duties and responsibilities.
20	1059	Message #3 completed to Georgia.
5	1100	Briefing in TSC concerning accountability. PA announcement made for non-essential personnel to leave protected area and report to Admin Bldg parking lot.
3	1103	Containment Personnel hatch interlocks set.
21	1105	Message #4 initiated by ENN communicator in TSC using Primary ENN for both Georgia and South Carolina.
2,4	1112	Unit 2 in Mode 3.
21	1116	Message #4 completed to all agencies by TSC ENN communicator.

Sequence of Events
Chronology

SITE AREA EMERGENCY
3/20/90

Source
of Info.

EST

TIMELINE

2, 22	1129	Message #5 initiated by ENN communicator in TSC.
5	1130	Unit 1B RAT has off-site power to hi-side.
1, 3, 5	1140	1BA03 energized from RAT 1B.
7	1140	Pressurizer manway installed.
22	1141	Message #5 completed by TSC communicator.
5, 7	1143	All buses off of 1BA03 energized.
1	1159	Train B NSCW started.
1	1203	Train B CCW pumps started.
23	1205	Message #6 initiated by TSC ENN communicator.
23	1212	Message #6 completed by TSC ENN communicator.
5, 7	1222	TSC Briefing.
28	1225	Public Information Manager leaves EOF and returns to Visitor Center.
5, 7	1229	TSC receives status of personnel accountability.
1	1231	Train B RHR pump started.
24	1235	Message #7 initiated by TSC ENN communicator.
1	1238	RHR Train B place in shutdown cooling mode. RHR Train A placed in recirc.
24	1241	Message #7 completed to all agencies by TSC ENN communicator.
1, 3	1257	1AA02 alternate incoming breaker closed to supply power from RAT 1B/paralleled with D/G 1A.

Sequence of Events
Chronology

SITE AREA EMERGENCY
3/20/90

Source
of Info.

EST

TIMELINE

12, 14	1259	Message #8 initiated by TSC ENN communicator.
5	1310	ED conference call to local agencies to discuss termination of emergency.
14	1313	Message #8 completed to all agencies by TSC ENN communicator.
7	1313	Offsite power restored - plant in normal refueling configuration.
7	1326	49 people unaccounted for by Security.
1, 3, 5, 7	1347	Emergency Terminated
26	1356	Message #9 (Termination) initiated by TSC ENN communicator.
26	1356	Message #9 completed to all agencies by TSC ENN communicator.
*	1400	News Release concerning termination of emergency.
1, 3	1426	Offsite power (from RAT 1B) supplying 1AA02 and 1BA03 with DG1a shutdown.
*	1430	Press Conference in Atlanta.
*	1545	Joint News Release to Media.
*	1630	Press Conference at Vogtle.

* - Times approximate and not logged

Source Index

- 1 - Unit 1 Control Log
- 2 - Unit 2 Control Log
- 3 - Unit 1 S.S. Log
- 4 - Unit 2 S.S. Log
- 5 - Emergency Director's Log
- 6 - Security Incident Report
- 7 - TSC Manager's Log
- 8 - ERF Computer Graphs
- 9 - Security Vehicle Access Log
- 10 - Event Notification Worksheet
- 11 - Telecon between J.N. Roberts ^(GFC) and Dick Garrett (GGMA)
- 12 - Extract from Communications Log at SRS
- 13 - Personal Statement from ENN communicators
- 14 - Emergency Notification # 8
- 15 - Telecon between J.N. Roberts (site) and Jeff Badgett (B'ham)
- 16 - VEGP Security Dept. Call Checklist (SAE Declared)
- 17 - Telecon between J.N. Roberts (site) and Ray Harris (Vis. Center)
- 18 - Transcript of GGMA Tape Recordings
- 19 - Emergency Notification # 2
- 20 - Emergency Notification # 3
- 21 - Emergency Notification # 4
- 22 - Emergency Notification # 5
- 23 - Emergency Notification # 6
- 24 - Emergency Notification # 7
- 25 - Emergency Notification # 9
- 26 - OSC Sequence of Events Status Board
- 27 - OSC Support Request Info. Form (Team #2)
- 28 - EOF Manager's Log

Source Index (continued)

29- TSC HP Supervisor Logged-in Notes

30- Telecon between Lawrence Mayo and Alberta Anderson

05-104-90

2.0 HARDWARE CONFIGURATION

The ERF computer system is a digital main-frame computer based system. It includes a Central Processing unit and associated peripheral equipment, input/output equipment for scanning field sensors, color CRT display consoles, and various hardcopy printers and copiers. The computer system hardware is physically located in the following five areas:

1. Computer Room
2. System Input Room
3. Control Room
4. Technical Support Center
5. Emergency Operations Facility

The hardware included in the ERF computer system was specified to meet the criteria of NUREG-0696. The individual components of the system are outlined in the following sections. Refer to Figure 2.1 for information concerning system locations and interconnections.

2.1 CENTRAL PROCESSING UNIT

The central processor integrates, synchronizes, and controls the functions of all other components of the system. It is triggered by an internal interval timer or external events to scan field inputs, perform algorithm calculations, and transmit the results to display devices and archival storage.

The central processing unit (CPU) is the Foxboro Co. F1100C series processor referred to as the FOX 1/A computer. It is a 24-bit machine with 128K words of semiconductor RAM main memory (expandable to 256K). The features of the CPU include: real-time clock, power fail/auto-restart, 12 levels of priority interrupts, hardware floating point, memory battery backup, and processor control panel. Also included are interface nests for asynchronous and bisynchronous communications, DMA I/O channels, peripheral equipment, and FOXNET communications links.

A detailed description of the CPU is provided in FOXBORO document MI 812-022 included in Appendix F1.

2.2 MEGASTORE

The Megastore device is a Foxboro model F2103 bulk core storage unit with 1024K word storage capacity. It is an all-electronic, random access data storage unit utilizing ferrite cores as the storage element providing non-volatile memory.

READ AND DESTROY
FOR INFORMATION ONLY

OVERALL E CONFIGURATION

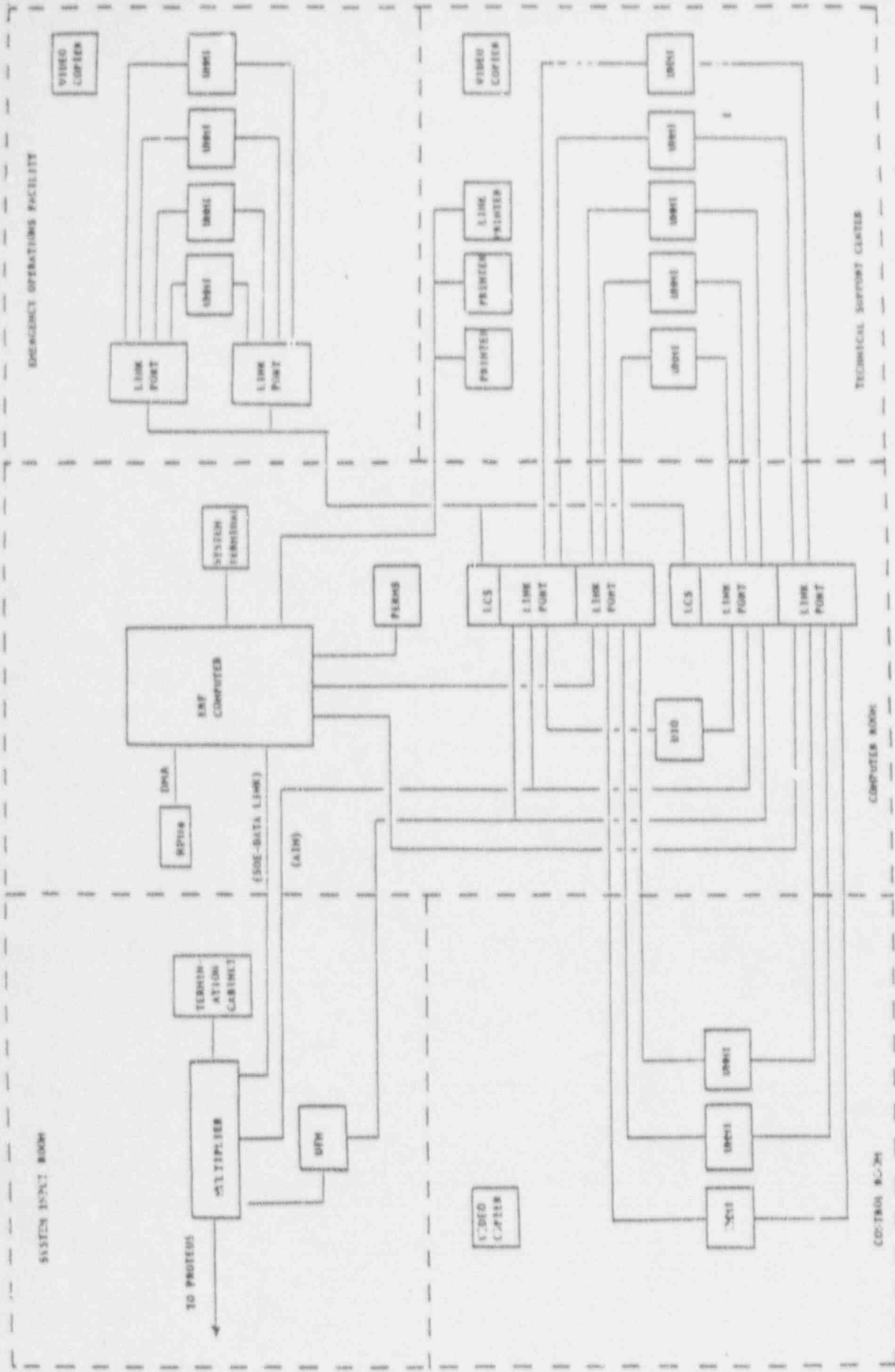


Figure 2.3

The Megastore serves as the primary storage medium for all programs, data base and data (except archival). It is also the primary source for system reload upon bootstrap. For programming purposes, the Megastore is subdivided into 4096 tracks (0-7777₈) of 256 words each. All requests for data to/from Megastore are track oriented and handled through the Operating System. See "Megastore Map" included in Appendix for Megastore track assignments.

Track zero of Megastore is utilized to initiate Boot loads from the Megastore device. When the "DØ" button is pressed on the CPU control panel, track zero is loaded into main memory by firmware. Track zero must contain code to initiate system reload. Refer to Foxboro document MI 506-030 for further information about the Megastore unit.

2.3 MOVING HEAD DISK

The moving head disk subsystem is the Foxboro model F2101B Disk Storage Unit. It is comprised of a disk interface unit and two Model 9427 disk drives manufactured by Control Data Corp. Each disk drive includes a fixed and a removable platter with each platter containing five million bytes of storage area.

The disk storage unit serves as a backup device to the Megastore and is also used to store historical data and program source files. The top and bottom drives are numbered drive 0 and drive 1 respectively. For programming purposes, each platter is subdivided into 6480 tracks (0-14517₈) of 256 words each. All requests for data to/from the disk storage unit are track, drive and platter oriented and are handled through the Operating System.

Track zero of drive zero of the disk are utilized as backup Boot load devices. Fixed disk track zero is called when "D1F" is pressed and removable track zero is called when "D1R" is pressed on the CPU control panel. See Foxboro documents MI 815-010 and MI 506-020 for information on the disk subsystem.

2.4 SYSTEM TERMINAL

The system terminal provides bidirectional communications between the CPU and the programmer/technician. It has two independent parts, a keyboard/monitor and a printer. The keyboard/monitor is the Esprit model ESP 6310 terminal. Hardcopy capability is provided via the Okydata Microline 182 printer. The system terminal is sometimes referred to as the "programmer's console" in other documentation.

The system terminal interface communicates with the keyboard/-printer over a full-duplex asynchronous communications channel at 4800

aud. In the ERF computer system, a "control-B" keystroke combination is used to generate a manual interrupt to facilitate operator input. See Section 3.5 - Programmer's Console for use of the system terminal and Foxboro MI 812-022 for more information.

2.5 UTILITY PRINTERS

The utility printers provide hardcopy logging and report capability. The Vogtle ERF system includes two Centronics model 704 dot-matrix printers. Output to the utility printers is accomplished through the Foxboro model F6321 Character Output Communication Module which provides ports for up to eight printers. Refer to Foxboro document MI 813-020 for more information on the character output communication module.

2.6 LINE PRINTER

The line printer is the model F7403A supplied by Foxboro (the printer is manufactured by Dataproducts Corp. under the model number 2230). It is a 132 character per line, 300 lines per minute printer. Communication with the printer is through the line printer synchronizer in the peripheral interface nest. It operates in a Direct Memory Access (DMA) mode.

The line printer included in the Vogtle ERF system is used primarily in software development to generate program listing. It may also be used for report generation and logging. For more information on the lineprinter/interface, refer to Foxboro documents MI 815 030 and MI 503-023.

2.7 FOXNET COMMUNICATIONS NETWORK

The Foxnet Communications subsystem provides high-speed data communications between equipment of the ERF computer system. The subsystem consists of stations, Linkports (LP), Link Control Stations (LCS), and the interconnecting coaxial cable system. The station types used in the Vogtle ERF computer system include UIO, UFM, AIM, and UMMIs. Each station type is discussed in following sections.

2.7.1 FOXNET CONFIGURATION

The Foxnet subsystem may be operated in one of two basic configurations: Cluster or Linked Cluster. The ERF computer system normally operates using the Linked Cluster configuration. Refer to Figure 2.2 for configuration diagram.

Each Linkport supports up to ten stations (masters or slaves). In the Cluster mode, the Linkport supports communications between the stations. The Cluster is the basic building block of the network.

The Linked Cluster configuration allows communications between multiple Linkports. This configuration uses coaxial cable to link the LP's which may be located in different areas into a common communications network. Data communication is via Link Interface Units (LIU's) located in the LP's and is controlled by the Link Control Station (LCS). The LCS consists of a modem and a microprocessor based controller. It arbitrates contention among network LP's for control of the link, and disconnects any master station that holds the link beyond a 100ms time period.

2.7.2 FOXNET COAXIAL CABLE SYSTEM

The coaxial cable system connects the LP's and LCS to form the network. It consists of the main (trunk) cable, terminators, couplers, and drop cables. The trunk cable in the ERF system is a 13,000 ft buried coaxial cable run extending from the computer room in the power block to the EOF in the simulator building. The drop cables connect the LP's/LCS to the trunk cable via couplers. The trunk cable is terminated on each end with a cable end tone generator.

Each LP and LCS constantly monitors the health of the cable system. The LP/LCS sense a cable break by detecting the loss of either or both of the two cable end tones. If the LP detects a cable break, it drops into the cluster mode and will communicate only with its own ten stations. Communications between LP's is impossible. Likewise, if the LCS is off or disabled, communications between LP's is impossible.

2.7.3 FOXNET SUBSYSTEM OPERATIONS

When a master station initiates a transaction, it issues a link request signal to the LP. When the link is available, the LP issues a link grant signal to the requesting master, which then becomes the link master. The link master can send control information and/or data to slave stations and other masters. All stations on the communications link are addressable. Each LP has a unique address and each LP port address is fixed by position from 0 to 9.

In a Linked Cluster network, the LP has an LIU to transmit and receive messages over the Foxnet coaxial cable system. A distinct tone frequency is transmitted over the link by the LIU when a master station requests to be link master. The LCS sequentially monitors the link request tones from all LIU's on the link. Upon detecting an active tone and an inactive link, the LCS grants control of the link to the requesting master station. After the master completes its transactions, it releases the link by removing the request tone.

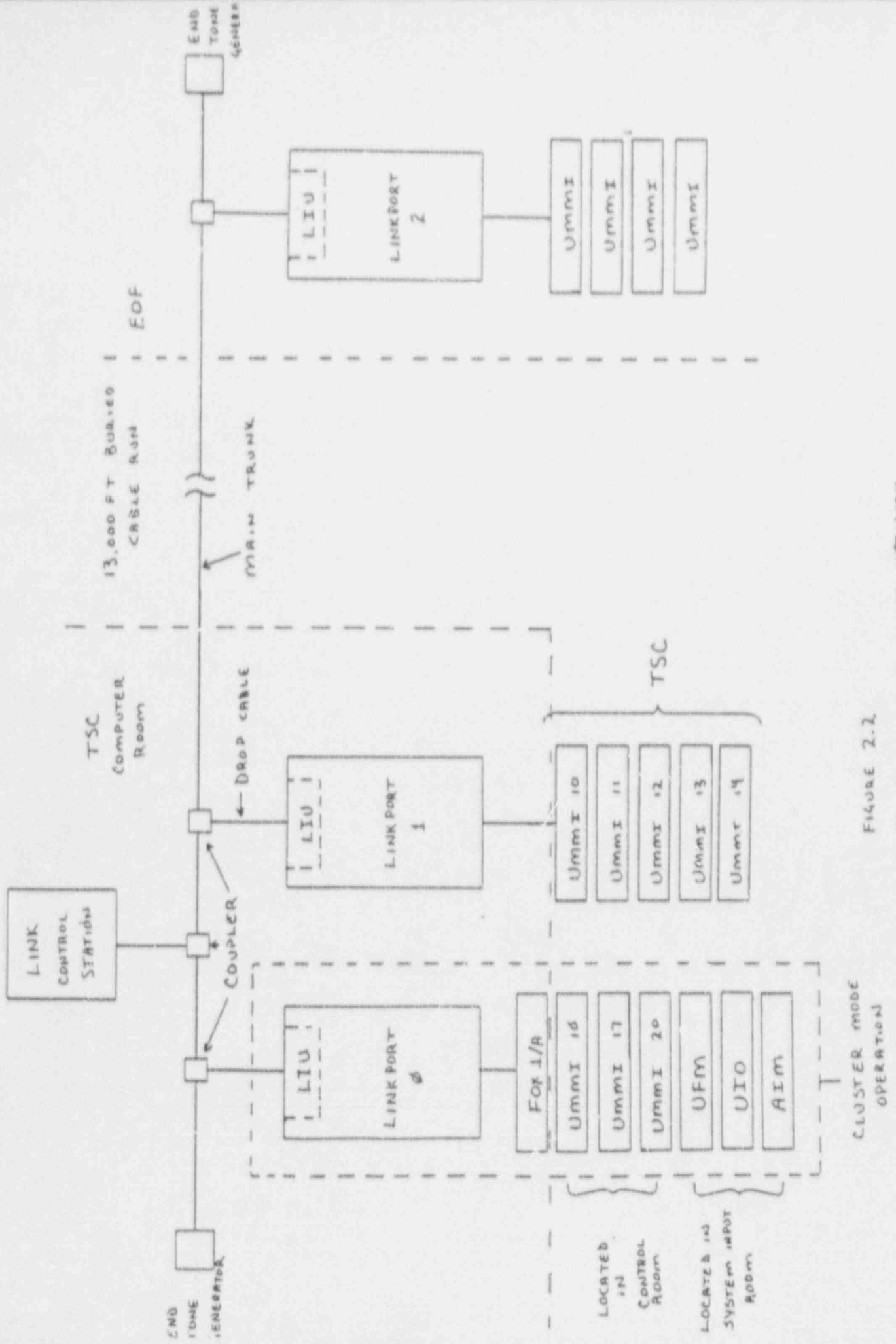


FIGURE 2.2
FORNET COMMUNICATIONS NETWORK
CONFIGURATION

2.7.4 FOXNET LINK PROTOCOL

The protocol used within the network for station-to-station communications is based on a request/reply, half-duplex operations scheme similar to SDLC (synchronous data link control) protocol. Only master stations may initiate a link operation. A link master initiates a link operation by sending a request frame. All such requests result in a reply from the addressed station unless the request was made in the broadcast mode. Receipt of a reply or issuance of a broadcast command by a link master constitutes a transaction. A series of transactions by the same link master constitutes a link operation. The Foxnet protocol supports multimaster operations, but only one station may be link master at a particular time.

2.7.5 FOX 1/A FOXNET INTERFACE

The Foxnet process communications link interface nest provides four data communications channels between the FOX 1/A CPU and the LP's. Each port can operate in either a slave or master mode as directed by the CPU. The port provides network interlock and security signals, handles handshaking operations, and effects the transfer of data into and out of the station.

The process communications link interface provides the translation of 8-bit parallel data from the linkports to a 24-bit word for use on the CPU buses. The interface operates in a DMA mode. All communications between the interface and the LP's follow Foxnet timing and protocol requirements.

2.7.6 FOXNET REDUNDANCY

The Vogtle ERF computer system is supplied with two identical Foxnet communications networks. All Foxnet stations in the ERF system, including the CPU interface are dual ported to allow communications over either network. Each of the two communication links, referred to as links "A" or "B", is capable of supporting all ERF stations.

To minimize link loading, both links are normally used simultaneously. Each Foxnet device is assigned a primary link for communications. Should either link fail, all devices assigned to that link would be addressed on the remaining link.

If both Foxnet communications links were to become disabled, the ERF system would still be able to operate in the Cluster mode. The CPU, UFM, UIO, AIM, and the UMMI's located in the control room are all attached to the same LP. Thus communications between these devices is possible in the Cluster mode. However, communications with the TSC and EOF would be impossible. Refer to Figure 2.3 for Linkport station assignments.

<u>LINKPORT</u>	<u>PORT</u>	<u>DEVICE</u>	<u>GPC DEV #</u>	<u>SSA</u>
LINKPORT 0	0	UFM	23	0
	1	-SPARE-	24	1
	2	UTO	25	2
	3	AIM	26	3
	4	UMMI	17	4
	5	UMMI	20	5
	6	-SPARE-		6
	7	UMMI	16	7
	8	-SPARE-	21	10
	9	CPU	22	11
LINKPORT 1	0	UMMI	10	12
	1	UMMI	11	13
	2	UMMI	12	14
	3	UMMI	13	15
	4	UMMI	14	16
	5	-SPARE-	15	17
	6	-SPARE-		
	7	-SPARE-		
	8	-SPARE-		
	9	-SPARE-		
LINKPORT 2	0	-SPARE-		
	1	(UMMI)	1	24
	2	(UMMI)	2	25
	3	(UMMI)	3	26
	4	(UMMI)	4	27
	5	(UMMI)	5	30
	6	(UMMI)	6	31
	7	(UMMI)	7	32
	8	-SPARE-		
	9	-SPARE-		

FIGURE 2.3 FOXNET/LINKPORT STATION ASSIGNMENTS

For more information on Foxnet communications, refer to the following Foxboro documents:

TI 821-002 - FOXNET COMMUNICATIONS SUBSYSTEM
TI 821-004 - FOXNET PROTOCOL
MI 813-050 - FOX 1/A FOXNET INTERFACE

2.8 UNIVERSAL MAN-MACHINE INTERFACE

The Universal Man-Machine Interface (UMMI) is the primary means of interactive communication between the ERF computer and the user. It is a free-standing console that includes a 19-inch video display monitor and a desk top operator keyboard. The UMMI may also be equipped with a 64-button annunciator keyboard. The UMMI is also referred to as the FWS1-FA Series FOX 1/A Color Console in certain Foxboro documentation.

The UMMI is compatible with the Foxnet process communications link. It is dual-ported and operates as either a slave or a master station when linked to a FOX 1/A host system. The UMMI includes a microprocessor based controller to handle display and network communications tasks.

When the UMMI is powered up/reset, it sends a broadcast message over Foxnet Port A to request initialization from a host (the CPU in the ERF system). If the message is received by the CPU, a request is sent back to place the UMMI in the initialized state. Upon successful initialization, the CPU will LOG IN to the UMMI and become it's host. Should the initialization request not be answered after thirty seconds, the UMMI will repeat the broadcast on Foxnet Port B. The UMMI will continue to issue the request on alternate ports until it is initialized.

The UMMI normally operates as a slave station. The CPU, acting as master, issues display commands to be carried out by the UMMI. The UMMI assumes the master status upon active function key hits to transfer the appropriate information to the CPU for action. Transfer of overlay insertion/removal are also UMMI master functions. Each overlay is coded with an specific I.D. which is passed to the CPU.

Each UMMI contains an internal Watch Dog Timer (WDT) to monitor communications with the host computer. The WDT is refreshed periodically by commands from the CPU. Should the UMMI WDT not be refreshed before it expires, the UMMI assumes a loss of communications with the CPU. The UMMI will then clear all foreground characters of the current display and sound the internal audible alarm to inform the user of communications failure. The UMMI must be reset either manually or from the CPU (via BOOTSTRAP) to restore communications.

For more information on UMMI consoles, refer to the following Foxboro documents:

MI 814-024 - FWS1-FA SERIES FOX 1/A CONSOLE
MI 814-028 - FUNCTION KEYBOARD AND ANNUNCIATOR PANEL
DRAFT REV B UMMI UNIV MAN MACH INTERFACE

2.8.1 EOF UMMI ACTIVATION

The Emergency Operations Facility (EOF) presents some unique problems in the implementation of UMMIs. The EOF is normally used as a classroom and is set up only when necessary. All equipment used in the EOF, including the UMMIs, is stored in an adjacent room until needed. Thus, the UMMI cabinets in the EOF have been fitted with castors to facilitate movement.

To provide flexibility in the location of the consoles, ten panels with military-type quick connectors have been installed corresponding to the ten linkport stations. These panels include plugs to attach to either the Unit 1 or 2 ERF system. Thus, when the EOF is activated, the UMMIs will be rolled out, attached to the appropriate station panels, and powered up. The UMMIs are then initialized by the CPU.

The VEGP Emergency Planning personnel requested the capability during an accident situation to take three of the UMMIs from the unaffected unit and implement them into the affected unit's ERF computer. This places seven UMMIs in the EOF on one system. This represents a significant increase in the scope of the EOF and came relatively late in the software development phase. Thus, because of software restrictions, a maximum of seven UMMIs may be implemented in each unit's EOF at any one time. The normally active stations will be ports one (1) through seven (7). Ports 0, 8, and 9 may be utilized by changing station software addresses in the Operating System but the total number of stations must not exceed seven.

The above design goes by the common acronym MUFF (Mobile UMMI Force Facilitation).

2.9 UNIVERSAL FIELD MULTIPLEXER

The Universal Field Multiplexer (UFM) is a remote field data acquisition subsystem which inputs thermocouple, RTD, millivolt, and high level data to the Foxboro computer. It communicates to the CPU via the Foxnet communications network. The UFM operates only as a slave station.

The UFM contains control logic which computes linearized temperatures for thermocouple and RTD inputs. These results, along with millivolt and volt data, are updated in UFM memory once a second. The UFM can process a maximum of 768 analog inputs. The data is available to the CPU on request.

The CPU requests UFM status and data according to Foxnet protocol. The UFM is dual-ported and may operate on either Foxnet communications port. For more information on the UFM, refer to Foxboro documents MI 200-314 and MI 200-318.

2.10 ANALOG INPUT MODULE

The Analog Input Module (AIM) is the Foxboro Company Model 2DNA-C subsystem. The AIM accepts up to 48 analog input values and transmits them to the FOX I/A on command via the Foxnet Communications network. The AIM provides 100 ms resolution fast scan capability. The AIM is currently only used in the ERF system for start-up testing. For more information on the AIM, refer to Foxboro documents TI 200-305 and MI 200-354.

2.11 UNIVERSAL INPUT-OUTPUT SUBSYSTEM

The Universal Input-Output Subsystem (Model 3FIB) allows the FOX I/A to read and change process signals to or from field devices. The communications path between the UIO and the FOX I/A is provided by the Foxnet communications link.

The subsystem consists of two functional elements: a Universal Input-Output Module and a process interface. The UIO module controls the transfer of field values between the input-output components and the Foxnet system. The UIO module is dual-ported.

The process interface consists of up to 30 I/O components which enable the subsystem to interface a variety of field signals to the processor. The I/O components provide termination, conditioning, and temporary storage of the signals flowing to and from the process devices. Accommodation of specific signal types is effected by selecting and inserting the appropriate I/O components into the subsystem.

For more information on the UIO subsystem, refer to Foxboro document MI 200-358.

2.12 SEQUENCE OF EVENTS RECORDER

The ERF computer system is equipped with a Rochester Instruments Systems Model RA-2800 Sequence of Events (SOE) recorder. The SOE provides contact status and real-time sequence of occurrence of digital inputs. Time-tagging is provided to one millisecond resolution.

The SOE monitor is equipped with an RS 232-C communications port through which it sends change of state information to the FOX 1/A computer. This port is linked to the CPU's asynchronous communications port by two IDS Model 6220 short haul modems. Data transfer is at the rate of 4800 baud.

The SOE monitor is set to transmit any contact closure as "ALARM" and open contacts as "NORMAL". This provides actual contact position to the CPU which then determines true "ALARM/NORMAL" conditions. Data is normally sent to the CPU only on a contact change of state. The SOE will send a summary of all points currently in alarm on CPU Bootstrap or on demand.

2.13 Data Concentrator

The data concentrator (DC) is a foxnet device connected to port C in the Fox 1/A computer. It is designed to receive all RPU, DFU, and FERMS data and transmit it on request to the Fox 1/A (See 5.1). The DC consists of Intel and Foxboro hardware and is programmed by Georgia Power Company Computer Section.

For a complete description of the hardware and software design, see Appendix G.

FOR INFORMATION ONLY

BIOCI
Sheet 1 of 2

DATA SHEET 3

VENDOR DOCUMENT STATUS SHEET

05-105-70

LOG NO. AX43K-1-509 2/6/89

REVISION K1

DOCUMENT TITLE: DIESEL GENERATOR INSTRUCTIONAL MANUAL

VENDOR Duke Engineering

P.O. _____

DATE RECEIVED 12-13-88

DOCUMENT LEGIBLE? YES NO

IF NO IS CHECKED, THE RESPONSIBLE REVIEWER SHALL DETERMINE IF THE DOCUMENT CAN BE USED IN ITS PRESENT CONDITION. IF IT CAN, THE NORMAL REVIEW CONTINUES. IF IT CAN NOT, THE DOCUMENT MUST BE RETURNED TO DOCUMENT CONTROL FOR REJECTION BACK TO THE VENDOR.

DISCIPLINE REVIEW REQUIRED

STATUS CODE

MAINTENANCE

1 APPROVED FOR PLANT USE

OPERATIONS

2 REVISE AND RESUBMIT. VENDOR MAY PROCEED

ENGINEERING

WITH MANUFACTURE SUBJECT TO THE INCORPORATION OF CHANGES INDICATED

HEALTH PHYSICS

CHEMISTRY

3 REVISE AND RESUBMIT. MANUFACTURE MAY NOT PROCEED

OTHER _____

S SUPERSEDED BY _____

V VOID

DCNs INCORPORATED: (IF APPLICABLE) _____

Pls NPPSG Related
NAME OF RESP. DEPT. AND REQUIRED SIGNATURE

DATE: 2-8-89

Area Support & Administration
NAME OF RESP. DEPT. AND REQUIRED SIGNATURE

DATE: 2/1/89

NAME OF RESP. DEPT. AND REQUIRED SIGNATURE

DATE: _____



MANUAL CHANGE

No. 76021-9

DATE: 09-SEPTEMBER1986

MODEL: DSRV-16-4 DIESEL/GENERATOR

SERIAL NO(S): 76021-2871, 76022-2872
76023-2873, 76024-2874

CUSTOMER: GEORGIA POWER COMPANY

AFFECTED MANUALS: INSTRUCTION MANUAL, VOLUME I

CHANGE: Replace page ii with new page provided.

REASON FOR CHANGE: To correct the fuel injection point.

Distribution

Customer (13)

Service (2)

File (1)

Instruction Manual
For
Model DSRV-16-4
Diesel Engine/Generator

Serial Numbers

76021-2871
76022-2872
76023-2873
76024-2874

Manufactured For:
Georgia Power Company
Alvin W. Vogtle Nuclear Plant

P.O. No. PAV 481 & 6-20

Date Of Issue

Manufactured By
Transamerica Delaval Inc.
Engine and Compressor Division
550 85th Avenue, P.O. Box 2161
Oakland, California 94621

Phone: (415) 577-7400/Telex: (47) 33-5304/Cable: Enterfound

Transamerica Delaval



Instruction Manual

Model DSRV-16-4 Diesel Engine/Generator

Serial Nos. 76021-2871

76022-2872

76023-2873

76024-2874

Georgia Power Company

Alvin W. Vogtle Nuclear Plant

Transamerica Delaval Inc.
Engine and Compressor Division

ENGINE DATA

MODEL.....	DSRV-16-4
SERIAL NUMBER(S).....	76021-2871, 76022-2872 76023-2873, 76024-2874
FUEL.....	DIESEL
TYPE INSTALLATION.....	STATIONARY
CONFIGURATION.....	VEE
NUMBER OF CYLINDERS.....	16
BORE.....	17 IN.
STROKE.....	21 IN.
CYCLES.....	FOUR
BMEP.....	223.7 PSI
RATED HORSEPOWER.....	9694
RATED SPEED.....	450 RPM
ROTATION.....	CLOCKWISE WHEN VIEWED FROM FLYWHEEL END
STARTING SYSTEM	PILOT AIR, GEAR DRIVEN DISTRIBUTOR
FIRING ORDER.....	1L-8R-4L-5R-7L-2R-3L-6R 8L-1R-5L-4R 2L-7R-6L-3R
DISPLACEMENT PER CYLINDER.....	4766.6 CU-IN.
TOTAL DISPLACEMENT.....	76,266 CU-IN.
FLYWHEEL DIAMETER.....	68 IN.
FUEL INJECTION TIMING.....	RIGHT BANK 21° (12.46 IN.) BT LEFT BANK 22° (13.05 IN.) BT
FUEL INJECTION PUMP RACK	SEE ENGINE NAMEPLATE
VALVE CLEARANCE.....	INTAKE & EXHAUST: 0.040 IN.

NOTES: REFER TO ENGINE NAMEPLATES FOR FIRING ORDER AND FUEL PUMP RACK SETTINGS AT FULL LOAD.

REFER TO APPENDIX X FOR COPIES OF THE FACTORY TEST LOGS.

ALWAYS INCLUDE SERIAL NUMBERS WHEN COMMUNICATING WITH TRANSAMERICA DELAVAL INC., ENTERPRISE ENGINE DIVISION CONCERNING ENGINE PERFORMANCE.

Plant A. W. Vogtle
SECURITY DEPARTMENT REPORT

05-106-90

1	a. Report Number 3941--	b. Report Date 5-20-90	c. Log Time/Date 10:20-20-90
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2	a. Classification of Incident by: <u>161</u>	b. Classifier: <u>A. J. J.</u>	c. Circle One 73.71 / Internal	d. Reportable YES (NO)
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3	a. Type of Incident/Situation/Violation <u>161 (CPU FAILURE / INTERRUPT)</u>	b. Location of Incident <u>Plant</u>
---	---	---

c. Date of Incident <u>5-20-90</u>	d. Time of Incident <u>10:20</u>	e. Reported by Name <u>FELKER, H.</u>	f. Date/Time Incident Reported <u>5-20-90 / 10:21 HRS</u>
---------------------------------------	-------------------------------------	--	--

4	Persons Involved Name	Company or Dept.	Job Title	Security Badge No.	Supervisor of Involved Person (If Employed on Site)	How Involved (If not Employee State SSN and Address of Individual)
a	FELKER, H.	SECURITY	ASC	CC65	TAYLOR, W.	CMS OPERATOR
b	WILBBS, R.	SECURITY	ASC	1014	TAYLOR, W.	RADIO OPERATOR
c	HILLIARD, V.	SECURITY	ASC	CC11	TAYLOR, W.	SAS OPERATOR
d	JOHNSON, W.	SECURITY	SNSCPT	CC18	HUYCK, D.	NOTIFIED
e	HUYCK, D.	SECURITY	NSSS	1793	DANNEMILLER, T.	NOTIFIED
f	WILLHITE, D.	GR/EC/CD	OPERATOR	1405	PHILLIPS, R.	SUBJECT
g	FERRY, R.	SECURITY	ANSC	2912	MOLAY, T.	VEHICLE ESCORT
h	PHILLIPS, R.	GR	MAINTENANCE CRAFTSMAN	2776		SUBJECTS SUPERVISOR NOTIFIED

5 Incident Chronology

0921 HRS - PLANT POWER OUTAGE CAUSED CPU "B" TO GO OFF LINE, SWITCHED OVER TO TAKE-UP POWER

0922 HRS - CPU "A" TOOK OVER AS PRIME CPU

0923 HRS - CPU "B" RETURNED TO NORMAL AS TAKE-UP CPU. SNS-CPT JOHNSON NOTIFIED

0944 HRS - ONE POINT PER MIN TEST INITIATED.

1546 HRS - ONE POINT PER MIN TEST COMPLETED

* REFERENCE EVENT CHRONOLOGY OF EMERGENCY PLANT CONDITIONS ON CONTINUATION SHEETS.

PLAN 1 SECURITY REPORT - CONTINUATION SHEET

041-90
 REPORT NUMBER

Page 2 of 6

PERSONS					
	SECURITY	NSC	1005	DANNEMILLER, T.	WAYNESBORO NEWS CENTER COORDINATOR
	SECURITY	SSS	1255	MIDDLETON, A.	WAYNESBORO NEWS CENTER COORDINATOR
	SECURITY	SSS	1272	MIDDLETON, A.	WAYNESBORO NEWS CENTER COORDINATOR
WICKRE, T.	SECURITY	SNS	0341	MIDDLETON, A.	WAYNESBORO NEWS CENTER COORDINATOR
CRINES, G.	SECURITY	NSC	0050	CHALK, P.	TSC COORDINATOR
SCHUBER, H.	SECURITY	ANSC	1730	MCCRAY, J.	TSC COORDINATOR ASSISTANT
CHRIS, J.	SECURITY	ANSC	1891	STEWART, A.	TSC ACCESS CONT
DEKIN, J.	OPERATIONS	SCS	0007	SWANWELDER, J.	SSS
KITCHENS, C.	SECURITY	UNKNOWN	0035	DANNEMILLER, T.	ECF COORDINATOR
MCGUILLEN, T.	SECURITY	SNSH	0042	DANNEMILLER, T.	ECF COORDINATOR
ANADH, J.	SECURITY	SSS	0652	HUYCK, D.	ECF COORDINATOR
BUCKHOLD, G.	PLANT MANAGEMENT	PLANT MGR.	0001	N/A	PLANT GENERAL MANAGER

PLANT SECURITY REPORT - CONTINUATION SHEET

7941-90
 REPORT NUMBER

Page 2 of 3
 3 of 6

EMERGENCY PLANT CONDITION EVENT CHRONOLOGY:

- 1000 HRS - WILLHITE (TRUCK OPERATOR ESCORTED BY BERRY) BACKED A TRUCK INTO A SUPPORT POLE, KNOCKING DOWN A INSULATOR HOLDING A HIGH VOLTAGE WIRE. THIS RESULTED IN A PLANT WIDE POWER OUTAGE AND CAUSED UNIT #2 TO TRIP OFF LINE, WITH POWER LOSS TO UNIT #1
- 1001 HRS - SITE AREA EMERGENCY DECLARED, ACCOUNTABILITY INITIATED
- 1002 HRS - SECURITY NET NOTIFIED OF EVENT, OSC AND TSC CARD READERS ACTIVATED, ENN COMMUNICATOR DISPATCHED TO CONTROL ROOM
- 1005 HRS - A. MIDDLETON, J. HOLLAND, D. TAMMARC, AND J. MOORE DISPATCHED TO WAYNESBORO EMERGENCY NEWS CENTER
- 1012 HRS - G. GRIMES, AND H. GEISBER DISPATCHED TO THE TSC (TSC COORDINATOR)
- 1013 HRS - POST 730 (GATE 4) NOTIFIED TO PREPARE ON OFF SITE SUPPORT VEHICLES
- 1015 HRS - ANSC DISPATCHED TO OSC TO ASSIST
- 1017 HRS - PLANT PA ANNOUNCEMENT FOR EARLY DISMISSAL
- 1019 HRS - POST 790 RELEASED FROM TURBINE DECK
- 1020 HRS - H.P. DOSIMETRY SENT TO GATE 4
- 1022 HRS - HARRIS DISPATCH FOR TSC ACCESS CONTROL

PLANT SECURITY REPORT - CONTINUATION SHEET

3941-90

REPORT NUMBER

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75
EMERGENCY PLANT CONDITION EVENT CHRONOLOGY (CONTINUED):

1022 HRS - NOTIFICATION RECEIVED THAT THE EMERGENCY WAS DOWN GRADED TO A ALERT AT 1015 HRS.

1025 HRS - PA ANNOUNCEMENT THAT THE EMERGENCY WAS DOWN GRADED TO AN ALERT. CSOS HOPKINS REQUESTED SUPPORT FOR TWO REPAIR VEHICLES TO BE PROCESSED THROUGH GATE 4.

1028 HRS - KITCHENS, MCQUILLEN, AND CANADA DISPATCHED TO THE ECF

1040 HRS - ANSO AT THE VAR (BADGE ISLAND) NOTIFIED TO ^{246 09-20-90} ~~EXPITE~~ EXPIDITE REPAIR CREW AND THEIR VEHICLES INTO THE PA.

1044 HRS - ESCORT OFFICERS DISPATCHED TO GATE 4 TO SUPPORT REPAIR CREW PA ENTRY

1047 HRS - TSC REQUESTED ACCOUNTABILITY STATUS

1051 HRS - SUPPORT REQUESTED FROM WAYNESBORO POLICE DEPARTMENT AND BURKE COUNTY SHERIFF'S DEPARTMENT FOR OFF SITE TRAFFIC

1058 HRS - PLANT GENERAL MANAGER (G. BOCKHOLD) ARRIVED AT THE TSC AND ASSUMED DUTY'S AS THE EMERGENCY DIRECTOR

PLANT SECURITY REPORT - CONTINUATION SHEET

3941-90

REPORT NUMBER

Page 5 of 6

EMERGENCY PLANT CONDITION EVENT CHRONOLOGY (CONTINUE)

1111 HRS - SECURITY PATROL ESTABLISHED OUTSIDE
THE PA TO DIRECT THE NEWS
MEDIA TO THE NEWS RELEASE CENTER

1112 HRS - G. GRIMES (TSC COORDINATOR) NOTIFIED
THAT UNIT #2 IS A MODE-3 STAGE

1350 HRS - PLANT EMERGENCY TERMINATED, ALL PLANT
PERSONNEL WAS ALLOWED ENTRY INTO THE
PA

6 Immediate Corrective Actions CPU "A" TOOK OVER AS PRIME CPU, BACK-UP POWER ON LINE, NOTIFICATIONS MADE, ONE POINT PER MUX TESTED.

7 Root Cause PLANT POWER OUTAGE, CAUSE BY A TRUCK OPERATED BY WILLHITE THAT WAS BACKED INTO A SUPPORT POLE KNOCKING DOWN A INSULATOR HOLDING A HIGH VOLTAGE LINE.

8 Enclosures
 3-COMPUTER TRANSACTION PRINTOUT
 4-STATEMENTS
 5-CONTINUATION SHEETS

9
 PECKER, H. L. *H. L. Pecker*
 a. Print & Sign Individual Making Report
 CARROLL, J. *J. Carroll*
 b. Print & Sign Shift Supervisor

 c. Print & Sign Approving Supervisor

SECURITY ADMINISTRATION SECTION REVIEW

10 Security Report entered into system: _____ Date: _____
 (Initials of person entering information into system)

b Security Report Corrective Action Distribution (If Applicable - Print Information if Copy of Report Sent.)
 If Deficiency Card is issued, enter card number here _____ and print information below.

NAME	DEPARTMENT	DATE TRANSMITTED	REPLY REQUESTED YES/NO

EXAMPLE
DATA SHEET #330-225
4-14-905VOLUNTARY STATEMENT
SECURITY DEPARTMENT

- (1) Date 2/26/90 19 90 (2) Time 9:30 (3) Place Low Voltage
- (4) Name of Person Giving Statement: DONNIE WILLIAMS
- (5) Address: 820 session Road Soperston Ga
- (6) Work/Home Phone Number: 912-529-6569 / 3361
- (7) The following information is given voluntarily:

I Drove service truck into low
voltage swiwt yard. To check fuel in
welder. The posion I stop Had the
pole in the blind. when I return, to
truck and BACK into pole

JOB TITLE operatorSUPERVISORS NAME/WORK EXTENSION Ronnie Phillips3361EMPLOYED BY E + C D, G.P.C.

Page of Pages

EXAMPLE
DATA SHEET #3

Page of ___ Pages

STATEMENT CONTINUATION

12
3/17/90

I further state that I have read this entire statement, initialed all pages and corrections, and signed this statement and that it is correct and true as written.

(8) Signed at 9146, this 20 day of March, 1990

(9) WITNESSES:

J.C. [Signature]
(Signature)

SARVIS GA. 30456
(Address)

[Signature]
(Signature)

[Signature]
(Address)

(10) [Signature]
(Signature of person giving statement)

EXAMPLE
DATA SHEET #3

VOLUNTARY STATEMENT
SECURITY DEPARTMENT

- (1) Date 3/20 19 90 (2) Time 1306 (3) Place PES 3
- (4) Name of Person Giving Statement: BERRY, Richard D.
- (5) Address: Rt. 1, Box 215, 201605, GA 30833
- (6) Work/Home Phone Number: work# 3777 / Home# 407 (547-6757)
- (7) The following information is given voluntarily:

I WAS ESCORTING MR WHITE TO PICK UP EQUIPMENT. HE WENT INTO THE SWITCH YARD ON THE NORTH SIDE OF THE TURBINE BUILDING TO PICK UP A COMPRESSOR (WELDING). THE COMPRESSOR WAS FULL, SO WE BEGAN TO BACK OUT OF THE SWITCH YARD AND HE BACKED INTO A PILE IN THE SWITCH YARD AND TOOK A CASE. HE STATED THAT IT WAS IN HIS BELT BUT I DID NOT JUST DIDN'T SEE IT

JOB TITLE 2262 Nuclear Security Dept
 SUPERVISORS NAME/WORK EXTENSION James Gibson EXT# 3777
 EMPLOYED BY GEORGIA POWER COMPANY Page of Pages

EXAMPLE
DATA SHEET #3

Page of ___ Pages

STATEMENT CONTINUATION

NO
ENTRY

I further state that I have read this entire statement, initialed all pages and corrections, and signed this statement and that it is correct and true as written.

(8) Signed at _____, this _____ day of _____, 19____.

(9) WITNESSES:

(10) _____
(Signature of person giving statement)

(Signature)

(Address)

(Signature)

(Address)

Diesel Line etc

✓ 0105 585

✓ 0625 PPEO

✓ 2101 5850

✓ 2564

✓ 0471 5850

✓ 1129 5850

✓ 1139 10000

✓ 2383 5850

✓ 0224 5850

✓ 0238 1815

✓ 0682 5850

✓ 02362 5850

✓ 00818 5850

✓ 02378 5850

✓ 2411 5850

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1000

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5850

Faint handwritten notes and markings on the right side of the page, including names and dates.

✓ ~~Frankley~~ 0436 R Page 0492
 ✓ Chestnut 2867 R. Sammons out
 ✓ T Jones 0349
 ✓ B Burmeister 0583 - TSC
 ✓ P. Jenkins 757
 ✓ G Gasser 2686 ✓ Humphrey 379
 ✓ Q. Hopkins 0667
 ✓ G. Bockhold 00001
 ✓ Howard 1053
 ✓ G. Soodrum 2478
 ✓ J. Morris 2181
 ✓ S. Pettit 1790
 ✓ D. More 0463
 ✓ S. Douglas 0194
 ✓ B. Ouellette 0289
 ✓ R. Smith 449
 ✓ Loftin 442
 ✓ D. Walker 1060
 ✓ C. Ebert 2425
 ✓ P. Vannier 0319
 ✓ Vineyard 484
 ✓ John R. 0294
 ✓ Snyder 529
 ✓ D. Quirk 660
 ✓ Christensen 0301
 ✓ Bishop 605
 ✓ Williams, H 1332
 ✓ Rhuland J 1615
 ✓ K-E Sawatzwelder 589
 A. Anderson 340

Control Room

✓ W. L. Dunn
 ✓ H. Shuman
 ✓ Sweet
 ✓ Dyer

0189

526

0525

196

2201

2576

3118

3720

3888

4550

5020

5800

5990

7110

7110

7110

7110

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Kitchener PEO's

✓ Hutton C	1859		
✓ Mosley B	2723		
✓ Manley, Leon	4180		
✓ G. Jenkins	2816		
✓ R. Bouchard	0540		
✓ J. Waters	1055		
✓ D. Gandy	2094		
✓ M. Newsome	2926		
✓ R. Smith	3112		
✓ M. Collins	2670		
✓ J. Cobb	1666		
✓ C. Grant	0285		
✓ Brantley	2076		
✓ Sheffield	0433		
✓ R. McDaniel	2054		
✓ Leadle	2381		
✓ Weaver	1036		a
✓ Manley, E	2729		404 3315089
Ever Hubble	0479	Aug	Ann Bowler

D.S.C. ACCOUNTABILITY

DATE 3/20/90

BADGE NUMBER	NAME	BADGE NUMBER	NAME
NO-5621	Patrick J. Ryan / Aud	NO-	
NO-227	Mary S. Lee /		
NO-4131	Kellen Robert / J.A. Kingston		
NO-360	Joe E. Wilson /		

O.S.C. ACCOUNTABILITY

DATE 3-20-77

BADGE NUMBER	NAME	BADGE NUMBER	NAME
NO-207	FRANCOIS		
NO-224	VILLANOVA		
NO-412			
NO-491	D SCHROEDER		
NO-12	T CLARK		
NO-223	R WOOD		
NO-753	L BULLY		
52072	T.M. WRIGHT		
NO-243	T.M. KITZHEIS		
NO-710	M. MACKER		
NO-693	M.D. DUNN		
NO-228	C.D. MCKINNEY		
NO-531	T.M. MACKER		
NO-4055	JASPER TAYLOR		
NO-4032	ALLEN CAMPBELL		
NO-432	TERRIE BENTON		
NO-1950	RICH YARNALL		
NO-741	G. COSKRELL		
NO-555	R. BARLOW		
NO-891	TEANNA CARR		

O.S.C. ACCOUNTABILITY

DATE 3-20-90

BADGE NUMBER	NAME		BADGE NUMBER	NAME
NO-	LAKE	/	NO-	
564	M.T. RAYBURN	/		
527	A.D. Cooper	/		
601	Mr. R. [unclear]	/		
127	Wm. HEATH	/		
813	Lamm Dean	/		
127	FRANCES	/		
1000	L. [unclear]	/		
628	D. Thompson	/		
716	J. [unclear]	/		
1665	W. Langell	/		
425	M. [unclear]	/		
149	W.B. Holcomb	/		
526	S.P. HICKINS	/		
273	H.E. Jeffers	/		
N0106	Brent Ansley	/		
697	Allen A. A	/		
544027	Ed Bellair	/		
564045	FRANK [unclear]	/		
564293	ALVIN KINGSLEY	/		
4164	WARREN ACKER	/		
4150	JOSEPH CRUYER	/		
561915	FRANK [unclear]	/		

O.S.C. ACCOUNTABILITY

DATE 3/20/60

BADGE NUMBER	NAME
NO-30	Louann Stokes

BADGE NUMBER	NAME
NO-	

O.S.C. ACCOUNTABILITY

DATE 2 20 90

BADGE NUMBER

NAME

BADGE NUMBER

NAME

NO-135	Tan Capolone	/	✓
418	Stanley Kirk	/	✓
1194	SHELTON SAYLES	/	✓
5103	Douglas H. Hill	/	✓
950	Tracy Rowlett	/	✓
NO-246	Betty Clark	/	✓
NO 1119	MICHAEL PORTER	/	✓
NO-852	John Rowlett	/	✓
NO-026	GARY HEATH	/	✓
NO 1030	Jack Cole	/	✓
NO 1020	Gary B Barwick	/	✓
NO-890	Summi Williams	/	✓
NO 352	Bill K. White	/	✓
NO 1225	N.W. Hendrix	/	✓
NO 203	J.M. Coffey	/	✓
NO 232	MARK SAMPSON	/	✓
NO 198	JERRY LUCOT	/	✓
SG-1951	STEVEN McLeod	/	✓
SG 294	JEFFRIE FISHER	/	✓
NO 588	CHARTER, M.R.	/	✓
NO 530	HEATH, A.N.	/	✓
NO 430	BRINKLEY	Contract	Rm
0776	WH. LEWIS		
1216	Clifton		
2360	WADON		
1990	Kaiser	Contract	VT

NO-			

Bill Baker	NO 5VL	
Steve Garrison	NO 2413	
Ruby Weyers	NO 829	
Dana Gustafson	NO 767	
Darry Brown	NO 240	
Warner Davis	NO 923	
James Darrell	NO 245	
Mike Silva	NO 425	
Shawn Morris	NO 497	
Thomas Willis	NO 402	LIT+C 1013
Robert Wolder	NO-1139	
Waymond Carter	NO-598	
Harry Birt	NO-063	
Leanne Kuo		
James Bandy Grandy	NO 504	
Dennis Couch	SB-4182	
Theodore Davis	SB-4044	
Dennis Hothkins	NO-386	
Gary Mathlage	NO-199	
Larry Lyda	NO-128	
Carl Kyle	NO-244	
Waymond Hutcherson	NO-158	
Thomas Howe	NO-436	
WoodrIDGE Holcomb	NO-149	
Kenneth Frippe	NO-875	
Arnos Cordell	NO-582	
G A Thompson	NO 302	

LINE NO	ARRIVAL DATE	ARRIVAL TIME	DEPARTURE DATE	DEPARTURE TIME	NAME	AFFILIATION/ ORGANIZATION	BADGE NO	PROOF OF IDENTIFICATION	OFFICERS INITIALS	PO
20	3-1-76	1310	3-2-76		Merchase Conner	GPC	1/A	(C. S. S.)	J.	(C)
21	3-20-80	1310	3-1-76		Dan Roebuck	GPC	N/A	CO. ID	AW	GPC
22	3-2-76	1330	3-1-76		W.E. Lynch	GPC	1/A	(C. S. S.)	J.	GR
					Christy Cathy	J.Merc				

LINE NO	ARRIVAL DATE TIME	DEPARTURE DATE TIME	NAME	AFFILIATION/ ORGANIZATION	BADGE NO	PROOF OF IDENTIFICATION	OFFICERS INITIALS	POSIT
		106	OPENED 1045 hrs	03-20-70		J.A.		
1	3:00-90	1050	G.S. McCutcheon	G.P.C.	101	SC. DIV. C.C.	J.P.	CH
2	3:20-90	1150	HARRY WYSE	G.P.C.	N/A	Company ID	J.P.	SECRET
3	3:00-90	1050	Gaulter Duns	G.P.C.	N/A	Company ID	J.P.	SECRET
4	3:20-90	1050	Steve Fiesler	G.P.C.	170	Company ID	J.P.	SECRET
5	3:00-90	1050	Daniel Thompson	G.P.C.	N/A	Company ID	J.P.	SECRET
6	3:00-90	1050	Henry A. Block	G.P.C.	N/A	Company ID	J.P.	SECRET
7	3:00-90	1050	Thomas J. Sherman	G.P.C.	N/A	Company ID	J.P.	SECRET
8	3:00-90	1050	Alfred J. Munnick	G.P.C.	N/A	Company ID	J.P.	SECRET
9	3:20-90	1115	Wesley H. Reynolds	G.P.C.	174	Company ID	J.P.	SECRET
10	3:20-90	1115	L.N. Brooks	G.P.C.	182	Company ID	J.P.	SECRET
11	3:20-90	1115	John Abbott	G.P.C.	N/A	Company ID	J.P.	SECRET
12	3:20-90	1115	Howard L. ...	G.P.C.	N/A	Company ID	J.P.	SECRET
13	3:20-90	1115	S.W. Carter	G.P.C.	198	Company ID	J.P.	SECRET
14	3:20-90	1115	Compton ...	G.P.C.	N/A	Company ID	J.P.	SECRET
15	3:20-90	1117	Keely J. ...	G.P.C.	163	Company ID	J.P.	SECRET
16	3:20-90	1117	...	G.P.C.	171	Company ID	J.P.	SECRET
17	3:20-90	1115	...	G.P.C.	N/A	Company ID	J.P.	SECRET
18	3:20-90	1115	R.F.W. ...	G.P.C.	N/A	Company ID	J.P.	SECRET
19	3:20-90	1115	R.L. ...	G.P.C.	N/A	Company ID	J.P.	SECRET

Georgia Power Company (GPC)

No.: JNR- 1
Date: 2/20/90
Time: 3:45 PM

Federal Emergency Management Agency (FEMA)
Georgia Emergency Management Agency (GEMA)
Ga. Dept. of Natural Resources,
Environmental Protection Div. (DNREPD)
South Carolina Emergency/
Preparedness Division (SCEMA)
Savannah River Plant
Burke County
Aiken County
Barnwell County
Allendale County

An emergency at the Vogtle Electric Generating Plant near Waynesboro was ended at 1:47 p.m. EST today. Both units are shut down, and the plant is stable.

There has been no release of radioactive material. At no time was the public in any danger.

A Site Area Emergency was declared at 10:00 a.m. EST today when a construction vehicle backed into a power pole in the plant's switchyard, resulting in a loss of on-site and off-site electrical power to Unit 1. Site Area Emergency is the second most serious emergency classification.

The event was downgraded to Alert status at 10:30 a.m. EST, after a backup diesel generator restored power to essential plant systems.

No one was injured as a result of the incident.

A Site Area Emergency is declared whenever on- and off-site power is lost for more than 15 minutes. At the time of the incident, Unit 1 was off line for a scheduled re-fueling outage.

Shortly after 10 a.m., non-essential plant personnel were assembled and accounted for in accordance with emergency operating procedures. There were no evacuations of personnel.

Unit 2 tripped off line due to power fluctuations associated with Unit 1; however, Unit 2 did not experience a loss of electrical power. Unit 2 remains shut down.

CONTROL NO. 19001576 00

05-108-70

WORK INSTRUCTIONS:

CAUTION

ALL PERSONNEL INVOLVED IN THE TESTING MUST READ AND UNDERSTAND THE ATTACHED CAUTION STATEMENT. DURING THE ENGINE START AND SUBSEQUENT TESTING IF ANY TRIPS OCCUR OTHER THAN PLANNED TRIPS OR OBSERVE OTHER SIGNIFICANT MALFUNCTION, STOP THE TEST AND NOTIFY IIT TEAM. TEST WILL NOT CONTINUE WITHOUT THE CONCURRENCE FROM IIT TEAM MEMBER. ANY PORTION OF THE TESTING THAT COULD IMPACT THE RELIABILITY AND SAFETY OF THE D/G SYSTEMS MUST BE EVALUATED BY GA POWER COMPANY PRIOR TO TESTING. IF A TEST NEEDS TO BE STOPPED, ENSURE ALL EQUIPMENT IS PLACED IN A SAFE POSITION.

PERFORM ENGINE LOGIC TESTING PER PROCEDURE 27563-C, REV 2. COOPER ENERGY SERVICES PERSONNEL WILL BE PERFORMING APPLICABLE PORTIONS OF THE PROCEDURE WITH ASSISTANCE FROM GPC PERSONNEL, AS REQUIRED. THE ELECTRICAL PORTIONS OF THE PROCEDURE NEED NOT BE RETESTED. ADDITIONAL INSTRUMENTATION MAY BE CONNECTED BY TEST PERSONNEL TO AID IN TROUBLESHOOTING ANY INSTRUMENTATION CONNECTED OR ADJUSTMENTS MADE SHALL BE DOCUMENTED COMPLETE ON THIS MWO. DOCUMENT ANY PROBLEMS ENCOUNTERED WHILE PERFORMING THIS TEST.

NOTE:

PRELUBE THE TURBOCHARGER PRIOR TO EACH START. TURN ALL 3 VIDEO CAMERAS AND RECORDERS TO RECORD THE ANNUNCIATORS AND OTHER ENGINE & GENERATOR PARAMETERS.

STEP 1: FOLLOWING THE LOGIC TEST THE ENGINE WILL BE STARTED IN THE EMERGENCY MODE AND A LEAK TEST PERFORMED ON THESE LINES.

E-10A - TRIP LOW PRESSURE LUBE OIL

B " " " " "

C " " " " "

E-16A - TRIP HIGH TEMPERATURE JACKET WATER

B - " " " " "

C - " " " " "

E-68 - TRIP HIGH PRESSURE CRANKCASE

E-92 - TRIP LOW PRESSURE TURBO OIL

E-14 - TRIP LOW PRESSURE JACKET WATER

E-23H - TRIP HIGH VIBRATION

E-19 - TRIP HIGH TEMPERATURE ENGINE BEARINGS

E-18 - TRIP HIGH TEMPERATURE LUBE OIL.

AFTER RECONNECTING THE LINES FOLLOWING THE TEST, PERFORM LEAK DETECTION BY SNOOP DETECTOR AND FIX ANY LEAKS.

TEST FOR LEAKAGE BY DISCONNECTING TUBING AT CONTROL PANEL BULKHEAD AND CONNECTING PNEUMATIC BUBBLE TESTER. OBSERVE TESTER FOR AIR FLOW WHEN LINE IS PRESSURIZED. RESTORE TUBING CONNECTION AT BULKHEAD AND CONTINUE WITH NEXT INSTRUMENT LINE.

STARTING TIME BETWEEN EACH START MUST BE AT LEAST 10 MIN. RECORD THE TIME IN WORKORDER.

CONTROL NO. 19001576 00

----- PRIOR TO PERFORM MULTIPLE START TURN BOTH AIR COMPRESSORS
OFF AND NOTE IN WORKORDER. AFTER THE MULTIPLE START IS COM
WORK INSTRUCTIONS: PLETED TURN THE AIR COMPRESSORS ON & PLACE IN AUTO AND
RECORD IN WORKORDER. NOTE THE STARTING AIR PRESSURE AT THE
BEGINNING OF EACH MULTIPLE START AND AFTER EACH STOPPING/
TRIPPING.

STEP #2 NORMAL START
-TRIP BY HI-TEMP LUBE OIL

STEP #3 LOSP START (JUMPER IN GEN CONTROL PANEL 211 TO 213)
-TRIP BY HIGH VIBRATION

STEP #4 NORMAL START
-TRIP BY HIGH PRESS CRANKCASE

STEP #5 SI START (JUMPER IN GEN. CONTROL PANEL 204 TO 209)
-TRIP BY 2 OF 3 L. O. PRESSURE

AFTER RECONNECTING THE LINES FOLLOWING THE BUBBLER TEST PERFORM
LEAK DETECTION BY SNOOP DETECTOR AND FIX ANY LEAKS.

NOTE

THE AREA OF TESTING SHALL BE ROPED AND ENTRANCE LIMITED TO
ESSENTIAL PERSONNEL AS DETERMINED BY COOPER REPRESENTATIVES
AND GPC ENGINEERING.

GPC ENGINEERING SHALL BE PRESENT FOR ALL TESTING AND QC
REPRESENTATIVE PRESENT AS REQUIRED.

IMPORTANT

EXTREME CAUTION MUST BE TAKEN TO ENSURE THAT THE WORK PERFORMED BY THIS MWO DOES NOT IN ANY WAY CAUSE A LOSS OF INFORMATION CONCERNING THE CAUSE OR CAUSES THAT LED TO THE TRIPS OF EDG 1A ON MARCH 20, 1990 OR THE LOW JACKET WATER PRESSURE AND LOW TURBO OIL PRESSURE ALARMS FOR EDG 1B ON MARCH 23, 1990.

CARE SHOULD BE TAKEN TO PRESERVE THE AS FOUND CONDITION OF REPLACED COMPONENTS (E.G., PREVENTION OF DAMAGE DUE TO JARRING OR DROPPING), AND TO CAREFULLY DOCUMENT ANY ABNORMAL OR UNUSUAL CONDITIONS THAT COULD POTENTIALLY AFFECT COMPONENT OPERATION. ALL TESTING OR CALIBRATION ACTIVITIES SHOULD BE CAREFULLY OBSERVED AND ANY ABNORMAL OPERATION OR MALFUNCTION OF EDG PARTS SHOULD BE CAREFULLY AND THOROUGHLY DOCUMENTED.