Anaconda Ericsson

Wire and Cable Division

Quality Assurance Manual For Generating Station Cables

TOPICAL REPORT
AWC-75-A REVISION 3

BOOK NO. 22

Anaconda Ericsson

Wire and Cable Division

WRITTEN BY David D Bostrom
D. O. BOSTROM
Manager of Quality Assurance
Wire & Cable

APPROVED BY _____ DATE 4/21/81
W. J. PLATE
President
Wire & Cable

APPROVED BY G. N. Benjamin DATE 4/9/81
G. N. BENJAMIN
Vice President
Manufacturing

APPROVED BY R. S. Sinatra DATE 4/30/81
R. S. SINATRA
Vice President
UMI Markets

APPROVED BY R. H. Filius DATE 4-28-81
R. H. FILIUS
Vice President
Continental Wire & Cable
York, Pennsylvania

APPROVED BY W. L. Yeager DATE 4-20-81
W. L. YEAGER
Manufacturing
Manager

APPROVED BY R. C. Wolf DATE 4-17-81
R. C. WOLF
Plant Manager
Marion, Indiana

APPROVED BY R. J. Montagno DATE 4-30-81
R. J. MONTAGNO
Plant Manager
Continental Wire & Cable
York, Pennsylvania

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MAR 2 0 1981

Mr. David O. Bostrom
Manager Quality Assurance
Anaconda-Ericsson Inc.
Wire and Cable Division
East 8th Street
Marion, IN 46952

Dear Mr. Bostrom:

SUBJECT: ACCEPTANCE OF REVISION 3 OF AWC-75-A

We have reviewed the changes to AWC-75-A proposed in your letter of December 19, 1980 and clarified in your letter of March 13, 1981. Our review of your proposed changes was conducted using the acceptance criteria in Revision 1 of our Standard Review Plan (NUREG-75/087, Section 17.1) as applicable to the Wire and Cable Division of Anaconda-Ericsson Inc.

Our review indicates that the proposed changes are acceptable. We find that the revised topical report describes an acceptable quality assurance program for the design, procurement, and fabrication activities that are within Anaconda-Ericsson Inc.'s scope of work for nuclear power plants.

Please indicate the changes by a bar in the margin, identify the report as Revision 3 of AWC-75-A, date the revised report March 1981, include a copy of this acceptance letter and our evaluation in each report, and transmit 34 copies to the Nuclear Regulatory Commission.

Should you have any questions regarding our review or if we can provide assistance, please contact Mr. Jack Spraul on (301) 492-7741.

Sincerely,

Walter P. Haass

Walter P. Haass, Chief
Quality Assurance Branch
Division of Engineering

Enclosure:
Topical Report Evaluation

TOPICAL REPORT EVALUATION

Report Number: AWC-75-A, Revision 3, Nonproprietary
Report Title: Quality Assurance For Generating Station Cables
Report Date: March 1981
Originating Organization: Anaconda-Ericsson Inc., Wire and Cable Division
Reviewed By: Quality Assurance Branch

SUMMARY OF TOPICAL REPORT

Topical Report AWC-75-A, Revision 3, dated March 1981, described the quality assurance (QA) program which Anaconda-Ericsson Inc., Wire and Cable Division applies to the design, procurement, and fabrication activities involving safety-related generating station cables used in nuclear power plants. AWC-75-A, Revision 3 commits Anaconda-Ericsson Inc., Wire and Cable Division to comply with the requirements of Appendix B to 10 CFR Part 50 and to follow the QA guidance provided by the applicable Regulatory Guides.

Anaconda-Ericsson Inc., Wire and Cable Division has provided for our evaluation a detailed organizational description of those individuals and groups involved in carrying out activities required by the QA program and a delineation of duties, responsibilities, and authority of those organizational elements involved in the QA program. AWC-75-A, Revision 3 contains a description of the measures used to carry out the Anaconda-Ericsson Inc., Wire and Cable Division QA program activities and describes how applicable requirements of Appendix B to 10 CFR Part 50 will be satisfied by the administration and implementation of these measures.

SUMMARY OF REGULATORY EVALUATION

We have evaluated the QA program and the organizations responsible for QA functions as described in AWC-75-A, Revision 3. We find that QA policy and direction originate at an acceptably high management level and are effectively communicated to other parts of the organization. Those performing QA functions have responsibility and authority commensurate with their duties in implementing the QA program. We also find that measures have been established, to be implemented by written procedures and instructions, which satisfy each of the criteria of Appendix B in an acceptable manner.

Based on our review and evaluation of AWC-75-A, Revision 3 we conclude that:

1. The organizations and persons performing QA functions in Anaconda-Ericsson Inc., Wire and Cable Division have the required independence and authority to effectively carry out the QA program without undue influence from those directly responsible for costs and schedules, and

2. The Anaconda-Ericsson Inc., Wire and Cable Division QA program contains the necessary requirements, procedures, and controls which when properly implemented will comply with the requirements of Appendix B to 10 CFR Part 50 and applicable Regulatory Guides.

REGULATORY POSITION

It is the staff's position that the Anaconda-Ericsson Inc., Wire and Cable Division quality assurance program described in Topical Report AWC-75-A, Revision 3, dated March 1981 is acceptable for use in the design, procurement, and fabrication phases of generating station cables used in nuclear power plants.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

CONTENTS

Date March, 1981

TABLE OF CONTENTS

PART I

PART II

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

PART II (Continued)

This manual contains the description of the Quality Assurance Program relative to generating station cables manufactured at the Marion, Indiana and York, Pennsylvania plants of Anaconda-Ericsson Inc., Wire & Cable Division.

This manual is based on the 18 point criteria identified as the Quality Assurance Criteria for Nuclear Power Plants; Licensing of Production and Utilization Facilities, Part 50, 10-CFR 50 Appendix B and Quality Assurance Program Requirements for Nuclear Power Plants, ANSI N45.2-1977. Throughout this manual, the Quality Assurance Criteria 10-CFR 50 will be listed by sections and those points which the Marion and York plants have incorporated to comply with those requirements will follow the quotation. The Quality Assurance Criteria will be in italics so as to identify them as being copies from the original.

Specific test methods and inspection procedures are contained in Anaconda-Ericsson's inspection standards which cover all policies, raw materials, process, final and special inspections, test methods, data forms, and inspection procedures. These manuals may be examined by customer's representatives who have need for the information contained in them, but they are not available for distribution outside of the Company.

This manual is divided into three parts. The first part contains the sections detailing the quality assurance system. The second part contains examples of exhibits which are referenced in the first and third parts. The third part is a checklist which compares the individual requirements of 10-CFR 50 and ANSI N45.2-1977 with those paragraphs, sections and exhibits which specifically address themselves to the individual requirement.

The Wire & Cable Division of Anaconda-Ericsson reserves the right to change or modify this Quality Assurance Manual whenever such modification is deemed necessary in order to comply with any government ruling, directive or order, or Anaconda-Ericsson policy.

Throughout this manual, the terms "Quality Assurance" and "Inspection" are used interchangeably and the terms "sign" and "initial" are synonymous.

Whenever a title is used in this manual such as Plant Manager, Quality Assurance Manager, Engineering Supervisor, etc., the intent is that the function is to be performed by that individual or his duly authorized representative.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

10CFR50 APPENDIX B

Every applicant for a construction permit is required by the provisions of §50.34 to include in its preliminary safety analysis report a description of the Quality Assurance Program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility. Every applicant for an operating license is required to include, in its final safety analysis report, information pertaining to the managerial and administrative controls to be used to assure safe operation.

Nuclear power plants and fuel reprocessing plants include structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. This appendix establishes quality assurance requirements for the design, construction, and operation of those structures, systems, and components. The pertinent requirements of this appendix apply to all activities affecting the safety-related functions of those structures, systems, and components; these activities include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying.

As used in this appendix, "quality assurance" comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

1.0 ORGANIZATION

10CFR50 APPENDIX B

The applicant[1] shall be responsible for the establishment and execution of the Quality Assurance Program. The applicant may delegate to others, such as contractors, agents, or consultants, the work of establishing and executing the Quality Assurance Program, or any part thereof, but shall retain responsibility therefor. The authority and duties of persons and organizations performing activities affecting the safety-related functions of structures, systems and components shall be clearly established and delineated in writing. These activites include both the performing functions of attaining quality objectives and the quality assurance functions. The quality assurance functions are those of (a) assuring that an appropriate Quality Assurance Program is established and effectively executed and (b) verifying, such as by checking, auditing, and inspection, that activities affecting the safety-related functions have been correctly performed. The persons and organizations performing quality assurance functions shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; and to verify implementation of solutions. Such persons and organizations performing quality assurance functions shall report to a management level such that this required authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations, are provided. Because of the many variables involved, such as the number of personnel, the type of activity being performed, and the location or locations where activities are performed, the organizational structure for executing the Quality Assurance Program may take various forms provided that the persons and organizations assigned the quality assurance functions have this required authority and organizational freedom. Irrespective of the organizational structure, the individual(s) assigned the responsibility for assuring effective execution of any portion of the Quality Assurance Program at any location where activities subject to this Appendix are being performed shall have direct access to such levels of management as may be necessary to perform this function.

[1]While the term "applicant" is used in these criteria, the requirements are, of course, applicable after such a person has received a license to construct and operate a nuclear power plant or a fuel reprocessing plant. These criteria will also be used for guidance in evaluating the adequacy of Quality Assurance Programs in use by holders of construction permits and operating licenses.

1.1 Anaconda-Ericsson Inc., Wire & Cable Division operates a multi-plant organization from corporate offices in Greenwich, Connecticut.

1.2 Attached to the headquarters are staff groups such as Quality Assurance, Manufacturing, Purchasing, Engineering, etc., who direct or coordinate the work of the plants.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

1.0 ORGANIZATION (Continued)

1.3 Wire & Cable Quality Assurance Organization

1.3.1 The Wire & Cable Manager of Quality Assurance shall report to the Wire & Cable Division President for administration and functional direction.

1.3.2 The Wire & Cable Manager of Quality Assurance has the following authorities and responsibilities:

1.3.2.1 Establish and publish a Wire & Cable Quality Assurance Policy Manual for use within the Wire & Cable facilities. These Wire & Cable policies and subsequent revisions shall be submitted to the President of the Wire & Cable Division for his approval before publication.

1.3.2.2 Establish and maintain a quality assurance system within all areas in the Wire & Cable Division which implements the quality assurance policies.

1.3.2.3 Direct the functional operations of the Plant Quality Assurance Managers. The functional operations consist of all matters dealing with test frequencies, inspection procedures, test methods, apparatus, equipment, acceptance and rejection, and compliance.

1.3.2.4 Maintain surveillance and conduct quality assurance audits throughout the Wire & Cable facilities to verify compliance with quality assurance policies and system requirements. (See Section #18)

1.3.2.4.1 Audits shall be conducted at least annually at all Wire & Cable manufacturing facilities and as necessary at other Wire & Cable operations.

1.0 ORGANIZATION (Continued)

1.3.2.4.2 A report shall be prepared for each audit showing results of each audit, recommendations and implemented corrective action. One copy of each report shall be sent to the President of Wire & Cable and others as required.

1.3.2.5 Attend and report on the adequacy, scope and status of the quality program to all members of the Wire & Cable Division at monthly staff meetings.

1.3.2.6 Settle disputes concerning compliance with specifications when such matters are referred to him by the manufacturing plants.

1.3.2.7 Maintain the CCA (Customer Complaint Analysis) procedures in accordance with Company policy. This will include the reporting and follow-up procedures on Customer Complaint Analysis.

1.3.2.8 Maintain liaison with standards and specification groups.

1.3.2.9 Issue periodic quality reports, at least quarterly to the Wire & Cable President.

1.3.2.10 Promote quality consciousness at all levels in the Wire & Cable operations.

1.3.2.11 Issue an organization chart showing the Wire & Cable functional and administrative relationships on quality matters. (Exhibit #1 and #2)

1.3.3 Wire & Cable Manager of Quality Assurance shall be certified in accordance with Level III as specified in USNRC Regulatory Guide 1.58 amended as follows:

1.3.3.1 Graduate of a four-year accredited engineering or science, college or university, plus five years of experience (or high school graduate with ten years experience) in quality assurance. At least two years of this experience shall be associated with wire and cable for use in nuclear generating stations or if not, the individual shall have training sufficient to acquaint himself thoroughly with the safety aspects of wire and cable for use in nuclear generating stations.

1.0 ORGANIZATION (Continued)

1.4 Plant Quality Assurance Organization.

1.4.1 Each plant shall have a Quality Assurance Manager who shall have clear access to and report to a level of management within his operation for administrative operation of his department which will grant him sufficient authority to ensure that quality requirements are consistently maintained and give freedom to make quality decisions without pressure or bias.

1.4.1.1 Administrative operation refers to those items described as hours of work, pay, scheduling, union activities, staffing, etc.

1.4.2 Each Plant Quality Assurance Manager shall report to the Wire & Cable Manager of Quality Assurance for the functional operation of his department.

1.4.2.1 Functional operation refers to those matters dealing with test frequencies, inspection procedures, test methods, apparatus, equipment, acceptance, rejection, disposition and compliance.

1.4.3 Each Plant Quality Assurance Manager shall have the following authorities and responsibilities.

1.4.3.1 Assist the Wire & Cable Manager of Quality Assurance in the implementation of Wire & Cable Quality Assurance Policies.

1.4.3.2 Assist the Wire & Cable Manager of Quality Assurance in establishing a quality assurance system which will conform to the requirements stated in this document; then maintain the system.

1.4.3.3 Establish relations and maintain liaison with customers' quality assurance representatives, and assist in the conduct of facilities surveys by customers' quality assurance representatives.

1.0 ORGANIZATION (Continued)

1.4.3.4 Make recommendations to the Wire & Cable Manager of Quality Assurance for improvements in equipment, procedures, test methods, operating methods, etc.

1.4.3.5 Conduct internal quality audits and make reports as directed by the Wire & Cable Manager of Quality Assurance.

1.4.3.6 Maintain a continuing training program for all quality assurance personnel.

1.4.3.7 Promote quality consciousness at all levels in the manufacturing plant.

1.4.4 Plant Quality Assurance Manager shall be certified in accordance with Level II as specified in USNRC Regulatory Guide 1.58 amended as follows:

1.4.4.1 Graduate of a four-year accredited engineering or science college or university, plus two years of experience (or high school graduate plus four years of experience) in quality assurance, including testing or inspection, or both of wire and cable.

1.5 Quality Assurance Personnel.

1.5.1 Staffing - Organization

1.5.1.1 The Plant Manager shall consult with the Wire & Cable Manager of Quality Assurance and obtain his concurrence prior to staffing or modifying supervisory positions in the Quality Assurance Department. Nonconcurrence shall be resolved by the Wire & Cable President.

1.5.2 Personnel Staffing

1.5.2.1 It is the responsibility of the Plant Quality Assurance Manager to coordinate the availability of personnel with his Plant Manager so as to have sufficient personnel available in the department to conduct all the required inspections and tests.

1.0 ORGANIZATION (Continued)

1.5.3 Selection of Inspection Personnel

1.5.3.1 Personnel employed for inspection, examination and testing shall have experience or be given training in the performance of the inspections and tests that they are required to perform. They shall be familiar with the inspection, examination and testing equipment to be employed and shall have demonstrated proficiency in their use. Documentation will be maintained of each individual person verifying that proficiency has been established. No wage incentive plan shall be allowed for compensation of personnel in the Quality Assurance Department.

1.5.3.2 All plant Quality Assurance, Quality Control, Inspection and Test personnel report directly to the Plant Quality Assurance Manager and to no other function within the manufacturing plant.

1.6 Plant Engineering Organization.

1.6.1 The Plant Engineering Organization has the following authorities and responsibilities:

1.6.1.1 To establish and maintain systems which comply with those sections of this Quality Assurance Manual which are applicable to the Engineering Organizational function.

1.6.1.2 To maintain liaison with the Quality Assurance Organization.

1.6.1.3 To establish and direct the operation of Process and/or Product Engineers. The function of the Process and/or Product Engineer is to provide engineering assistance to the manufacturing personnel and develop new processes from a manufacturing aspect. In conjunction with these responsibilities, manufacturing standards and/or manufacturing instructions are issued by the Process and/or Product Engineers and are issued only after approval by an authority level with the responsibility for that function.

1.0 ORGANIZATION (Continued)

1.7 Product Design Organization.

1.7.1 The Product Design Organizations have the following authorities and responsibilities:

1.7.1.1 To establish and maintain systems which comply with those sections of this Quality Assurance Manual which are applicable to the Design Organization functions.

1.7.1.2 To maintain liaison with the Quality Assurance Organizations.

1.7.1.3 To establish and direct the operation of the designers. The function of the designers is to prepare the design sheet which will be used for manufacturing the product for each customer's order. The Design Sheet, MSO/EN/SI, is prepared in accordance with Section 3, paragraph 3.2 of this manual.

1.8 Wire & Cable Purchasing Organization.

1.8.1 Anaconda-Ericsson Inc., Wire & Cable Division Purchasing Organization as a centrally-controlled decentralized operation consists of the General Purchasing personnel and local Purchasing personnel situated at various plants.

1.8.2 Personnel with purchasing responsibilities at other locations such as Distribution Centers although not reporting to the General Purchasing Department are bound by the Purchasing Policy when applicable.

1.8.3 The General Purchasing staff is directed by a Vice-President of Purchasing who reports to the President of the Wire & Cable Division. He is responsible to Management for the performance of the purchasing organization. He establishes purchasing policy procedures and is responsible for guiding and assisting local purchasing and carrying out the purchasing function.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

1.0 ORGANIZATION (Continued)

1.9 Plant Purchasing Organization.

1.9.1 The local Purchasing Agent has the following authorities and responsibilites:

1.9.1.1 To establish and maintain systems which comply with those items of this Quality Assurance Manual which are applicable to the purchasing function.

1.9.1.2 To maintain liaison with the Quality Assurance Organization.

1.9.1.3 To report to their respective managers and are functionally responsible to him for performance of their duties. They are responsible to the Vice-President of Purchasing on all matters pertaining to Company purchasing policy and procedures. The authorities of the local Purchasing Agent are determined by the Vice-President of Purchasing.

1.10 Plant Manufacturing Organization.

1.10.1 The Plant Manufacturing Organization has the following authorities and responsibilities:

1.10.1.1 To establish and maintain systems which comply with those sections of this Quality Assurance Manual which are applicable to the Plant Manufacturing Organization.

1.10.1.2 To maintain liaison with the Quality Assurance Organization.

1.10.1.3 To direct and verify that all manufacturing operations are in accordance with current design and production standards.

1.10.1.4 To direct that only accepted material is used within the manufacturing facility.

1.10.1.5 To verify that standard practices, procedures, and manufacturing standards are complied with totally.

1.0 ORGANIZATION (Continued)

1.11 Organizational Variation.

1.11.1 Manufacturing facilities may consolidate or divide organizational responsibilities so long as function, systems and authorities as described within this manual are maintained. Levels of reporting shall be equivalent to those described within this manual.

2.0 QUALITY ASSURANCE PROGRAM

10CFR50 APPENDIX B

The applicant shall establish at the earliest practicable time, consistent with the schedule for accomplishing the activities, a quality assurance program which complies with the requirements of this Appendix. This program shall be documented by written policies, procedures, or instructions and shall be carried out throughout plant life in accordance with those policies, procedures, or instructions. The applicant shall identify the structures, systems, and components to be covered by the quality assurance program and the major organizations participating in the program together with the designated functions of these organizations. The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems and components to an extent consistent with their importance to safety. Activities affecting quality shall be accomplished under suitably controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanness; and assurance that all prerequisites for the given activity have been satisfied. The program shall take into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection and test. The program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. The applicant shall regularly review the status and adequacy of the quality assurance program. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the quality assurance program which they are executing.

2.1 Quality Policy.

2.1.1 Wire & Cable products of Anaconda-Ericsson Inc., Wire & Cable Division, shall conform to all applicable specified and implied standards of quality, performance, safety and reliability.

2.1.2 Procedures for conformance with all applicable specified and implied standards of quality, performance, safety and reliability shall be implemented at each manufacturing plant as established by Wire & Cable Quality Assurance Headquarters.

2.1.3 Whenever any revisions or modifications are made which are more than editorial changes, the NRC will be notified of these changes in accordance with NUREG-75/087, Standard Review Plan, and provisions will be made for the review and acceptance of the revisions.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.2 Documentation

2.2.1 The quality assurance system shall assure that adequate control including objective evidence of quality is maintained throughout the entire process of manufacturing, from order entry and specification control, through purchasing, receiving, manufacturing, testing, packaging and shipping. This will require the cooperation of the departments performing the above functions but will not otherwise infringe upon the operations of the departments. The requirements in these sections shall be in addition to and not in lieu of other applicable requirements.

2.2.1.1 Objective evidence of quality showing conformance to quality assurance system requirements and applicable specifications shall be maintained at each manufacturing location. Objective evidence is defined as the documentation which has been established and placed on record to show conformance to quality assurance system requirements and applicable specification and contract requirements.

2.2.1.1.1 Records shall be maintained for both conforming and nonconforming products.

2.3 Quality Planning.

2.3.1 Procedures are established for the review of the requirements in each contract, order or changes as necessary to provide for the purchasing, raw materials and manufacturing controls, test procedures, equipment, customer inspections, and documentation necessary to assure complete conformance to contract or order requirements.

2.3.1.1 Quality Assurance shall receive a copy of the mill (plant) and/or customer's order and establish a customer order file.

2.3.1.2 Quality Assurance reviews the order, the contract and specification requirements and the MSO, EN or SI to verify conformance to the order, contract or specification.

2.3.1.2.1 Quality Assurance reviews any change orders to verify conformance to the order, contract, or specification.

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.3.1.3 When required, the Quality Assurance Department shall establish a schedule of visits for customer representatives to check the order at the times established within the contract.

2.3.1.4 Quality Assurance shall establish a cross-check system of tests and inspections to verify that they will be done and to also verify that equipment is available to conduct the tests.

2.3.2 Wire & Cable Quality Assurance Headquarters establishes and publishes quality assurance policies and procedures. An Inspection Procedure Manual and Test Methods Manual describes the procedures to be followed by the inspector in inspecting and testing each product. These procedures are reviewed, revised, updated and expanded as necessary. Inspection Procedure Manuals and Test Method Manuals are issued as controlled copies. Records are maintained to verify that only approved, latest issue copies are in use.

2.4 Procedures.

2.4.1 Inspection procedures are issued by the Wire & Cable Manager of Quality Assurance to each manufacturing plant. They detail all instructions dealing with inspections, tests, record keeping, performance, etc., for a specific material or product necessary to maintain compliance with the designated specification. Inspection procedures are to be made available at each work and inspection station. (Exhibit #23)

2.4.2 An inspection procedure shall be written for standard products, and for non-standard products run in sufficient quantity to justify the use of inspection procedures. Whenever an inspection procedure is issued in a standard accepted industry specification such as ASTM, ANSI, UL, ICEA, AEIC, Government Specifications, etc., these procedures may be used in lieu of internal procedures.

2.4.2.1 Inspection procedures shall cover raw materials, wire drawing, coating, stranding, insulating, and all other manufacturing operations.

2.4.3 Inspection procedures are to be written in terms capable of being understood by the inspectors and test operators.

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.4.3.1 The inspection procedure shall be totally inclusive covering all test and inspection requirements, and written in such a manner that no explanation or interpretation is needed.

2.4.3.2 The inspection procedure shall include all specification tests which are required, and other non-specification tests that the plant may request for control of the manufacturing process and end-product.

2.4.4 Inspection procedures shall not have specification values included as part of the procedures. Specification values must be obtained from the appropriate specification.

2.4.5 It shall be the responsibility of the Plant Quality Assurance Manager to inform the Wire & Cable Manager of Quality Assurance whenever a new inspection procedure is required or whenever an existing inspection procedure needs to be reviewed and revised. The Plant Quality Assurance Manager shall include with this request for a new inspection procedure recommendation of what should be included, an outline of the inspection procedure and details or suggestions which are applicable to the inspection procedure. Inspection procedures will be reviewed and approved by affected plants prior to issue.

2.5 Test Methods.

2.5.1 Test methods are issued by the Wire & Cable Manager of Quality Assurance to each manufacturing plant. Test methods shall be made available for all inspectors at work stations and inspection stations where they are required. (Exhibit #23)

2.5.1.1 Whenever a test method is issued in a standard accepted publication such as ASTM, ANSI, U/L, ICEA, AEIC, Government Specifications, etc., these test methods may be used in lieu of internal methods.

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.5.2 Test methods shall be written for each routine test performed at individual plants.

2.5.2.1 Test methods shall cover the equipment, the specimen and method of performing tests.

2.5.2.2 Special test methods will be written when required.

2.5.3 Test methods are to be written in terms capable of being understood by the inspectors and test operators.

2.5.3.1 The test method shall be totally inclusive covering all of the requirements for conducting a test and written in such a manner that no explanation or interpretation is needed.

2.5.4 Test methods shall not have specification values included as a part of the method. Specification values must be obtained from the appropriate specification.

2.5.5 It shall be the responsibility of the Plant Quality Assurance Manager to inform the Wire & Cable Manager of Quality Assurance whenever a new test method is required or whenever an existing test method needs to be reviewed and revised. The Plant Quality Assurance Manager shall include with this request for a new or revised test method recommendations of what should be included, an outline of the test method and details or suggestions which are applicable to the test method. Test methods shall be reviewed and approved by the affected plants prior to issue. In the case of new test equipment, the Plant Quality Assurance Manager will further be required to supply the Wire & Cable Manager of Quality Assurance with a copy of the instruction manual which accompanies the new equipment.

2.6 Forms

2.6.1 Forms for reporting tests shall be the same for all plants making the same product to the same applicable specification.

2.6.2 Forms shall be designed so that they will serve as a reminder to the test operator of the tests to be performed.

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.6.3 Forms shall be designed so that original data can be recorded and so any calculations done in longhand can be made on the forms without the use of scrap paper. Results shall be reported in the same units given in the applicable specifications. At no time should the words "Pass" or "Fail" be used unless this is the only criteria showing compliance with the specification. A pace shall be provided to enter specification requirements adjacent to the reported test results.

2.6.4 Test forms shall be completely filled in and all entries must be clear and legible. When spaces are not used on the form, the spaces shall have a large "X" or the letters "NA" applied to that section of the form showing that they have not been left blank inadvertently. Data on test forms is to be recorded using a non-erasable writing instrument.

2.6.5 When errors are made in entry of facts and figures on data sheets, the error shall not be erased or written over in an attempt to show the correct value. Instead, the entry shall be crossed out and the correct entry written beside it and initialed. Should it be necessary to prepare a fresh sheet, the voided sheet shall be filed with other test record data on the order.

2.6.6 Record sheets shall not be destroyed even though the material has been reworked. These record sheets shall be filed in the appropriate order file for which they were made.

2.6.7 Data showing failing requirements shall be circled in red on the form. Stop Tag numbers shall be recorded on the form whenever a Stop Tag is applied to failing material.

2.6.8 Data forms shall be legibly signed and dated by the tester. They shall be reviewed, signed and dated by the Plant Quality Assurance Manager within 24 working hours of the time the forms were filled out by the tester.

2.7 Indoctrination and Qualifications.

2.7.1 Titles of Qualifying Personnel

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.7.1.1 Production Personnel are qualified by the Area Supervisor (foreman).

2.7.1.2 Inspection Personnel are qualified by the Quality Assurance Supervisor or Chief Inspector.

2.7.2 Production Personnel.

2.7.2.1 New operators are subjected to a training and qualification program before they are permitted to produce wire and cable on any equipment. Initially the operator is placed on probation for observation and ability to learn the functions of the equipment and the job.

2.7.2.2 The period of time that the training program will require is dependent upon the complexity of the equipment which the operator will be working on. The new trainee will be trained by existing qualified operators under the supervision of the foreman.

2.7.2.3 The new operator will not be qualified until the prescribed training program requirements are fulfilled and the operator has attained all the necessary skills required to produce quality products.

2.7.2.4 Once the new operator has proven himself competent, the qualification status is made a part of the employee's personnel file. A list is maintained for each employee listing those manufacturing equipments on which the employee is qualified to produce. Only operators qualified by management are permitted to operate manufacturing equipment. Management may disqualify operators who do not continue to meet the established quality standard.

2.7.2.4.1 The operator uses Company furnished tools and gauges to check his setup.

2.7.2.4.2 The operator makes use of operating standards, production orders, plant specifications and automatic control devices to control the manufacture of the product.

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.7.3 Inspection Personnel.

2.7.3.1 No wage incentives are used in calculating an inspector's or tester's wages. This fact, together with the functional reporting of the Plant Quality Assurance Manager to Wire & Cable Quality Assurance Headquarters, assures freedom from production pressure and allows inspectors ample time to perform all tests and inspections in a thorough manner.

2.7.3.2 Each manufacturing location shall maintain a continuing training program for all quality assurance personnel.

2.7.3.2.1 All inspectors are given a training program prior to being qualified and assigned to an inspection post.

2.7.3.2.2 The training of inspectors is a continuing program through the conducting of training classes to keep all inspectors abreast of specifications, procedures and equipment which will be used in the performance of their jobs.

2.7.3.2.3 It is the responsibility of the Plant Quality Assurance Manager to send to the Wire & Cable Manager of Quality Assurance an outline of the subject matter and the schedule he proposes to use. Subject matter to be included in training sessions shall be all of those elements which can influence the quality of the product.

2.7.3.2.4 Assistance in planning or conducting training sessions shall be available from the Wire & Cable Manager of Quality Assurance.

2.7.3.2.4.1 Arrangements may be made by the Quality Asurance Manager to have representatives from other departments participate in the training program such as Engineering Manager, Employee Relations Manager, etc.

2.0 QUALITY ASSURANCE PROGRAM (Continued)

2.7.3.2.4.2 The use of training films is encouraged where the subject matter is suitable.

2.7.3.2.5 Records of subject matter and attendance shall be made and maintained for each and every training session.

2.7.3.3 Each manufacturing location shall maintain a qualification list for each inspector.

2.7.3.3.1 This qualification list shall be reviewed and up-dated as required.

2.8 Reports.

2.8.1 Monthly reports of inspection and tests are sent to the Wire & Cable Manager of Quality Assurance from the manufacturing plants. These reports describe the quality and types of material inspected, accepted and rejected during the reporting period.

2.8.2 Audits (See Section 18) and corrective action (See Section 16) are reported as prescribed in the mentioned sections.

3.0 DESIGN CONTROL

10CFR50 APPENDIX B

Measures shall be established to assure that applicable regulatory requirements and the design basis as defined in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components.

Measures shall be established for the identification and control of design interfaces and for coordination among participating design organizations. These measures shall include the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.

The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. The verifying or checking process shall be performed by individuals or groups other than those who performed the original design, but who may be from the same organization. Where a test program is used to verify the adequacy of a specific design feature in lieu of other verifying or checking processes, it shall include suitable qualification testing of a prototype unit under the most adverse design conditions. Design control measures shall be applied to items such as the following: reactor physics, stress, thermal, hydraulic, and accident analyses; compatibility of materials; accessibility for inservice inspection, maintenance, and repair; and delineation of acceptance criteria for inspections and tests.

Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

3.0 DESIGN CONTROL (Continued)

3.1 Cable designs can be divided into two categories:

Category One: Standard proven designs, regularly produced and normally stocked.

Category Two: Special designs which are ususally modifications of standard designs. Special designs are established to conform to customer requirements and specifications.

Special designs to conform to customer requirements and specifications are outlined in the inquiry state in the quotation which is submitted to the customer. These special designs with any specification exceptions are submitted to the customer for his review and approval. For Class 1E application only those materials and cable configurations will be used which have been subjected to and passed all qualification tests.

3.2 The Manufacturing Specification Order - MSO (Exhibit #5), and the Engineering Instruction - EN or SI (Exhibit #6) and the Stock Release Order - (Exhibit #7) are printed forms describing or referencing the specifications of the product. The MSO, EN, SI or Stock Release Order contains the plant order number, is applicable only to that order number and the plant order number becomes obsolete automatically as the order is completed.

3.2.1 The MSO, EN or SI is prepared by the organization responsible for design. The detailed information which includes the completed cable design, specification requirements and inspection and test acceptance criteria is assembled on the MSO, EN or SI using approved designs submitted to the customer (3.1), design cards, or standing instructions as a basis for this information. The organization responsible for design also uses the standards catalog, design standards, Specification for Electrical Conductors, Machine Manufacturing Standards and Compound Data Books.

3.2.2 The organization responsible for design retains in their files copies of the MSO, EN, SI and/or Stock Release Order.

3.2.3 The Production Control Department shall prepare the correct number of copies of the MSO, EN, SI, and/or Stock Release Order for distribution to each of the manufacturing and Quality Assurance areas prior to commencing manufacturing.

3.0 DESIGN CONTROL (Continued)

3.2.4 Prior to issuing the copies (3.2.3), the MSO, EN or SI is checked for accuracy of design and specification requirements. This review may be performed by a specification engineer or the organization responsible for design, other than the originator, of the document. The reviewer will initial and date the MSO, EN or SI as approved. The Plant Quality Assurance Manager will also review the MSO, EN or SI for accuracy and completeness of quality assurance requirements. He will then initial and date the MSO, EN or SI as approved in the area provided for approval.

3.3 Engineering & Research Specification Interpretation will be issued whenever a vague or ambiguous requirement of a specification necessitates a clarification or deviation from a specification requirement as authorized by the customer.

3.3.1 This specification interpretation shall show:

3.3.1.1 The exact wording of the section of a specification involved.

3.3.1.2 The authorized interpretation or deviation.

3.3.1.3 Reference to customer's authorization for the interpretation or deviation, or reference to the ruling approved by the Vice-President, Engineering & Product Development.

3.3.2 All company employees who negotitate such authorization with customers shall furnish complete information to the Engineering Department.

3.3.3 It is Anaconda-Ericsson's policy that no change will be made in the requirements of a customer specification without authorization from the customer.

3.3.4 When issued, Engineering & Research Specification Interpretations will be distributed to all holders of the specification to which it applies. It shall be kept on file with the specification.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

3.0 DESIGN CONTROL (Continued)

3.4 Changes to MSO, EN or SI are prepared by the same group which prepared the MSO, EN or SI, and copies of the change notices are distributed to holders of the original document (Exhibit #8). Change notices may be issued to correct errors on the original MSO, EN or SI, to incorporate improved manufacturing procedures and/or materials, or to incorporate changes requested by the customer.

3.4.1 All changes are reviewed by the Specification Engineer or the organization which prepared the change. The reviewer will always be other than the originator of the document. The reviewer will initial as approved all changes prior to being distributed. All changes which affect materials, design specifications and/or Quality Assurance requirements are also reviewed and initialed as approved by the Plant Quality Assurance Manager.

3.4.2 To document receipt of a change notice, the designated representative of the receiving department shall initial the originating departments copy certifying that delivery has been made. The originating department's copy will be maintained on file with the original MSO, EN or SI.

3.4.2.1 The individual receiving a change notice is charged with the responsibility of incorporating the changes to the appropriate MSO, EN or SI.

4.0 PROCUREMENT DOCUMENT CONTROL

10CFR50 APPENDIX B

Measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of material, equipment, and services, whether purchased by the applicant or by its contractors or subcontractors. To the extent necessary, procurement documents shall require contractors or subcontractors to provide a quality assurance program consistent with the pertinent provisions of this appendix.

4.1 The purchase orders for all raw materials and materials used in fabrication shall be produced and issued in accordance with the Anaconda-Ericsson Purchasing Guide or Standard Practice.

4.2 Purchase orders for raw materials and materials used in fabrication fall into three basic categories.

4.2.1 Standard stock raw materials which are purchased on a regular basis from approved suppliers.

4.2.2 Non-standard raw materials which are purchased where special requirements are involved. Non-standard raw materials are purchased from approved suppliers.

4.2.3 Fabricated items which are used in an as received condition, i.e., no modifications, chemical, electrical, or mechanical are made.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

4.0 PROCUREMENT DOCUMENT CONTROL (Continued)

4.3 Standard Stock Raw Material Purchase Orders.

4.3.1 Information to be shown on the purchase order includes the name of the supplier, the destination, date of order, quantity, description of material or service, specification number or proprietary name, if applicable.

4.3.2 Purchase orders shall be reviewed by the Purchasing Agent and initialed as being reviewed. The review shall verify that the information from 4.3.1 is included and accurate.

4.3.3 A copy of the reviewed and approved purchase order will be sent to the Quality Assurance Department for their review, approval and files. The Quality Assurance review of purchase orders shall be conducted in accordance with written procedures by trained and qualified personnel. Purchase orders when approved by Quality Assurance shall be initialed and dated demonstrating approval.

4.4 Non-Standard Raw Materials.

4.4.1 Information to be shown on purchase orders includes, as applicable, the name of the supplier, date of order, applicable requisition number, quantity, description of material or service, specification number or proprietary name, special instructions which may include requirements for test reports and quality control information. Provisions will be stated that the purchaser will have access to the suppliers plant facilities and records for inspection or audit by the purchaser or the purchaser's designated representative if deemed necessary.

4.4.1.1 Safety-related items for use on nuclear generating station cables which are classified as critical non-standard raw materials will be purchased from suppliers who demonstrate either through questionnaire or audit, that their facilities encompass those parts of 10CFR50, Appendix B and ANSI N45.2 which are applicable to the product or service being supplied. Records of the audits and questionnaires shall be maintained on file.

4.0 PROCUREMENT DOCUMENT CONTROL (Continued)

4.4.2 The purchase order shall be reviewed by the Purchasing Agent and the issuer of the requistion for the non-standard raw material on all critical materials ordered (see 8.2) to assure that the item or services being ordered meet the specified requirements. The Purchasing Agent shall initial the dated purchase order signifying the performance of review and evidence of accomplishment. Other reviewers of the purchase order shall initial and date the purchase order signifying their review. A copy of the reviewed and initialed purchase order will be sent to the Quality Assurance Department for their records. The issuer of the requisition shall inform the Purchasing Department if he finds errors or discrepancies in the purchase order.

4.4.3 Copies of the reviewed purchase orders which have been sent to the Quality Assurance Department shall be reviewed by Quality Assurance in accordance with written procedures by trained and qualified personnel. Purchase orders when approved by Quality Assurance shall be initialed and dated.

4.5 Fabricated Items.

4.5.1 No purchase order shall be issued for fabricated items (see 7.4) until a pre-award quality audit has been made of the manufacturer's or supplier's facility if it is deemed necessary.

4.5.2 Information to be shown on the purchase order, once approval has been given that the supplier's facility has a quality assurance program which implements those portions of 10CFR50 and ANSI N45.2 as applicable, for the material includes as a minimum the name of the supplier, the destination, date of order, applicable requisition number, quantity, description of material or service, the specification which is applicable, the unique designation to define the material, special instructions such as test reports, quality control information, etc. Purchaser or procuring agency will have the right of access of the suppliers plant facilities and records for inspection or audit by the purchaser or the procuring agency or their designated representatives if deemed necessary.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

4.0 PROCUREMENT DOCUMENT CONTROL (Continued)

4.5.3 Purchase orders for fabricated items shall be reviewed by the Purchasing Agent and the individuals who initiated the requisition for the material. This review shall verify that the purchase order includes all those provisions to assure that the items meet the specified requirements. The reviewer shall initial as approved the purchase order. A copy of the reviewed and initialed purchase order will be sent to the Quality Assurance Department for their records. The issuer of the requistion shall inform the Purchasing Department if he finds errors or discrepancies in the purchase order.

4.5.4 Copies of the reviewed purchase order which have been sent to the Quality Assurance Department shall be reviewed by Quality Assurance in accordance with written procedures by trained and qualified personnel. Purchase orders when approved by Quality Assurance shall be initialed and dated.

4.6 Purchase orders for critical materials as defined in Section 8, paragraph 8.2, will be reviewed by Quality Assurance prior to issuance. When discrepancies are found in purchase orders for critical materials, the purchase shall be corrected. Quality Assurance will review copies of purchase orders order for non-critical materials which are retained by the Quality Assurance Department. When discrepancies are found in purchase orders of non-critical materials, a change order shall be issued correcting the discrepancy. All purchase change orders shall be reviewed and approved in the same manner as the original purchase order.

4.7 Further details of procurement document control are provided in the Purchasing Manual or in written and published standard practices.

4.8 Suppliers of critical raw materials, when deemed necessary to be audited, will be audited for compliance to the requirements of 10CFR, Part 50, Appendix B and ANSI N45.2 in those areas that are judged applicable to their product or operation in accordance with Section 18, paragraph 18.3.

5.0 INSTRUCTIONS, PROCEDURES AND DRAWINGS

10CFR50 APPENDIX B

Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

5.1 Controls are established to monitor production at various stages of manufacture. These controls are continually in effect and are outlined in either the Manufacturing Standards or Inspection Standards.

5.1.1 Written procedures for in-process control of fabrication are employed.

5.1.2 Quality Assurance inspections are pre-planned in such a manner as to be compatible with manufacturing operations.

5.1.3 Inspection operations and tests are performed in accordance with approved written instructions.

5.1.4 Quality Assurance inspections are documented to provide positive inspection status.

5.1.5 Inspection operations and test results are documented and validated on the inspection sheets and process tags.

5.1.6 All supporting documentation is identifiable to the inspection personnel responsible for the inspections performed.

5.1.7 Product identity is maintained throughout the manufacturing operation starting with the bare conductor (stranded conductor) through to the finished cable.

5.1.8 All inspection acceptance and/or tests are performed under the jurisdiction of the Plant Quality Assurance Manager.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

5.0 INSTRUCTIONS, PROCEDURES AND DRAWINGS (Continued)

5.1.9 The Plant Quality Assurance Manager reviews all inspection procedures for adequacy and to assure contractual compliance.

5.1.10 Test methods which are issued are detailed in such a manner so as to minimize inspector error in performing tests.

5.1.11 Records of inspection and test data are maintained, reviewed, initialed and dated by the Plant Quality Assurance Manager.

5.1.12 Records will reflect actual data. Checkmarks, OK's, etc., are not permitted when actual data is available. As an example, a dimension would be recorded as actual data, whereas, a visual examination would be recorded as "OK."

5.1.13 Test methods and inspection procedures shall be available at all times within the Quality Assurance Department and/or work stations.

6.0 DOCUMENT CONTROL

10CFR50 APPENDIX B

Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed. Changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval unless the applicant designates another responsible organization.

6.1 The following departments shall be responsible and held accountable for the proper preparation, review and approval, and the control of issuing of those documents and changes which prescribe activities affecting quality.

6.1.1 Wire & Cable Quality Assurance Headquarters (See Section 2).

6.1.1.1 Inspection Procedures

6.1.1.2 Test Methods

6.1.1.3 Inspection and Test Forms

6.1.2 Plant Quality Assurance Department (See Section 15).

6.1.2.1 Nonconformance Reports

6.1.3 Plant Purchasing Department (See Section 4).

6.1.3.1 Purchase orders for raw materials and changes to purchase orders.

6.1.3.2 A copy of the certified test report or certificate of compliance, if required, on raw material as received to be sent to the Quality Assurance Department for review and filing.

6.1.4 Plant Production Control (Section Section 3).

6.1.4.1 Production schedules, distribution of MSO's, EN's, SI's and/or Stock Release Orders.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

6.0 DOCUMENT CONTROL (Continued)

6.1.5 Sales Service and/or Product Design Organization

6.1.5.1 Mill orders and changes to mill orders.

6.1.5.2 Completed Advise to Sales forms.

6.1.5.3 Inquiries, preparation of MSO's, EN's, and SI's, customer specifications and change pages.

6.2 All documents shall be identified. Identification can be any method which directs the document to a specific product, material, customer, order, inspection procedure, etc.

7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

10CFR50 APPENDIX B

Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery. Documentary evidence that material and equipment conform to the procurement requirements shall be available at the nuclear power plant or fuel reprocessing plant site prior to installation of use of such material and equipment. This documentary evidence shall be retained at the nuclear power plant or fuel reprocessing plant site and shall be sufficient to identify the specific requirements, such as codes, standards, or specifications, met by the purchased material and equipment. The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee at intervals consistent with the importance, complexity, and quantity of the product or services.

7.1 The policies in this section supplement those in the Company Purchasing Manual. They apply to all purchases of raw materials and fabricated components used in the construction of Anaconda-Ericsson products, and all completed products purchased for resale.

7.2 Responsibilities of Purchasing.

7.2.1 Coordinate evaluation of suppliers.

7.2.2 The transmission of accurate current specifications, as necessary, and contract information to the supplier.

7.2.3 The requiring of objective test data for:

7.2.3.1 Critical materials from outside suppliers (See 8.2).

7.2.3.2 Completed test data on all fabricated components.

7.2.4 Maintain a current file of approved raw materials.

7.2.5 Return of all rejected material when so specified.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES (Continued)

7.2.6 The timely transmission of quality information back to the supplier. Information is to come from Quality Assurance records.

7.2.7 Requirements of corrective action from the supplier on problems.

7.2.8 Furnishing copies of the purchase orders for non-standard raw materials and fabricated items to the individual who initiated the requisition for review and approval and transmittal to Quality Assurance.

7.3 Responsibilities of Quality Assurance.

7.3.1 The Raw Material Inspector or Analyst shall check the purchase order to verify that the necessary Quality Assurance requirements are included and that reviews have been made as detailed in paragraph 4.3.2 and 4.4.2 and 4.5.3 before initialing his copy.

7.3.2 To supply information to the Purchasing Department on quality information (See 7.2.6).

7.3.3 To assist Purchasing in the evaluation of suppliers.

7.3.3.1 Conduct facility surveys if necessary.

7.3.3.2 Analyze data furnished by suppliers.

7.3.3.3 Analyze data generated by the Quality Assurance Department.

7.3.4 To verify that all critical material received has been inspected according to approved inspection procedures.

7.3.4.1 Test data from vendors shall be reviewed for compliance and completeness and stamped or initialed and dated as accepted or rejected.

7.3.4.2 Incoming inspection shall be restricted to the minimum amount necessary to verify specification compliance. Where sampling plans are used, they shall conform to MIL-STD-105D and shall assure an AQL (Acceptance Quality Level) no worse than 10%.

7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES (Continued)

7.3.4.2.1 Checks shall include: Verification that no damage occurred in transit, quantity, identification, verification to the purchase order, verification to the applicable specification and testing of material in accordance with applicable inspection procedure.

7.3.4.3 Acceptable material shall be stamped or tagged with an accepted or approved stamp or tag. Received material awaiting approval must be segregated until approved to prevent inadvertent use before approval is given.

7.3.4.3.1 If it is impractical to segregate and/or stamp or tag all accepted material, an alternate system shall be established which will insure that only accepted material shall be transferred for further processing.

7.3.4.4 Nonconforming material shall be identified and segregated so that it can not be directed inadvertently into the production process.

7.3.5 Disposition of Nonconforming Material.

7.3.5.1 A Nonconforming Report, form WC-1985, shall be issued for nonconforming material. (See Exhibit #3)

7.3.5.2 Dispositions shall be made by the Engineering Manager or other person performing that function. Possible dispositions may be:

7.3.5.2.1 Use part that meets specification requirements.

7.3.5.2.2 Use with extra processing to correct defect.

7.3.5.2.3 Use as is if by so doing we will not violate any customer or final specifications.

7.3.5.2.4 Use as is by obtaining a waiver from the customer if the specifications of the finished product contain raw material requirements.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

7.0 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES (Continued)

7.3.5.2.5 Divert for use in constructions having lesser requirements.

7.3.5.2.6 Return to vendor.

NOTE: The decision to use nonconforming material for any reason shall not influence the Quality Assurance Department in any way in the performance of final inspections and tests on the manufactured product using such material.

7.4 Completed Products Purchased For Resale.

7.4.1 When completed products are delivered to a manufacturing plant, all the above procedures shall apply and approved material shall be stamped or tagged with an accepted or approved stamp or tag denoting approval. All fabricated components or completed products purchased for resale shall include in the purchase requirement that the product, where practical, be identified as to the manufacturer.

7.4.2 When completed products are delivered directly to a customer or to a warehouse or distribution center, the Purchasing Agent shall inform the Wire & Cable Manager of Quality Assurance who shall be responsible for control through the review of purchase orders and test data supplied by the vendor. In certain cases it may be desirable for the Wire & Cable Manager of Quality Assurance to arrange for a facilities survey of the vendor, or a meeting with the vendor to verify the vendor's capability to supply a satisfactory product.

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

10CFR50 APPENDIX B

Measures shall be established for the identification and control of materials, parts and components, including partially fabricated assemblies. These measures shall assure that identification of the item is maintained by heat number, part number, serial number, or other appropriate means, either on the item or on records traceable to the item, required throughout fabrication erection, installations, and use of the item. These identification and control measures shall be designed to prevent the use of incorrect or defective material, parts, and components.

8.1 Traceability of wire and cable manufactured for nuclear generating station use is a requirement to:

8.1.1 Define components as to critical and non-critical with relationship to cable performance and reliability.

8.1.2 Establish the requirements for documentation of critical or non-critical components.

8.1.3 Define the documentation necessary to identify the various lengths of cable in a lot and the relationship with one another.

8.2 Critical Materials.

8.2.1 All materials which contribute to the electrical and insulating characteristics of the cable are classified as critical materials.

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS (Continued)

8.2.2 Specific traceability into manufactured product is not possible, however, suitable documentation must be maintained to demonstrate:

8.2.2.1 Material has been ordered to comply with an applicable specification.

8.2.2.2 Purchase orders have been reviewed and approved by the Purchasing Agent and the issuer of the requistion.

8.2.2.3 Where practical a certificate of compliance with test data was received covering the purchased material.

8.2.2.4 A system of incoming raw material inspection and test is established with documented results.

8.2.2.5 A system of control so that only raw material which has passed all incoming inspections and tests will be delivered to the manufacturing facility for use in manufactured products.

8.3 Non-Critical Materials.

8.3.1 All materials which do not contribute to the electrical or insulating characteristics of a cable are classified as non-critical materials.

8.3.2 Purchased non-critical material traceability.

8.3.2.1 Specific traceability is not required, however, suitable documentation must be maintained to show:

8.3.2.1.1 Material has been ordered in accordance with the conditions established in Section 4 of this Quality Assurance Manual.

8.3.2.1.2 Purchase orders have been reviewed and approved by the Purchasing Agent and the issuer of the requistion.

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS (Continued)

8.3.2.1.3 Where practical a certificate of compliance with test data was received covering the purchased material.

8.3.2.1.4 A procedure of incoming raw material inspection is established in accordance with Inspection Procedures.

8.4 Manufactured Products.

8.4.1 Complete traceability is required for each reel, coil or spool of wire or cable. Traceability starts with the stage at which the wire or cable becomes definitely identifiable with the specific order, contract and specification. (See 5.1.7)

8.4.2 Each length of cable manufactured shall be identified as follows:

8.4.2.1 A tagging system for each individual piece of wire or cable produced is required which will identify the cable either by a piece number or as a manufactured length with sufficient information to permit tracing to inspection and test records.

8.4.3 The traceability of wire to inspection and test records shall be accomplished by the use of individual process tags on each reel, coil or spool of wire and cable as follows:

8.4.3.1 Process tags must show the order number or stock release number and the name or number of the manufacturing personnel producing the item. Process tags which are applied to conductors at the completion of the stranding operations and from this point through the rest of the manufacturing operations must also contain the proper piece identification.

8.4.3.2 No material will be submitted to the Inspection Department for inspection and/or test which does not have a process tag attached or does not have proper identification on the process tag.

8.0 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS (Continued)

8.4.4 When it is necessary to cut cables while in process and to maintain piece identification for inspection records, the following steps are to be followed:

8.4.4.1 The foreman, expeditor, or Production Control Department will contact the Inspection Department and request an inspector to be present. The Inspection Department will be supplied with an order number, last piece number, if applicable, and stock release number.

8.4.4.2 The Production Control Department will make out appropriate tags with regard to the order or stock release number. Cut pieces will be resubmitted to the Inspection Department for processing. The appropriate tags will be attached and punched or stamped showing which inspections have been conducted. The inspector will also complete the transfer records for the Inspection Department files showing all the new piece identification data plus the inspection data he has accumulated from the cut pieces.

8.4.5 The documentation shall show compliance with applicable specifications and include:

8.4.5.1 Results of the required electrical tests on completed cable.

8.4.5.2 Results of the required constructional and dimensional inspections on completed cable.

8.4.5.3 Documentation to support the acceptability of the critical and non-critical components.

8.4.6 The documentation will demonstrate a uniform inspection and control system such that all material manufactured is inspected after each stage of manufacture or as required and determined to be in compliance with the appropriate specification. Only after verification of specification compliance will the manufactured material be forwarded to the next process operation. Suitable records must be maintained.

9.0 CONTROL OF SPECIAL PROCESSES

10CFR50 APPENDIX B

Measures shall be established to assure that special processes, including welding, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

9.1 Normally, in the manufacture of wire and cable, there are no special processes involved.

9.1.1 Should special processes be invoked on wire and cable, these processes shall be accomplished under specially controlled conditions by appropriately qualified personnel in accordance with written procedures.

10.0 INSPECTION

10CFR50 APPENDIX B

. program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity. Such inspection shall be performed by individuals other than those who performed the activity being inspected. Examinations, measurements, or test of material or products processed shall be performed for each work operation where necessary to assure quality. If inspection of processed material or products is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel shall be provided. Both inspection and process monitoring shall be provided when control is inadequate without both. If mandatory inspection hold points, which require witnessing or inspecting by the applicant's designated representative and beyond which work shall not proceed without the consent of its designated representative are required, the specific hold points shall be indicated in appropriate documents.

10.1 Inspections which are to be performed are outlined in the Anaconda-Ericsson Inspection Standards for all standard products. Instructions for handling material which deviates from Anaconda-Ericsson quality standards or customer specifications are found in these standards.

10.1.1 Instructions are provided for the operation of specific pieces of complex equipment and the performance of particular tests. The test methods are published in the Anaconda-Ericsson Inspection and Test Method Manuals.

10.1.2 Specific copies of the inspection standards which contain Inspection Procedures and Test Methods are available to the inspectors.

10.1.3 Any special instructions issued by the customer relating to inspection or inspection hold points shall be indicated on the MSO, EN or SL.

10.2 Inspection and testing of wire and cable is performed by trained and qualified quality assurance personnel reporting directly to the Plant Quality Assurance Manager and to no other function within the manufacturing plant (See Section 2).

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

10.0 INSPECTION (Continued)

10.3 Standard forms are used whenever possible for reporting inspection and test data. The completed forms are maintained with the records for each order.

10.3.1 It is the policy of the Wire & Cable facilities to retain inspection and test records as required by contract or specification. Upon expiration of the retention period, the records are destroyed. Specific periods have been established for all products.

10.4 A sample flow chart showing the manufacturing processes and inspection points is attached as Exhibit #4.

11.0 TEST CONTROL

10CFR50 APPENDIX B

A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, pre-operational tests, and operational tests during nuclear power plant or fuel reprocessing plant operation, of structures, systems and components. Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions. Test results shall be documented and evaluated to assure that test requirements have been satisfied.

11.1 Tests are divided into three major categories and are performed with calibrated equipment in accordance with published inspection procedures and test methods.

11.1.1 Acceptance Tests are required on each length of completed cable. These tests are sometimes called final tests. They usually consist of but are not limited to one or more of the following:

11.1.1.1 High Voltage A.C.

11.1.1.2 Spark Test A.C. or D.C.

11.1.1.3 Insulation Resistance

11.1.1.4 High Voltage D.C.

11.1.1.5 Corona

11.1.1.6 Dimensional Inspection

11.1.1.7 Visual Examination

11.1.1.8 Conductor Resistance

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

11.0 TEST CONTROL (Continued)

11.1.2 Production Continuous Sampling Tests are laboratory tests on compounds required on each day's run of each specific compound. Samples are selected from the day's run. Three compound specimens are prepared from each sample and the results averaged to give the value of the tests on the sample. These tests usually consist of but are not limited to:

11.1.2.1 Initial unaged physical tests on insulations.

11.1.2.2 Initial unaged physical tests on jackets.

11.1.3 Conformance Tests are laboratory tests made to assure continuing conformance of inherent characteristics. These tests are required to qualify initial production. Conformance tests are performed at specific intervals after initial qualification as detailed in the inspection standards. Requalification is required whenever there is a basic change in process or raw material.

Some of the usual conformance tests may consist of one or more of the following but are not limited to:

11.1.3.1 Aged physical tests on insulation.

11.1.3.2 Aged physical tests on jackets.

11.1.3.3 Moisture absorption, electrical.

11.1.3.4 Moisture absorption, gravimetric.

11.1.3.5 Capacitance and power factor.

11.1.3.6 Structural stability.

11.1.3.7 High voltage time.

11.1.3.8 Volume resistivity.

11.0 TEST CONTROL (Continued)

11.1.3.9 Surface Leakage

11.1.3.10 Ozone Resistance

11.1.3.11 Cold Bend

11.1.3.12 Flame

11.1.3.13 U-Bend Discharge

11.1.3.14 Heat Shock

11.1.3.15 Solvent Extraction

11.2 Identification.

11.2.1 All products shall be identified by a process tag indicating the MSO, EN or SI and the insulating and/or vulcanizing dates. The MSO, EN or SI shall include the compound number designating the compound used. This identification shall remain on the material until it is approved for placing in finished stock or shipment.

11.3 Laboratory Tests On Compounds.

11.3.1 Laboratory tests on insulation and jacket compounds shall be performed at the frequencies required by the applicable individual product inspection procedure or the applicable specification. If the order, procedure, or specification does not specifically spell out a sampling frequency or if reference is made to a standard industry specification, such as ICEA, ASTM, AEIC, UL, etc., the material shall be inspected at the frequencies and under the conditions established by Wire & Cable Division Quality Assurance as being essential to the control of quality.

11.3.2 Normal routine sampling frequencies are delineated in inspection procedures. (See paragraph 2.4)

11.3.3 Tightened sampling shall be immediately instituted in the event of a failure of a compound under normal sampling. The purpose of tightened sampling is to requalify the process after failure on normal sampling.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

11.0 TEST CONTROL (Continued)

11.4 Control of Tests.

11.4.1 A log or control sheet shall be maintained in the Quality Assurance Department to serve as a check-off sheet to ensure that samples are cut at the frequencies specified. Material is not released for shipment pending satisfactory completion of these tests. In the event of a failure, the procedures of paragraph 11.3.3 are followed.

11.5 Acceptance Tests (Final Tests)

11.5.1 Electrical acceptance tests shall be performed as required in the governing specification. These tests shall be performed on each length of completed cable.

11.5.2 The corona level test, when required, shall always be performed before the DC test.

11.5.3 Material which has successfully passed the acceptance tests shall have the process tag punched, or stamped and initialed, by the inspector in the appropriate position on the tag.

11.5.4 If Power and Control Cables fail the voltage test, a Failure of Voltage Tag, form WC-1994 is applied (See Exhibit #9). If the same cable or conductor fails the voltage test three times, it shall be held by a Stop Tag and shall not be subject to any further retests.

11.6 Evaluation of Test Results

11.6.1 The Plant Quality Assurance Manager shall review all test and inspection records to verify that tests and inspections have been conducted and that results are in conformance with all specifications, order and contract requirements.

11.6.2 All inspection and test records shall be initialed and dated to demonstrate their review.

11.7 Customer specifications may require tests or test frequencies different from those specifically covered in published inspection procedures. In this event, all of the special requirements will be incorporated in the quality assurance requirements on the MSO, EN or SI.

11.0 TEST CONTROL (Continued)

11.8 Copies of complete certified test reports will be supplied for each cable shipment upon request. The certified test report may consist of but is not limited to:

11.8.1 The Certificate of Compliance, form WC-1949, Exhibit #10.

11.8.2 Copies of Form WC-2011, Exhibit #11, which will have tabulated inspection data from actual test forms.

11.8.3 Copies of Form WC-2057, Exhibit #12, which will have tabulated inspection data from actual test form.

11.8.4 Copies of Form WC-2057A, Exhibit #13, which will have tabulated inspection data from actual test form.

11.8.5 The Plant Quality Assurance Manager shall sign all certificates of compliance or certified test reports.

11.8.6 Copies of original test forms from inspection and test are maintained on file for the period necessary as established by customer specification. Copies of these forms are available to be sent to the ultimate user when requested. Data from these forms have been transcribed onto forms WC-2011, WC-2057 and WC-2057A, Exhibits #11, #12 and #13, as mentioned above.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT

10CFR50 APPENDIX B

Measures shall be established to assure that tools, gauges, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.

12.1 Each plant shall implement a system for the periodic calibration of all test, inspection, weighing and measuring equipment used for determining compliance with applicable specifications and purchase order requirements. (See 12.8)

12.2 Each plant shall implement a system for scheduled inspection, maintenance and calibration of process control instrumentation, such as temperature recorders and controllers, footage counters, speed measuring devices, weighing machines, etc., whenever a process control instrumentation will have an effect upon the product which is being produced on that equipment as determined by the Quality Assurance Department. Process control instrumentation which does not have an effect upon the product will be identified as "FOR REFERENCE ONLY."

12.3 Testing areas, facilities and test equipment shall be adequate to assure compliance with all customer and specification requirements.

12.4 The calibration system shall comply with Military Specification, Calibration System Requirements, MIL-C-45662A, latest edition.

12.5 Calibration sources shall be in accordance with Military Specification, Calibration System Requirements, MIL-C-45662A, latest edition.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT (Continued)

12.5.1 The accuracy limitations for test equipment is published in the ETL recommendations for acceptable limits of accuracy for equipment used in commercial wire and cable testing. Calibration standards which will be used for calibrating these commercial wire and cable testing equipments must have an accuracy of at least one-fourth of this tolerance of the equipment being calibrated. When practicable, it is desired that the precision and readability be at least one-tenth of the tolerance of the applicable limits as listed.

12.5.2 Calibration standards shall be considered traceable to NBS if they have been checked against other recently calibrated standards which in turn are traceable to NBS.

12.6 Calibration may be performed either by a qualified outside agency or by qualified Anaconda-Ericsson personnel.

12.7 A schedule shall be established for the frequency of calibration of each equipment to be checked. (See Table I, Exhibit #15)

12.7.1 All equipment used for determining compliance with applicable specification and purchase order requirements shall be calibrated at least annually; more frequent calibrations shall be established on the basis of stability, purpose and degree of usage.

12.7.2 Records shall be maintained and analyzed periodically to justify the frequency of calibration schedule which has been established. (See 12.8.6)

12.8 Calibration of Test Equipment.

12.8.1 Each plant shall follow the system outlined in this manual for the periodic calibration of all test, inspection, weighing and measuring equipment used for determining compliance with applicable specifications and purchase order requirements.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT (Continued)

12.8.2 The system provides for the detection of inaccuracies and timely action for correcting them by establishing a schedule of secondary calibrations. Any equipment which does not meet the required standards of operation and accuracy shall be removed promptly from use; it may be returned for use only after it has been repaired or adjusted and found acceptable on re-calibration.

12.8.3 Primary Calibration of Test Equipment.

12.8.3.1 A schedule shall be established for annual calibration of test apparatus. All major items of test equipment are to be calibrated. All standards are also to be calibrated and this will enable manufacturing plants to conduct secondary calibrations.

12.8.3.2 These in-house calibrations are to be carried out by qualified personnel using standards complying with the requirements of MIL-C-45662A, latest edition.

12.8.3.3 Test equipment which is found to be acceptable (within the acceptable limits of accuracy), will be given a calibration sticker (Exhibit #14).

12.8.3.4 Test equipment which has been denied a calibration laboratory accepted sticker shall not be used for acceptance testing until it has been repaired and recalibrated with the recalibration data on record.

12.8.3.4.1 When equipment has been returned to the manufacturer or other repair facility for repairs and adjustment, it shall be re-calibrated by the agency doing the work, and this calibration shall be considered satisfactory until the next primary calibration due date.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT (Continued)

12.8.4 Secondary Calibration of Test Equipment.

12.8.4.1 Secondary calibrations shall be performed by either a qualified outside agency or by qualified Anaconda-Ericsson personnel on the test apparatus and at the minimum frequencies in Table I. (See Exhibit #15)

12.8.4.2 All calibration standards will be kept in a controlled area when not in use and stored in a locked cabinet. The words "Calibration Standards" will be painted on the face of the cabinet to denote that these are standards which must not be used in connection with normal testing or by unauthorized personnel. Access to these calibration standards will be controlled by the calibration personnel. These standards shall be included in the annual primary calibration of test equipment by calibration personnel.

12.8.4.3 Test equipment which is found to be acceptable (within the acceptable limits of accuracy), will be given an Anaconda-Ericsson calibration sticker, form WC-2050 (Exhibit #14). The calibration sticker will be filled out in ink and affixed in a conspicuous place on the equipment.

12.8.4.3.1 On some small items of test equipment, such as micrometers it may not be practical to attach a calibration sticker. In all such cases, the items must be permanently marked or serially numbered, and a calibration log must be maintained showing the same information as listed on the sticker.

12.8.4.4 Test equipment which if found to be unacceptable will not be given an Anaconda-Ericsson calibration sticker (form WC-2050), and will not be used for testing until it is repaired and recalibrated. A "Do Not Use Until Calibrated" sticker, form WC-2026 (Exhibit #14), will be placed on the face of the test equipment.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT (Continued)

12.8.5 Acceptable Limits of Accuracy for Test Equipment - Range of Calibration - Correction Factors.

12.8.5.1 The acceptable limits of accuracy for secondary calibrations shall be the same as those used by calibration laboratories for primary calibrations. These limits can be found under the Test Methods Section of the Anaconda-Ericsson Publication "Industry Specifications."

12.8.5.2 Equipment shall be calibrated over the entire working range where practicable.

12.8.5.3 Where equipment is certified for use over a limited range only, the limits of certification shall be posted prominently on the equipment.

12.8.5.3.1 Precautions shall be taken to ensure that the equipment is not used for ranges outside the limits of certification.

12.8.5.4 Where equipment is certified for use without corrections, no correction factors shall be applied.

12.8.6 Records of Secondary Calibrations.

12.8.6.1 A master log shall be maintained in the Quality Assurance Department listing each piece of test equipment, asset or serial number and showing the department or area to which it is assigned and the frequency of calibration.

12.8.6.2 Results of the calibration shall be recorded on a suitable form or on a general test form WC-1951, as approved by the Wire & Cable Manager of Quality Assurance. The form shall be signed by the individual performing the calibration and reviewed by the Plant Quality Assurance Manager. (Form WC-1951-A, see Exhibit #16)

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT (Continued)

12.9 Daily Verification Point Calibration.

12.9.1 Verification that critical equipment for acceptance tests is in calibration shall be conducted daily when used. Critical equipment consists of:

12.9.1.1 High Voltage A.C. test sets in conjunction with corona test equipment.

12.9.1.2 Insulation resistance test sets.

12.9.1.3 Conductor resistance test sets.

12.9.2 Verification calibration shall be conducted at the start of each day's operation when the equipment is used.

12.9.3 Verification calibration shall be in accordance with written procedures.

12.9.4 When verification indicates an out of calibration condition, a determination shall immediately be made in which direction the out of calibration error is. If the out of calibration condition is in the direction of a more severe test, no action is required. If the out of calibration condition is in the direction of a less severe test, the Plant Quality Assurance Manager shall call an emergency meeting of the Material Review Board to determine the validity of tests and actions to be taken. Records shall be maintained of all decisions and actions taken. The out of calibration equipment will not be used for acceptance tests until it has been fully recalibrated and certified accurate.

12.10 Calibration of Instrumentation Used For Process Control.

12.10.1 Calibration of instrumentation for process control may be conducted by any qualified personnel. The Plant Quality Assurance Manager shall review the results of all calibrations. He will be required to write, issue or establish:

12.10.1.1 Qualification procedures for the individual who is doing the calibration.

12.10.1.2 Standards for calibration.

12.0 CONTROL OF MEASURING AND TEST EQUIPMENT (Continued)

12.10.1.3 Forms designed to record calibration.

12.10.1.4 A record file system to maintain documentation of calibration.

12.10.2 Calibration stickers shall be applied to instruments found to be acceptable. The stickers shall show as a minimum the initials of the individual performing the calibration, the date of calibration, and the due date when the next routine calibration is to be performed. Form WC-2050 may be used for this purpose (Exhibit #14).

12.10.3 Instruments found out of calibration shall be labeled with form WC 2026 (Exhibit #14) and will be replaced, repaired, recalibrated or removed from service.

12.10.4 Records of all schedules and periodic calibrations shall be maintained on suitable forms. Actual readings shall be shown in appropriate spaces on the forms; the letters "OK" shall not be used where finite characteristics are readable.

13.0 HANDLING, STORAGE AND SHIPPING

10CFR50 APPENDIX B

Measures shall be established to control the handling, storage, shipping, cleaning and preservation of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration. When necessary for particular products, special protective environments, such as inert gas atmosphere, specific moisture content levels, and temperature levels, shall be specified and provided.

13.1 Preservation, packaging, packing, and shipping is in accordance with standard commerical practice unless otherwise specified by customer requirements. Methods described in MIL-C-12000, MIL-STD-129 and 130 are generally used for government orders.

13.2 Standard commercial preservation, packaging, packing and shipping requirements are specified in the published document, Packaging Standard PS-1008 or Standard Practice SP-4102, which is available to the Shipping Department.

13.2.1 Personnel are subjected to a training and qualification program in handling, storage and shipment of material in accordance with Section 2.7 of this manual.

13.3 In the event the order for cable specifies practices of preservation, packaging, packing, and shipping other than standard commerical, practices, instructions will be forwarded to the Shipping Department spelling out the special requirements.

13.3.1 Instructions for special packaging or marking may include a check sheet which will list all those items which differ from standard commercial practices. The check sheet will be inclusive enough to cover each reel of wire which will be supplied on the order.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

13.0 HANDLING, STORAGE AND SHIPPING (Continued)

13.3.2 It will be the responsibility of the Shipping Department Supervisor or Quality Assurance Inspector to verify that the packaging and marking comply with the special instructions. Each reel shall be checked off on the check sheet.

13.3.3 Upon completion of the order, the Shipping Supervisor will forward the check sheet to the Plant Quality Assurance Manager for review before the check sheet is made a part of the inspection file for the specific order involved.

13.4 When special instructions are required, they will be applied to the flange of the reel. (See Exhibit #22)

14.0 INSPECTION, TEST AND OPERATING STATUS

10CFR50 APPENDIX B

Measures shall be established to indicate, by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items of the nuclear power plant or fuel reprocessing plant. These measures shall provide for the identification of items which have satisfactorily passed required inspections and tests, where necessary to preclude inadvertent bypassing of such inspections and tests. Measures shall also be established for indicating the operating status of structures, systems, and components of the nuclear power plant or fuel reprocessing plant, such as by tagging valves and switches to prevent inadvertent operation.

14.1 Material, when found to comply with inspection requirements at various points of manufacture, is so identified by affixing to the unit of product a distinctive marking which is authorized by the Plant Quality Assurance Manager.

14.1.1 Each inspector has their own individual punch or stamp assigned to them. A log is maintained by the Plant Quality Assurance Manager detailing who has been assigned these individual punches or stamps. Punches or stamps are surrendered when the individual leaves the Company or the Quality Assurance Department. Punches or stamps may be reissued after a period of two years. With this control, any tag which has been punched or stamped can be traced directly to an individual inspector and the test sheets that this inspector has filled out for the cable which has the punched or stamped tag.

14.2 At final inspection, the finished wire or cable is checked by an inspector using specifications, MSO, EN or SI's and/or inspection standards. The inspector punches or stamps the process tag with their own code punch or stamp or applies an initialed and dated Inspected tag to signify the wire has met all of the specification requirements for final inspection. Wire and cable requiring certification and/or customer inspection is then held until authorization is given for release of the wire for shipment.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

14.0 INSPECTION, TEST AND OPERATING STATUS (Continued)

14.2.1 At final inspection the inspector verifies that the tag has been punched or stamped by the preliminary inspectors. In the event that the tag has not been punched or stamped by the preliminary inspectors, all of those required inspections must now be conducted prior to being released for shipment.

14.3 Material when found not to comply with inspection requirements shall be handled in accordance with Section 15.

14.4 Process tags will be removed from completed reels only after the reel has been identified to inspection records by re-tagging or by including piece numbers on packing lists. Removed process tags shall be returned to the Quality Assurance Department.

15.0 NONCONFORMING MATERIALS, PARTS OR COMPONENTS

10CFR50 APPENDIX B

Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation. These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations. Nonconforming items shall be reviewed and accepted, rejected, repaired or reworked in accordance with documented procedures.

15.1 Nonconforming material includes all material in the process, final, packaged and shipping state which does not comply with the applicable specification, mill order, production order or customer order.

15.2 Nonconforming material shall be held with a Stop Tag. Material must be removed from the normal flow of acceptable production and placed in a segregated "Stop Tag Area" if possible. Sometimes the size and weight of reels of cable held will make removal to a segregated area impractical. However, the quality assurance system must as a minimum, provide for the removal of nonconforming material from the normal flow of acceptable production and ensure against inadvertent shipment or transfer to the next processing operation.

15.2.1 Stop Tags applied by Quality Assurance shall be a three part tag, serially numbered, form WC-1999 (Exhibit #17). The color red shall be used only for tags designating nonconforming material or material to be scrapped.

15.2.1.1 Stop Tags shall be used for material which fails to meet specification requirements and implied standards of quality.

15.2.1.2 Stop Tags shall be applied by Quality Assurance personnel only.

15.0 NONCONFORMING MATERIALS, PARTS OR COMPONENTS (Continued)

15.2.1.3 Stop Tags shall be removed by Plant Quality Assurance personnel only, and only after suitable disposition has been effected.

15.2.1.4 If a Stop Tag has been applied in error, the Plant Quality Assurance Manager shall review the situation. If the Stop Tag is not required, the Plant Quality Assurance Manager shall remove the Stop Tag and the material will be stamped acceptable. The Plant Quality Assurance Manager shall advise the individual who originally applied the Stop Tag as to its removal and the reason for its removal.

15.3 Notice of Nonconforming Material.

15.3.1 A Notice of Nonconforming Material may be issued whenever a defect, as defined above, is found in material held by means of a Stop Tag. However, a Notice of Nonconforming Material shall be issued whenever a corrective action is indicated. Information regarding the defect is obtained from the Stop Tag stub. The word "Stock" shall be used in the space provided for the customer's name if the material is being manufactured on a stock basis.

15.4 Disposition of Nonconforming Material.

15.4.1 Nonconforming material is discovered by either Production or Inspection.

15.4.1.1 Manufacturing Management reviews the nonconforming material and disposes of those cases for which no corrective action is indicated.

15.4.1.2 The Plant Quality Assurance Manager reviews those cases on nonconforming material and disposes of those for which no corrective action is indicated and which have not been disposed of by the Materials or Operations Manager.

15.0 NONCONFORMING MATERIALS, PARTS OR COMPONENTS (Continued)

15.4.2 A Material Review Board shall be established and meet at least weekly to take short-term corrective action (see Section #16) and to decide on the dispositon of the remaining Stop-Tagged material. The Material Review Board shall consist of the Managers from Engineering, Manufacturing and Quality Assurance and when applicable a customer representative. The Material Review Board shall:

15.4.2.1 Recommend disposition of the material being submitted for review, e.g., rework, scrap, offer for Advice to Sales or transfer to less stringent requirements.

15.4.2.2 Ascertain that there was no assignable cause for the nonconforming material which permits disposition as a short-term corrective action. In the event that there is an assignable cause or if the nonconformance appears to be a repetitive type of nonconformance, corrective action requirements are turned over to the Corrective Action Committee.

15.4.2.3 Assign to the representative of the Quality Assurance Department the responsibility of maintaining adequate records pertaining to the actions of the Material Review Board.

15.5 The short-term corrective action to be taken on material which has been Stop-Tagged and the decision to go Advice to Sales has been made shall be shown in the appropriate area on form WC-1985, "Notice of Nonconforming Material" (Exhibit #3).

15.5.1 When there is no assignable cause for a nonconformity, the area for Corrective Action on the form "Notice of Nonconforming Material," shall be filled out stating "No Assignable Cause, Disposition Only."

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

15.0 NONCONFORMING MATERIALS, PARTS OR COMPONENTS (Continued)

15.6 Removing the Stop Tag.

15.6.1 No one outside the Quality Assurance Department has the authority to remove a Stop Tag. The Plant Manager shall instruct the plant personnel in this policy.

15.6.2 Stop Tags shall remain with the nonconforming material until disposition has been executed. At this time they shall be removed only by an inspector. The inspector shall enter the final disposition on the tag, date and initial. The completed tag is to be returned to the Quality Assurance Department and matched to the stubs that are on file.

15.6.3 The used Stop Tag and its stub shall be filed as prescribed in Anaconda-Ericsson Quality Assurance Policies.

15.7 A follow-up on active Stop Tags shall be established. It is important that Stop Tags be handled promptly for prevention of loss of the tag and unauthorized diversion of nonconforming material.

15.8 Any material which has been Stop-Tagged may be disposed of by these four methods only:

15.8.1 By scrapping the cable which will require the application of either a Scrap Tag or Disposition Scrap Tag which will be filled out and attached to the defective cable for subsequent scrapping.

15.8.2 By the application of a Rework Tag (Exhibit #18) to the defective cable and the subsequent rework with approved inspection and test after rework.

15.8.3 By offering the cable to the customer advising the type of failure and obtaining permission to ship with the defect by use of the Advice to Sales procedure (Exhibit #19).

15.8.4 Reassign the material to an order requiring a less stringent specification providing the material meets the requirements of the less stringent specification.

15.0 NONCONFORMING MATERIALS, PARTS OR COMPONENTS (Continued)

15.9 If it is decided that the nonconformance is such that scrapping or rework is not warranted, then release for shipment is permitted only upon customer acceptance. The customer must be the final user of the material.

15.9.1 The Plant Quality Assurance Manager will issue a Notice of Nonconforming Material, form WC-1985 (Exhibit #3) which will give all of the pertinent information on the rejection and this in turn will be given to the Engineering Manager.

15.9.2 Engineering Management and/or the Vice-President of Engineering & Product Development determine and verify that the deficiency is such that it should be offered to the customer. In this event only, will an Advice To Sales form, Exhibit #19, be completed by the Engineering Management and/or the Vice-President of Engineering & Product Development who is stating that in his opinion the material is serviceable for the purpose for which it is intended. This Advice To Sales procedure is generally not used for low insulation walls or low conductor circular mil area on power cables.

15.9.3 The Advice To Sales form, Exhibit #19, is presented to Plant Management and to Sales Management for their consideration for offering to the customer. If decisions are made that the material is to be offered to the customer, this will be handled through the Sales Service Department and/or the Account Manager servicing the account.

15.9.4 If the customer is willing to accept the material, this information is completed on the Advice To Sales form which is then distributed to the various departments indicated in the upper-left hand box of the form.

15.9.5 The Plant Quality Assurance Manager shall use the completed Advice To Sales form indicating customer acceptance as his authority to release the material for shipment.

15.9.6 Nonconforming material is never released without specific approval and knowledge of the customer.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

15.0 NONCONFORMING MATERIALS, PARTS AND COMPONENTS (Continued)

15.10 Review of Nonconforming Material.

15.10.1 Monthly Reports of Inspection and Tests are sent to the Wire & Cable Manager of Quality Assurance from the manufacturing plants. These reports describe the quantity and type of materials inspected, accepted and rejected during the reporting period. Copies of this report may be distributed locally as required.

15.11 Feedback of Customer Complaints - CCA Procedure.

15.11.1 A procedure to monitor, tabulate, and analyze customer complaints involving quality and design is provided to all Sales and Marketing personnel.

15.11.1.1 Proper documentation forms are provided for reporting of customer complaints (Exhibit #24).

15.11.2 Reports are issued to the executive branch of the Company outlining the status of customer complaints and the actions that have been taken.

15.11.2.1 Should any of the analysis data demonstrate the customer complaint is due to design, corrective action will be taken immediately to correct or change the design.

16.0 CORRECTIVE ACTION

10CFR50 APPENDIX B

Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition and the corrective action taken shall be documented and reported to appropriate levels of management.

16.1 Corrective action shall be taken when quality deficiencies are found in:

16.1.1 Material in process.

16.1.2 Finished material.

16.1.3 Packaging, marking and shipping.

16.1.4 Material delivered to customer. These are reported on CCA forms - Request for Customer Complaint Analysis. (Exhibit #24)

16.2 Corrective action taken shall be of two types:

16.2.1 Short Term - To correct the deficiency in the particular item found to be defective or to disposition material for which no corrective action need be taken. Short-term corrective action is handled by the Material Review Board (see Section 15). Typical examples of short-term corrective action are:

16.2.1.1 Rework or repair.

16.2.1.2 Salvage good material.

16.2.1.3 Material rendered obsolete due to design changes.

16.0 CORRECTIVE ACTION (Continued)

16.2.1.4 Material which has been altered or substituted as a result of engineering changes which are subject to formal approval.

16.2.1.5 Material manufactured for purposes of Research and Development, Engineering evaluation or tests and for obtaining engineering data.

16.2.1.6 Material used for set-up purposes unless the quantity is excessive.

16.2.1.7 Material for which the nonconformance is considered insignificant and non-repetitive. Judgment and experience should differentiate between those nonconformances caused by chance alone and those attributable to assignable causes thus being corrective.

16.2.2 Long Term - To correct the cause of trouble which produced the deficiency. Long-term corrective action is referred to the Correction Action Committee by the Material Review Board (see Section 15). Typical examples for which long-term action is required are:

16.2.2.1 Failure to follow manufacturing instructions.

16.2.2.2 Incorrect or inadequate instructions.

16.2.2.3 Inadequate equipment.

16.2.2.4 Inadequate training.

16.2.2.5 Inadequate inspection or test method.

16.3 The steps in long-term corrective action for assignable causes shall be:

16.3.1 To hold by a Stop Tag and by a Notice of Nonconforming Material when material is found to be in nonconformance.

16.0 CORRECTIVE ACTION (Continued)

16.3.1.1 Only one Notice of Nonconforming Material need be filed for any class of nonconformance which has occurred under the same conditions at the same time.

16.3.2 To diagnose the cause of trouble, and determine if there is an assignable cause. When no assignable cause is evident, this shall be noted by the Material Review Board and so stated on the proper documentation forms. In the event there is an assignable cause or if the nonconformance appears to be a continuing repeat type of nonconformance, the corrective action requirements are turned over to the Corrective Action Committee.

16.3.3 To develop the long-term corrective action.

16.3.4 To apply the correction action.

16.3.5 To follow-up to determine timely effectiveness of the corrective action employed.

16.4 A Corrective Action Committee shall be established at the manufacturing plant to discuss and take necessary action on all deficiencies requiring long-term corrective action. The committee shall be composed of at least the Engineering, Quality Assurance and Manufacturing representatives who shall have sufficient authority to recommend and take the necessary corrective action. The authority of the committee is confined to determination of long-term corrective action, putting it into effect and seeing that it is done. The committee shall meet whenever a nonconformance requiring long-term corrective action is referred to them by the Material Review Board.

16.4.1 Responsibility of Engineering representative; providing criteria have not previously been established, he shall conduct such investigations as are necessary to determine:

16.4.1.1 The effect of the defective material on prescribed quality and reliability requirements.

16.4.1.2 Whether a suitable method of repair can be devised. He shall provide such details of analysis as required by other members of the Committee.

16.0 CORRECTIVE ACTION (Continued)

16.4.1.2.1 When repairs on critical components are authorized and made on product, the product on which repairs have been made will be identified as having been repaired. It will be the responsibility of the Quality Assurance Department to maintain records for that particular item showing the repairs made. This information shall be made available to customers who require this.

16.4.2 Responsibilities of the Quality Assurance representative:

16.4.2.1 The Quality Assurance representative shall conduct such investigations as are necessary to:

16.4.2.1.1 Determine the recurrent trend for the same or similar defects.

16.4.2.1.2 Verify that the information regarding the defects is correct and complete as stated.

16.4.2.1.3 Have available for the committee specifications or other pertinent data.

16.4.2.1.4 Conduct periodic analyses and issue reports on the effectiveness of the corrective action procedures at the manufacturing location. These reports are to include copies to the Wire & Cable Manager of Quality Assurance.

16.4.3 Responsibilities of the Manufacturing Representatives:

16.4.3.1 The Manufacturing Representative shall conduct such investigations as are necessary to:

16.0 CORRECTIVE ACTION (Continued)

16.4.3.1.1 Correct assignable conditions which could result in the further production of discrepant material.

16.4.3.1.2 Give a reasonable date when corrective actions will be accomplished.

16.4.3.1.3 Ensure that corrective action has accomplished the desired results.

16.4.3.1.4 Report, when applicable, unsatisfactory conditions created by corrective actions initiated such as labor problems resulting from disciplinary action, the rejection of materials resulting in a shortage of materials, excessive scrap, etc.

16.4.4 In those cases where previously established criteria are available, the Committee may use such criteria for subsequent action. Previous decisions should not be used as routine justification for acceptance of the same or similar defect.

16.5 The Corrective Action Committee shall:

16.5.1 Ascertain that action is being, or has been, initiated to prevent recurrence of the discrepancy.

16.5.2 Assign to the representative of the Quality Assurance Department ment the responsibility of maintaining adequate records pertaining to the actions of the Corrective Action Committee.

17.0 QUALITY ASSURANCE RECORDS

10CFR50 APPENDIX B

Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include at least the following: Operating logs and the results of reviews, inspections, tests, audits, monitoring of work performance, and materials analyses. The records shall also include closely-related data such as qualifications of personnel, procedures, and equipment. Inspection and test records shall, as a minimum, identify the inspector or data recorder, the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted. Records shall be identifiable and retrievable. Consistent with applicable regulatory requirements, the applicant shall establish requirements concerning record retention, such as duration, location, and assigned responsibility.

17.1 The Plant Quality Assurance Manager shall set up for the manufacturing plant a system for maintaining Quality Assurance records.

17.2 Quality Assurance records shall be maintained in four file classifications which are listed below, together with a description of the material to be placed in each classification.

17.2.1 Active Order File.

A file folder shall be established for each order received and shall contain the following:

17.2.1.1 Copy of mill order, production order and any change orders. A copy of the customer's order, if available and all change orders.

17.2.1.2 Schedule of inspections and tests, if prepared.

17.2.1.3 The original copy, photo copy or carbon copy of all inspections and tests made with regard to:

17.2.1.3.1 Any specialized or custom requirements of the customer for the specific material constituting that order, including any such requirement on the raw material used.

17.0 QUALITY ASSURANCE RECORDS (Continued)

17.2.1.3.2 Records shall be maintained which will permit tracing the quality status through the various stages of manufacturing to the finished product.

17.2.1.3.3 Any standard requirements on standard or customer built products which are inspected or tested on a per order basis

17.2.1.3.4 Review by the Plant Quality Assurance Manager to verify that tests and inspections have been conducted and that results are in conformance with specifications, order and contract requirements, also inspector identification.

17.2.1.4 Notices of Nonconforming Material relating to the order including a record of Stop and Reject Tags and Advice to Sales reports.

17.2.1.5 Copies of affidavits (Notarized Certifications) furnished in connection with the order.

17.2.2 Routine Test Record File.

17.2.2.1 A file or folder shall be established by type of report, for each variety of report prepared on the basis of continuous production sampling and qualification tests.

17.2.2.2 A file or folder shall also be established for each variety of report prepared in testing by raw materials, and/or by supplier for standard requirements and shall contain the original copies of such reports.

17.2.2.3 The routine test record file shall be cleared of records on material once each calendar year. Such records shall be placed in an inactive file in an environment which will protect from loss and damage.

17.0 QUALITY ASSURANCE RECORDS (Continued)

17.2.3 Completed Order File.

17.2.3.1 The completed order file shall be cleared of records on material once each calendar year. Such records shall be placed in an inactive file in an environment which will protect from loss and damage.

17.2.4 Special File.

17.2.4.1 Special files shall be maintained which may include but are not limited to:

17.2.4.1.1 Audits and other special surveys which are conducted within the inspection facility.

17.2.4.1.2 Stop Tags.

17.2.4.1.3 Records of Calibrations.

17.2.4.1.4 Records of Qualification of Personnel.

17.2.4.1.5 Equipment Records.

17.2.4.1.6 Training Schedules and Programs.

17.2.4.1.7 Raw Material Purchase Orders.

17.2.4.1.8 Cost Studies.

17.2.4.1.9 Supplier Evaluation Data.

17.2.4.1.10 Vendor Surveillance/Facility Survey Reports.

17.3 Record Storage Facility.

17.3.1 Record storage facilities shall be located to protect the contents from possible destruction.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

17.0 QUALITY ASSURANCE RECORDS (Continued)

17.3.2 All records will be stored in a suitable cabinet fully protected.

17.3.3 Duplicate records on microfilm shall be maintained and stored in a separate remote location from the area where the original records are stored.

17.3.3.1 Microfilm storage shall be maintained in an environment which is recommended by the film manufacturer.

17.4 The Plant Quality Assurance Manager shall set up for his manufacturing location a system for the retention of quality records which will provide as a minimum:

17.4.1 A list of documents requiring retention.

17.4.2 The length of retention.

17.4.3 Planned storage.

17.5 The following items shall be considered in determining the length of retention for quality records:

17.5.1 Contractual requirements, especially on government orders.

17.5.2 Specification requirements.

17.5.3 General Office, Financial, Accounting and Related Policies and Procedures, Section 26.

17.5.4 Period stated in certificates of compliance.

17.5.5 A length of time sufficient to permit:

17.5.5.1 Quality system audits and reviews.

17.5.5.2 Quality analyses and trends.

17.5.5.3 Review for policy audits.

17.0 QUALITY ASSURANCE RECORDS (Continued)

17.5.6 The minimum retention period shall be not less than one full calendar year and in addition:

17.5.6.1 Records on material requiring traceability shall be maintained for not less than ten years.

17.5.6.2 Records on certain other products shall be maintained for periods determined by specification, contract and established industry practice.

18.0 AUDITS

10CFR50 APPENDIX B

A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program. The audits shall be performed in accordance with the written procedures or check lists by appropriately trained personnel not having direct responsibilities in the areas being audited. Audit results shall be documented and reviewed by management having responsibility in the area audited. Follow-up action, including re-audit of deficient areas, shall be taken where indicated.

18.1 Wire & Cable Quality Assurance Audits.

18.1.1 Scheduled Quality Assurance audits shall be conducted in the Wire & Cable plants by the Wire & Cable Manager of Quality Assurance to evaluate the entire quality assurance sytem in effect at each plant.

18.1.1.1 Audits shall be conducted in accordance with the requirements established by USNRC Regulatory Guide 1.144.

18.1.2 Audits shall be made at least once a year at each Wire & Cable facility.

18.1.2.1 Follow-up audits or surveillance visits shall be made to verify that recommended corrrective actions have been taken on unsatisfactory ratings pointed out by the audit.

18.1.3 The audit shall be divided into the various sections of the Quality Assurance Manual, Policies, Inspection Procedures, Test Methods, Standard Forms, etc. Each of the elements making up one section shall be rated either satisfactory, recommendation or unacceptable. Comments and recommendations shall be made by the Wire & Cable Manager of Quality Assurance on each location.

18.0 AUDITS (Continued)

18.1.4 Audits shall encompass all of the elements of this manual including but not be limited to the following:

18.1.4.1 Adherence to inspection procedures, sampling plans, etc.

18.1.4.2 Use of published test methods and standard forms.

18.1.4.3 Filing test records, records of calibration, etc.

18.1.4.4 Maintenance of tightened sampling files.

18.1.4.5 Maintenance of calibration program and locked cabinet for calibration standards.

18.1.4.6 Certification programs for inspectors and testers including records.

18.1.4.7 Maintenance of test equipment, good housekeeping.

18.1.4.8 Control of material within process.

18.1.4.9 Maintenance of Stop Tag and corrective action files.

18.1.4.10 Control of incoming purchased raw materials.

18.1.4.11 Adequacy of reports to Purchasing on vendor performance.

18.1.4.12 Control of flow of accepted and rejected material within the plant.

18.1.4.13 Adequacy of start-up, process and final inspection.

18.1.4.14 Adequacy of programs for excess material usage and control of scrap for quality reasons.

18.1.4.15 Adequacy of records.

18.0 AUDITS (Continued)

18.1.4.16 Adequacy of quality instructions at work stations.

18.1.5 To insure that a systematic, orderly and consistent approach will be taken when performing a system audit, the Wire & Cable Manager of Quality Assurance shall make out a checklist which can be used for rating the various elements of the audit. (Exhibit #20)

18.1.6 The findings and recommendations of the Quality Assurance system audit will be reviewed with the Plant Manager and the Plant Quality Assurance Manager.

18.1.6.1 Elements of the audit shall be rated. The rating system is divided into three categories.

S - Satisfactory - Items given an S-rating indicate no problems in that general area and will normally receive no comments or recommendations. Action may be taken at the discretion of the Plant Manager or Plant Quality Assurance Manager.

R - Recommendation - Items given an R-rating indicate that there are present or potential problems in this area and will receive comments and recommendations. Corrective action for this rating may be long or short-term as applicable.

U - Unsatisfactory - Items given a U-rating require immediate attention and indicate serious present or potential problems. This type of rating will receive a comment and recommendation. Corrective action for this rating is normally short-term. Follow-ups will be conducted to verify implementation of corrective action.

N/A - Not Applicable.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

18.0 AUDITS (Continued)

18.1 7 Reports of audits written on appropriate forms and categorized on Exhibit #21 shall be sent to the Plant Quality Assurance Manager with copies to the Plant Manager and the President of Wire & Cable.

18.1.7.1 The Plant Quality Assurance Manager upon receipt of the report of audit shall reply to each comment and recommendation on the report. These comments are to be sent to the Wire & Cable Manager of Quality Assurance.

18.1.7.2 The Wire & Cable Manager of Quality Assurance shall upon receipt of the comments and recommendations of 18.1.7.1, conduct a follow-up audit to verify that all unacceptable points have been corrected. The follow-up audit shall be reported on Exhibit #21.

18.1.7.3 A report shall be prepared for each audit showing results, recommendations and implemented corrective action. One copy of each completed report shall be sent to the President of Wire & Cable and others as required.

18.2 Internal Plant Audits.

18.2.1 Internal audits shall be conducted quarterly by the Plant Quality Assurance Manager. Whenever audits result in no findings the internal audit may be extended to semi-annually. The audits shall cover as a minimum the following:

18.2.1.1 A review of operations performed by Production personnel and inspections performed by Quality Assurance personnel.

18.2.1.2 A check for damage in handling and storing.

18.2.1.3 Segregation of nonconforming material.

18.0 AUDITS (Continued)

18.2.1.4 Identification of material in process.

18.2.1.5 Quality aspects of packaging, marking and shipping.

18.2.1.6 General use and operation of spark testers, automatic gauges, continuity checkers, etc.

18.2.1.7 Records of reworked material.

18.2.1.8 Records of salvaged Stop-Tagged material.

18.2.1.9 Evidence of continued running of rejectable material.

18.2.1.10 Verification that documents prescribing activities affecting quality are current and that obsolete documents have been withdrawn from use.

18.2.2 Results of the audits shall be reported to the Wire & Cable Manager of Quality Assurance and to the Plant Manager.

18.2.2.1 The report shall include a list of corrective actions taken if they were within the jurisdiction of the Plant Quality Assurance Manager; otherwise recommendations for corrective action shall be made.

18.2.2.2 A follow-up shall be conducted to assess improvement.

18.3 External Audits (Lower Tier Suppliers)

18.3.1 External audits may be conducted at suppliers plants to evaluate the quality assurance system in effect at that plant.

18.3.2 Audits shall be scheduled by the Wire & Cable Manager of Quality Assurance as required to assure conformance to purchase order, specification and quality assurance requirements. (See 4.4.1 and 4.5.1)

18.3.2.1 Audits may be conducted by any Quality Assurance Manager within Anaconda-Ericsson Wire & Cable Division.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

18.0 AUDITS (Continued)

18.3.2.2 Follow-up audits, as required, shall be made to verify that corrective action has been taken for any deficiencies found in the original audit.

18.3.3 The audit shall be divided into various sections encompassing those parts of 10CFR50, Appendix B and ANSI N45.2 which are deemed applicable to the product or service being supplied.

18.3.4 To ensure that a systematic, orderly, consistent approach will be taken while performing this system audit, the Wire & Cable Manager of Quality Assurance shall make out a checklist which can be used for rating the various elements of the audit. The checklist will be made available for use by the individuals conducting the audit.

18.3.5 The findings and recommendations of the quality system audit will be reviewed with the management of the supplier and the management of the purchasing Anaconda-Ericsson plant.

18.3.6 Reports of audits shall be sent to the Wire & Cable Manager of Quality Assurance, the Quality Assurance Manager of the supplier, the Plant Manager and the Plant Quality Assurance Manager of the Anaconda-Ericsson plant purchasing the service or product. The supplier will be required to delineate all of the corrective actions that will be implemented for compliance with the quality assurance system requirements established by purchase order or contract.

18.3.7 Upon completion of the audit and follow-up, the Wire & Cable Manager of Quality Assurance will report to the responsible Anaconda-Ericsson Purchasing Agent as to the acceptability of the supplier.

19.0 QUALITY ASSURANCE MANUAL - REGULATORY GUIDE COMMITMENT; CHANGES AND ADDITIONS - CONTROLS AND APPROVALS

19.1 Regulatory Guide Commitment

19.1.1 Anaconda-Ericsson is committed to comply with the following Regulatory Guides as they apply to the manufacture of wire and cable:

19.1.1.1	Regulatory Guide 1.28	-	February 1979
19.1.1.2	Regulatory Guide 1.38	-	May 1977
19.1.1.3	Regulatory Guide 1.58	-	September 1980
19.1.1.4	Regulatory Guide 1.64	-	June 1976
19.1.1.5	Regulatory Guide 1.74	-	February 1974
19.1.1.6	Regulatory Guide 1.88	-	October 1976
19.1.1.7	Regulatory Guide 1.123	-	July 1977
19.1.1.8	Regulatory Guide 1.144	-	September 1980
19.1.1.9	Regulatory Guide 1.146	-	August 1980

19.2 Customer Changes and/or Additions.

19.2.1 Customer Quality Assurance Standards may have requirements which exceed or differ from the requirements established and specifically covered or described in this manual. In this event an addendum may be issued to the manual covering the specific items to be added for the customer involved. These addendums will be assigned only to those individual customers for whom they are published and will be applicable only to the individual order or contract for which they are produced.

19.2.1.1 Addendums will be approved prior to issuing by the same organization which approved this original manual.

19.2.1.2 Records of distribution will be maintained by the Wire & Cable Manager of Quality Assurance.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

19.0 QUALITY ASSURANCE MANUAL - REGULATORY GUIDE COMMITMENT: CHANGES AND ADDITIONS - CONTROLS AND APPROVALS (Continued)

19.3 Controls.

19.3.1 Issuance of all Quality Assurance Manuals for Generating Station Cable shall be controlled by the Wire & Cable Manager of Quality Assurance. Manuals will be issued only upon written request or when specifically required by order or contract and only when the recipient is known. Records shall be maintained for all copies of the manual as to recipient and manual number. Only controlled copies will be issued.

19.3.2 Whenever changes or revisions to the Quality Assurance Manual for Generating Station Cable are made, customer acceptance will be requested and copies of this acceptance will be forwarded to the Plant Quality Assurance Manager.

19.4 Approvals.

19.4.1 Whenever this manual is changed or modified to comply with government rulings, directives or orders, etc., the changes or modifications will be approved prior to issuing by the same organizations which approved the original manual. Copies of all changes and modifications will be distributed to all manual holders on record under the same controls as used when issuing the original manual.

19.5 Review and Updating.

19.5.1 This manual will be reviewed at intervals not greater than once every two years to verify that it is current and up to date. Should revisions and updates be required, they will be handled in accordance with paragraph 19.3

19.5.2 Any revisions or modifications will be transmitted to all holders of record of this manual.

19.5.3 Whenever any revisions or modifications are made which are more than editorial changes, the NRC will be notified of these changes in accordance with NUREG-75/087, Standard Review Plan, and provisions will be made for the review and acceptance of the revisions.

EXHIBITS

The exhibits which appear in this section are referenced in Part I and III of this manual.

Exhibits 1, 2 and 15 are specific documents and any changes and/or modification in these exhibits will be distributed to all holders of record of this manual.

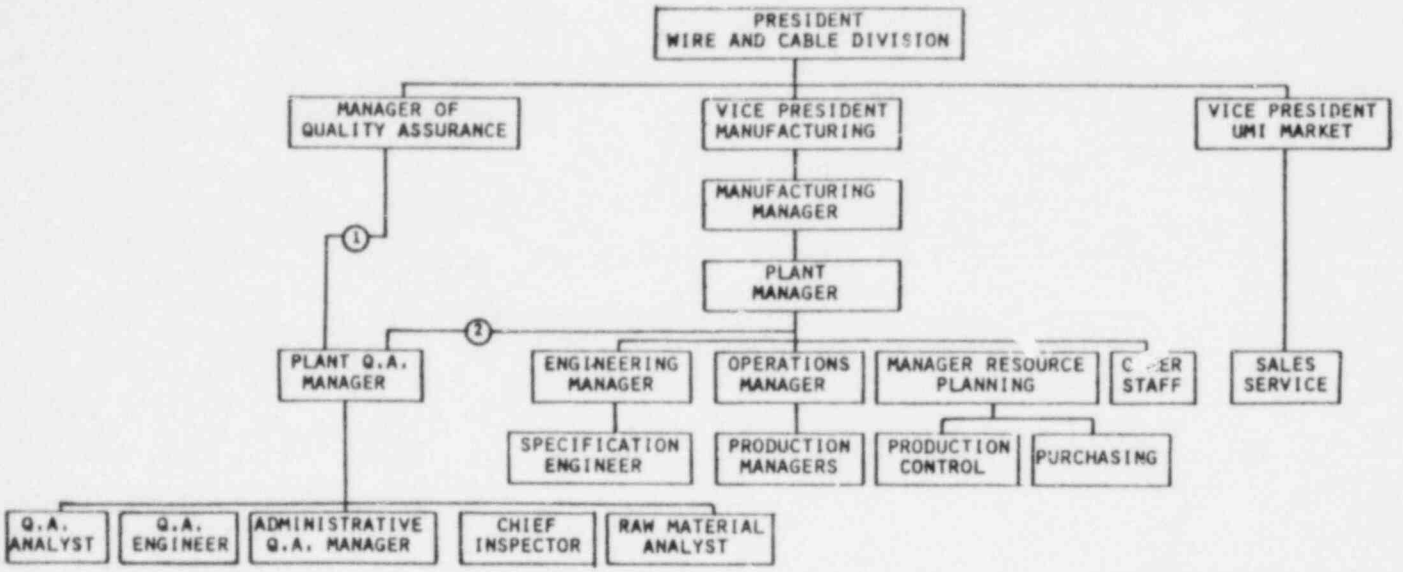
All other exhibits are example of the documented controls which are available and used to provide objective evidence that the published quality assurance system is maintained. Many other forms not included as exhibits are used at the manufacturing plants. In many cases these forms serve the same function as the exhibits. For this reason, whenever slight modifications are made in forms used as exhibits, the modifications will not be reflected or updated in issued copies of this manual.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

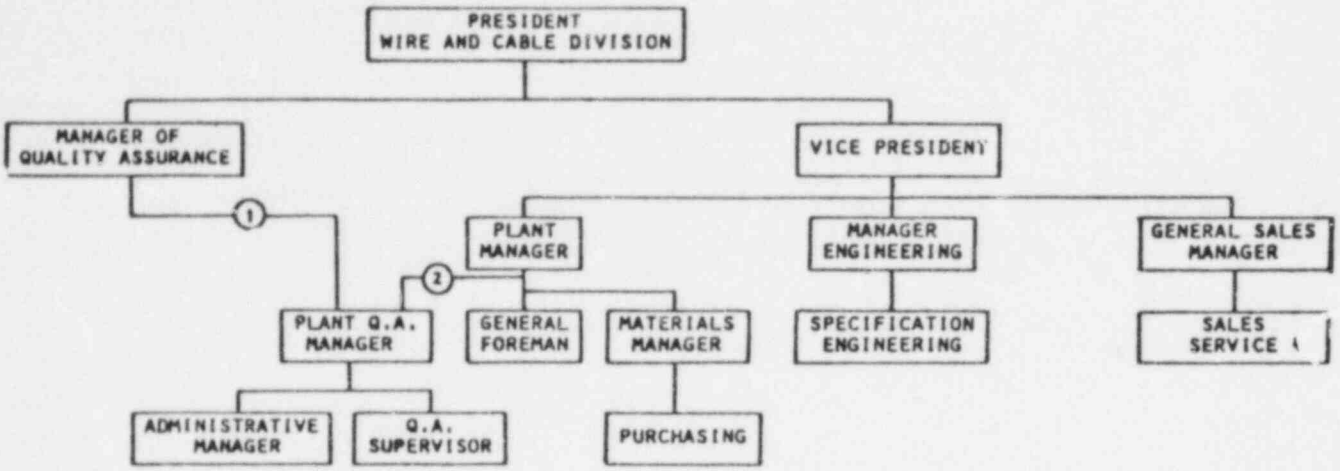
EXHIBIT #1



QUALITY ASSURANCE ORGANIZATION
FOR
MARION, INDIANA

(1) FUNCTIONAL DIRECTION
(2) ADMINISTRATIVE DIRECTION

EXHIBIT #2



QUALITY ASSURANCE ORGANIZATION
FOR
YORK, PENNSYLVANIA

(1) FUNCTIONAL DIRECTION
(2) ADMINISTRATIVE DIRECTION

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #3

NC 1985 (3/81)

___ DIVISION MGR. Q.A. - MARION ___ FILE ___ PURCHASING (RAW MATERIAL ONLY) ___ ENGINEERING ___ ___	Anaconda Ericsson WIRE AND CABLE DIVISION QUALITY ASSURANCE NOTICE OF NONCONFORMING MATERIAL PLANT	DATE REPORT NO. STOP TAG NO.: ORDER NO.: ITEM NO.: C.O. NO.: ITEM NO.: CUSTOMER OR SUPPLIER:

DEFICIENCY FOUND ON: ___ RAW MATERIAL INSPECTION ___ PROCESS INSPECTION ___ FINAL INSPECTION

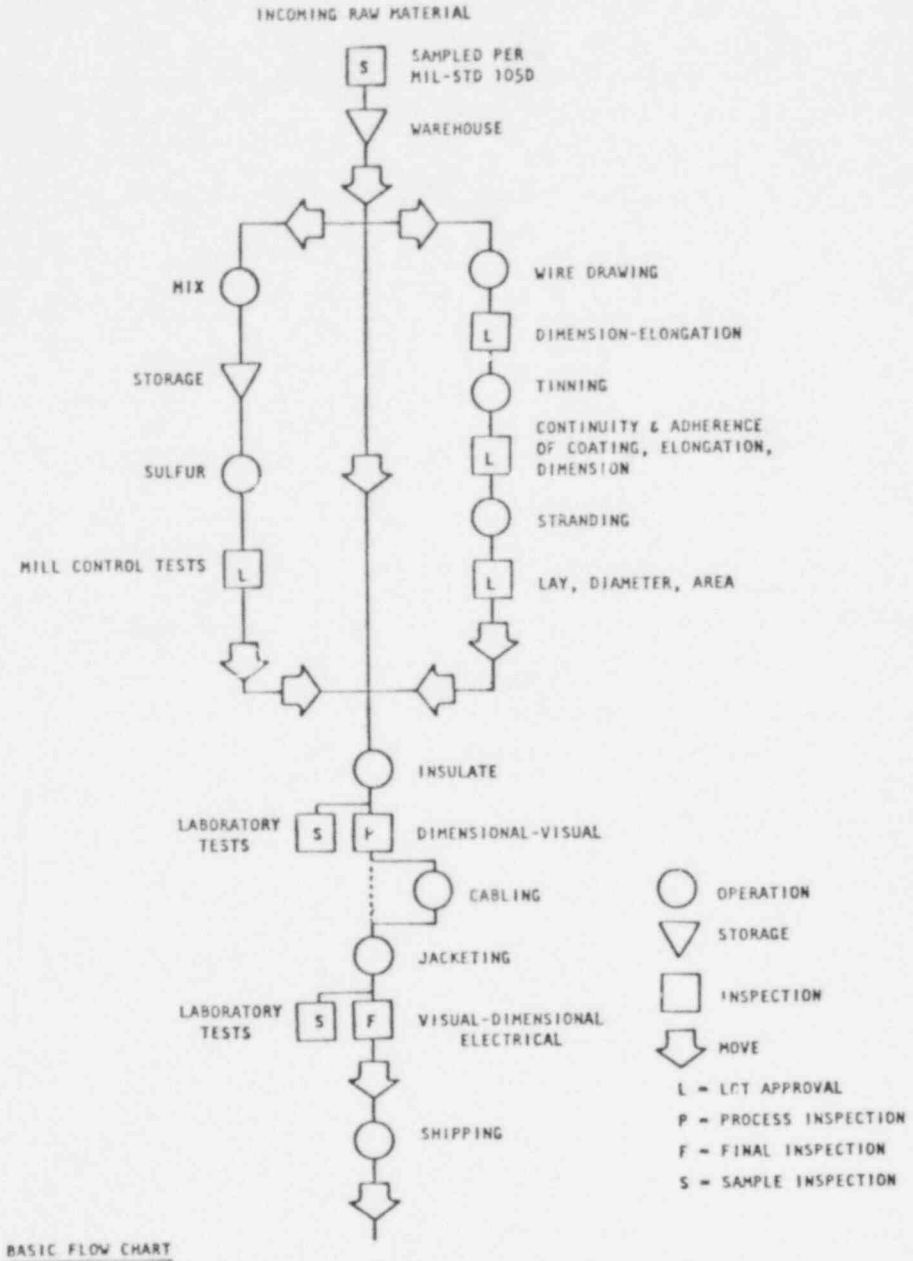
DESCRIPTION OF MATERIAL	
QUANTITY IN LOT	
QUANTITY NONCONFORMING	
REASON FOR HOLDING	
ACTUAL VALUES OBTAINED	
SPECIFIED VALUES	
SPECIFICATION APPLYING	
STATE OF MATERIAL AND LOCATION	
MATERIAL PRODUCED ON MACHINE NO.	

INSPECTED BY:_____DATE_____REVIEWED BY Q.A. MGR._____DATE_____

ASSIGNABLE CAUSE CORRECTIVE ACTION TAKEN	MANUFACTURING MANAGER_____DATE_____
DISPOSITION	

ENGINEERING_____DATE_____MANUFACTURING_____DATE_____QUALITY ASSURANCE_____DATE_____

EXHIBIT #4



BASIC FLOW CHART

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #5

FORM # WSQ x 78

ORDER NO

CUST NO

DESIGN NO

CUST CAT NO

QUANTITY

LAST OPER DATE | FROM DATE | REVIEWED & APPROVED BY: WRITER | SPEC ENG | QA | SPEC

NET WT | MAKE | REPL | NEW | REPEAT | CHANGE | SHEET NO | REV | DATE

SHIPPING LENGTHS

TOL % + —

REEL

TAGS

PRIORITY RATING | OSHA

CERTIFY TYPE | SAMPLE ITEM

MILL INSPECTION | GEN STA

OPERATION			WORK CENTER PRIMARY (SECOND)	QUANTITY		DIAMETERS		INSTRUCTIONS	MATERIAL REQ	
SEQ NO	NEXT	TYPE		PC	LENGTH	NOM	TOL + —		MATERIAL ITEM NO	QUANT

EXHIBIT #6

EN-14008-A
12/PE #16(7/0192) T.C., FR-EP, TWIST, DRAIN, ALUM/MYLAR, TAPE, CABLE, TAPE, DRAIN, ALUM/MYLAR, CPE JKT 90°C-600V
TYPE ERCP, 10-615831-1

#/M' 593.33

PAIR #_____

200 12012 TWIST - FPM
12937.0009 DRAIN
#/M' - 4.99 #/M' 62.28
06516.2105 ALUM/MYLAR
#/M' - 1.75 #/M' 21.42
06352.2105 MYLAR
#/M' - .63 #/M' 7.71

CORE - 2/C + 1/C #18(7/0152) T.C.
DRAIN (IN ONE INTERSTICE)
PITCH - 2 ± 1/4
LAY - LH
RPM - 400 NOM .222
DRAIN IR#_____

TAPE - ALUM/MYLAR (CC-2453)
SIZE - 1" X 0025
LAP - 1/3 (1/4 ABSOLUTE MIN)
(AL SIDE DOWN) NOM .230
IR#_____

TAPE - CLEAR MYLAR (CC-2432)
SIZE - 1" X 001
LAP - 1/4 NOM .233

210 08010 REWIND & INSPECT FOR CABLE

220 01000 INSPECT
CR - 4.53 OHMS/M' MAX @ 20°C

COLOR CODE

EACH PAIR - 1/C WHITE + 1/C BLACK WITH SURFACE PRINTED PAIR #'S

NEXT OPERATION 900

START: QA SUPV. WRITER DATE 11/1/79

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #7

MDC

STOCK RELEASE ORDER

W-

APPLICABLE MSO:

DUE DATE

CATALOG NO.

QUANTITY:

SHEET NO.

PRODUCTION CONTROL SCHEDULE

Operation	Operation	Tags
DRAW	1st BLT	CONDR TG PC NO. ____ TO ____
BUNCH	WEB	CONDR SUB SET ____ OF ____
SUB BRD	2nd BLT	GRD/CK TG PC NO. ____ TO ____
STRAND	BUNCH GRD/CK	GRD/CK SUB SET ____ OF ____
QUAL	STRAND	GRD/CK TG PC NO ____ TO ____
INSLT	PUNCH GRD/CK	GRD/CK SUB SET ____ OF ____
BELT	STRAND	OA TG PC NO. ____ TO ____
BLT/SHLD	INS GRD/CK	DATE TGS MADE
CORE	ARMOR	BY
BRD/SHLD	BLT OA	TAGS CHKD BY
TAPE/SHLD	FILLERS	
TAPE		
CABLE		

Q.A. RELEASE TO TRANSFER						M.D.C. TRANSFERS					
DATE	PC. NO.	FEET	DATE	PC.NO.	FEET	DATE	PC. NO.	FEET	DATE	PC. NO.	FEET

EXHIBIT #8

FORM # CHANGE MSO 5-78

CHANGE PAGE NO. _____ PAGE _____ OF _____

ORDER NO.
CUST. NO.
DESIGN NO.
DATE
SHEET NO.
CUST. CAT. NO.
QUANTITY
DESC

REQUESTED BY | DATE | REVIEWED & APPROVED BY: WRITER | SPEC. ENG. | Q.A. | REASON FOR CHANGE

FIELD DESCRIPTION | FROM | TO

OPERATION			WORK CENTER PRIMARY (SECOND)	QUANTITY		DIAMETERS		INSTRUCTIONS	MATERIAL REQ.	
SEQ. NO.	NEXT	TYPE		PC.	LENGTH	NOM.	TOL. + —		MATERIAL ITEM NO.	QUANT.
FROM										

Q.A. ( ) _____ STRANDING ( ) _____ PLASTICS ( ) _____ D.P. & COST ( ) _____
SEC. FLEX ( ) _____ INSULATING ( ) _____ HIGH VOLTAGE ( ) _____ PROC. ENGR. ( ) _____
MDC ( ) _____ LOAD CENTER ( ) _____ PROD. CONT. ( ) _____

MSO CHANGE

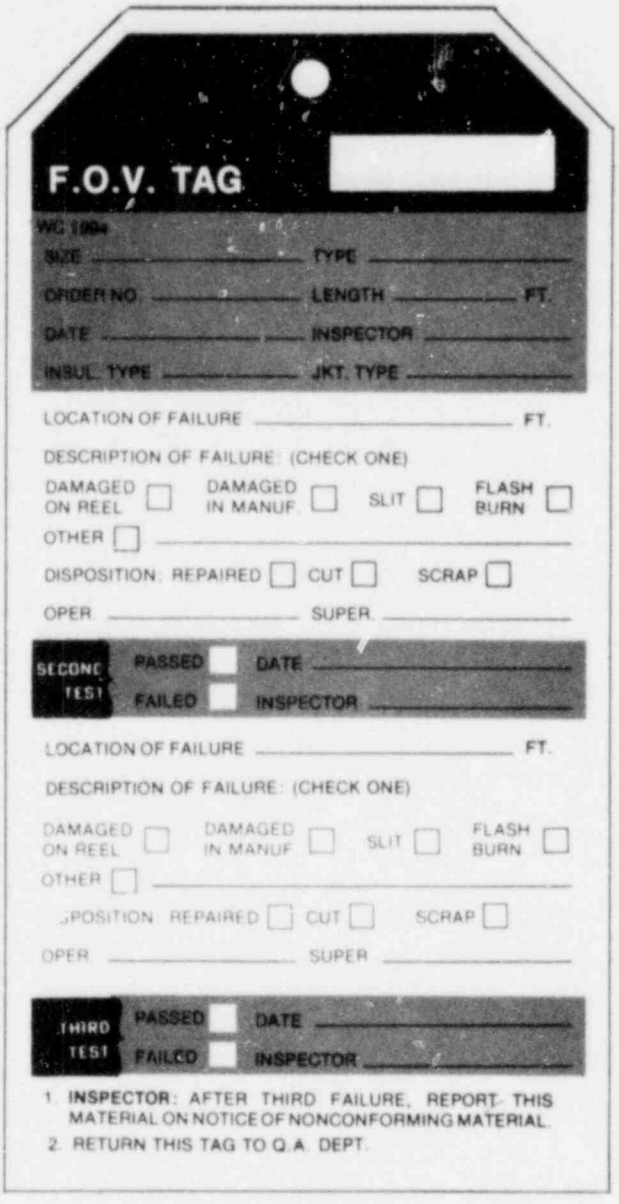
Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #9



F.O.V. TAG

WC 1994

SIZE _____ TYPE _____

ORDER NO. _____ LENGTH _____ FT.

DATE _____ INSPECTOR _____

INSUL. TYPE _____ JKT. TYPE _____

LOCATION OF FAILURE _____ FT.

DESCRIPTION OF FAILURE: (CHECK ONE)

DAMAGED ON REEL ☐ DAMAGED IN MANUF. ☐ SLIT ☐ FLASH BURN ☐

OTHER ☐ _____

DISPOSITION: REPAIRED ☐ CUT ☐ SCRAP ☐

OPER. _____ SUPER. _____

SECOND TEST PASSED ☐ FAILED ☐ DATE _____ INSPECTOR _____

LOCATION OF FAILURE _____ FT.

DESCRIPTION OF FAILURE: (CHECK ONE)

DAMAGED ON REEL ☐ DAMAGED IN MANUF ☐ SLIT ☐ FLASH BURN ☐

OTHER ☐ _____

DISPOSITION: REPAIRED ☐ CUT ☐ SCRAP ☐

OPER _____ SUPER _____

THIRD TEST PASSED ☐ FAILED ☐ DATE _____ INSPECTOR _____

1. **INSPECTOR**: AFTER THIRD FAILURE, REPORT THIS MATERIAL ON NOTICE OF NONCONFORMING MATERIAL.
2. RETURN THIS TAG TO Q.A. DEPT.

EXHIBIT #10

WC 1949 (2/81)

Anaconda Ericsson
Wire and Cable Division

Quality Assurance

CERTIFICATE OF COMPLIANCE

Customer's Order No.

Anaconda-Ericsson Order No.

The following is a true and accurate description of the material manufactured at our plant, and shipped on the above order:

ITEM NO.	QUANTITY	DESCRIPTION	APPLICABLE SPECIFICATION

I hereby certify that the material described above was inspected under my general supervision and found to comply with the requirements of
as interpreted by Anaconda-Ericsson Quality Control Procedures prior to being placed into stock or released for shipment.

Test records will be kept on file at least one year from date of test, and will be made available for examination by authorized persons upon request.

Signed _____

Title _____

Plant _____

Sworn and subscribed to before me this _____ day of _____ 19 ___
Notary Public

WC 2011 (2/81)

SPECIFICATION APPLYING

DESCRIPTION OF CABLE

Anaconda Ericsson
Wire and Cable Division
Quality Assurance

CERTIFIED TEST REPORT

PLANT STATE

REPORT NO. DATE

SHEET OF

ORDER NO. ITEM NO.

C.O. NO.

CUSTOMER

PC. NO.	REEL NO.	LENGTH FEET	MARKER TYPE	PHYSICAL MEASUREMENTS: BARE COND. DIA. INCH	ESS. THICK. ACTUAL MIN. INCH	ESS. THICK. ACTUAL AVG. INCH	INSUL. THICK. ACTUAL MIN. INCH	INSUL. THICK. ACTUAL AVG. INCH	COVER THICK ACTUAL MIN. INCH	COVER THICK ACTUAL AVG. INCH	O. D. ACTUAL MIN. INCH	O. D. ACTUAL MAX. INCH	ELECTRICAL TESTS: VOLTAGE TEST ___ min AC KV	VOLTAGE TEST ___ min DC KV	IR (60F) ACTUAL X1000 MΩ-1000'	CORONA EXT. KV	COND. RES. Ω/1000'
SPECIFICATION REQUIREMENTS															MINIMUM		MAXIMUM

MISCELLANEOUS TESTS, REMARKS

Not Required by applicable Specification

CORONA WAS NOT INITIATED AT _____ VOLTS

EXHIBIT #11

EXHIBITS

Page 12 of 25

Date March, 1981

Anaconda Ericsson
Wire and Cable Division
Quality Assurance
For Generating Station Cables

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #12

WC 2057 (2/81)

SPECIFICATION APPLYING:

DESCRIPTION OF CABLE:

Anaconda Ericsson
Wire and Cable Division
Quality Assurance

CERTIFIED TEST REPORT

PLANT STATE

REPORT NO. DATE

SHEET OF

ORDER NO. ITEM NO.

CUST. ORDER NO.

CUSTOMER

REEL NO.	LENGTH	MARKER TAPE START / FINISH	PHYSICAL MEASUREMENTS							ELECTRICAL TESTS			
			BARE COND. DIA.	INSUL. THICK. ACTUAL		COVER THICK. ACTUAL		JACKET WALL	LENGTH OF LAY	O.D. ACTUAL		VOLTAGE TEST ___MIN	___MIN	IR (60°F) ACTUAL	CONDUCTOR RESIS. ___°C
				MIN.	AVG.	MIN.	AVG.			MIN.	MAX.	AC	DC		
	FEET		INCH	INCH		INCH			INCHES	INCH		KV		MEGΩ-K000'	Ω/1000
SPECIFICATION REQUIREMENTS ——→															

Sworn and subscribed to before me this _____ day of _____ 19 ____

Notary Public

_____

Quality Assurance Manager

EXHIBITS

Page 14 of 25

Date March, 1981

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #13

WC 2057-A (2/81)

SPECIFICATION APPLYING:

PRODUCT DESCRIPTION:

Anaconda Ericsson
Wire and Cable Division
Quality Assurance

PRODUCTION CONTINUOUS SAMPLING TESTS
TAKEN FROM ANACONDA Q.C. RECORDS AND IS REPRESENTATIVE OF THE MATERIAL FURNISHED

PLANT STATE

REPORT NO. DATE
SHEET OF
ORDER NO. ITEM NO.
C.O. NO. ITEM NO.
CUSTOMER:

PHYSICAL PROPERTIES

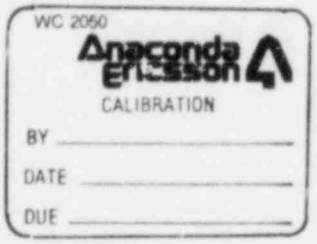
	INSULATION		JACKET	
	ACTUAL	SPECIFIED MIN.	ACTUAL	SPECIFIED MIN.
ORIGINAL				
TENSILE, psi				
STRESS AT 200% ELONG, psi				
ELONGATION %				
SET IN 2" GAGE LENGTH		MAX.		MAX.
AFTER AGING				
OXYGEN BOMB TEST	____ HRS AT ____ °C AND ____ PSI		____ HRS AT ____ °C AND ____ PSI	
TENSILE, % OF ORIGINAL				
ELONG, % OF ORIGINAL				
AIR OVEN TEST	____ HRS AT ____ °C		____ HRS AT ____ °C	
TENSILE, % OF ORIGINAL				
ELONG, % OF ORIGINAL				
AIR PRESSURE HEAT TEST	____ HRS AT ____ °C AND ____ PSI		____ HRS AT ____ °C AND ____ PSI	
TENSILE, % OF ORIGINAL				
ELONG, % OF ORIGINAL				
OIL IMMERSION TEST				
HRS AT				
TENSILE, % OF ORIGINAL				
ELONG, % OF ORIGINAL				

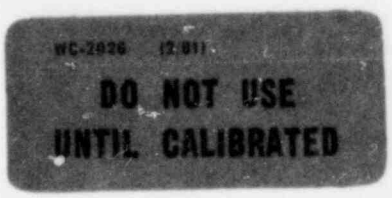
MOISTURE ABSORPTION

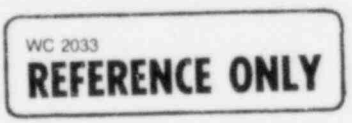
	ACTUAL	SPECIFIED MAX
ELECTRICAL METHOD: IMMERSED AT ____ °C AT AN AVG. STRESS OF 8 VOLTS PER MIL, ____ CYCLES		
DIELECTRIC CONSTANT AFTER 24 HOURS		
INCREASE IN SIC, 1-14 DAYS, %		
INCREASE IN SIC, 7-14 DAYS, %		
STABILITY FACTOR AFTER 14 DAYS %		
ALTERNATE STABILITY FACTOR		
GRAVIMETRIC METHOD: IMM. FOR ____ DAYS AT ____ °C		
MOISTURE ABSORPTION: MILLIGRAMS PER SQ. INCH		

REMARKS, MISC. TESTS

EXHIBIT #14







Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #15

Table I

Secondary Calibration of Test Equipment and Process Instrumentation in the Manufacturing Plants and Quality Assurance Departments

	Type of Equipment	Quality Assurance Equipment Frequency	Process Equipment Frequency
1.	Micrometer	M	Q
2.	Dimensional Gages	M	Q
3.	Tensile Gages	S	-
4.	Pressure and Vacuum Gages	Q	Q
5.	Thermometers	Q	-
6.	Temperature Recorders & Controllers	Q	Q
7.	Scales and Balances	M	Q
8.	Bridges	Q	-
9.	Megohmeters	Q	-
10.	Footage Indicators	-	M*
11.	Spark Testers		
	Calibrate	-	M
	Operation	-	D
12.	Speed Measuring Devices	-	Q

*Required only on those equipments that are critical to shipping or manufacturing as defined by the Quality Assurance Department.

D = Daily Q = Quarterly A = Annually

M = Monthly S = Semi-annually

EXHIBIT #16

WC 1981-A (2/81)

SPECIFICATION APPLYING:
Quarterly Calibration

INSTRUMENT:
1644A Megohm Bridge
General Radio #884

Anaconda Ericsson
Wire and Cable Division
Quality Assurance

TEST REPORT
CALIBRATION

PLANT

REPORT NO. DATE
SHEET OF
ORDER NO. ITEM NO.
C.O. NO. ITEM NO.
CUSTOMER
MAX. PERMISSIBLE ERROR:
± 10%

MONTH/YEAR	STANDARD MEGOHMS	BRIDGE READING MEGOHMS	PERCENT ERROR	CHECKED BY/DATE	REVIEWED BY/DATE
JANUARY					
APRIL					
JULY					
OCTOBER					

EXAMPLE

REPORTED BY _____ DATE _____ REVIEWED BY _____ DATE _____

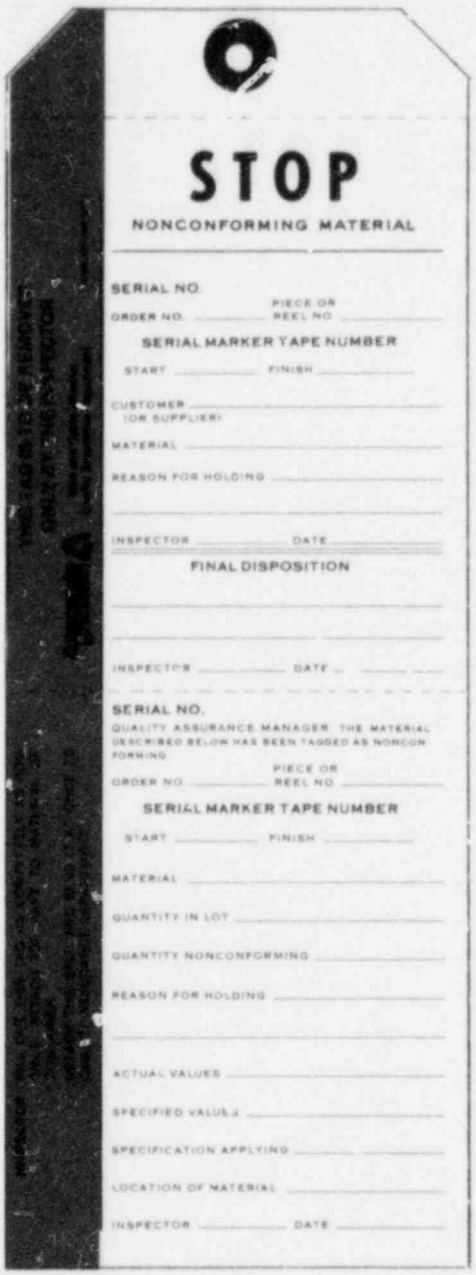
Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #17



STOP

NONCONFORMING MATERIAL

SERIAL NO.

ORDER NO. _____ PIECE OR REEL NO. _____

SERIAL MARKER TAPE NUMBER

START _____ FINISH _____

CUSTOMER (OR SUPPLIER) _____

MATERIAL _____

REASON FOR HOLDING _____

INSPECTOR _____ DATE _____

FINAL DISPOSITION

INSPECTOR _____ DATE _____

SERIAL NO.

QUALITY ASSURANCE MANAGER: THE MATERIAL DESCRIBED BELOW HAS BEEN TAGGED AS NONCONFORMING

ORDER NO. _____ PIECE OR REEL NO. _____

SERIAL MARKER TAPE NUMBER

START _____ FINISH _____

MATERIAL _____

QUANTITY IN LOT _____

QUANTITY NONCONFORMING _____

REASON FOR HOLDING _____

ACTUAL VALUES _____

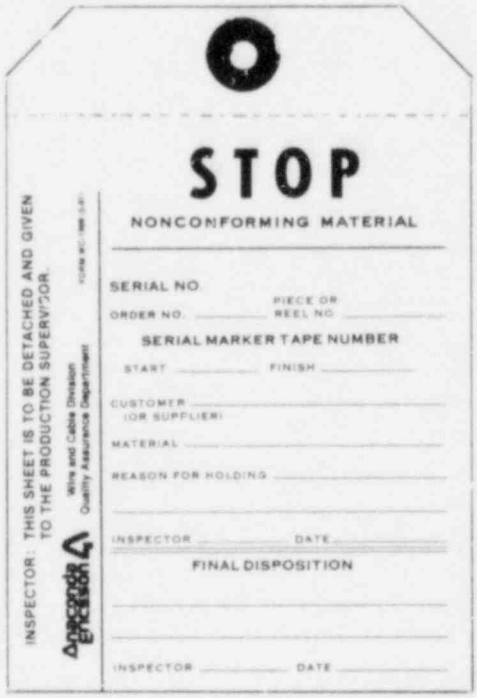
SPECIFIED VALUES _____

SPECIFICATION APPLYING _____

LOCATION OF MATERIAL _____

INSPECTOR _____ DATE _____

Red background



STOP

NONCONFORMING MATERIAL

INSPECTOR: THIS SHEET IS TO BE DETACHED AND GIVEN TO THE PRODUCTION SUPERVISOR.

Anaconda Ericsson

Wire and Cable Division
Quality Assurance Department

SERIAL NO.

ORDER NO. _____ PIECE OR REEL NO. _____

SERIAL MARKER TAPE NUMBER

START _____ FINISH _____

CUSTOMER (OR SUPPLIER) _____

MATERIAL _____

REASON FOR HOLDING _____

INSPECTOR _____ DATE _____

FINAL DISPOSITION

INSPECTOR _____ DATE _____

This tag is printed on a manila tag board.

EXHIBIT #13

REWORK

Order No. _____

Customer _____

Size/No. of Conds. _____

EN/SI No. _____

Footage _____ Reels _____

Stop Tag No. _____

(Rework)

Approved By _____ Date _____

(DISPOSITION)

Performed By _____ Date _____

AC-1102

REPAIR OR REWORK

REPAIR

ORDER NO. _____

PC. NO. _____

DEFICIENCY _____

_____

DEFECT LOCATION _____

_____

WORK PERFORMED _____

_____

BY OPER# _____ DATE _____

ROUTED TO _____

INSPECT/TEST _____

DATE _____

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #19

WC 1988 (2/81)

DISTRIBUTION	Anaconda Ericsson WIRE AND CABLE DIVISION QUALITY ASSURANCE ADVICE TO SALES PLANT	REPORT NO. DATE ORDER NO. ITEM NO. C. O. NO. ITEM NO. CUSTOMER USER

MATERIAL DESCRIPTION:

Upon final inspection, we find that the above described material does not comply with every requirement of the applicable specification. The following is a detailed description of the variance from specification:

APPLICABLE SPECIFICATION:

It is the opinion of the Engineering Department that this material is entirely serviceable. This material will be ready for shipment on _____.

_____
Engineering Manager

If in the customer's opinion this material will serve the purpose for which he intends it, and he is willing to accept it, please inform the Manager of Quality Assurance that the customer has accepted the material. If the customer advises you that the material is not acceptable, we shall proceed to remake it.

_____
Plant Manager

FOR SALES DEPARTMENT USE

Please obtain the customer's decision on the material described above. The decision must be from the final user of the material.

Complete this section of the form and transmit copies to those indicated above.

Customer's decision on material described above: _____

Decision obtained by _____ _____ through ☐ Interview ☐ Telephone ☐ Telegram ☐ Letter
ANACONDA ERICSSON REPRESENTATIVE

Final user's representative _____ of _____

Remarks:

DATE _____

_____
SALES SERVICE MANAGER

EXHIBIT #20

WCP-591 (5/81)

AUDIT CHECKLIST

	S	R	U
I. ORGANIZATION			
1. Does the Q.A. Manager have clear access to the Plant Manager?			
2. Is the Q.A. Manager given sufficient authority to assure quality requirements are maintained?			
3. Is the Organization Chart up to date and reporting of personnel delineated?			
4. Does the Q.A. Manager make recommendations to the Wire & Cable Manager of Q.A. for improvements in equipment, operating methods or provide solutions to quality problems?			
5. Is reporting of the Q.A. Manager as defined; 1) To the Plant Manager - Administrative operations such as hours of work, pay, scheduling, union activities, staffing, etc.; 2) To the Wire & Cable Manager of Q.A. - Functional operations in matters such as test frequencies, inspection procedures, test methods, apparatus, test equipment, acceptance, rejection, dispostion and compliance?			
6. Are reports submitted regularly to management on the effectiveness of the Quality Assurance Program?			
II. QUALITY ASSURANCE PROGRAM			
1. Are procedures established for the review of the requirements for each contract or order as necessary to provide for the purchasing of raw materials, manufacturing controls, test procedures, equipment, customer inspections and documentation necessary to assure complete conformance?			
2. Are inspection procedures detailing instructions for inspections, tests, record keeping, etc., issued and maintained to verify conformance to designated specifications?			
3. Are there test methods written for tests that are performed routinely? Do they cover the equipment and all requirements for conducting the test?			
4. At work stations and inspection stations are the inspection procedures and test methods available for use by the inspectors and test operators?			

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #21

WCQA-003 (3/81) Page

ANACONDA-ERICSSON INC.
Wire & Cable Division

MANUFACTURING/SERVICES FACILITIES QUALITY ASSURANCE AUDIT

FACILITY AUDIT NO. (S) (R) (U)

___ Satisfactory ___ Recommendation ___ Unsatisfactory

SUMMARY SHEET

FINDING: Section Item

EVALUATION/RECOMMENDATION:

CORRECTIVE ACTION:

AUDITED BY: Date	Second Review Date	Third Review Date
	___ RESOLVED ___ UNRESOLVED	___ RESOLVED ___ UNRESOLVED

Anaconda Ericsson

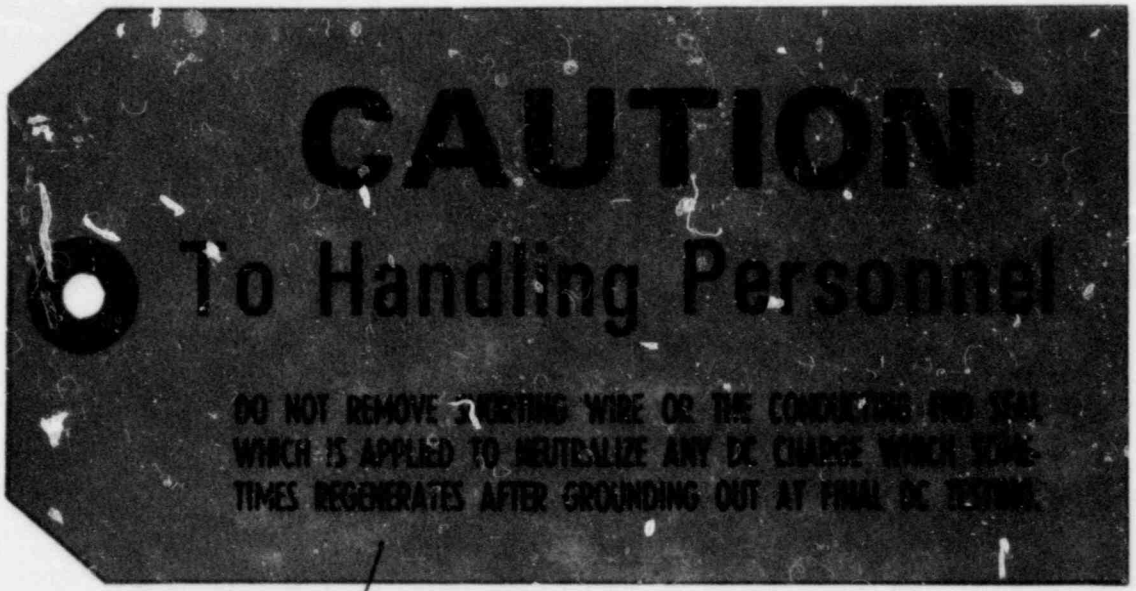
Wire and Cable Division

Quality Assurance

For Generating Station Cables

Date March, 1981

EXHIBIT #22



Day-Glo Red

Anaconda Ericsson

Call 800 435 6952 for reel return, routing and destination instructions.

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

EXHIBIT #23

NO. _____

	PAGE DATE	Anaconda Ericsson Wire and Cable Division QUALITY MANUAL
	APPROVED BY/DATE	
	REVIEWED BY/DATE	

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

EXHIBIT #24

WC 711

DISTRIBUTION

Anaconda Ericsson

WIRE AND CABLE DIVISION

REQUEST FOR

CUSTOMER COMPLAINT ANALYSIS

SEND ORIGINAL TO:
MANAGER-QUALITY ASSURANCE
WIRE and CABLE HDQTRS - MARION

QUALITY COMPLAINTS ONLY

CCA NO. _____

REPORTED BY _____

MARKET _____

DATE _____

PREVIOUS CORRESPONDENCE:

USER:

CUSTOMER:

KEEP COPY FOR FOLLOW-UP

OUR ORDER NO. _____ C.O. NO. _____

PRODUCT DESCRIPTION:

QUANTITY IN QUESTION _____ ESTIMATED VALUE $ _____

NATURE OF COMPLAINT INCLUDING SERVICE RECORD:

ACTION REQUESTED (BE SPECIFIC):

ON CCA'S INVOLVING CLAIMS FOR MATERIAL ONLY, WHEN VALUE IS LESS THAN $1000 MAKE FINAL AGREEMENT FOR SETTLEMENT WITH CUSTOMER AND STATE SETTLEMENT HERE:

MATERIAL RETURNED TO _____ VIA _____ DATE _____

A TECHNICAL ANALYSIS IS REQUIRED ON ALL COMPLAINTS OVER $1000.

ANALYSIS REQUIRED: YES _____ NO _____ IDENT. NO. _____

SAMPLE SENT TO Q.A. HDQTRS. _____ VIA _____ DATE _____

SUPPORTING INFORMATION (AS COMPLETE AS POSSIBLE)

MANUFACTURING MILL _____

SHIPPED FROM _____

INVOICE NO. _____ DATE _____

COPPER PRICE _____

OTHER _____

THIS SPACE RESERVED FOR SALES SERVICE SETTLEMENT:

MILL TECH. REPORT DATE _____

RHR DATE _____ FOOTAGE _____

CREDIT NO. _____ DATE _____

AMOUNT _____

REMARKS _____

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

CHECKLIST

Date March, 1981

I Requirements of ORGANIZATION	Reference Manual Paragraph
1. Name of Quality Assurance Department Head.	1.4.1
2. Quality Assurance Department Head Reports To.	1.4.1 & 1.4.2
3. Organizational Chart conforms with present functional organization.	Exhibits # 1 & 2
4. Authority and responsibility of persons and/or department performing activities affecting quality clearly defined.	1.3.2 & 1.4.3.
5. Persons performing Quality Assurance functions have authority and organizational freedom to:	
5.1 Identify quality problems	1.4.1
5.2 Initiate, recommend or provide solutions for quality problems through designated channels.	1.4.3.4
5.3 Verify implementation of problem solutions.	1.4.3.5
5.4 Control further processing, delivery or installation of a nonconforming item, deficiency or unsatisfactory condition until proper dispositioning has occurred.	1.4.1 Section 15
6. Person or department responsible for defining and measuring the overall effectiveness of the Quality Assurance Program:	
6.1 Designated in writing.	1.3.2
6.2 Independent from the pressures of production.	Exhibits #1 & 2
6.3 Has direct access to responsible management.	Exhibit #1 & 2
6.4 Reports regularly to management on the effectiveness of the Quality Assurance Program.	1.3.2.8, 1.4.3.5 & 2.8.1

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

II Requirements for QUALITY ASSURANCE PROGRAM	Reference Manual Paragraph
1. Quality Program identifies or references written instructions, procedures, and policies related to activities affecting quality.	2.3, 2.4, 2.5, 2.6 & 1.3.2.1
2. Reviewed by management of departments participating in the program for adequacy and status of that part of the program they are responsible for.	2.4.5 & 2.5.5
3. Provides for indoctrination and training of personnel performing activities affecting quality.	2.7
4. Revised and distributed thru controlled systems.	2.3.2
5. Quality Assurance Program in use is approved by the Senior Management of the Company.	1.3.2.1

III Requirements for DESIGN CONTROL	Reference Manual Paragraph
1. Measures to assure that applicable specified design requirements, i.e. design bases, codes, standards, are correctly translated into specifications, drawings, procedures or instructions.	3.1 & 3.3
2. Measures include provisions to assure that quality standards are specified and included in design documents.	3.2.1 & 3.2.4
3. Changes and/or deviations from specified design requirements, or quality standards are:	
3.1 Properly identified.	3.4
3.2 Documented.	3.4
3.3 Controlled.	3.4
4. Design control measures provide for delineation of acceptance criteria for inspection and tests.	3.2.1
5. Interface Control:	
5.1 Procedure for identification and control of design interfaces coordinated among participating design departments or organizations.	3.2
5.2 Provides for establishment of procedures among participating design departments or organizations for:	
5.2.1 Review and approval.	3.2.4
5.2.2 Release and distribution.	3.2.3
5.2.3 Revisions of documents involving design interfaces.	3.3 & 3.4
6. Design Verification.	
6.1 Control measures to verify and/or check the adequacy of design done by design reviews.	3.1
6.2 Verification of checking process performed by persons other than those who performed the original design.	3.2.4
7. Design Change Control.	
7.1 Design changes governed by design control measures commensurate with those applied to the original design.	3.4, 3.2 & 3.3
7.2 Changes are reviewed and approved by the organization or department that performed the original design review approval.	3.4

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

IV Requirements for PROCUREMENT DOCUMENT CONTROL	Reference Manual Paragraph
1. Measures to assure that applicable regulatory requirements, design bases and other requirements (Codes, specifications) necessary to assure that quality is included or referenced in the procurement documents.	4.3.1, 4.4.1 & 4.5.2
2. Changes to procurement documents are subject to same control measures applied to the original documents.	4.6
3. Procurement documents include provisions for (as applicable):	
3.1 Supplier Quality Assurance/Quality Control Program	4.4.1 & 4.5.2
3.2 Basic technical requirements.	4.4.1, 4.5.2 & 4.3.1
3.3 Source inspection.	4.4.1
3.4 Audit.	4.5.1
3.5 Documentation requirements.	4.4.1 & 4.5.2
4. Control measures include provisions for review and approval of procurement documents prior to release.	4.3.2, 4.4.2, 4.5.3 & 4.6

V Requirements for INSTRUCTIONS, PROCEDURES AND DRAWINGS	Reference Manual Paragraph
1. Activities affecting quality prescribed by documented instructions, procedures or drawings.	5.1
2. Instructions, procedures or documents include quantitative or qualitative criteria for determining satisfactory accomplishment.	5.1.3
2.1 Quantitative criteria:	
2.1.1 Dimensions	5.1.12
2.1.2 Tolerances	5.1.12
2.1.3 Operating Limits	2.6.3
3. Instructions, procedures and drawings are:	
3.1 In conformance with Customer Procurement documents.	5.1.9
3.2 Identified as part of the Quality Program.	5.1.3 & 5.1.8
3.3 Readily accessible to operating personnel in the work location.	5.1.13
3.4 Reviewed and approved by responsible management.	5.1.9 & 2.6.8

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

VI Requirements for DOCUMENT CONTROL	Reference Manual Paragraph
1. Measures to control the issuance and retrieval of documents which prescribe activities affecting quality.	6.1
2. Measures assure that documents, including changes are:	
2.1 Reviewed for accuracy.	6.1
2.2 Approved for release by authorized personnel.	6.1
2.3 Distributed to and used at the location where the activity is performed.	6.1
3. Changes to documents reviewed and approved by the same department or organization that performed the original review and approval.	6.1
4. Document control measures include provisions for:	
4.1 Identification of individuals, departments or organizations responsible for preparing, reviewing, approving and issuing documents and revisions.	6.1.1, 6.1.2, 6.1.3 6.1.4, 6.1.5
4.2 Identifying the proper documents to be used in the performance of each activity.	6.1
4.3 Coordination and control of interface document.	6.1
4.4 Ascertaining that proper documents are being used.	6.2
4.5 Establishing current and updated distribution lists.	6.1
4.6 Control of obsolete documents.	6.1

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

CHECKLIST

Date March, 1981

VII Requirements for CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	Reference Manual Paragraph
1. Measures to assure that purchased items and services conform to procurement documents.	7.2.2, 7.2.3, 7.3.4 & 7.4
2. Measures to include provisions for (as appropriate):	
2.1 Source evaluation and selection.	7.2.1
2.2 Objective evidence of quality.	7.3.3
2.3 Source inspection.	4.4 & 4.5
2.4 Audits.	4.4 & 4.5
2.5 Receiving inspection.	7.3.4 & 7.4
3. Records on file to substantiate supplier quality rating system.	7.2.1
4. Receiving inspection procedure:	
4.1 Incoming material checked against requirements of procurement documents.	7.3.4 & 7.4
4.2 Checklist used to verify supplier documentation requirements.	7.3.4 & 7.3.4.1
4.3 Test reports and/or certificate of chemical and physical analyses maintained on file.	17.2.2.2
4.4 Characteristics for visual and dimensional checks classified.	7.3.4
4.5 Material accepted on test reports or certificates of conformance are subjected to verification testing.	7.3.4.2
4.6 Acceptance or rejection of material indicated on inspection records, to include:	
4.6.1 Reasons for rejection.	7.3.4.4
4.6.2 Control measure applied to rejected material.	7.3.5
4.7 Material accepted by authorized personnel prior to release to manufacturing.	7.3.4.3
5. Lower tier supplier's procedures verified and accepted (as applicable).	4.4. & 4.5

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

VIII Requirements for IDENTIFICATION AND CONTROL OF MATERIAL, PARTS AND COMPONENTS	Reference Manual Paragraph
1. Measures for identification and control of material, parts and components.	8.4
2. Measures include provisions for:	
2.1 Assuring that only correct and accepted items are used and installed.	8.2.2.5
2.2 Relating an item of production at any stage from initial receipt through fabrication, installation, repair or modification, to an applicable drawing, specification or technical document.	8.4
2.3 Traceability of material, parts, or components to specific inspection, or test records as required by codes or standards.	8.4
3. Identification of material, parts, or components maintained:	
3.1 By Part Number.	8.4.3.1
3.2 On material, part, component.	8.4.2.1
OR	
Records traceable to the material, part or component.	8.4.3 & 8.4.5
4. Marking of material and parts defined as to location and methods used to preclude deleterious effects.	14.0

IX Requirements for CONTROL OF SPECIAL PROCESSES	Reference Manual Paragraph
1. Measures to assure that Special Processes, including welding heat treating, cleaning and NDE are accomplished under controlled conditions in accordance with applicable codes, standards, specifications criteria and other special requirements, using qualified personnel and procedures.	9.1.1

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

X Requirements for INSPECTION	Reference Manual Paragraph
1. Program for inspection of activities affecting quality performed to verify conformance to documented instruction, procedures and drawings for accomplishing the activity.	10.1
2. Inspection program includes:	
2.1 Written procedures and instruction approved by responsible management.	Cover Sheet, 10.1.1, 2.4.5 & 2.5.5
2.2 Provisions to assure that inspection is performed by personnel other than those who perform the activity being inspected.	10.1 & 10.1.2
2.3 Examinations, measurements, or tests of items processed for each work operation where necessary, to assure quality.	10.1
2.4 Sampling procedure to verify acceptance of group items:	
2.4.1 Procedure based on recognized standards.	7.3.4.2
2.4.2 Provides adequate justification for size and sampling process.	7.3.4.2
2.5 Measures for process monitoring of methods, equipment and personnel when inspection of processed items is impossible or disadvantageous.	10.1.1 & Flow Chart Exhibit #4
2.6 Hold Points:	
2.6.1 Provisions for Mandatory Inspection Hold Points.	10.1.3
2.6.2 Hold Points established and indicated on appropriate documents.	10.1.3
2.7 Inspection Status:	
2.7.1 Measures for positive inspection status of material on in-process inspection documents.	5.1.4
2.7.2 Inspection status of items indicated by tagging.	5.1.5
2.7.3 Assembly and inspection operations documented and validated on standard forms.	2.6 & 10.3
2.7.4 Material or supporting documentation identificable to the manufacturing and inspection personnel responsible for the operation.	14.1.1 & 8.4.3.1
2.8 Provisions for stamping of acceptance for determining quality conformance or rejection.	14.1.1
2.9 Measures for final inspection.	14.2

XI Requirements for TEST CONTROL	Reference Manual Paragraph
1. Test Program established to assure that all required testing is accomplished to demonstrate that the item will perform satisfactorily in service	All of Section 11.0
2. Test Program:	
2.1 Identified and documented.	11.1
2.2 Performed in accordance with written procedures.	11.1
2.2.1 Procedures incorporate or reference requirements and acceptance limits specified in design documents.	11.7
2.2.2 Includes provisions for assurance that prerequisites for a given test are identified and met, i.e.:	11.6.1
2.2.2.1 Calibrated instrumentation.	Section 12
2.2.2.2 Trained personnel.	2.7.3
2.2.2.3 Condition of test equipment and the item to be tested.	12.9.2 & 12.9.4
2.2.2.4 Data acquistion (System to obtain/record results).	11.8
2.3 Encompasses all required testing to verify continued satisfactory performance during operation, i.e.:	
2.3.1 Prototype qualification tests (In-plant)	11.1.3
2.3.2 Proof tests prior to installation ((In-plant)	11.1.2
2.3.3 Preoperational tests (In-plant)	11.1.1
2.3.4 Operational tests	11.5
3. Tests are performed by qualified personnel other than those directly responsible for the activity being tested.	
3.1 Testing monitored by qualified personnel.	1.5.3.2
3.2 Tests results documented and evaluated by responsible authority.	11.6.1 & 11.6.2

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

XII Requirements for CONTROL OF MEASURING AND TEST EQUIPMENT	Reference Manual Paragraph
1. Measures to assure that tools, gauges, instruments and other inspection measuring and testing devices are of the proper range, type and accuracy to verify conformance to established documents.	12.3 & 12.8.6.1
2. Measures include provisions for control, calibration and adjustment at prescribed intervals.	12.1, Exhibit #15
2.1 Calibration procedures included:	
2.1.1 Method utilized.	12.4
2.1.2 Interval performed.	12.8.4.1, Exhibit #15, 12.9, 12.10.2
2.1.3 Nationally recognized standards (as applicable).	12.5
2.1.4 System to evaluate the validity of previous inspection or test results and the acceptability of items previously inspected or tested when equipment is found to be out of calibration.	12.9
2.1.5 Provisions to assure that personnel/outside source performing calibration activities are qualified.	12.6
3. Inspection, measuring and test equipment/tools, identified by serial number and:	12.8.6.1
3.1 Tagged or marked (decals, etc.) with:	12.8.4.3, 12.10.2 & 12.8.5.3
3.1.1 Date of last calibration.	12.10.2, Exhibit #14
3.1.2 Date due for next calibration.	12.10.2, Exhibit #14
4. Records maintained and validated by authorized personnel.	12.8.6.2

XIII Requirements for HANDLING, STORAGE AND SHIPPING	Reference Manual Paragraph
1. Control measures conform to established instructions, procedures or drawings to prevent damage, deterioration or loss of material	13.1 & 13.2
2. Measures include provisions for:	
2.1 Handling	13.1 & 13.2
2.2 Storage	13.1 & 13.2
2.3 Cleaning	13.1 & 13.2
2.4 Preservation	13.1 & 13.2
2.5 Packaging	13.1 & 13.2
2.6 Shipping	13.1 & 13.2
2.7 Special coverings, equipment and protective environments for particular items, i.e. inert gas atmosphere, specific moisture content levels, temperature levels.	13.3
2.8 Special written procedures for handling, storage, packaging, shipping and preservation for critical sensitive or high value articles.	13.3
2.9 Control over special handling tools and equipment to include:	N/A
2.9.1 Inspection and testing to verify maintenance on tools and equipment.	N/A
2.10 Marking and labeling to identify, maintain and preserve the shipment.	13.4 & Exhibit #22
2.11 Conformance with procurement documents regarding customer approval of procedures prior to implementation.	13.2, 13.3.2 & 14.2

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

XIV Requirements for INSPECTION, TEST AND OPERATING STATUS	Reference Manual Paragraph
1. Measures to identify inspection and test status.	14.1
2. Measures include provisions for assuring:	
2.1 Required tests and inspections are performed.	14.2
2.2 The acceptability of items with regard to inspections and tests performed is known throughout manufacturing.	14.1 & 14.2
2.3 Identification of nonconforming items.	14.3
2.4 That only items which have passed required inspections and tests are used and installed.	14.2
3. Inspection and test status of items maintained by: Tags, markings and stamps.	14.1 & 14.2
4. Measures for control of status indicators include authority for application and removal of tags, markings, labels and stamps.	14.4

XV Requirements for NONCONFORMING MATERIALS, PARTS OR COMPONENTS	Reference Manual Paragraph
1. Measures to control items, services, or activities which do not conform to requirements.	15.2
2. Measures include provisions for:	
2.1 Identification of the item, service or activity.	15.2
2.2 Documentation.	15.2 & 15.3
2.3 Segregation.	15.2
2.4 Disposition.	15.4
2.5 Notification to affected organizations.	15.9
3. Nonconforming items reviewed for acceptance, rejection, repair or rework:	
3.1 Items disposed of by acceptance, "as is", scrapping, repair or rework identified as nonconforming and controlled.	15.4.2.1 & 15.8
3.2 Acceptability of nonconforming items with dispositon of "repair" or use "as is" verified and documented.	15.4.2.1 & 15.8
3.3 Accepted change, waiver, or deviation, documented with description of "as built" condition.	15.9
4. Responsibility and authority for dispostion of nonconforming items defined.	15.4
5. Repaired and reworked items reinspected in accordance with applicable procedures.	15.8.2
6. Nonconformance reports reviewed and analyzed for seriousness and/or excessive frequency.	15.4.2.2 & 15.4.2.3

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

XVI Requirements for CORRECTIVE ACTION	Reference Manual Paragraph
1. Measures to assure conditons adverse to quality, i.e. failures malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances promptly identified and corrected.	Section 16
2. On significant conditions adverse to quality, the conditions are:	
2.1 Identified.	16.3.1
2.2 Evaluated to determine the cause.	16.3.2
2.3 Corrected promptly, to include steps to preclude repetition.	16.3.3 & 16.3.5
2.4 Documented, to include identification, cause and corrective action.	16.5.2
2.5 Reported to responsible management.	16.4.2.1.4

XVII Requirements for QUALITY ASSURANCE RECORDS	Reference Manual Paragraph
1. Records are prepared as work is in progress, or being performed.	17.2.1
2. Records are consistent with applicable standards, codes, specifications and contracts.	17.2.1
3. Quality Assurance Records (As applicable):	
3.1 Results of reviews.	2.6.8, 17.5.5.3 & 17.2.4
3.2 Inspections.	17.2.1.3
3.3 Tests.	17.2.1.3
3.4 Audits.	17.2.4.1.1
3.4.1 Internal	17.2.4.1.1
3.4.2 External (Lower Tier Suppliers).	17.2.4.1.9 & 17.2.4.1.10
3.5 Monitoring of work performances.	17.2.4.1.6
3.6 Material analyses.	17.2.2
3.7 Qualification of personnel.	17.2.4.1.4
3.8 Procedures and equipment.	17.2.4.1.7
3.9 Other documentation required by procurement documents.	17.2.1.3.1
3.10 Inspection and test records indicate:	
3.10.1 Identity of inspection.	17.2
3.10.2 Type of examination	17.2
3.10.3 Examination procedure used.	17.2
3.10.4 Acceptance standards.	17.2
3.10.5 Examination results.	17.2
3.10.6 Final acceptance.	17.2
4. Records identifiable and retrievable.	17.2
5. Requirements and responsibilities for record transmittal, retention and maintenance subsequent to completion of work established and documented consistent with applicable codes, standards and procurement documents.	Section 17
6. Quality Assurance records are indexed, filed and maintained in facilities that provide suitable environment to minimize deterioration or damage, and to prevent loss.	17.2.1 & 17.2.2, 17.2.3, 17.2.4 & 17.3
7. Retention period of Quality Assurance records.	17.5

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

XVIII Requirements for AUDITS	Reference Manual Paragraph
1. Internal Audits:	
1.1 System of planned and documented audits performed to verify conformance with all aspects of the Quality Program.	18.1, 18.2 & 18.3
1.2 Performed in accordance with written procedures or checklists.	18.1.5 & 18.2.1
1.3 Performed by trained personnel not having direct responsibility in the areas being audited.	18.1.1
1.4 Audit results documented.	18.1.6 & 18.1.7
1.5 Results reviewed by management having responsibility in the area being audited.	18.1.6
1.6 Responsible management takes action to correct deficiencies.	18.1.6.1 & 18.1.7.1
1.7 Deficient areas re-audited until corrections have been completed.	18.1.6.1 (U) & 18.1.7.2
1.8 Frequency of audits specified.	18.1.2 & 18.2.1
2. External Audits (Lower Tier Suppliers)	
2.1 System of planned and documented audits performed to verify compliance with all aspects of the supplier's Quality Program (as required).	18.3
2.2 Performed in accordance with written procedures or checklist.	18.3.4
2.3 Performed by trained personnel.	18.3.2.1
2.4 Audit results documented.	18.3.6 & 18.3.7
2.5 Reports reviewed by management of both parties.	18.3.5
2.6 Responsible management takes corrective action to ensure that deficient areas are promptly followed up and corrective action is completed.	18.3.2.2 & 18.3.6
2.7 Frequency of audits specified.	18.3.2

MATRIX FOR 10 CFR 50 APPENDIX B

PART 1

ORGANIZATION

DOCUMENT	TITLE	PLANT

PART 2

QUALITY ASSURANCE PROGRAM

D-2	Distribution and Control of Indexes for Inspection Procedure Manuals, Test Method Manuals and Form Manuals.	Marion
IP-100	General Inspection Procedure for Insulated Wire and Cable - Marion	Marion
Letter	Training Classes - 1981	Marion York
IP-583	General Inspection and Test Standard Insulated Wire and Cable - York	York
WCP-13	Distribution and Control of Indexes for Inspection Procedure Manuals, Test Method Manuals and Form Manuals	Div. QA
WCP-14	Distribution and Control of Quality Assurance Manuals	Div. QA

PART 3

DESIGN CONTROL

SPS-100	Anaconda Marion Manufacturing Specification Order Write-Up Procedure	Marion
SPS-101	Product Deviation Report Procedure - Marion	Marion
SP-1903	Sales Order Flow	York
SP-1911	Engineering Change Notice Control	York

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

PART 4

PROCUREMENT DOCUMENT CONTROL

DOCUMENT	TITLE	PLANT
IP-101	Raw Material Inspection Procedure	Marion
PD-033	Purchasing - Marion Plant	Marion
NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
SP-2014	Incoming Material Inspection	York
SP-2015	Raw Material Purchase Order Review	York

PART 5

INSTRUCTIONS, PROCEDURES AND DRAWINGS

IP-100	General Inspection Procedure for Insulated Wires and Cables - Marion	Marion
MQAP-02	Procedure to Conduct Transfers of Wire and Cable	Marion
NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
IP-583	General Inspection and Test Standard Insulated Wire and Cable - York	York
SP-2003	Pre-Order Clearance	York
SP-2008	Production Order Review	York

PART 6

DOCUMENT CONTROL

DOCUMENT	TITLE	PLANT
MQAP-02	Procedure to Conduct Transfer of Wire & Cable	Marion
MQAP-12	Corrective Action - Marion	Marion
SPS-100	Anaconda Marion Manufacturing Specification Order Write-Up Procedure	Marion
IP-101	Raw Material Inspection Procedure	Marion
SP-1903	Sales Order Flow	York
SP-1911	Engineering Change Notice Control	York
SP-2003	Pre-Order Clearance	York
SP-2004	Certified Test Reports and Certificates of Compliance	York
SP-2005	Reel Check Out	York
SP-2006	Order Files	York
SP-2007	Record Retention	York

PART 7

CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

IP-101	Raw Material Inspection Procedure	Marion
MQAP-12	Corrective Action - Marion	Marion
PD-033	Purchasing - Marion Plant	Marion
IP-100	General Inspection Procedure for Insulated Wire and Cable - Marion	Marion
SP-2014	Incoming Material Inspection	York
SP-2015	Raw Material Purchase Order	York
IP-583	General Inspection and Test Standard Insulated Wire and Cable - York	York

Anaconda Ericsson

Wire and Cable Division

Quality Assurance

For Generating Station Cables

PART 8

IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

DOCUMENT	TITLE	PLANT
MQAP-02	Procedure to Conduct Transfer of Wire & Cable	Marion
IP-100	General Inspection Procedure for Insulated Wires & Cable - Marion	Marion
IP-101	Raw Material Inspection Procedure	Marion
NQARS	Nuclear Quality Assurance Record System Marion Plant	Marion
SP-2004	Certified Test Reports and Certificates of Compliance	York
SP-2008	Production Order Review	York
SP-2012	Traceability	York

PART 9

CONTROL OF SPECIAL PROCESSES

NONE

PART 10

INSPECTION

DOCUMENT	TITLE	PLANT
D-2	Distribution and Control of Indexes for Inspection Procedure Manuals, Test Method Manuals and Form Manuals	Marion
IP-100	General Inspection Procedure for Insulated Wire and Cable - Marion	Marion
NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
SPS-100	Anaconda Marion Manufacturing Specification Order Write-Up Procedure	Marion
IP-583	General Inspection and Test Standard Insulated Wire and Cable - York	York
SP-2000	In-Process Testing	York
SP-2001	Cable Testing - Final	York
SP-2002	Single Conductor Testing Final	York
SP-2016	Test Sheet Review and Issuance	York

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

PART 11

TEST CONTROL

DOCUMENT	TITLE	PLANT
L.I.M.	Laboratory Inspection Manual	Marion
IP-100	General Inspection Procedure for Insulated Wire and Cable - Marion	Marion
NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
SPS-100	Anaconda Marion Manufacturing Specification Order Write-Up Procedure	Marion
IP-583	General Inspection and Test Standard Insulated Wire and Cable - York	York
SP-1903	Sales Order Flow	York
SP-2000	In-Process Testing	York
SP-2001	Cable Testing - Final	York
SP-2002	Single Conductor Testing - Final	York
SP-2016	Test Sheet Review and Issuance	York

PART 12

CONTROL OF MEASURING AND TEST EQUIPMENT

DOCUMENT	TITLE	PLANT
ETL NO. 101-78	Limits of Accuracy. Required for labeling of calibrated instrumentation and equipment.	Marion York
TM-6001-2	Calibration of Outside Micrometers	Marion York
TM-6006-3	Point Verification of Calibration (Insulation Resistance Test Sets)	Marion York
TM-6007-2	Point Verification Utilizing a 40 Picocoulomb Pulse Generator	Marion York
TM-6009-3	Point Verification Utilizing Corona Inception Level Indicator	Marion York
TM-6004-1	Calibration of the General Radio 1644 Megohm Bridge	Marion York
SP-2010	Calibration Standards	York

Anaconda Ericsson
Wire and Cable Division
Quality Assurance
For Generating Station Cables

PART 13

HANDLING, STORAGE AND SHIPPING

DOCUMENT	TITLE	PLANT
PS-1008	Packaging Standard - Marion Plant	Marion
SPS-100	Anaconda Marion Manufacturing Specification Order Write-Up Procedure	Marion
NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
SP-2005	Reel Check-Out	York
SP-3013	ANSI N45.2.2 Packaging, Packing and Labeling	York
SP-4102	Packaging, Packing and Labeling	York

PART 14

INSPECTION TEST AND OPERATING STATUS

IP-100	General Inspection Procedure for Insulated Wire and Cable - Marion	Marion
MQAP-12	Corrective Action - Marion	Marion
NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
IP-583	General Inspection and Test Standard Insulated Wire and Cable - York	York
Folder	Inspector Qualification File	Marion

PART 15

NONCONFORMING MATERIALS, PARTS OR COMPONENTS

DOCUMENT	TITLE	PLANT
MQAP-12	Corrective Action - Marion	Marion
IP-100	General Inspection Procedure for Wire and Cable - Marion	Marion
----	Computerized program for cause, defects and dispositon of Stop Tags	Marion
NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
IP-583	General Inspection and Test Standard Insulation Wire and Cable - York	York
SP-2000	In-Process Testing	York
SP-2001	Cable Testing - Final	York
SP-2002	Single Conductor Testing - Final	York
SP-2014	Incoming Material Inspection	York

PART 16

CORRECTIVE ACTION

MQAP-12	Corrective Action - Marion	Marion
IP-100	General Inspection Procedure for Wire and Cable - Marion	Marion
---	Computerized program for cause, defects and disposition of Stop Tags	Marion
MMS-221	Cable Repair	Marion
SP-6014	Returned Goods	York

Anaconda Ericsson

Wire and Cable Division

Quality Assurance For Generating Station Cables

PART 17

QUALITY ASSURANCE RECORDS

DOCUMENT	TITLE	PLANT
MQA	NCLR#34 Security of Records - Microfilming	Marion
	#35 Microfilming - QA Record Procedure	Marion
	#36 QA Records - Maintenance of Files	Marion
NQARS	(ANSI 45.2.9-1974)	Marion
SP-2004	Certified Test Reports and Certificates	York
SP-2006	Order Files	York
SP-2007	Record Retention	York
SP-2016	Test Sheet Review and Issuance	York

PART 18

AUDITS

NQARS	Nuclear Quality Assurance Record System - Marion Plant	Marion
WCP-589V	Vendor Quality Assurance Audit Check List	Div. QA
WCP-590	Vendor Quality Assurance Program Survey	Div. QA
WCP-591	Wire & Cable Quality Assurance Audit and Check List - Marion & York	Div. QA
WCP-700	Procedure for Conducting Internal Quality Audits	Marion York

This matrix is general in nature and is intended only as a guide. It is not subject to update. Specific procedures or titles may change as required by individual location.