

210.64

Exhibit :

CAROLINA POWER & LIGHT COMPANY
SHEARON HARRIS NUCLEAR POWER PLANT

SITE SPECIFICATION NO. 030

FIELD FABRICATION AND ERECTION OF POWER PIPING DOCUMENT CONTROL.

(Includes ASME Code Class 1, 2, & 3 Items & BOP Categories 4-8)

for
PERMANENT PLANT CONSTRUCTION

RECEIVED
JUL 25 1974
REGULATED

Prepared by: Malden E. Reese & Gary C. White ⁷⁻¹⁸⁻⁷⁸ SHEARON HARRIS N. P. P.
Date: 6-28-78

Reviewed by: [Signature] Date: 7-12-78

Approved by: [Signature] Date: 7-19-78
Resident Engineer - Project

Approved by: [Signature] Date: 7/25/78
Manager - Engineering Pool

REVISIONS

NO.	DATE	DESCRIPTION	BY			
1	11-13-78	Revised Section 16.1	mer	[Signature]	[Signature]	[Signature]
2	3-22-79	Revised Section 7.8	CHB	mer	AM	[Signature]
3	5/24/79	P.E. Form & Index Revised.	JAB	mer	[Signature]	[Signature]
4	8/21/79	Revised as Noted.	EMM	ASH	[Signature]	[Signature]
5	4/2/80	Revised as Noted.	[Signature]	[Signature]	[Signature]	[Signature]

Uncontrolled Copy
FOR INFORMATION ONLY

- MAY 8 1979 Rev. 2
- JUL 30 1979 Rev. 3
- OCT. 04, 1979 Rev. 4
- JUL 01 1980 Rev. 5
- DEC 7 1978 Rev. 1
- MAR 9 1982 Rev. 6
- APR 26 1982 Rev. 7
- APR 18 1983 Rev. 8

8310130293 830919
PDR ADDOCK 05000400
PDR



216.64-

INDEX

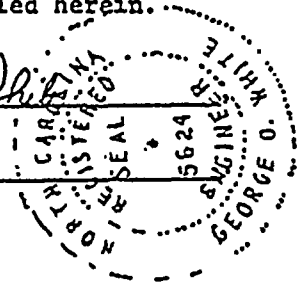
	Page
Signature of Registered P.E.	11
1.0 Scope	1
2.0 Definitions	3
3.0 Specifications and References..	4
4.0 Erection and Fabrication Procedures	6
5.0 Drawings	6
6.0 Receipt Inspection, Storage and Handling	7
7.0 Field Fabrication and Erection	8
8.0 Materials	11
9.0 Welding	12
10.0 Cleaning	12
11.0 Marking and Material Identification	13
12.0 Repair of Base Metal Defects	14
13.0 Cutting, Forming, and Bending	15
14.0 Hot or Cold Forming or Bending	15
15.0 Fitting and Aligning	15
16.0 Hydrostatic Testing	15
17.0 Testing, Inspection, and Examination	16
18.0 Documentation	17
19.0 Special Requirements	19



710.69

I, George O. White, Date October 2, 1979, N. C. Professional Engineering Registration Number - 5624 -, certify that Site Specification 030 ^{PNH} is correct and in compliance with the applicable requirements of subsubarticle NA-3250 of Section III of the ASME Boiler and Pressure Vessel Code. This certification shall not relieve the Manufacturer or the Engineer from responsibility for meeting all obligations under contracts for the supply of services, equipment, or materials associated with the work specified herein.

Rev. 6 prepared under the supervision of George O. White
NAME
JAN. 15, 1982, NC PE No. - 5624 -
DATE



Rev. 7 prepared under the supervision of George O. White
NAME
MAR 31, 1982, NC PE No. - 5624 -
DATE

Rev. 8 prepared under the supervision of George O. White
NAME
OCT 13, 1982, NC PE No. - 5624 -
DATE

210.64

1.0 SCOPE

1.1 The work to be performed under this specification shall include fabricating, erecting, testing, adjusting, and examining of power piping, valves, process tubing, piping specialties and accessories for Carolina Power & Light Company's Shearon Harris Nuclear Power Plant. All work shall be in accordance with the Industry Code or Standard established for the various lines by Ebasco Drawing No. CAR-1134-B070, "Piping Line List". All Ebasco Category 1, 2, or 3* pipe work shall be in accordance with the ASME Code, Section III, Division 1, 1974 Edition, Winter, 1976 Addendum, Section NB, NC, or ND respectively. All Ebasco Category 4 thru 8 pipe work shall be in accordance with the Summer 1973 addenda to ANSI B31.1. All Category 1, 2 & 3 work will be performed in accordance with the requirements of the CP&L ASME Quality Assurance Manual and CP&L's Corporate QA Program, Part 1. Radwaste and Fire Protection piping will be procured, erected, tested, etc., under CP&L's Corporate QA Program, Part 1.

R5

R5

R5

1.2 The work shall include, but not necessarily be limited to, the following:

1. Erection, inspection, examination, test, and rework or repair if required of all shop-fabricated power piping fabricated by others.
2. Complete erection of guides, bolting anchors, vibration eliminators, and seismic snubbers, including fabrication and erection of supplementary support steel for all shop-fabricated power piping.
3. Installing valves, instruments, accessories, and specialties into the piping system as shown on the drawings or specified herein.
4. Field-fabricating as required, erecting, hanging, supporting, inspecting, examining, and reworking or repairing if required of power piping 2 inches and smaller and other selected piping assemblies.

R5

R5

* ASME Code Class 1, 2, and 3 correspond to Ebasco Category 1, 2, and 3, respectively.

1.0 SCOPE (Cont'd)

5. Field-fabricating as required, guides, anchors, bolting, gaskets, including supplementary support steel for all nonseismic power piping 2 inches and smaller. R5
6. Obtaining, preparing, verifying, maintaining, and submitting reports, records, and documentation covering materials, procedures, including rework and repair examinations, tests, repairs, and qualification certificates for all work covered by this specification in accordance with regulations and requirements of the ASME Code, Section III and/or ANSI B31.1, as specified herein. R5
7. Altering and field-fabricating piping including the preparation of weld ends in accordance with the Engineer's drawings, Westinghouse drawings and the Code, where required, as determined by the Owner/Engineer. Alternate joint designs for piping which is field-cut may be used if approved by the Owner/Engineer.
8. Installing, supporting, and dismantling of temporary pipe for flushing, cleaning, hydrostatic testing or blowing-out of lines as noted on drawings and as required by the project.
9. Excavation, installation, and backfill for underground power piping, except as noted on the drawings or specified herein.
10. The Owner shall provide all necessary transportation, storage facilities, labor, tools, apparatus, hoists, and scaffolding required for the proper execution of the work prescribed in this specification.
11. The Power Plant Construction Department shall be responsible for protection, material loss, damage, and safe handling of all equipment and material required for the completion of the work until it is completed and accepted by the



2/10/84

1.0 SCOPE (Cont'd)

Generation Department.

1.3 The following work is not included as part of this specification:

1. Erection or installation of plumbing and drainage piping.
2. Mounting or installing instruments and control devices, including transmitters, controllers, receivers, recorders, local and remote reading instruments and switches.
3. Insulation and heat tracing.
4. Furnishing machined backing rings, in general, for piping 2-1/2 inches and larger.
5. Installation and erection of hangers.

R5

R5

2.0 DEFINITIONS

As used throughout design documents, the following terms shall have the meanings set forth hereinafter:

- 2.1 OWNER shall mean Carolina Power & Light Company.
- 2.2 ENGINEER shall mean Ebasco Services Incorporated, who is an agent for the OWNER.
- 2.3 OWNER/ENGINEER shall mean the OWNER or ENGINEER.
- 2.4 PRIME CONSTRUCTOR shall mean Daniel International Corporation of Greenville, South Carolina, who will work under direct supervision and technical control of Carolina Power & Light Company management personnel at the site. The responsibility for construction activities at this nuclear power plant is that of Carolina Power & Light Company who has the authority to control assignment and removal of personnel at Carolina Power & Light Company's discretion.
- 2.5 DESIGN DOCUMENTS shall mean specifications and drawings derived from design bases that delineate plant item design, quality assurance, and process requirements for use in procurement, fabrication, installation, examination, and testing; and analysis and reports that substantiate design characteristics, or evaluate plant item performance.
- 2.6 MANUFACTURER shall mean one who produces any class of component, material, part, or appurtenance to meet prescribed design requirements, and shall be an organization which fabricates

210.54

2.0 DEFINITIONS (Cont'd)

components, parts, or appurtenances to meet the design documents and the rules of Section III of the ASME Code when required by the design documents.

- 2.7 WORK shall mean labor, services, materials, and equipment as set forth in the design documents.
- 2.8 EQUAL shall mean equal as approved by the OWNER/ENGINEER.
- 2.9 The CODE shall mean the 1974 ASME Boiler and Pressure Vessel Code, Section III, Division I, Nuclear Power Plant Components, including all Addenda through Winter 1976 or ANSI B31.1, Power Piping, as applicable.

R5

3.0 SPECIFICATIONS AND REFERENCES

The following items are attached or enclosed herein and are hereby made a part of this specification as specifically stated herein:

- 3.1 Ebasco Specification CAR-SH-M-30 "General Power Piping", Revision 4, dated February 16, 1978.
- 3.2 SHNPP Site Specification Nos. 031, 032, and 034.
- 3.3 Codes and Standards

R5

Materials, erection and fabrication procedures, inspection, and testing followed in the field fabrication and erection of the piping covered by this specification shall conform to the following codes and standards, to the extent referenced herein:

- 1. American National Standards Institute (ANSI) B31.1, Power Piping, 1973 Edition, Summer 1973 Addendum.
- 2. American Society of Mechanical Engineers (ASME)
 - 1. Boiler and Pressure Vessel Code, Section II, Material Specifications, 1974 Edition, Winter 1976 Addendum.
 - 2. Boiler and Pressure Vessel Code, Section III, Division 1, Nuclear Power Plant Components, 1974 Edition, Winter 1976 Addendum, except "welding procedure qualification" for which the latest applicable Code, Edition, and Addendum shall apply.
 - 3. Boiler and Pressure Vessel Code, Section V, Nondestructive Examination, 1974 Edition, Winter 1976 Addendum.

R5

R5

R5

210.82

3.0 SPECIFICATIONS AND REFERENCES (Cont'd)

4. Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications, 1974 Edition, Winter 1976 Addendum, except "Procedure Qualification" for which the latest applicable Edition and Addendum shall apply.
3. American Society for Testing and Materials (ASTM)
Latest Applicable Edition
4. ASME Code Requirements
All equipment falling under the scope of Section III of the ASME Boiler and Pressure Vessel Code shall be designed, fabricated, inspected, and tested in accordance with the applicable portions of that Code, registered, as required, with the National Board of Boiler and Pressure Vessel Inspectors, and stamped with the applicable code and national board number.
5. The Supplier shall comply with the provisions of 10CFR Part 21, Discovery of Defects and Noncompliances in the following manner:
 1. If you as a supplier, discover a defect or noncompliance which you evaluate as a substantial safety hazard, then you are required to report in writing to the Nuclear Regulatory Commission and to CP&L Company's site procurement unit. CP&L shall be notified in parallel with the NRC of any reportable items pursuant to 10CFR21.
 2. If you find a defect or suspected noncompliance which you are unable to evaluate, then the CP&L Company shall be notified in writing to the site procurement unit and requested to perform the evaluation.
6. Conflicts
In any area in which a conflict exists between this specification and other applicable specifications, this specification shall govern. In any case where a conflict exists between this specification and the applicable ASME Code or ANSI B31.1, the requirements of the ASME or ANSI B31.1 Code shall govern. The Senior Resident Engineer shall be promptly notified of any conflict.

R7



4.0 ERECTION AND FABRICATION PROCEDURES

4.1 The Owner, acting through its site field and/or OA organizations, shall prepare procedures for use in guiding operations covered by this specification. Such procedures shall include but shall not be limited to the following:

1. Qualification of Welding Procedures.
2. Procedure for Qualifying Welders & Welding Operations.
3. Welding Material Control.
4. Procedure for Heat Treatment.
5. Procedure for Stamping of Weldments.
6. General Welding Procedure for Carbon Steel Weldments.
7. General Welding Procedure for Stainless Steel Weldments.
8. BOE and Nonseismic Structural Welding Inspection.
9. Procedure for Welding Equipment Control.
10. Procedure for Repair of Base Materials and Weldments.
11. Personnel Training.
12. Radiographic, liquid penetrant, ultrasonic, magnetic particle, and visual examination procedures, including acceptance criteria.
13. Hydrostatic and Leak Test Procedures.
14. NDE Personnel Qualification Procedures.
15. Warehousing Material Control and Identification Procedures.
16. Flushing Hydrostatic Testing Procedures.

4.2 Procedures shall comply with Nuclear Regulatory Commission Regulatory Guides No. 1.31, 1.44, 1.50 and 1.71 as required by the Shearon Harris Nuclear Power Plant PSAR. The requirements are incorporated in the above procedures and in this specification.

5.0 DRAWINGS

5.1 The Owner will be furnished with piping flow diagrams and electrical, structural, plant layout, and equipment drawings for information, reference, and planning.

5.2 All ASME Code, Section III piping will be dimensioned on the Engineer's drawing, including 2-inch and under piping.



5.0 DRAWINGS (Cont'd)

- 5.3 The Manufacturer shall provide detail drawings of all shop-fabricated piping showing details of each piece, including dimensions, material, shop heat treatment, shop welds, lugs and attachments, support location marks, codes which apply, piece marks, and estimated weights.
- 5.4 The Owner will be provided with detail drawings by the Manufacturer and/or Engineer for hangers and supports which will contain the following engineering information:
1. Dimensioned location plan and elevation views.
 2. Type, size, and arrangement of support.
 3. Design loads and movements.
 4. Cold load settings and proper cold adjustments.
 5. External connections, anchorages, and supports.
 6. Lists of parts cross-referenced to the drawings.
 7. Information for proper installation and adjustment.
 8. Correct hot and cold settings in relation to travel range for spring and constant support hangers.
- 5.5 The Owner shall notify the Engineer without delay, of any omissions, errors, or discrepancies the Owner may discover.
- 5.6 The Owner will be furnished with isometric field erection drawings for piping with the exception of category 4-8 pipe in the yard and yard buildings and structures.
- 5.7 The Owner shall revise, amend, or correct Manufacturer's or Engineer's drawings to show "as built" conditions.

6.0 RECEIPT, INSPECTION, STORAGE AND HANDLING

- 6.1 The Owner shall provide the materials and personnel necessary to unload, inspect, and store all pipe, piping assemblies, fittings, support assemblies and materials, piping accessories, and valves upon arrival at the jobsite.
- 6.2 Stock pipe, fittings and similar ASME Code, Section III items shall be segregated from non-ASME Code, Section III items.

6.0 RECEIPT INSPECTION, STORAGE AND HANDLING (Cont'd)

- 6.3 The Owner, through its Quality Assurance organization, shall perform receipt inspection of safety related items in accordance with CP&L's ASME Quality Assurance Manual and the Corporate Quality Assurance Program, Part 1.
- 6.4 The Owner shall provide suitable storage for all piping materials to prevent physical damage, corrosion, or contamination, and to maintain the cleanliness of the materials.
- 6.5 Stainless steel pipe and materials shall be handled and controlled such that the material is protected from harmful contaminants (low melting alloys and halogenated materials), and physical damage. When carbon steel chokers or slings are used on stainless steel items, care shall be exercised to prevent abrasion damage to the softer stainless. Materials shall be segregated for storage. ASME material shall not be stored/mixed with non ASME material. Stainless steel material shall not be stored/mixed with carbon steel materials.

R8

7.0 FIELD FABRICATION AND ERECTION

- 7.1 Materials furnished for ASME Code field-fabrication will be in accordance with the applicable requirements of ASME Code, Section III, Article NB-2000, NC-2000, and ND-2000, corresponding to piping code class as indicated on drawings of Westinghouse or of the Engineer.
- 7.2 The specific materials to be used in the fabrication of piping specified herein will be in accordance with the Drawing No. CAR-1364-3070, "Piping Line List", and as set forth within this specification.
- 7.3 Materials whose use or application is not under the jurisdiction of ASME Code, Section III shall be identified and shall be in accordance with the appropriate ASTM and ANSI standards.
- 7.4 Substitution for specified materials or use of alternate materials is prohibited without prior written approval from the Owner.
- 7.5 Materials furnished by the Owner, such as valves, strainers, instruments and meters, and other piping specialties for field installation will be noted by Bills of Material number or instrument number on the "final" drawings. Copies of Bills of Material and drawings for these materials will be furnished.



FIELD FABRICATION AND ERECTION (Cont'd)

- 7.6 Welding shall be used throughout for joining pipe, fittings and other components unless otherwise designated on applicable drawings. Screwed joints, socket connections, and flanged joints shall only be used where specified in individual Pipe Codes or as shown on drawings. No seal welding (single pass welding) shall be permitted except where indicated in individual Pipe Codes or on drawings.
- 7.7 The number of pipe joints shall be kept to a minimum. Short or odd pieces of pipe shall not be used without prior written acceptance from Owner.
- 7.8 All piping shall be fabricated to lines and elevations as indicated on the pipe drawing or isometric. 28
- 7.9 Piping 2-1/2 inches and larger (unless otherwise indicated in the purchase order) shall be shop-fabricated, according to the sizes indicated on the drawings, so as to provide the largest component assemblies that can be safely and economically shipped and erected, and thereby minimize the number of welds or other joints to be made in the field. Owner shall have final approval as to the extent of shop-fabrication.
- 7.10 Oxyacetylene flame and hand-held torches are expressly prohibited for heating during bending and welding operations in the shop. Water or brine quenching to control heat shall not be used for alloy steel containing chromium (this does not apply to austenitic stainless steel such as SA312/376/240, etc.). Hand-held torches using propane or oxyacetylene gas are permitted for field erection.
- 7.11 Branch connections for Piping System Categories 1, 2, and 3 shall be in accordance with the requirements of Section III of the ASME Code except as classified by Paragraphs 7.0, 12.0, 13.0, and 14.0 of this specification. Branch connections for all other categories shall be in accordance with the requirements of ANSI B31.1.
- 7.12 Branch connections 2-1/2 inch nominal size and larger and the same size as the main header shall be welding tees.



7.0. FIELD FABRICATION AND ERECTION (Cont'd)

- 7.13 Branch connections 2-1/2 inch nominal size and larger but smaller than the main header shall be reducing tees, extruded outlets of equivalent reinforcement, or sweeplets attached by full penetration welds.
- 7.14 Branch connections smaller than 2-1/2 inches nominal size may be weldlets, socklets or similar fittings attached by full penetration welds.
- 7.15 Engineer will provide drawings of related equipment to which connections are to be made, also general arrangements, concrete, electrical trays, ventilation ducts, and structural steel for Owner information and for checking purposes as set forth in the scope of this specification.
- 7.16 Owner shall be responsible for maintaining arrangements, dimensions, etc., in accordance with approved drawings including the latest revision, as furnished by Seller.
- 7.17 Engineer will furnish Owner with prints of all special valves and will indicate the proper orientation of these valves, especially those of the motor operated type, in each system. All flanged valves and pumps shall be connected into the piping system, as applicable, with raised face flanges, (except in areas where cast iron or nonferrous materials are used, then the mating steel flange face shall be of the same type as the flange face of the cast iron or nonferrous material. Manufacturer shall make allowance for gaskets and backing rings or weld shrinkage in preparing spool piece sketches to ensure that the overall dimensions of the installed spool piece agree with the dimensions shown on piping drawings.
- 7.18 Owner shall accept full responsibility for compliance with this specification. Review of Engineer's drawings, data, specifications, or procedures by Owner with regard to general design, dimensions or techniques does not constitute acceptance of any designs, materials, or components which will not fulfill the functional or performance requirements, or comply with applicable codes or regulatory requirements.

7.0 FIELD FABRICATION AND ERECTION (Cont'd)

- 7.19 For each piping system which requires a stress analysis, Engineer will perform the analysis and submit data to Owner.
- 7.20 Special precautions shall be taken when machining the weld end preparation so that the depth of the counterbore does not encroach on the minimum wall on fittings (e.g., 45 degree elbows, etc.)
- 7.21 The use of couplings to make up straight lengths from short pieces of pipe shall not be permitted.
- 7.22 Fabrication which proves not in accordance with Engineer's drawing or specification shall be replaced or corrected. Spool pieces damaged during erection shall be replaced or repaired at Owner's option.
- 7.23 For corrosion abatements, in all cases where a flanged connection is made between dissimilar metals, the mating surfaces shall be electrically insulated from each other. The flanged joints shall be furnished with plastic washer under the bolt heads and plastic ferrules; electrically nonconducting gaskets shall be used.
- 7.24 Unless other requirements are specifically invoked by this specification, Paragraph 2 of the "General Requirements" of Specification CAR-SH-M-30 shall apply.
- 7.25 Pipe bending shall be done in conformance with the requirements of Paragraph 12 of the "General Requirements" of Specification CAR-SH-M-30.

8.0 MATERIALS

- 8.1 Unless other requirements are specifically invoked by this specification, materials used shall meet the requirements of Paragraph 6 of Specification CAR-SH-M-30, latest revision. All site-procured materials falling under the scope of ASME Code, Section III, shall be in accordance with the applicable requirements of Subsection NB, NC, or ND, Winter 1976 Addendum. Malleable iron, wrought iron, cast iron, or plastic piping shall not be used for radwaste systems. | R8



8.0 MATERIALS (Cont'd)

8.2 Weldolet (supplied by Bonney Forge Division, Allentown, Pa. 18105) for piping branch connections 2-1/2" and larger, but smaller than the main header may be used for piping not analyzed by Ebasco's stress analysis group. Their use in piping systems analyzed by Ebasco's stress analysis group required design approval.

R8

9.0 WELDING

Weld preps may be in accordance with Ebasco Design Guides in CAR-SH-M-30 or other preps in accordance with ASME and ISI requirements. All welding will be performed in accordance with the appropriate Site Specifications. In addition, ASME Code, Section III, Class 1 and 2 piping shall be fabricated and erected in accordance with the requirements of Specification CAR-SH-M-30, Appendix I, In-service Inspection.

R8

10.0 CLEANING

Cleaning shall be provided as follows:

1. The interior of all erected pipes shall be cleaned and free from foreign substances such as loose mill and heat scale, oil, rust, grease, paint, welding fluxes, chalk, abrasives, carbon deposits, and coatings used for nondestructive testing.
2. The Owner shall have documented cleaning procedures for use on field-fabricated piping and other piping fabrication/installation.
3. The cleaning process and cleaning compounds shall in no way damage the pipe either during or after cleaning. Should shot, grit, or sandblasting be employed, adequate inspection shall follow to assure no excessive thinning of pressure boundaries (particularly in the area of bends and changes in pipe sections).
4. The interior of the pipe after cleaning shall be free of cleaning media such as aluminum oxide, silica, grit, lint, chemical cleaning residue, and petroleum solvent residue.
5. Following the completion of a piping subassembly, all open ends, nozzles, etc. shall be closed using temporary closures such as caps to prevent the ingress of dirt into the piping during temporary storage prior to field erection. All caps, if used, shall be inspected to ensure that there are no holes or cuts in the caps and shall be taped to the pipe and other open ends by using an approved tape.
6. Prior to initial plant operation the various piping systems will be appropriately cleaned.

11.0 MARKING AND MATERIAL IDENTIFICATION

11.1 Purchased material identification shall be in accordance with the requirements of ASME Code, Section III, Articles NB-2000, NC-2000, and ND-2000.

R8

11.2 Site marking requirements are as follows:

<u>Material Wall Thickness</u>	<u>Marking Method(s) Allowed</u>	<u>Instructions/Removals</u>
Less than 0.120"	- Banding - Electro chemical Etching	All Materials
0.120" thru 0.215"	- Banding - Electro chemical Etching - Vibratory Tool Marking	All Materials
0.216" and over	- Banding - Electro chemical Etching - Vibratory Tool Marking - Impression Stamping	All Materials, except vibratory tool marking should not be used on carbon steel due to longevity of marking.

R8

11.3 When impression stamping is used on site, it shall be done only with a low-stress stamp of either the blunt-nosed continuous or the blunt-nose interrupted dot dye type. The depth of the impression shall be limited to a maximum of 10% of the wall thickness and shall not violate minimum wall.

11.4 The Owner shall not install, erect, or perform any Code Class 1, 2, or 3 work on or to materials which are not clearly identifiable. Unmarked or unidentifiable material shall be held until positive identification is established.

11.5 Material for ASME Code pressure retaining parts shall carry identification markings which will remain distinguishable until the component is assembled or installed. If the original identification markings are cut or if the material is divided, the marks shall either be transferred to the parts cut or a

11.0 MARKING AND MATERIAL IDENTIFICATION (Cont'd)

coded marking shall be used to assure identification of each piece of material during subsequent fabrication or installation.

An as-built sketch or a tabulation of materials shall be made identifying each piece of material with the Certified Material Test Report (CMTR) and the coded marking. For studs, bolts, nuts, and heat exchanger tubes, identification of the CMTR for material in each component in lieu of identifying each piece of material with the CMTR and code marking may be used.

11.6 Welding material used on ASME Code work shall be identified and controlled so that they can be traced to each component or installation of a piping system.

11.7 ASME Code materials, including bolts, nuts (1-inch nominal diameter and smaller), and other products where the largest space available for marking is less than 1 inch in any direction need not be individually marked provided they are packed in packages or containers which shall be clearly identified by legible marking to ensure positive identification of the material.

11.8 Identification of joints by welder or welding operators shall be accomplished by applying the identification mark assigned to him on or adjacent to all permanent welded joints made by him at 3-foot intervals or less. Banding may be used where marking is not acceptable. Marking requirements of Ebasco Specification CAR-SH-M-30 will be used as a guideline.

12.0 REPAIR OF BASE MATERIAL DEFECTS

Defects in materials which were accepted on delivery or which are discovered during the process of fabrication or installation may be eliminated or repaired by welding provided the defects are removed, repaired, and examined in accordance with Site Specification Nos. 031 and 032.



13.0 CUTTING, FORMING, AND BENDING

When thermal cutting is performed to prepare weld joints or edges, to remove attachments or defective material, or for any other purpose, consideration shall be given to preheating, using preheat schedules as suggested in Site Specification Nos. 031 and 032.

14.0 HOT OR COLD FORMING OR BENDING

Any process involving hot or cold forming or bending shall be in accordance with Site Specification Nos. 031 and 032.

15.0 FITTING AND ALIGNING

Piping and parts that are to be joined by welding may be fitted, aligned, and retained in position during the welding operation by the use of bars, jacks, clamps, tack welds, or temporary attachments. Fitting and aligning shall be in accordance with Site Specification Nos. 031 and 032.

16.0 HYDROSTATIC TESTING

- 16.1 The Owner shall hydrostatic test all piping systems except 48" cooling tower make-up piping, may be tested by MT in lieu of hydro test. For ASME Code pipe, test procedures shall be determined in accordance with the requirements of Articles NB-6000, NC-6000, and ND-6000 of the Code. Leaks shall be repaired and retests made until satisfactory results are obtained. Hydrostatic test pressures and temperatures shall be as called for in the Code or Standard.
- 16.2 The Owner shall perform the required work to plug openings or isolate equipment or sections of piping to allow hydrostatic testing.
- 16.3 The Owner shall be responsible for blocking or pinning pipe hangers as required prior to hydrostatic testing, or cleaning, and restoring to operating condition following such tests.



16.0 HYDROSTATIC TESTING (Cont'd)

16.4 Hydrostatic testing of buried or embedded piping shall be performed before backfilling or pouring of concrete.

16.5 Test procedures for non-ASME Code pipe shall be in accordance with the applicable code and Site Specification No. 034.

17.0 TESTING, INSPECTION, AND EXAMINATION

17.1 Testing

The Owner shall provide evidence of performing all Code required NDE tests. Test reports shall be kept for information in accordance with the applicable Code and the CP&L ASME QA Manual and Corporate QA Program, Part 1. This includes tests provided by the Owner, subcontractors, and manufacturers.

17.2 Inspection

The Owner is responsible for inspecting the work in accordance with applicable codes and this specification.

17.3 Examination

1. Nondestructive examination for Piping Categories 1 thru 8 shall be done in accordance with Site Specification No. 034. The nondestructive examination requirements for component supports shall be in accordance with Site Specification No. 034.

2. The nondestructive test personnel will be adequately and properly qualified in accordance with SNT-TC-1A, 1975 Edition, to perform the particular examination(s) assigned in accordance with ASME Code, Section III. The Owner shall have available for review evidence of qualification for each NDE examiner who performs or interprets the type of examination to be performed.

3. The finished surface of all Category 1, 2, and 3 socket welds shall be visually examined. In addition, a PT exam shall be performed on Category 1 & 2 socket welds.

R8

17.0 TESTING, INSPECTION, AND EXAMINATION (Cont'd)

4. The Owner shall provide the services of an Authorized Inspector in accordance with Article NA-5000 of ASME Code, Section III, for all piping and attachments welded to piping covered by Subsections NB, NC, and ND of the Code.

18.0 DOCUMENTATION18.1 Piping System Categories 1, 2, and 3

Documentation requirements for Piping System Categories 1, 2, and 3 shall meet the requirements of Ebasco Specification CAR-SH-M-30, latest revision.

18.2 Main Steam and Feedwater Piping, Categories 4 and 5 (Seismic Class I)

Documentation is required for Seismic Class I Main Steam and Feedwater Piping System components in Piping System Categories 4 and 5 as follows:

1. Pressure retaining materials (other than bolting) 2-1/2 inch nominal pipe size and greater shall be documented so that identification is maintained either on the item or on records traceable to the item throughout fabrication, manufacture, and installation. The documentation shall include the same data as outlined in Paragraph 18.1.
2. In these systems for pressure retaining materials (other than bolting) whose nominal pipe size is 2 inches and smaller, Material Manufacturer's Certificate(s) of Compliance shall be provided. Traceability for each pipe, fitting, and weld in these systems need not be maintained.
3. NDE reports shall be traceable to the specific weld joints.

18.3 For piping Categories 4 and 5, other than Seismic Class I Main Steam and Feedwater and For Categories 6 thru 8 piping, NDE reports shall be traceable to the specific weld joint when such testing is required. Visual inspection acceptance of welds shall be documented on the system hydrostatic test report.



18.0 DOCUMENTATION (Cont'd)

18.4 Weld Data

The records shall include, as a minimum, the following information for weld joints and weld repairs:

1. Identification of the welding procedure(s) used;
2. Identification of the welder or welders performing the welding operation;
3. Postweld heat treatment procedure identification, as applicable;
4. Indication that fit-up inspection was conducted and date observed;
5. Postweld heat treatment data consisting of the automatic temperature recording charts, as applicable;
6. Identification of the filler metals involved.

18.5 Material Test Reports

The Certified Material Test Reports (CMTR) for materials and weld filler metal shall include, as applicable, the following information:

1. Applicable code and identification, e.g., ASME/ASTM/SFA specification, grade and classification, pipe or fitting size and schedule, electrode size;
2. Mill heat or lot number;
3. Chemical analysis (see applicable Ebasco Material Specification when a product analysis is also required);
4. Mechanical properties;
5. Test results when required by the ASME/ASTM/SFA material specification or Ebasco's material specification(s), e.g., hydrostatic test data, notch ductility test data, NDE results, delta ferrite content;
6. Heat treatment performed by the material manufacturer to satisfy requirements of the materials specification may be reported on the CMTR; otherwise, heat treat charts or a summary description of heat treat time and temperature data certified by manufacturer or installer shall be provided.

18.0. DOCUMENTATION (Cont'd)

7. Filler metal material test reports, with the above information, as applicable.

19.0. SPECIAL REQUIREMENTS

- 19.1 Main Steam and Feed-water piping between the containment isolation valve and the last seismic restraint is designated as Seismic Category 1. This portion of the pipe will meet all the Quality Assurance requirements for Category 3 piping. Code stamping of this piping is not required.
- 19.2 Two inch and under pipe and fittings in the Waste Liquid, Secondary Waste, Reactor Coolant (portions of piping and valves as identified in the piping line list), Chemical and Volume Control and Boron Recycle (portions of piping and valves as identified in the Piping Line list) Systems shall be butt welded (except for fitting and valves that can only be furnished with socket weld ends).