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ASME REINFORCED THERMOSET PLASTICS CORROSION RESISTANT EQUIPMENT

GUIDE FOR ASME RTP SURVEY TEAMS FOR SURVEY OF APPLICANTS FOR ASME CERTIFICATES OF AUTHORIZATION

**The American Society of Mechanical Engineers
Conformity Assessment Department
Two Park Avenue
New York, NY 10016**

INTRODUCTION

This Guide is prepared for the use of ASME survey team leaders and members. It is not intended to replace or interpret the requirements of the ASME Reinforced Thermoset Plastics Corrosion Resistant Equipment Standard (RTP-1). The checklist does not list all of the detailed requirements, but rather, lists the highlights that the applicant is required to include in their Quality Assurance Program.

In addition, to assist the ASME survey team, this Guide is provided to applicants for ASME Certificates of Authorization for their use in verifying and identifying the paragraph where their Quality Assurance Manual addresses all applicable control requirements of the Standard. The Quality Assurance Manual must contain the controls for implementing the Quality Assurance Program but, it is not required to contain all the detailed programmatic requirements which will be found in the Quality Assurance Program.

This Guide is based on the RTP-1 Standard. The Guide is subject to revision based on changes made in the Standard.

A survey must cover a QA Manual, and Manual implementation will vary from applicant to applicant therefore, only those activities to be performed under the scope of the applicant's Certificate of Authorization are required to be addressed in the Quality Assurance Manual. The ASME survey teams are advised that all aspects of this Guide may not apply and that this Guide may not outline all possible aspects of each survey. The Manual need not follow the format of this Guide.

Questions of possible need for interpretation raised by survey team members or the applicant shall be submitted to the Secretary, RTP Main Committee.

Suggestions for revisions or clarification to this Guide should be directed to the ASME Director of Accreditation and Certification.

HOW TO USE THIS GUIDE

Review each checklist item in the "Quality Program Survey Checklist" and note the paragraph number in the QA Program which covers the subject addressed in the column labeled "Quality Program References." In the case where an item gives more than one alternative for fulfilling the applicable Code requirement, mark "N/A" in the column labeled "Quality Program References" adjacent to those alternatives that do not apply.

The original of this Guide shall be provided to the Team Leader along with sufficient copies for each member of the survey team (including the Team leader).

QUALITY PROGRAM SURVEY CHECKLIST

Company _____

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Item No.	Quality Element and Subelements	Quality Program References (To be filled in by Applicant)
1.	<p><u>Organization (M4-200)</u></p> <p>The program includes measures established to:</p> <p>A. Ensure that quality is achieved, verified and documented by persons or organizations not directly responsible for performing the work.</p> <p>B. Provide for documentation by organizations, groups or individuals (by title) performing activities affecting quality including:</p> <ol style="list-style-type: none"> (1) Organizational structure, (2) Functional responsibilities, (3) Levels of authority, (4) Lines of communication, (5) Responsibility and authority of each organization involved, <p>B. Ensure that persons or organizations performing quality assurance functions have:</p> <ol style="list-style-type: none"> (1) direct access to responsible management at a level where organizational freedom is maintained and appropriate action can be affected, (2) sufficient independence from cost and schedule considerations. <p>C. Ensure the QC function and Inspector is independent of the production group and marketing group.</p>	
2.	<p><u>Quality Assurance Program (M4-100)</u></p> <p>The program includes measures established to:</p> <p>A. Provide a Quality Assurance Manual which documents in detail the Quality Assurance Program required by RTP-1 including controls for approval of the Quality Assurance Manual.</p> <ol style="list-style-type: none"> 1. Provisions for the Quality Assurance Manual to be available to the Inspector. <p>B. Ensure that the QA Manual, records and procedures necessary to make the QA Program intelligible are available to the ASME including:</p> <ol style="list-style-type: none"> 1. Controls for Design Basis Laminates 2. Controls for Demonstration and Re-demonstration Laminates 3. Controls for Proof Testing <p>C. Identify the activities and items to which the QA Program applies.</p> <p>D. Provide for training and qualification of personnel performing activities affecting quality, Including:</p> <ol style="list-style-type: none"> 1. RTP-1 Qualified Designer (1-300) 2. Certified Individual (including designation) (1-400) 3. Inspector (Big I) (1-410) 4. inspector (little i) (1-410) 	

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3.	<p>E. Ensure that personnel records are maintained.</p> <ol style="list-style-type: none"> 1. Controls for qualification of Laminators (M-5) 2. Controls for Secondary Bonders (M-5) 3. Controls for qualification of Welding Procedure Specifications (Dual Laminate only) (M-12H) 4. Controls for qualification of Welders (Dual Laminate only) (M-12H) <p>F. Ensure that only the most current revision of latest and/or correct drawings, specifications, purchase orders, and quality control procedures are used for procurement, fabrication, inspection and testing. (M4-300)</p> <p>G. The Quality Control Program shall include as a minimum the documentation required by RTP-1. These documents must be organized in one place and readily available while fabrication is in progress. Documentation must be retained by the Fabricator for a minimum of 5 years(M4-300)</p> <p><u>Design Control</u></p> <p>A. Provisions for Review of the UBRS and including designation of the authorized Fabricators representative.</p> <p>B. Person responsible for preparation and approval of design documents</p> <p>C. Provisions for the Fabricator's Design Report to be certified by RTP-1 Qualified Designer and for the Fabricator's Design Report to include the calculations, component and joint thicknesses, and laminate sequences necessary to establish that the design complies with the rules of RTP-1 and the UBRS.</p>	
4.	<p><u>Material Control</u></p> <p>The program includes measures established to:</p> <p>A. Ensure that procedures for material control exist and to ensure that the material received is properly identified and has documentation, including, as applicable, required material test reports, to satisfy RTP-1 requirements.</p> <ol style="list-style-type: none"> 1. Procedure for inspection resin and curing agents (Appendix M-2), reinforcement material (Appendix M-1) and other received goods (M4-400(a)) <p>B. Ensure that procedures for material control exist and to ensure that the material received is properly identified and has documentation, including, as applicable, required material test reports, to satisfy RTP-1 requirements.</p> <ol style="list-style-type: none"> 1. Procedure for inspection resin and curing agents (Appendix M-2), reinforcement material (Appendix M-1) and other received goods (M4-400(a)) 2. Receiving controls for Thermoplastic materials including Visual inspection of fiber backing (Dual Laminated only) (M12B-600). 3. Provisions for inspection of plastic shapes (Dual Laminated only) (M12B-650) 	

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5.	<p>C. Ensure that only the intended material is used in fabrication.</p> <p>D. Ensure that a procedure exists for handling materials that are found to be nonconforming at receiving inspection.</p> <p><u>Inspection</u></p> <p>The program includes measures established to:</p> <p>A. Ensure that process sheets or checklist are prepared and include document numbers and revision to which the examination or test is to be performed.</p> <p>B. Ensure examination checklist is filled in and completed by the Certificate Holder.</p> <p>C. Provide for in-process and final examination and test procedures. This includes resin curing, laminate thickness and vessel dimensions.</p> <p>D. Prior to the start of fabrication, the Fabricator shall make available to the Inspector such records pertaining to the vessel as required to permit the Inspector to perform the inspections. These shall include drawings, material test results, the UBRS, the Fabricator's Design Report, and any other reports or records as required</p> <p>E. The Fabricator shall provide for Inspector's hold points and verifications of satisfactory completion. Fabrication shall not proceed beyond a hold point until specified inspections have been made. (6-300(f))</p> <p>F. Provision for access of the Inspector</p> <p>G. Provisions for the Inspector to establish hold points and make periodic inspections and measurements of the vessel. (M4-400(c))</p> <p>H. Provisions for notifying the Inspector of upcoming hold points (M4-400(c))</p> <p>I. Provide for in-process inspection or monitoring, or both, as appropriate for activities affecting quality including:</p> <ul style="list-style-type: none"> (1) Inspection and distribution of received goods, (2) Laminate reinforcement sequence, (3) Component fabrication, (4) Assembly procedures, (5) Laminate imperfections are within tolerances, (6) Control of resin handling and cure <p>J. Provide for final inspections which include:</p> <ul style="list-style-type: none"> (1) a records review of results and resolution of nonconformances identified by prior inspections, (2) an examination of quality records, (3) a documented acceptance of the item by authorized personnel. 	

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6.	<p>K. Ensure that the Fabricator shall ensure that the vessel is in suitable condition to permit reasonable and safe access for inspection and that proper safety equipment be provided the inspector to conduct the inspection.</p> <p>L. Provision to control the ongoing process of laminate fabrication to ensure that imperfections are within required tolerances prior to the final inspection. Procedures to control the ongoing process of lining fabrication and lining–RTP bond fabrication to ensure that imperfections are within required tolerances prior to final inspection. (Dual Laminate only) (M12E-220).</p> <p>M. Provisions for procedures controlling forming of thermoplastic shapes (Dual Laminate only) (M12D-300)</p> <p>N. Visual inspection of all qualification welds shall be by an experienced Welder qualified in the material and weld process. Each weld evaluator shall be designated in writing by the Quality Control Manager.</p> <p>O. Controls for the welder to initial a copy of the sheet/weld map at the end of each day (M12D-420)</p> <p><u>Corrective Action of Nonconforming Items M4-400(e)</u></p> <p>The program includes measures established to:</p> <p>A. Ensure that items that do not conform to specified requirements are controlled.</p> <p>B. Ensure that items that do not conform to specified requirements are controlled.</p> <p>C. Ensure that the written procedure for the control of nonconforming items includes:</p> <ul style="list-style-type: none"> a. identification, b. documentation, c. evaluation, d. disposition, <p>D. Ensure repairs are examined in accordance with procedures and acceptance criteria resulting in RTP-1 Standard compliance.</p> <p>E. Minimum data to be recorded shall be date of correction, specific location on the vessel, description of nonconformity or imperfection, method of correction, name of qualified Laminator or Secondary Bonder who made the correction, and signature approvals for each correction. (M4-400(e))</p>	

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7.	<p><u>Test Control (6-900)</u> The program includes measures established to ensure:</p> <ul style="list-style-type: none"> A. Tests are performed in accordance with specified, written test procedures or other appropriate documents approved by the designated organization including: <ul style="list-style-type: none"> 1. Resin cure 2. Dimension and laminate thickness 3. Laminate mechanical properties 4. Reinforcement control 5. Laminate imperfections 6. Pressure tests 7. Acoustic emission tests B. Final Internal and External C. Test results are documented. D. Required test records are specified and documented. 	
8.	<p><u>Final Inspection</u> The program includes measures established to ensure:</p> <ul style="list-style-type: none"> A. Provisions for documentation to be provided to the Inspector for final inspection (6-900) (M4-400-c) B. Provisions for the Inspector to be provided with the Welder Qualification, current weld map and sheet placement, high voltage spark test records and material logs for all material used. (Dual Laminate only) (M12E-200) C. Provisions for the Inspector to prepare a brief report summarizing his/her inspection activities and findings, and submit the report to the Fabricator as an attachment to the Certificate of Compliance (Fabricator's Data Report) (6-900(d)) D. Provision for the contents of the Inspector's Inspection Report (6-900(d)). E. Provisions to assure that the RTP-1 nameplate information meets the requirements of the UBRS and paragraph 8-850. (M4-400(h)) F. Controls for the use of paper nameplates. G. Provisions for the preparation and certification of the Fabricator's Data Report 	
9.	<p><u>Calibration</u> The program includes measures established to ensure:</p> <ul style="list-style-type: none"> A. Tools, gauges, instruments and other measuring and test equipment used for activities affecting quality are controlled, calibrated and adjusted prior to use or at specified periods. B. The selection of measuring and test equipment is controlled. C. Measuring and test equipment is properly handled and stored. 	

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	<p>D. Calibration is against certified equipment having known valid relationships to nationally recognized standards. (If no nationally recognized standards exist, the basis for calibration is documented.)</p> <p>E. The method for calibration for each device is defined.</p> <p>10. <u>Internal Audits (M4-400(g))</u> The program includes measures established to ensure there are procedures for internal audits of the Quality Control Program.</p> <p>11. <u>Forms (6-300(c))</u> The program includes measures established for the use of Forms for documenting:</p> <ul style="list-style-type: none">A. Resin Handling and cure (6-910)B. Dimensions and Laminate thickness checks (6-920)C. Forms for checking laminate reinforcement and mechanical properties (6-930)D. Form for Laminate Imperfection (6-940)E. Forms for Non-conformities (M4-400(e))F. Forms for lining imperfections (M12E-220) <p>12. <u>Field Controls</u> The program includes measures established to ensure there are procedures for control of operations during field fabrication and field repairs.</p> <p>13. <u>Dual Laminate Controls</u> The program includes measures established to ensure there are procedures for control of Dual Laminate operations including:</p> <ul style="list-style-type: none">A. Lining/RTP Bond ControlB. Forming of Thermoplastic ShapesC. Welding Operation Control	
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