Quality System Manual
The ESAB Group, Inc.
1500 Karen Lane Hanover, PA 17331
801 Wilson Avenue Hanover, PA 17331
1200 Biglerville Road, Gettysburg PA 17325
ASME Boiler & Pressure Vessel Code Section III
10 CFR 50 – Appendix B And 10 CFR Part 21

Issue No. 13, - Revision 1
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Prepared by:

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Quality Manager

10/5/23
Date

Reviewed and Approved by:

Jorge Zedillo
Plant Director

10/05/23
Date

QUALITY SYSTEM MANUAL CONTENTS

STATEMENT OF POLICY

It is the policy of The ESAB Group, Inc., Hanover, PA, to provide to industry, products that can be relied upon to meet the engineering, manufacturing, and quality requirements and standards of our customers and of ASME, Section III. This Quality System Program covers the manufacture and supply of:

- Ferrous and non-ferrous covered electrodes.
- Ferrous flux cored electrodes
- Ferrous and non-ferrous metal cored electrodes
- Ferrous and non-ferrous solid electrodes
- Welding flux

This Quality System Program also covers the supply of ferrous and non-ferrous strip electrodes and ferrous and non-ferrous bare electrodes and wires. This Quality System Manual is designed to provide that systems, procedures, and controls are in effect to meet the requirements of ASME Boiler & Pressure Vessel Code-Section III Nuclear Power Plant Components 10 CFR 50 Appendix B and 10 CFR part 21.

This program applies to welding materials manufactured and supplied under different brand names that are under the control of The ESAB Group Inc. All CMTRs and packaging of all brands of materials in the scope of this program shall include the words, “The ESAB Group, Inc.”.

The Quality Manager has the primary responsibility for implementation of this Manual with the active participation of all other employees of the Company. The Quality Manager shall apprise the Plant Director and Department Managers regularly of the status, adequacy, performance, and effectiveness of this Quality System Program.

The Quality Manager is directly responsible for and has the authority through this office to prepare, maintain, update, and audit compliance to these requirements. The Quality Manager shall control, revise, and update this Manual as required. The Quality Manager shall immediately inform the Value Stream Manager when a condition is found that may affect continuing manufacturing operations or may create nonconforming material. The Quality Manager shall immediately inform the Value Stream Manager when operations are not being implemented in accordance with the requirements of this Manual. Managers and supervisors of all departments recognized in this Manual shall be responsible for implementing applicable portions of this Manual during manufacturing of all materials required to meet the requirements of the codes and specifications listed above.

Quality System Personnel are independent from cost and scheduling considerations and have the authority to:

(a) Identify quality system problems.
(b) Initiate, recommend, or provide solutions to quality related problems.
(c) Verify implementation of solutions to those problems.
(d) Assure that further processing, delivery, or use is controlled until proper disposition of a deficiency, or unsatisfactory condition has occurred.

Persons performing this work shall not report directly to a supervisor with immediate responsibility for the work being verified.

In case of conflict between Quality System Manual and ASME Code, ASME Code governs and this Manual will be revised. In case of conflict between Quality System Manual and any other documents, the Quality System Manual governs and documents will be revised.

In case of conflict between the Quality Manager and any other Department Manager, The Plant Director will resolve the issue. This resolution shall be in accordance with this Quality System Manual and the ASME Code.

Jorge Zedillo, Plant Director
Date: 10/05/2023

SCOPE OF ACTIVITIES

The scope of work defined in this Manual includes these activities performed at these addresses listed here.

1500 Karen Lane, Hanover PA 17731

- Receiving, identification, verification, and handling, storage, and shipment of material and Source Material.
- Performance of testing, examination, and treatments required by material specifications and specific applicable code requirements.
- Approval and control of suppliers of Source Material and subcontracted services.
- Utilization of unqualified Source Material.

801 Wilson Ave, Hanover PA 17731

- Performance of testing, examination, and treatments required by material specifications and specific applicable code requirements, and certification of the results of such tests, examinations and treatments.
- Approval and control of suppliers of Source Material and subcontracted services.
- Utilization of unqualified Source Material.

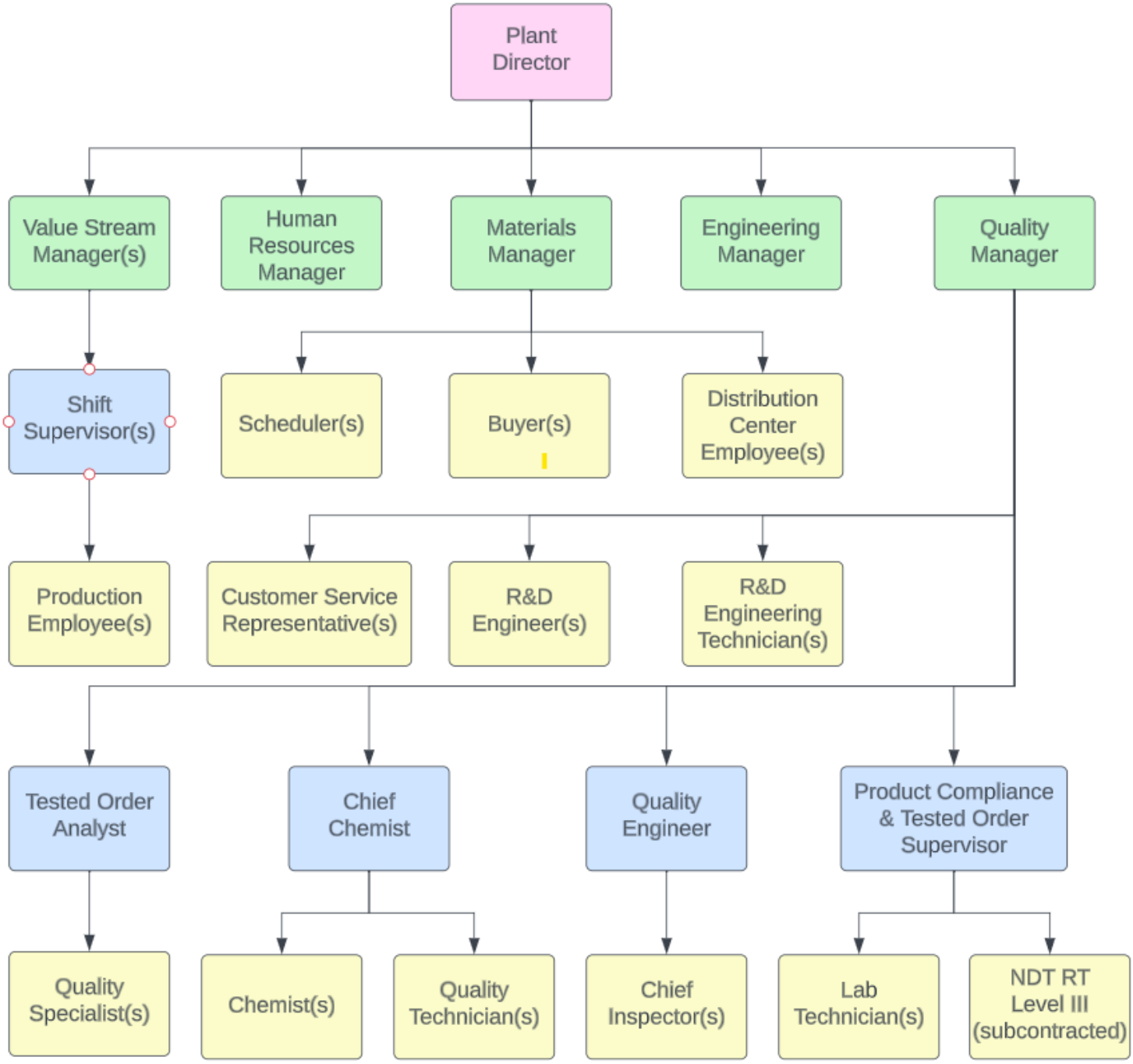
1200 Biglerville Road, Gettysburg PA 17325

- Receiving, identification, verification, and handling, storage, and shipment of material and Source Material.

The scope of qualification as listed on the ESAB Group Inc. QSC-221 is as shown below.

Material Organization furnishing welding material including utilization of unqualified Source Material, and approval and control of suppliers at the above location and with additional Code activities as described in the Quality Program Manual at 801 Wilson Avenue, Hanover, Pennsylvania 17331 and 1200 Biglerville Rd, Gettysburg, Pennsylvania 17325.

This Organizational chart applies only to activities in the scope of this Manual:



REVISION LOG

Section QA-	Page	Paragraph	Change
1	a		Changed Revision to "Issue 13, Revision 1, dated 10/05/2023" from "Issue 13, Revision 0, dated 11/05/2020"
1	b		Mission Statement page was deleted
1	c		Changed Plant Manager to Plant Director, Changed Production Manager to Value Stream Manager Added requirements for supervisory structure for individuals performing Code work.
1	d		Updated the scope of qualification as listed on the ESAB Group Inc. QSC-221
1	e		Organizational Chart Change
2	1 and 2	3.2 and 5.2.1	Updated according to the Organizational Chart
2	3 and 4	8.0	Changed NCA 3800 to NCA 3300
2	2	5.1.4	Updated that revisions shall be maintained in the Revision Log
2	2	5.2.2	Added requirement that "annually" shall not exceed 12 months. Other instances of "annually" throughout the QSM were updated with the same requirement.
3	1, 2, 5, 6, 7, and 9	1.1.1, 1.2.2.2, 1.9.1, 1.10, 2.1, 2.1.1, 2.2.1, 2.5, 2.5, 2.5.1, 2.6.1, 2.9.1, 2.11.1, 2.13, 4.1	Updated according to the Organizational Chart
3	8	3.1	Changed NCA 3800 to NCA 3300
3	9	3.2	Added requirement that training records be maintained by Human Resources Manager
4	2	2.2.2	Creation of Exhibit 4-3 Special Order Sticker
5	1 and 2	3.2.4 and 4.5.4	Updated according to the Organizational Chart
5	2	5.1	Added requirements for preparation, maintenance, and storage of Quality Documents
6	4	5.5.1	Added requirements for testing and calibration suppliers
6	7 and 8	7.1.4 and 7.4.1	Added "or Quality Technician" and Added "In addition, the Quality Manager shall validate the calibration"
7		5.1	Updated to include QC01003 for Chief Inspector Job Requirements
8		3.2	Expanded to include records for All Test Personnel and added section 3.2.2 giving requirements for Chemists and Quality Technicians
10		4.1	Added requirement that records of inspection, examination, and testing shall be traceable to the document/revision to which it was ordered.
11	1	3.1 and 5.1	Added "Open One or"
13	1	2.4 and 4.3	Changed Plant Manager to Plant Director

QUALITY SYSTEM PROGRAM

1.0 PURPOSE

1.1 It is the purpose of this section to define the content and responsibility for the preparation and control of the Manual, management review of the program, conditions required for the implementation of the program, and definitions of terms used throughout the Manual.

2.0 CONTENT

2.1 This Manual shall provide a written description of the Quality System Program maintained by The ESABGroup, Inc. Hanover PA. The Manual shall contain sufficient detail and exhibits to be a working document for all departments. Activities included in the scope are listed in QA-1.

3.0 RESPONSIBILITY

3.1 The Quality Manager shall be responsible for the preparation, maintenance, and implementation of this Manual.

3.2 The Manual and its revisions shall be prepared by the Quality Manager and reviewed and approved by the Plant Director as shown on the cover page.

4.0 QUALITY SYSTEM MANUAL DISTRIBUTION

4.1 The electronic version of the Quality System Manual at The ESAB Group, Inc., Hanover is considered to be the controlled master document. This Manual is located in the OpenOne database, which is password protected by a unique logon and password to prevent unauthorized access.

4.2 A controlled copy of the Manual shall be issued to ASME by the Quality Manager.

4.2.1 The controlled copy will be controlled per QA-5, and a receipt of the controlled document will be documented on the “Controlled Document Receipt Acknowledgement” (Exhibit 4-6)

4.3 Uncontrolled copies of this Manual may be distributed to organizations outside the ESAB Group, Inc.

4.3.1 Uncontrolled copies of this Quality System Manual are not allowed in the facility, except for the purposes of training or revision discussion. In these cases, uncontrolled copies will be printed collected and destroyed upon completion of use by the appropriate Department Manager.

5.0 QUALITY SYSTEM PROGRAM REVIEW AND REVISION

5.1 Quality System Program Revision

5.1.1 Issue Number, Revision Number, and Date indicate the Quality System Program Manual Revision status/level. The Manual shall be revised in its entirety or by individual section.

5.1.2 Each revision to the Manual shall be accompanied by a Revision Number and Date on the affected sections or pages. When the Manual is revised by Section or exhibit, the Revision Number of the revised section or exhibit is incremented by one, and the date is changed to reflect the date that the change was made. When the Manual is revised in its entirety, the IssueNumber is incremented by one, the previous Revision Number reverts to zero, and the Date is changed to reflect the date the entire Manual was revised. New issues are controlled in the same manner as revisions.

5.1.3 All Manual revisions shall include a revised Title Page and a revised Table of Contents. A revised Index of Exhibits shall also be included if changes were made to any exhibits listed in Section QA-14. Any specific forms used to implement the controls of exhibits listed in QA-14 may be

modified without revising the Manual exhibit if the new form does not take away any requirements of the exhibit.

5.1.4 The Issue Number, Revision Number, and Date shown on the Title Page of the current version of the Quality System Program Manual shall be used to indicate the overall revision level or status of the Manual. All changes made during each Manual revision and issue, shall be identified in the Revision Log.

5.1.5 The Quality Manager, or designee, shall review Code Editions, and revise and implement the Manual if necessary, within six months of the date of issue. The purpose of this review is to ensure compliance of the Quality Program with the applicable sections of the Code. This review shall be documented by signature and date on the summary of changes page of the applicable Code section or subsection.

5.2 Quality System Program Review

5.2.1 The Quality Manager shall prepare a report, which documents a review of the Quality System Program to determine its performance, status, effectiveness and adequacy. The review will include a quorum of the site management representatives. The Plant Director, Value Stream Manager, Engineering Manager, Human Resources Manager, and Materials Manager are required attendees. Topics to be covered include internal nonconformance, customer complaints, audit results (customer, internal, and supplier, corrective action requests (internal and supplier), and continuous improvement opportunities.

5.2.2 Review of the Quality System Program as outlined in paragraph 5.2.1 shall occur at least once per year (not to exceed 12 months). The review shall be documented by the Quality Manager in the form of meeting minutes that indicate what topics were discussed, all employees in attendance, and any results/recommendations that may have been generated during the review. Copies of the review documentation shall be provided to all attendees who will review the minutes for recommendation of potential changes or revisions that may need to be made to the Quality System Program.

5.3 Revisions and issues to the Quality System Program shall be submitted to ASME in final form for acceptance PRIOR to implementation. Implementation shall occur within 30 days after ASME acceptance of the revision. ASME acceptance of QSM issue/revision is shown on the “Controlled Document Receipt Acknowledgement” (Exhibit 4-6).

6.0 RECORDS OF QUALITY SYSTEM MANUAL REVISION

6.1 In addition to the requirements of paragraph 5.1.3 of this section, all Manual revisions shall include a record of revision page(s) documenting the Revision (Issue Number and Revision Number), Date, Section, and Page(s) being changed during each Issue’s revision cycle. Pages may be added as required to accommodate additional revision cycles. When the Manual is reissued as described in paragraph 5.1and subparagraphs, the “cumulative” record of revisions shall be revised to document only the new Issue Number, Revision Number, Date and the fact that the Manual was completely revised.

6.2 The Quality Manager will maintain the master copy of the Quality System Manual and all its issues and revisions in accordance with the requirements of retention procedure QC-12000.

7.0 PROGRAM CONDITIONS

7.1 The Quality System program shall be implemented under controlled conditions suitable for the purpose at hand. All projects and activities that affect product quality shall provide for special controls, processes, manufacturing and test equipment, tools, and skills to attain required quality levels.

8.0 DEFINITIONS

- *Approved Supplier* – A supplier that has been evaluated and approved by a Material Organization or Certificate Holder in accordance with the requirements of NCA-33003800 to supply qualified Source Material forconversion to material, or provision of services, to the party performing the evaluation and approval.
- *Audit* - a documented evaluation performed to verify, by examination of objective evidence, that those selected elements of a previously approved quality program have been developed, documented, and implemented in accordance with specified requirements. An audit does not include surveillance or inspection for the purpose of process control, or acceptance of material or items.
- *Certificate Holder* – An organization holding a Certificate of Authorization, Certificate of Authorization (Corporate), or Quality Assurance Program Certificate issued by ASME. This does not include the holder of a Quality System Certificate or Owner's Certificate.
- *Certified Material Test Report (CMTR)* - a document attesting that the material is in accordance with specified requirements including the actual results of all required chemical analyses, tests, and examinations.
- *Chemically Controlled Mix of Flux* – Flux material that has been chemically analyzed to insureensure that it conforms to the percent allowable variation from The ESAB Group, Inc.'s standard for each chemicalelement for that type electrode.
- *Code* – refers to ASME Sec III and all referenced standards.
- *Commercial Products* – Products not used for code applications.
- *Corrective Action* – Measures taken to rectify conditions adverse to quality, and where necessary, to preclude repetition.
- *Designee* – A Qualified Individual given authority to perform any action by the Responsible Individual assigned to perform the task.
- *Dry Batch* –is defined as the quantity of dry ingredients (raw materials) mixed at one time in one mixing vessel; a dry batch may be used singly or may be subsequently subdivided into quantities to which the liquid binders may be added to produce a number of wet mixes.
- *Dry Blend* – Two or more dry batches mixed in a mixing vessel and combined proportionately to produce a uniformity of mixed ingredients equal to that obtained by mixing the same total amount of dry ingredients at one time in one mixing vessel.
- *Material* – For ASME Code Section III, Division 1, metallic materials manufactured to an SA, SB, SFA, or any other material specification permitted in Section III and that are manufactured, identified, and certified in accordance with the requirements of Section III. For Section III, Division 2, metallic materials, as well as to nonmetallic materials, conforming to the specifications permitted in ASME Code Section III. For the purposes of ESAB Group, Inc., the term material applies only to welding materials.
- *Material Organization, Certified* - an organization certified by holding a Quality System Certificate issued by ASME to provide materials or services in accordance with the requirements of Section III, NCA-33003800.
- *Nuclear Tested Order* – Any order for product that invokes requirements from and testing to ASME Section III, 10 CFR 50B
- *Open One* - Total Quality Management software package that is used for managing documentation requirements for the Quality Management System.
- *Qualified Source Material* – Metallic products produced by an approved supplier, Material Organization, or Certificate Holder in accordance with the requirements of NCA-33003800 or the output of the

qualification process requirements of NCA-4255.5.

- *Raw Material* – Chemicals used in the manufacture of flux for covered electrodes, flux cored wires, and SAW flux. For the purpose of this manualManual, Raw Material is not considered to be Material or Source Material.
- *SAP* – an Enterprise Resource Planning (ERP) system, which enables companies to run their business processes, be they accounting, sales, production, quality, human resources or payment, in an integrated environment.
  Source Material – Metallic products used by a Material Organization or Certificate Holder in a product form conversion process in the manufacture of material [NCA-4251.2 (a) (1)] or in a qualification process based on test and examination to the requirements of the material specification [NCA-4255.5 (a) (2) and NCA-4255.5(a) (3)]. Source material may be qualified or unqualified.
- *Source Material Test Report (SMTR)* - a document attesting that the Source Material is in accordance with specified requirements including the actual results of all required chemical analyses, tests, and examinations.
- *Supplier* – Any individual or organization that furnishes products or services in accordance with a procurement document.
- *Survey* - a documented evaluation of an organization's ability to perform Code activities as verified by a determination of the adequacy of the organization's quality program and by review of the implementation of that program at the location of the work.
- *Unqualified Source Material* – Source material not produced by a Certificate Holder, Material Organization, or approved supplier in accordance with the requirements of Section III, NCA-33003800.
- *Wet Mix* – is defined as the combination of a dry batch or dry blend and liquid binder ingredients at one time in one mixing vessel.

10.0 TERMINOLOGY

10.1 The terms ESAB Welding and Cutting Products, Alloy Rods Corporation, ESAB Group and The ESAB Group, Inc. are current and previous names of this company and may be found interchangeably on internal documents. The current name is The ESAB Group, Inc., which, in this Manual means The ESABGroup, Inc., Hanover, PA.

PERSONNEL

1.0 QUALITY ASSURANCE

1.1 Quality Manager

1.1.1 Reports to the Plant Director.

1.1.2 Responsibilities:

1.1.2.1 Oversee activities of all Quality Department Personnel to assure that they are independent from cost and scheduling considerations and have the authority to:

1.1.2.1.1 Identify quality system problems.

1.1.2.1.2 Initiate, recommend, or provide solutions to quality related problems.

1.1.2.1.3 Verify implementation of solutions to those problems.

1.1.2.1.4 Assure that further processing, delivery, or use is controlled until proper disposition of a deficiency, or unsatisfactory condition has occurred.

1.1.2.2 Control of the entire Quality System Program, including preparation and review of the Quality System Manual.

1.1.2.3 Control/perform Quality Systems audit of The ESAB Group, Inc. suppliers as required.

1.1.2.4 Review of all written procedures and monitoring of all activities associated with:

1.1.2.4.1 Control of operations and materials.

1.1.2.4.2 Conducting examinations and tests.

1.1.2.4.3 Calibration of measuring and test equipment.

1.1.2.4.4 Taking corrective action when necessary.

1.1.2.4.5 Keeping essential records and submitting Certified Material Test Reports and Certificates of Compliance when required by the customer.

1.1.2.4.6 Control of all nonconforming materials and products.

1.1.2.4.7 Evaluation of customer complaints.

1.1.2.5 Train personnel per policy and procedure.

1.1.2.5 Disposition of non-conforming material/product.

1.1.2.5 Review and approve purchase orders as described in QA-6.

1.2 Product Compliance & Tested Order Supervisor

1.2.1 Reports to the Quality Manager.

1.2.2 Responsibilities:

1.2.2.1 Perform Quality Assurance audits of The ESAB Group, Inc., suppliers as required.

1.2.2.2 Perform internal audits as assigned by Quality Manager or Plant Director

1.2.2.3 Assume duties of Quality Specialist in his/her absence.

1.2.2.4 Assume duties of Quality Manager in his/her absence.

1.2.2.5 Monitors and schedules product certification by third party agencies (e.g. Canadian Welding Bureau, DNV-GL, TUV, ABS, etc.)

1.2.2.6 Assists Customer Service Representative, Quality Manager or others in review of technical requirements of Tested Orders.

1.2.2.7 Additional duties as may be assigned by the Quality Manager.

1.2.2.8 The Quality Department review of all tested orders and special inquires in terms of specifications, code requirements, and other requirements imposed by the ordering data.

1.2.2.9 Schedules workload to ensure proper balance and flow of sales and research tests through the lab.

1.2.2.10 Develops welding, machining, and testing methods or procedures.

1.2.2.11 Maintains equipment and meter calibrations to the proper standards and recommends replacements or additional ones when required.

1.2.2.12 Purchases materials and equipment required in the lab.

1.2.2.13 Responsible for the certification of RT process for weld test personnel.

1.2.2.14 Responsible for developing and maintaining raw material, steel, and production formulation specifications.

1.2.2.15 Evaluate job performance of subordinates and recommends appropriate actions.

1.2.2.16 Maintain training records of welding test personnel and assure compliance to company training policies.

1.3 Tested Order Analyst

1.3.1 Reports to the Quality Manager.

1.3.2 Responsibilities

1.3.2.1 Receives from Customer Service Representative a “Tested Order Review” and Customer Purchase Order for tested/certified product.

1.3.2.2 Reviews orders, for test requirements, special markings, packaging, identification, etc.

1.3.2.3 Initiates sales tests based on review of Customer Purchase Order and Tested Order Review form.

1.3.2.4 Coordinates tested order processing with Customer Service Representative and Test Lab Supervisor

1.3.2.5 Receives and Reviews test results recorded on the Product Test Data Sheet.

1.3.2.6 Inspects completed tested order products for correct markings and packaging.

1.3.2.7 Prepares Certificates of Analysis and Certified Material Test Reports for those orders requiring certification.

1.3.2.8 Coordinates final inspection of product with Customer Service Representative prior to shipment.

1.3.2.9 Retains test records.

1.3.2.10 Disposition of non-conforming material/product.

1.3.2.11 Supervision of Quality Specialists.

1.4 Quality Specialists

1.4.1 Report to Tested Order Analyst

1.4.2 Responsibilities

1.4.2.1 Preparation and review and maintenance of quality system documentation

1.4.2.2 Reviews orders, for test requirements, special markings, packaging, identification, etc.

1.4.2.3 Initiates sales tests based on review of Customer Purchase Order and Tested Order Review form.

1.4.2.4 Receives and Reviews test results recorded on the Product Test Data Sheet.

1.4.2.5 Inspects completed tested order products for correct markings and packaging.

1.4.2.6 Retains test records.

1.5 Chief Chemist

1.5.1 Reports to Quality Manager.

1.5.2 Responsibilities

1.5.2.1 Plans and directs lab work in support of Manufacturing Processes.

1.5.2.2 Interprets laboratory results and prepares technical reports for lab personnel, and manufacturing operations.

1.5.2.3 Develops and maintains equipment calibrations to proper standards.

1.5.2.4 Provides technical support for laboratory instrumentation.

1.5.2.5 Specifies and creates PO requisitions for Chem Lab supplies, gases, consumables, instrument parts, and annual instrument service contracts.

1.5.2.6 Works at the various lab equipment stations to process even workflow.

1.5.2.7 Evaluates job performance of subordinates and recommends appropriate actions.

1.5.2.8 Oversees performance of all duties by Chemists and Quality Technicians.

1.6 Chemist

1.6.1 Reports to Chief Chemist.

1.6.2 Responsibilities

1.6.2.1 Calibrates, operates and maintains optical emission spectrometers. Electronically releases finished goods through SAP.

1.6.2.2 Operates and maintains carbon/sulfur/oxygen/nitrogen/H20 analyzers.

1.6.2.3 Operates gas chromatographs for diffusible hydrogen analysis of weld metal. Data entry.

1.6.2.4 Performs wet chemical analysis of metals and minerals.

1.6.2.5 Calibrates, operates and maintains X-ray fluorescence spectrometers.

1.6.2.6 Performs wet chemical analysis and sample preparation.

1.6.2.7 Performs testing on incoming steel; reviews and approves steel supplier certifications.

1.7 Quality Technicians

1.7.1 Quality Technicians report to the Chief Chemist.

1.7.2 Responsibilities

1.7.2.1 Receiving Inspection

1.7.2.2 Weld Chemistry Testing

1.7.2.3 Testing of Fluxes for moisture and CO2

1.8 Lab Technicians

1.8.1 Reports to Product Compliance & Tested Order Supervisor.

1.8.2 Responsibilities:

1.8.2.1 Set-up of machine, plate and weld specimens for completion of test.

1.8.2.2 Welds test specimens in flat, vertical and overhead position to determine operating characteristics, chemical composition, radiographic quality, and mechanical properties.

1.8.2.3 Selects the most effective parameters and technique to be used within the guidelines of the governing specification.

1.8.2.4 Works with R&D Engineer to evaluate quality of weld and conformance to requirements.

1.8.2.5 Notifies supervisor or Quality Manager of electrodes being tested that do not meet the weldability standards of ESAB.

1.8.2.6 Machines test weld plates for testing

1.8.2.7 Performs NDT on test weld plates

1.8.2.8 Lab Technicians are NDT Level II or Level I.

1.8.2.9 Tests samples machined from test weld plates (Tensiles, Impacts, etc)

1.9 Chief Inspectors

1.9.1 The Chief Inspectors report to the Quality Engineer.

1.9.2 The general duties of the Chief Inspectors are described in detail throughout the various Quality Control and Inspection Procedures that cover such activities for each stage of product manufacture. Whereas the Quality Technicians' duties are concentrated in the beginning of the manufacturing process (i.e., incoming materials, some in-process analysis, etc.), the Chief Inspectors are involved primarily with in-process and final inspection of products produced. The Quality Manager will also assign other duties/responsibilities to the Chief Inspectors as deemed necessary and/or appropriate. The Chief Inspector duties/responsibilities are to focus on inspection of all nuclear tested orders.

1.9.2.1 Monitoring in-process manufacturing activities such as fabrication/extrusion of electrodes, baking operations, wire cleaning, drawing, and cutting operations; product packaging and identification; etc.

1.9.2.2 Taking samples of finished product and inspecting for dimensional attributes in accordance with the appropriate Quality Control and Inspection Procedure covering the specific product and/or stage of manufacture being inspected.

1.9.2.3 Documenting inspection activities as required by the Quality System Program and/or the Quality Control and Inspection Procedures.

1.9.2.4 Obtaining samples for the Quality Technician for producing weld deposit pads for analysis.

1.9.2.5 Obtaining samples for preparation and performance of Tested Orders as requiredby the Production Schedules.

1.9.2.6 Application and removal of Nonconforming Material Hold Tags (Exhibit 10-6) from non-conforming product.

1.10 Quality Engineer

1.10.1 The Quality Engineer reports to the Quality Manager.

1.10.2 Responsibilities:

1.10.2.1 Supervises the Chief Inspectors.

1.10.2.2 Rosetta claims (customer warranty claim).

1.10.2.3 Disposition of non-conforming material/product.

1.10.2.4 Leads investigation and resolution of corrective and/or preventive actions.

2.0 PARTICIPATING DEPARTMENTS

2.1 Plant Director

2.1.1 Plant Director is the senior responsible manager in this program.

2.1.2 Responsibilities:

2.1.2.1 Develop and specify the operating procedures to be used in manufacturing a product to enable it to meet the quality requirements at a minimum cost.

2.1.2.2 Improve product quality through processing methods.

2.1.2.3 Oversees manufacturing operations in all production departments.

2.1.2.4 Oversees those activities directly associated with storage and shipping of finished products.

2.1.2.5 Assigns Lead Auditors to perform internal audit of quality function

2.2 Materials Manager

2.2.1 Reports to the Plant Director

2.2.2 Responsibilities:

2.2.2.1 Manages the procurement of materials, Source Materials, services, and raw materials.

2.2.2.2 Procures to the latest specifications.

2.2.2.3 Contacts suppliers on all quality problems

2.2.2.4 Training per policy and procedure

2.3 Buyers

2.3.1 Reports to Materials Manager

2.3.2 Responsibilities

2.3.2.1 Procure materials, Source Materials, services, and raw materials

2.3.2.2 Procures to the latest specifications.

2.3.2.3 Serves as the liaison between ESAB QA and suppliers on all quality issues.

2.4 Schedulers

2.4.1 Reports to the Materials Manager

2.4.2 Responsibilities:

2.4.2.1 Schedules work orders and establishes priority of orders to be processed, including the consideration of special requirements.

2.4.2.2 Furnishes Buyers with information on the amount and type of materials needed to what specification and requested delivery date using SAP.

2.5 Value Stream Manager

2.5.1 Reports to the Plant Director

2.5.2 Responsibilities

2.5.3 Oversees all production operations within this program.

2.6 Shift Supervisors

2.6.1 Report to Value Stream Manager

2.6.2 Responsibilities

2.6.2.1 Performs the functions as described in the Quality System Manual, Inspection Procedures, and Manufacturing Procedures.

2.6.2.2 Indoctrinates and trains the production employees in the applicable requirements shown in these referenced procedures and system and reviews the work of the department to assure compliance to Code and other requirements.

2.7 Production Employees

2.7.1 Report to Shift Supervisors.

2.7.2 Responsibilities:

2.7.2.1 Performs all applicable functions as described in the Quality Assurance Manual, Inspection and Manufacturing Procedures.

2.7.2.2 Participates in on-the-job training of “new hires” or employees who are new to the department and/or job classification

2.8 Customer Service Representative

2.8.1 Reports to the Quality Manager for Code Activities.

2.8.2 Responsibilities

2.8.2.1 Order Entry.

2.8.2.2 Customer Order Service.

2.8.2.3 Training per Policy and Procedure.

2.8.2.4 Customer inquiries and orders with assistance from Quality Assurance in terms of specifications and special requirements including Code requirements.

2.8.2.5 Contacts customers when orders are completed and ready for inspection and shipment.

2.9 Human Resources Manager

2.9.1 Reports to the Plant Director for Code Activities.

2.9.2 Responsibilities

2.9.2.1 Administers/oversees training (including the Quality training procedure), education, and organizational development functions.

2.9.2.2 Maintaining records of training per Policy and Procedure.

2.10 Engineering Manager

2.10.1 Reports to Plant Director

2.10.2 Responsibilities

2.10.2.1 Preparation and approval of manufacturing procedures.

2.11 R&D Engineer

2.11.1 Reports to the Quality Manager for Code Activities

2.11.2 Performs trials to optimize product performance.

2.11.2.1 Approves Recipes (charts) for dry mixes.

2.11.2.2 Approves Specifications on the following items:

2.11.2.2.1 Raw Materials

2.11.2.2.2 Source Materials

2.11.2.2.3 Finished Product

2.11.2.3 Approves suppliers for raw materials.

2.12 R&D Engineering Technician

2.12.1 Reports to the Quality Manager for Code Activities

2.12.2 Reviews and publishes R&D documents including raw material, Source Material, and materialspecifications

2.13 Distribution Center Employees

2.13.1 Reports to the Materials Manager

2.13.2 Responsibilities:

2.13.3 Receive, handle, and store raw materials.

2.13.4 Receive, handle, store, and ship finish goods.

3.0 INDOCTRINATION AND TRAINING OF PERSONNEL

3.1 All personnel in the organization will be indoctrinated on this Quality System Program, 10 CFR Part 21, 10 CFR 50 Appendix B, ASME-III NCA 3300, job responsibilities, authority and nuclear safety, using procedure AOP-18-001. This indoctrination will be in the form of a presentation given by the Quality Manager. Records of indoctrination will be maintained by HR in the person's personnel file on a Certificate of Training (Exhibit 3-1).

3.1.1 The extent of the indoctrination and training shall be commensurate with the scope, complexity, and nature of the activity, as well as the education, experience and proficiency of the person

receiving the training as determined by the Quality Manager.

3.1.2 The indoctrination and training shall include the general criteria, applicable codes, standards, company procedures, Quality System Program requirements, job responsibilities and authority as they relate to a particular function as determined by the Quality Manager.

3.1.2 Training shall be provided, as needed to achieve initial proficiency, maintain proficiency, and adapt to changes in technology, methods and job responsibilities as determined by the Quality Manager.

3.2 Training of new personnel or personnel changing tasks is the responsibility of the Department Manager. Tasks requiring training will be documented. Competence on each task will be documented by the Department Manager. The person being trained will sign off that they understand all elements of the task being trained on. These training records shall be stored by the Human Resources Manager.

3.3 Quality Technicians and Chief Inspector Special Training Requirements.

3.3.1. In addition to the above, the Quality Manager will ensure that Quality Technicians and Chief Inspectors are properly trained/qualified to perform their assigned duties.

3.3.2. New hires or employees transferring into the quality department (through the “bidding” process) shall undergo an initial thirty-day “on-the-job” training period. The individual will spendtime with a qualified individual working in the same job classification. The individual will, during the course of this training period, be made familiar with the Quality System Program and QualityProcedure requirements that pertain directly to the specific job classification.

3.3.3. The Quality Manager will determine (based on job performance) if the Chief Inspector is qualified. Procedure QC-01003 notes specific attributes and responsibilities. This qualification will be conducted annually

3.3.4. The Chief chemist will determine (based on job performance) if the Quality Technician is qualified. Procedure QC-01000 notes specific attributes and responsibilities. This qualification will be conducted annually.

3.3.5. All qualification records are maintained by the Quality Manager for each qualified Quality Technician or Chief Inspector.

3.4 Indoctrination and Training requirements for NDT are listed in QA-9

3.5 Indoctrination and Training for Auditors is in QA-6 and QA-13

4.0 General

4.1 When a department is referenced throughout the Manual, the manager of the department is theresponsible party. The department managers are the managers who report directly to the Plant Director as shown in this section and in the organizational chart.

4.2 When an activity is listed anywhere in this Manual is listed as the responsibility of a specific individual by title, the responsible individual may delegate performance of activities to an indoctrinated, trained, and, when required, qualified individual(s) withinthe same department but retains responsibility for the actions taken.

ORDER ANALYSIS

CUSTOMER SERVICE, RESEARCH DEPARTMENT, & QUALITY ASSURANCE DEPARTMENT

1.0 PURPOSE

1.1 To describe and define Customer Service, R&D and Quality responsibilities to:

1.1.1 Analyze orders including Customer Order Change Notices in terms of specifications, Code requirements, and other requirements imposed by the ordering data.

1.1.2 Plan for records and final documentation.

1.1.3 Prepare, review, and approve documents to record and communicate technical requirements.

2.0 ORDER ANALYSIS

2.1 Inquiries and orders are processed through The ESAB Group, Inc. Customer Service Representative. In the event that an inquiry or order requires actual testing and subsequent certification of actual test results for finished product, the Customer Service Representative will enter an order in the TOPS system (Tested Order Products System). Customer Service Representative will scan a copy of the customer's order into the TOR (Tested Order Review) (Exhibit 4-4).

2.1.1 Commercial, non-tested orders are not subject to the controls of this Manual section.

2.1.2 TOR will then be electronically forwarded by the Customer Service Representative to the Tested Order Analyst for evaluation of all requirements (test certification, packaging, labeling, etc.).

2.1.2.1 The Tested Order Analyst then forwards the TOR on to the Scheduler and Production Employees with all special requirements.

2.1.2.2 After material is produced, the TOR is moved by the Tested Order Analyst into the TOPS System. The Tested Order Analyst creates the Product Test Data Sheet (PTD) (See Exhibit 4-1) enters the test and examination requirements, then selects, identifies and forwards the samples to be tested to the Product Compliance & Tested Order Supervisor along with the PTD. The PTD form provides the necessary reference specification and instructions for assuring that all prerequisites for a given test have been met, using adequate test instrumentation and equipment and suitable environmental conditions.

2.1.2.3 When the test is completed, data is entered on both the hard copy and electronic PTD. The hard copy of the PTD is then hand carried by the person completing the test, and the electronic PTD is forwarded to the Tested Order Analyst. The Tested Order Analyst reviews the electronic PTD and hardcopy PTD for completeness and consistency by reading them and comparing to make sure that required fields are complete and the data is not different between copies.

2.1.2.4 In the event data is missing on the hard copy of the PTD or not identical with the data on the electronic PTD, the Tested Order Analyst will notify the Product Compliance & Tested Order Supervisor and the original hard copy PTD will be returned to have data entered or corrected. The hard copy of the PTD will be returned to the Tested Order Analyst with complete data.

2.1.2.5 In the event data is missing on the electronic PTD, but is present on the hard copy PTD, the Tested Order Analyst shall enter that data on the electronic PTD.

2.1.3 When a tested order is received following a quote based on an RFQ (Request for Quote), both the order and the RFQ will be reviewed for differences, by Customer Service Representative. If differences are noted, the order will be referred back to Customer Service Representative to determine if requoting is necessary.

2.2 The Tested Order Analyst is responsible to ensure that material that has been produced in fulfillment of a tested order shall be identified in the following manner:

2.2.1 Electronically in the Quality Inspection location in the ESAB SAP System,

2.2.2 Physically by placement on it of a Special Order Sticker (See Exhibit 4-3) on the material.

2.3 All testing for certification purposes is performed under the control of the Product Compliance & Tested Order Supervisor. The Tested Order Analyst selects, identifies, and forwards the samples to be tested plus the PTD to the Product Compliance & Tested Order Supervisor. The PTD provides the necessary reference specifications and instructions for assuring that all prerequisites for a given test have been met, using adequate test instrumentation and equipment and suitable environmental conditions.

2.4 Upon completion of the tests, the results are reported to the Tested Order Analyst for review against the acceptance criteria of customer requirements. Release approval is indicated on the PTD by signature and date.

2.5 A Certified Materials Test Report (CMTR) (See Exhibit 4-2) is generated by the Quality Specialist from the completed PTD, and the customer's order.

2.5.1 The CMTR includes all actual test results obtained from chemical analyses, physical tests, and other examinations as required. Analysis, test and other examinations required by the material specification that were not performed shall also be recorded on the CMTR.

2.5.2 When chemical analysis, heat treatment, test, examinations, or repairs are subcontracted, the approved supplier's certification for the operation performed shall be furnished as an identified attachment to the CMTR.

2.5.3 When operations other than chemical analysis, heat treatment, test, examinations, or repairs that require maintenance of traceability are subcontracted, these operations and the approved suppliers performing them shall be listed on the CMTR, or the approved supplier's certification for the operation performed shall be furnished as an identified attachment to The CMTR.

2.5.4 When unqualified Source Material is utilized, it shall be done as described in QA-6 and the supplier's CMTR for the Source Material shall be attached and identified on The ESAB GroupCMTR.

2.5.5 When specific times or temperatures (or temperature ranges) of heat treatments are required by material specifications, they shall be reported on the CMTR. For austenitic stainless steels and high nickel alloys, a statement of the minimum solution annealing temperature is a sufficient statement of heat treatment.

2.5.6 When specific times or temperatures (or temperature ranges) of heat treatments are not required by the material specification, a statement of the type of heat treated condition shall be reported on the CMTR.

2.5.7 The ESAB Group, Inc.'s ASME Quality System Certificate (QSC) number and expiration date shall be shown on the CMTR covering materials supplied under the provisions of The ESAB Group, Inc.

The inclusion of the QSC number and expiration date shall be considered the certification that all activities have been performed in accordance with the applicable code requirements. All CMTR's are then reviewed and signed by the Tested Order Analyst.

2.5.8 Material identification traceable to the markings on the packaging shall be described in the CMTR. Welding consumables manufactured by The ESAB Group, Inc. under any brand name, within the scope of this program, shall show the ESAB Group, Inc. on the packaging, and on the CMTR.

2.6 All test records, and a copy of the CMTR pertaining to the required contract shall be retained by Tested Order Analyst in accordance with the requirements of record retention procedure QC-12000. If required by purchase order, all documents will be offered to the buyer before destruction.

2.7 The Customer Service Representative is responsible for notifying the customer by email or phone (when inspection is required), when the orders are completed and ready for shipping. When inspection hold points are requested by the customer, the work will at these designated points, be tagged by the Chief Inspector and moved tohold area until inspected and released by the customer for further processing or testing.

2.8 Chief Inspector will inspect the product for proper markings, labeling, etc. during manufacturing process in accordance with QA-7, QA-8, and QA-10. The Tested Order Analyst will ensure that all special order requirements are met.

2.9 Records of packaging activities as documented on various manufacturing and inspection forms are maintained by the Tested Order Analyst and shipping records by Customer Service Representative in accordance with the requirements of record retention procedure QC-12000.

DOCUMENT CONTROL

1.0 PURPOSE

1.1 To define responsibilities for preparation, review, approval, distribution and control of revisions for documents which defines activities affecting quality, which include, as a minimum, the following:

1.1.1 Customer Orders

1.1.2 Purchased Material Specifications

1.1.3 Product Specifications (Formulations)

1.1.4 Manufacturing Procedures and Work Instructions

1.1.5 Quality Control and Inspection Procedure

1.1.6 Finished Product Purchase Specifications

1.2 Internally generated controlled documents shall include the document number, revision and total pages, including exhibits, on each page. Copying documents other than described in the system herein is prohibited.

2.0 CUSTOMER ORDERS

2.1 The Customer Service Representative is responsible for maintaining the original and changes to the customer purchase orders. All contract changes will be handled the same as the original as covered in Section QA-4.

3.0 PURCHASED SOURCE MATERIAL AND RAW MATERIAL SPECIFICATIONS

3.1 All specification requirements of Source Materials and raw materials are prepared and maintained by the R&D Engineer. The R&D Engineer approves all specifications by signing the master hard copy.

3.1.1 Specifications for qualified Source Material shall require that the approved suppliers certify thatthe Source Material was produced under a Quality Systems Program accepted by The ESAB Group, Inc. or ASME by including their approved Quality Manual revision and date, or QSC number and expiration date on the CMTR.

3.1.2 R&D Engineer maintains a master index of Source Material and raw material specifications,which will show the current revision level of each specification.

3.2 Copies of these specifications are electronically furnished by the R&D Engineer to:

3.2.1 Quality Manager

3.2.2 Buyer

3.2.3 Engineering Manager

3.2.4 Value Stream Manager

3.3 The R&D Engineering Technician is responsible for distribution of the original and revised specifications, control master(hard copy), recall of obsolete specifications, and maintaining record of revisions. These specifications are available via computer access on networked directories. Read only access will be given to all appropriate parties that do not control the specification. The R&D Engineering Technician will update the database and provide notification by email to a distribution list maintained by the R&D Engineering Technician to the personnel with access that a change has been made.

4.0 PRODUCT SPECIFICATIONS

4.1 All new product specifications, formulations, and changes to existing specifications and formulations, are prepared, and approved by the R&D Engineer, and reviewed by the R&D Engineering Technician prior to release.

4.2 The formulations are transmitted by the R&D Engineer to the Production Employees through a computerized weigh up system. R&D Engineering Technician reviews these before transmission.

4.3 The R&D Engineer is responsible for the preparation and approval and distribution of the original and revised formulation and computer weigh up and control of the master (hard copy). R&D Engineering Technician reviews these and maintains a record of revisions.

4.4 R&D Engineer maintains a master index of product specifications, which will show the current revision level of each specification. These specifications are only available via computer access on networked directories; read only access will be given to all appropriate parties that do not control the specification. The R&D Engineer will update the database and provide notification to the personnel with access that a change has been made.

4.5 Copies of Product Specifications are furnished to:

4.5.1 Quality Manager

4.5.2 Engineering Manager

4.5.3 Buyer

4.5.4 Value Stream Manager

4.6 Temporary Change Notices (TCNs) to product specifications may not be used for ASME Section III orders

5.0 QUALITY SYSTEM MANUAL, PROCEDURES, WORK INSTRUCTIONS

5.1 The QSM, procedures and work instructions are available via computer access in the OpenOne Database. The OpenOne Database allows anyone with computer access and permissions to view all controlled documents. Changes can only be approved by authorized personnel as indicated in this section. The security on OpenOne prevents unauthorized persons from editing the controlled documents. Permissions are granted and controlled by the Quality Manager based on security requests approved by applicable department managers. Documents in OpenOne shall be prepared, stored, and maintained per the requirements of QC12000. Records shall be legible, identifiable, and retrievable. Records shall be protected against damage, deterioration, or loss.

5.1.1 As documents are updated and approved in ESAB Procedure Database. It is the responsibility of the document owner to notify the users that a change has been made.

5.1.1.1 All manufacturing procedures and work instructions, including revisions are prepared, approved and maintained by the Engineering Manager. These are reviewed by the Quality Manager.

5.1.1.2 All Quality system procedures and work instructions, including revisions are prepared by approved and maintained by the Quality Manager. These are reviewed by the Product Compliance & Tested Order Supervisor.

5.1.2 Printed copies of Quality System Manuals, procedures or work instructions are uncontrolled unless marked as “Controlled”.

5.1.3 Controlled printed copies of documents must be identified with the posting location, so that they can be changed out when revised. It is the document owner’s responsibility to deliver the

revised document, and remove the old revision.

5.1.3.1 Controlled copies of manufacturing procedures, in total or in part, will be displayed in appropriate work areas to provide instruction to manufacturing personnel.

5.1.4 Uncontrolled copies of Quality System Manual, procedures and work instructions are not allowed to control any work affecting quality, except for the purposes of training or revision discussion. In these cases, uncontrolled copies will be collected and destroyed upon completion of use by the responsible Department Manager.

5.1.5 Records of all changes are maintained in the ESAB Procedure Database in accordance with the requirements of record retention procedure QC-12000 by the Quality Manager.

5.1.6 Temporary Manufacturing Process Change Notices may not be applied to manufacturing procedures that are to be used for ASME Section III orders.

6.0 PRODUCTION SCHEDULES AND ORDERS

6.1 All Production Schedules are prepared and maintained by the Scheduler. These schedules are issued toShift Supervisors who review and approve them. They are also copied to other departments that directly support the production effort.

6.2 All work will immediately be put on “Hold” (by attaching a Nonconforming Material Hold Tag to the material) by the ChiefInspector, should a change in the customer purchase order necessitate such action.

7.0 FINISHED PRODUCT PURCHASE SPECIFICATIONS

7.1 Finished Product Purchase Specifications are prepared and approved by the R&D Engineer. Any changes to the specifications are the responsibility of the R&D engineer. These are reviewed by R&D Engineering Technician prior to release.

7.2 Quality Manager will provide the appropriate Quality Requirements for inclusion into each specification.

7.3 The R&D Engineer maintains a master index of Finished Product Purchase Specifications showing the current revision level of each specification. Specifications are available via computer access on networked directories, read only access will be given to all appropriate parties that do not control the specification. A R&D Engineer will update the database and provide notification to the personnel with access that a change has been made.

7.4 R&D Engineer will maintain a record that distribution of new/revised specifications has been completed.

8.0 TRAINING PROCEDURES

8.1 Training procedures are developed by the Human Resource Manager with input from Department Managers.

8.2 Training procedures are reviewed for adequacy and approved for release by the Quality Manager.

9.0 ELECTRONIC SIGNATURES

9.1 Electronic signatures are self-created by the individual.

9.2 A digital copy of a signature may be used on documents if the following condition is met:

9.2.1 The person who approves the document in the electronic database is the signer of the document.

9.2.2 Access to the electronic database is by unique login and is password protected. Passwords are self-assigned by each user.

10.0 RESPONSIBILITY FOR PREPARATION, REVIEW, APPROVAL, AND DISTRIBUTION OF DOCUMENTS

Document Type	Prepare	Review	Approve	Distribute
Customer Order	Customer Service Representative	Product Compliance & Tested Orders Supervisor	Customer Service Representative	Customer Service Representative
Source Material Specification	R&D Engineer	Engineering Technician	R&D Engineer	Engineering Technician
Raw Material Specification	R&D Engineer	Engineering Technician	R&D Engineer	Engineering Technician
Product Specification	R&D Engineer	Engineering Technician	R&D Engineer	Engineering Technician
QSM	Quality Manager	Plant Director	Plant Director	Quality Manager
Quality System Procedures and Work Instructions	Quality Manager	Product Compliance & Tested Orders Supervisor	Quality Manager	Quality Manager
Production Schedules and Orders	Schedulers	Shift Supervisors	Shift Supervisors	Shift Supervisors
Manufacturing Procedures and Work Instructions	Engineering Manager	Quality Manager	Engineering Manager	Engineering Manager
Finished Product Purchase Specifications	R&D Engineer	Engineering Technician	R&D Engineer	Engineering Technician
Training Procedures	Human Resource Manager	Quality Manager	Human Resource Manager	Human Resource Manager
PTDs	Tested Order Analyst	Quality Specialist	Product Compliance & Tested Order Supervisor	Product Compliance & Tested Order Supervisor
CMTRs	Quality Specialist	Quality Specialist	Tested Order Analyst	Customer Service Representative
Purchase Orders	Buyer	Quality Manager	Quality Manager	Buyer

PROCUREMENT CONTROL

1.0 PURPOSE

1.1 To describe the system and define responsibilities for:

1.1.1 APPROVAL OF RAW MATERIAL SUPPLIERS AND SOURCE MATERIAL TRIALS

1.1.2 APPROVAL OF SUPPLIERS OF QUALIFIED SOURCE MATERIAL AND SERVICES

1.1.3 APPROVAL OF SUPPLIERS WHO ARE QUALITY SYSTEM CERTIFICATE HOLDERS

1.1.4 ALTERNATIVE APPROVAL FOR CALIBRATION AND TESTING SERVICE PROVIDERS

1.1.5 PURCHASE ORDER DEVELOPMENT

1.1.6 RECEIVING INSPECTION, TESTING, AND RELEASE

1.1.7 DISPOSITION OF NONCONFORMING MATERIAL, SOURCE MATERIAL AND RAW MATERIAL

1.1.8 CUSTOMER SUPPLIED PRODUCT

1.1.9 UTILIZATION OF UNQUALIFIED SOURCE MATERIAL

2.0 APPROVAL OF RAW MATERIAL SUPPLIERS AND SOURCE MATERIAL TRIALS

2.1 R&D Engineer is responsible for evaluating raw material or Source Material samples from POTENTIALraw material or Source Material sources.

2. 2 R&D Engineer will coordinate with the Buyer to arrange for procurement of a trial shipment of raw material or Source Material to be considered from a potential supplier. Upon receipt and inspection ofthe raw material or Source Material sample, the R&D Engineer will initiate a trial (experimental) run ofproduct, utilizing the trial raw material or Source Material.

2. 3 Trial run production will be monitored by the R&D Engineer and the appropriate Engineer as required. Upon completion of the manufacturing process, the finished product will be placed on HOLD for R&D Engineer evaluation. R&D Engineer will arrange to have the trial product tested to product specifications to ensure that this finished product is acceptable for use. R&D Engineer will notify the Buyer concerning the acceptability of the trial raw material or Source Material shipment.

2.4 For raw material, if trial run is acceptable, R&D Engineer will approve the new source and include the new source on the raw material specification.

2.5 For Source Material, if trial run is acceptable, R&D Engineer will recommend the supplier to the QualityManager for approval.

2.6 Trial run material will not be for ASME Code use.

3.0 APPROVAL OF SUPPLIERS OF QUALIFIED SOURCE MATERIAL AND SERVICES

3.1 Prior to purchasing qualified Source Material or subcontracted services required by a material specification or Code requirement from any supplier, the Quality Manager will arrange to approve the supplier. Subcontracted services include manufacturing, testing, auditing, and calibration services.

3.2 To approve a supplier to provide qualified Source Material or services, the Quality Manager will arrangeto perform an on-site survey and triennial audits of the supplier's Quality System Program. This on-site survey and triennial audits will assess the supplier's ability to meet applicable Code and/or The ESAB Group, Inc. Quality requirements.

3.3 The Quality Manager will select the lead auditors to perform the on-site survey and triennial audits. The lead auditors selected shall be any qualified lead auditors employed by The ESAB Group, Inc. or any qualified lead auditor from an approved subcontract source of auditing services.

3.3.1 Lead auditors that are employees of the ESAB Group Inc. shall be qualified on the basis of education, experience, training, audit participation, and examination in accordance with Auditor qualification Procedure QC-18001 and QC Form 0014.

3.3.2 Lead Auditors chosen from a subcontract source shall be listed by name on The ESAB Group, Inc. Approved Supplier List as an approved source of auditing services, and the auditor's qualifications shall be reviewed/approved by the Quality Manager as per QC-18001 and QC Form 0014.

3.4 A checklist, prepared by the Lead Auditor, and reviewed and approved by the Quality Manager, shall be used for each supplier on-site survey and triennial audit. The checklist will be developed for each Source Material or service supplier depending on the Source Material or service being supplied, the supplier's particular operation, or other factors that may be deemed necessary to be included in the audit of a supplier of this type. Those items/areas to be audited shall be determined jointly by the Quality Manager, the Lead Auditor, and as necessary other personnel within the company who shall possess technical knowledge or expertise relative to the service being procured.

3.5 The lead auditor shall use the checklist to document the conformance of the supplier's Quality System Program to ASME Section III Code requirements as applicable. The supplier must comply with all areas of their program as covered during the audit via the audit checklist. Those areas that are found to be deficient by the lead auditor shall be discussed by the lead auditor with the supplier during an exit meeting with appropriate supplier personnel.

3.6 The lead auditor shall prepare an audit report indicating the results of the on-site survey and triennial audit including any findings. The audit report shall be saved in the OpenOne audit module, by the Quality Manager. The audit report shall serve as documentation of the audit and exit meeting.

3.7 All survey and audit deficiencies will be documented individually as Corrective Action Requests in the OpenOne Issues module and linked to the audit report, by the Quality Manager. Corrective actions submitted by suppliers addressing any deficiencies will be reviewed and accepted by the Quality Managerprior to issuance of full supplier approval. Supplier's response to Corrective Action Requests shall be submitted within thirty working days of the audit report date unless prior approval has been given by the Quality Manager to allow for additional time. In all cases, final supplier approval authority rests with the Quality Manager. A re-survey or re-audit of the supplier's facility to verify corrective actions shall be performed as deemed necessary by the Quality Manager.

3.8 Suppliers receiving approval authorized by the Quality Manager shall be placed on the Approved Supplier's List. The Quality Manager shall be responsible for maintaining the Approved Suppliers List. The Approved Suppliers List shall identify supplier name, actual location and product or service

qualified to supply. The list shall identify the next audit due and last audit completion dates. The list shall be revised whenever there is a change in the status of any suppliers. Copies of the list are distributed to Buyers.

3.10 In order to verify continued adequacy of the quality systems of previously approved suppliers, audits will be performed at least once every three years. The due date for the triennial audit will be the third year anniversary date of original approval. In the event findings are disclosed during a triennial audit of a supplier that is currently on the Approved Supplier's List, the supplier, at the discretion of the Quality Manager may be issued a "conditional" approval until the audit findings are addressed, corrected and closed out.

3.11 For the years between triennial audits, annual evaluations will be performed and documented on QC-Audit Form 006. Annual evaluations will include an assessment of supplier QS program changes, nonconformances, corrective actions and any other conditions adverse to quality related to the supplier for the period since the last audit or assessment. This also includes a documented review of testing performed on the supplier's qualified Source Material by ESAB since the last assessment.

3.12 Suppliers approved by survey and triennial audit shall be required to submit proposed modifications to their Quality System Program prior to implementation. This requirement shall be invoked on the Purchase Order via the purchased material specification. Such modifications shall be reviewed by the Quality Manager to determine if the modifications meet ESAB Group quality requirements. This review is documented on the ESAB's copy of the supplier's Quality System Manual by signature and date. A note shall accompany the signature and date indicating if a re-audit of the Supplier is required prior to the supplier's regularly scheduled triennial audit as shown on the approved supplier list.

3.13 A supplier that has no activity to be assessed within the triennial approval period will be listed as inactive, or removed from the Approved Supplier List. The supplier must be re-approved by survey and audit before a purchase order can be issued to the supplier.

3.14 Any Source Material that is supplied or processed by production service suppliers that are approved byany other method than described in this section will be considered unqualified Source Material.

4.0 APPROVAL OF SUPPLIERS WHO ARE QUALITY SYSTEM CERTIFICATE HOLDERS

4.1 Suppliers who hold a Quality Systems Certificate (QSC) from ASME need not be approved by survey and audit, if the material or Source Material or services including performance and certification or operations, the results of tests and examinations, repairs or treatments required by a material specification or Code requirement supplied is within the scope of their QSC. The QSC will serve as approval of the supplier and their Quality System; however, all material or Source Material provided by the QSC holder shall be subject to receiving inspection and release activities as outlined in this Manual section and in the applicable QC Inspection Procedures. This, along with annual evaluation, serves as a verification of the supplier's quality system implementation.

4.2 For customer orders where 10 CFR Part 50 Appendix B compliance is required, QSC holders may not be exempted from survey and audit. The requirements of paragraph 3.0 of this Manual section still apply.

5.0 ALTERNATIVE APPROVAL FOR CALIBRATION AND TESTING SERVICE PROVIDERS

5.1 The Quality Manager may accept subcontracted calibration or testing services based on recognized accreditation, as an alternative to the performance of supplier surveys, audits, source surveillances, and additional tests and inspections beyond standard receipt inspection for the qualification of calibration and testing service suppliers as described in this Manual.

5.2 To place a calibration or testing service supplier on the Approved Suppliers List, a copy of the supplier's accreditation shall be obtained, and reviewed by the Quality Manager. As a minimum, the review shall determine whether the following requirements are satisfied:

5.2.1 The supplier shall be a commercial grade domestic (US) calibration or testing laboratory accredited to ANSl/ISO/IEC 17025 by an accreditation body that is recognized by the International Laboratory Accreditation Program (ILAC) Mutual Recognition Arrangement (MRA).

5.2.2 The suppliers published scope of accreditation includes the needed measurement parameters, ranges, and uncertainties for calibration or the needed testing services including test methodology.

5.2.3 The intended scope of work to be reflected on the Approved Supplier List is covered by the supplier's published scope of accreditation.

5.2.4 The supplier’s certificate of accreditation is active and the certificate includes a certificate number and expiration date.

5.3 Completion of this evaluation and acceptance of the supplier for placement on the Approved Supplier List shall be evidenced/documented by the supplier’s certificate of accreditation along with the date, and initials of the Quality Manager. The approved copy of the supplier’s accreditation shall be maintained by the Quality Manager in the supplier's qualification file.

5.4 Prior to placement of an order, the scope of work reflected in the procurement documents shall be reviewed by the Quality Manager against the supplier's most recently published Scope of Accreditation to determine if there have been any changes that affect the supplier's scope of qualification on the Approved Supplier List. This review shall verify the Scope of Accreditation covers the needed measurement parameters, ranges, and (for calibration only) uncertainties. Changes affecting the scope reflected on the Approved Supplier List shall be addressed in a revision to the Approved Supplier List.

5.5 Upon completion of the testing or calibration services, the Quality Manager shall conduct a review of objective evidence to verify the supplier's conformance to the requirements of the procurement documents. This review shall include these critical characteristics:

5.5.1 Verification that the supplier's calibration or test certificates/reports conform to the purchase order requirements and that the testing/calibration was performed in accordance with the supplier’s ANSl/ISO/IEC 17025 program and scope of accreditation.

5.5.2 Receiving Inspection for those items that have been calibrated.

5.5.3 Verification of any required calibration status stickers

5.6 For calibration and testing services, the completion of the review in 5.5 and acceptance of the calibrated item and associated certification shall be evidenced by application of the Quality Manager’s initials and date onthe supplier's calibration certificates or test reports and completed QC-Form-0021, Dedication Plan for Commercial-Grade Calibration Services Checklist.

6.0 PURCHASE ORDER DEVELOPMENT

6.1 Purchase Orders for Source materials and services performed on Source Material

6.1.1 The R&D Engineer issues copies of Source Material specifications to the buyer for issue to thesupplier.

6.1.2 Buyers will prepare a purchase order for Source Material or services to a supplier listed on theapproved supplier list. The purchase order shall indicate the supplier's name, street address, and location as approved by the Quality Manager. The purchase order shall provide adequateinformation to procure, inspect, and accept/reject the Source Material or service. This will normally be done by referring to a specification and its revision level as approved by R&D Engineer.

6.1.3 The Quality Manager will review each Source Material or service purchase order. By signature and date, the Quality Manager constitutes approval of the purchase order, the supplier, and all referenced documents (specifications, descriptions, etc.)

6.1.4 Change orders will be reviewed and approved in the same fashion as the original order. If the change order only alters the quantity of the items to be received, it does not have to be reviewed by the Quality Manager.

6.2 Purchase Orders for Raw Materials

6.2.1 The R&D Engineer issues copies of raw material specifications to the buyer for issue to the supplier.

6.2.2 The Buyer will prepare a purchase order of raw materials to suppliers listed on the raw material specification. The purchase order shall provide adequate information to procure, inspect and accept/reject the raw material. This will normally be done by referring to a raw material specification and its revision level as approved by R&D Engineer.

6.3 Purchase Orders for Finished Products that could be used as ASME Code Material

6.3.1 The R&D Engineer will provide the Buyer with copies of finished product purchase specifications and pertinent data to satisfy ESAB and ASME Code requirements.

6.3.2 The Buyer will prepare the purchase order to a supplier listed on the approved supplier list that is a QSC holder. The purchase order will refer to a purchasing specification by number and revision or shall include within the order the ASME standard to be met, the Quality requirements, and the certification requirements. Purchase orders shall require the supplier to show their QSC number and expiration date on each CMTR.

6.3.3 The Quality Manager will review each order. By signature and date, the Quality Manager constitutes approval of the purchase order, the supplier, and all referenced documentation.

6.3.4 Change orders will be reviewed and approved in the same fashion as the original order. If the change order only alters the quantity of the item(s) to be received, it does not have to be reviewed again by the Quality Manager.

6.4 Purchase Orders for Calibration and testing services

6.4.1 Purchase orders for calibration or testing services will be reviewed by the Quality Manager. By signature and date, The Quality Manger constitutes approval of the purchase order, the supplier, and all referenced documentation.

6.4.2 Change orders for these orders will be reviewed and approved in the same fashion as the original order. If the change only alters quantity/cost of the item(s) or services to be provided, it does not have to be reviewed again by the Quality Manager.

6.4.3 For suppliers approved based on recognized accreditation, the PO shall specify that the service must be provided in accordance with the accredited ISO/IEC 17025 program and scope of accreditation and that the certificates/reports shall include the laboratory's applicable certificate number and expiration date.

6.4.4 For suppliers approved based on survey and audit, the PO shall specify that the service must be provided in accordance with the supplier's Quality System Manual and that the certificates/reports shall include the laboratory's Quality System Manual revision level.

6.4.5 The PO shall specify that the service supplier shall not subcontract the service to any other supplier.

6.4.6 The PO shall specify that the Buyer must be notified of any condition that adversely impacts thelaboratory's ability to maintain the scope of accreditation or ability to meet the PO requirements.

6.4.7 The PO shall specify additional technical and quality requirements, as necessary, based on a review of the procured scope of services, including, but not limited to, tolerances, accuracies, ranges, and industry standards.

6.4.8 The PO shall specify that all certificates/reports must be signed and dated by the supplier.

6.4.9 The PO shall specify that the calibration certificate/report shall include identification of the laboratory equipment/standards used and that these equipment/standards must have documented traceability to NIST or other recognized standards.

6.4.10 The PO shall specify that calibration certificate/report shall include as-found and as-left calibration data for all calibrated items.

6.4.11 The PO shall specify that calibration certificate/report shall include a notification of any repairs that were made and any parts used in the repairs.

7.0 RECEIVING INSPECTION, TESTING, AND RELEASE

7.1 Receiving Inspection for Source Materials

7.1.1 Incoming Source Materials shall be checked visually by Quality Technician for damage, identification, and quantity. Every rod coil must contain a mill identification tag (heat and type). Inthe event that the identification tags are missing from any of the rod coils, these rod coils maynot be used for any certified orders and are stored in a designated area until the material is dispositioned by the Quality Manager.

7.1.2 All Source Material in the forms of rolled rod or strip (mild steel, stainless steel, or alloy) will bestored and not used until evaluated and released by the Chief Chemist. (See QA-10)

7.1.3 A Source Material Test Report (SMTR) must accompany each heat of material shipped.

7.1.4 All Source Material Test Report (SMTR) on incoming Source Materials are reviewed and approved by the Chemist or Quality Technician for conformance to the requirements of the purchase order and thedesignated purchased material specification. The review and approval is documented on the SMTR by signature and date.

7.1.5 From each heat of Qualified Source Material in form of rolled rod or strip, a sample from at least one ofthe coils is obtained by a Quality Technician and analyzed by the Chemist. The chemistry lab analysis and the steel mill certificate of analysis results are compared with the designated purchase specification by the Chief Chemist. Release of Qualified Source Material is accomplished after satisfactory chemistry and analysis results have been obtained.

7.1.6 All Source Material SMTRs and chemical analysis results for Source Material in the form of rolled rod or strip are kept on file by the Chief Chemist and are maintained in accordance with the requirements of record retention procedure QC-12000. Chemical analyses are also stored electronically in SAP.

7.1.7 For Qualified Source Material in Rod form – The Chemist notifies the Quality Technician when the chemistry of each Heat of Source Material is approved via a usage decision in the SAP database.The Scheduler may then schedule the processing of released hot rod Heats.

7.1.8 For Qualified Source Material in Strip Form – A Quality Technician verifies each mill Heat of Source Material by SAP inspection lot. When a mill Heat passes, the Chief Chemist sends a Steel Heat Release email, containing mill Heat number, ESAB specification number to the Source Materialsupplier authorizing material shipment to ESAB. No strip steel Source Material shall be shippedto ESAB without this email authorization. Incoming released Heats are verified by a Quality Technician using paperwork, packing list, CMTR, provided with shipment and visual inspection.

7.1.9 See section 10.0 for Unqualified Source Material.

7.2 Receiving Inspection for Raw Materials

7.2.1 Incoming raw materials shall be checked visually for damage and identification by the Quality Technician

7.2.2 Each package, container, drum, bag, etc. of raw material shall be marked with the appropriate trace code and lot number by the Quality Technician. Raw material that is not identified in this manner will be positivelyidentified through ESAB testing and re-identification before release.

7.2.3 Raw materials will be stored and not used until evaluated and released by the Quality Technician. (See QA-10)

7.2.4 A Quality Technician will sample incoming material as required by QC-4000 “Flux Raw Material Inspection”. No material may be used for production until it has been approved and released by Quality Technician.

7.2.5 Each sample taken will be analyzed appropriately in accordance with the requirements of procedure QC-4000 and reported in SAP. If out of tolerance, approval for use must be obtained in accordance with the QC-4000 procedure requirements before it can be released by the Quality Technician

7.2.6 After 7.2.1-7.2.5 are completed, then A Quality Technician will place “Raw Material Release Ticket” (Exhibit 13-3) on all pallets of approved lots in the designated storage area. The SAP Material ticket will remain attached to the pallets until material is consumed. Each tag will contain the technician’s stamp and approval date.

7.3 Receiving Inspection for Finished Products that could be used as ASME Code Material

7.3.1 Incoming finished products to be used as ASME Code materials will be checked visually by the Quality Technician for damage, quantity, and identification. These must be identified with a lot number, heat number, or both in accordance with Code requirements and traceable to a CMTR.

7.3.2 The Quality Technician shall ensure that Incoming finished products to be used as ASME Code materials shall be placed on hold in SAP until inspections and tests are completed and the materials is released by the Tested Order Analyst.

7.3.3 Incoming finished product to be used as ASME code material shall include the original manufactures name on the product packing.

7.3.4 A CMTR must accompany each heat/lot of product received.

7.3.5 Certifications of finished products to be used as ASME Code materials will be conducted by the Tested Order Analyst. Prior to providing a Code CMTR, the certifications of finished products will be reviewed by the Quality Manager. The certification provided to the customer constitutes review and approval of the finished product certification.

7.4 Receiving inspection for calibration services

7.4.1 At receipt inspection, the Quality Manager shall validate that the calibration supplier’s documentation certifies that the calibration was performed in accordance with the requirements of the purchase order. In addition, the Quality Manger shall validate that the calbration was performed in accordance with the scope of the supplier’s approved ISO/IEC 17025 program or Quality Manual as accepted by ESAB in section 3.0 or 5.0 of this Manual section.

8.0 DISPOSITION OF NONCONFORMING MATERIAL, SOURCE MATERIAL AND RAW MATERIAL

8.1 Nonconforming product found at receiving inspection will be tagged with a “Non-conforming Material Hold Tag” (See Exhibit 10-6) by the Quality Technician and remain in designated areas until disposition is completed.

8.2 Product that does not meet purchase order requirements shall have a nonconformance recorded in the OpenOne database by the Quality Technician. Disposition shall be recommended by the R&D Engineer with final approval by theQuality Manager. Quality Manual Section QA-12 provides more detail about nonconformance and corrective action.

9.0 CUSTOMER SUPPLIED PRODUCT

9.1 Customer supplied product is not utilized at this facility.

10.0 UTILIZATION OF UNQUALIFIED SOURCE MATERIAL

10.1 Source material that is furnished by a supplier who is approved by any other method than what is described in this Manual section is considered to be unqualified Source Material. No unqualified Source Material will be used for Code material unless it goes through a qualification process described in this Manual section.

10.2 ESAB allows the utilization of unqualified Source Material for use in conversion to solid bare welding wire only.

10.3 ESAB may accept the certification of requirements of the material specification that must be performed during the melting, heat analysis, and heat treatment of the Source Material, and may use unqualified Source Material, provided the requirements of this Manual section are met.

10.4 Before unqualified Source Material can be utilized for Code material, the Tested Order Analyst and planner must identify and select and segregate the specific pieces of unqualified Source Material that are to be qualified for use on the specific order that requires this Source Material. A piece is defined as single continuous uninterrupted length of wire or wire rod.

10.5 The supplier that establishes the product form of the unqualified Source Material in the form of bare wire or wire rod and issues the SMTR shall not perform any welding with filler metal and shall confirm on the Source Material SMTR that no welding with filler metal has been performed.The Tested Order Analyst must review the suppliers SMTR to verify this requirement has been met before selecting the pieces.

10.6 The Quality Technician will verify that each selected piece is identified with a lot number or heat number that is traceable to the Source Material supplier's SMTR. The Quality Technician will place Nonconforming Material Hold Tag on each selected piece and will collect samples from both ends of each piece to be analyzed for chemical composition by the Chemist.

10.7 The chemistry lab analysis and the steel mill certificate of analysis results are compared with the designated purchase specification by the Chief Chemist. For Source Material in the form of bare wire orwire rod, chemical composition is the only applicable material specification requirement. Qualification is accomplished after satisfactory chemistry and analysis results have been obtained.

10.8 When the qualification process is completed, the Tested Order Analyst will notify the Quality Technician that the Nonconforming Material Hold Tag may be removed and notify the planner that the specific pieces may bereleased for use on the specific order for which they were selected.

10.9 When unqualified Source Material is utilized for Code material, the Tested Order Analyst must certifythat unqualified Source Material is used on the finished material SMTR. The results of the chemical analysis of each piece of unqualified Source Material, and the original mill SMTR must be included in the finished material SMTR package as referenced attachments.

10.10 All unqualified Source Material SMTRs and chemical analysis results used in this qualification process are kept on file by the Chief Chemist and are maintained in accordance with the requirements of record retention procedure QC-12000. Chemical analyses are also stored electronically in SAP.

PROCESS CONTROL

1.0 PURPOSE

1.1 Describe the control processes affecting quality of materials, Source Materials and/or services. Process Control Documents used at ESAB are:

1.1.1 Production Schedules

1.1.2 Production Orders

1.1.3 Manufacturing Process Control

1.1.4 In-Process Inspection

1.1.5 Handling, Storage & Shipping

1.2 Special processes are not used in manufacturing.

1.3 Special processes used in the Product Verification are covered in QA-8 and QA-9.

2.0 PRODUCTION SCHEDULES

2.1 The Schedulers are responsible for issuing Production Schedules to the Shift Supervisors. The Production Schedules include theinformation required to initiate and direct product manufacturing activities. The following information can be found on a Production Schedule:

2.1.1 Shop Order No. (Bare Wire and Flux Cored Electrodes)

2.1.2 Type Wire or Electrode

2.1.3 Size

2.1.4 Quantity

2.1.5 Formulation Code (Covered and Flux Cored Electrodes)

2.1.6 No. of mixes (Covered Electrodes)

2.1.7 Priority

2.1.8 Special instructions, Customer Information, Package Size and Configuration, etc.

3.0 PRODUCTION ORDERS

3.1 Production orders shall be prepared jointly by the Shift Supervisors and Schedulers in each area in accordance with manufacturing control procedures and work instructions.

3.1.1 Covered electrode and solid wire (mild steel) production employees uses the Production Schedule as a “Work Order”. The schedule is distributed to required personnel and areas ofoperation.

3.1.2 Flux Cored Electrodes utilize a Fabrication Production Data Sheet as a “routing card” or production order. The order sheet contains product-specific information that supplements the manufacturing procedures as necessary to produce the finished product. Exhibit 7-5

3.1.3 Solid Wire (stainless) uses a Shop Order as a “routing card” or production order. The shop order contains product-specific information that supplements the manufacturing procedures as necessary to produce the finished product. Exhibit 7-4

4.0 MANUFACTURING PROCESS CONTROL

4.1 Identification throughout processing.

4.1.1 All wire and electrodes are identified by means of heat numbers or shop order numbers with tags traceable to heat numbers. In receiving inspection QA-6 the supplier tags are checked by the Quality Technician. When coils or containers are subdivided, tags are transferred to each coil or container by the production employees and not obliterated or hidden.

4.1.2 All identification markings shall be clear, unambiguous, indelible, and applied in such a manner as not to affect the function of the item.

4.1.3 Inspection and test records provide traceability to Codes, Standards, or Specifications, shop orders and heat numbers.

4.1.4 Heat integrity of core wire rod for coated electrodes shall be maintained at all times.

4.1.4.1. Two different heats of core wire rod may be spliced together only at the payoff end before it enters processing equipment of the line cutter.

4.1.4.2 To prevent mixing of heats, when welding two different heats of steel together, the weld will be clearly marked by the production employee with high contrast paint for a minimum distance of 12” on both sides of the weld. The paint must be completely dry before entering the descaler. The production employee will oversee the passage of the weld through the machine and will stop and repaint as necessary to maintain visibility. The weld will be followed to the finish head where a piece of paper will be tucked behind the weld. When the paper falls from the wire, the conveyor at the end of the cutter will be switched off. A new pan will be placed under the exit conveyor and the rods accumulated in the conveyor will be scrapped.

4.1.5 Heat Integrity of wire rod for solid electrodes shall be maintained at all times.

4.1.5.1 Two different heats of wire rod may be spliced together only at the payoff end of the drawing line.

4.1.5.2 To prevent mixing of heats, when welding two different heats of steel together, the weld will be clearly marked with high contrast paint for a minimum distance of 3” on both sides of the weld. The paint must be completely dry before entering the drawing line. The operator will slow down draw speed and visually follow colored wire all the way to the payoff reel. Remove and discard the colored wire to separate the heats.

4.1.6 Mild Steel strip is chemically controlled, so heats may be spiced for commercial product within the lot. For ASME – III orders, a single lot shall be produced using a single heat of steel strip.

4.2 Core Wire for coated electrodes. (Flow Chart – Exhibit 7-6)

4.2.1 The Source Material shall be identified throughout production to assure traceability to the millCMTR and production lot identification.

4.2.2 Every pan of cut wire must have attached by the production employee an identification tag showing heat, type and size.

4.2.3 All incoming cut wire will be inspected and released for use per QA-6, by the Quality Technician.

4.3 Covered Electrode (Flow Chart – Exhibit 7-7)

4.3.1 Each coating mix is tag identified as to type and mix number prior to extrusion.

4.3.2 The core wire heat and coating mix identification is maintained throughout the extruding and baking process.

4.4.3 By means of Production Schedules and markers, (heat, mix and type) all electrodes are correctlyidentified and verified by the Chief Inspector. This verification is documented on the Covered Electrode Inspection Report (Exhibit 10-1).

4.4.4 Weld deposit analysis is performed by the Quality Technician for each wet mix in all Nuclear Tested orders. Weld deposit analysis is performed per customer and Code requirements and specification. The chemistry results are documented and maintained by the Quality Technician.

4.4.5 The labels that are used for electrode identification on all cans and cartons are checked by the Chief Inspector for correct information.

4.4.6 Detailed procedures including QC-3000 and QC-5000 describe the inspection plan for coated electrodes.

4.5 Flux Cored Electrode (Flow Chart – Exhibit 7-8)

4.5.1 Each mix of flux material is tag identified by type and lot number.

4.5.2 The strip materials identified by heat number traceable to the mill CMTR and to production lot identification.

4.5.3 The shop order for each mix is attached to the product throughout processing for positive identification.

4.5.4 Labels used for identification on all coils, spools, and cartons are checked by the Chief Inspector for correct information.

4.5.5 Detailed Quality Control and Inspection Procedures including QC-06000 describe the inspection plans for flux-cored wire and are available to the workstation.

4.6 Solid Wire

4.6.1 The material shall be identified by the production employee throughout production by heat number to assure traceability to the mill CMTR and production lot identification.

4.6.2 Every mill coil and every reel of work in process material must contain an identification tag.

4.6.3 Detailed Quality Control and Inspection Procedures including QC-03001 describes the inspection plans for solid wire and are available to the workstation.

4.7 Welding Flux

4.7.1 Manufacture of welding flux is controlled through procedures and work instructions including QC-7000.

4.7.2 Dry flux materials are weighed according to the product specification and mixed. A sample of the dry mix is analyzed by the Chemists. Dry mix is released if analysis meets specification requirements in controlled procedures.

4.7.3 Released dry mix is introduced to the wet mixer with the proper amount of binder and agglomerated. Agglomerated flux is baked and sized and packed.

4.7.4 Finished product is tested according to the schedule in the controlled procedure QC-7000.

5.0 IN-PROCESS INSPECTION

5.1 The Chief Inspectors will follow all instructions as outlined in QC 01003. Copies of these procedures are available electronically view only to all plant Chief Inspectors and Shift Supervisorsin each area.

6.0 PACKAGING, HANDLING, STORAGE, SHIPPING AND PRESERVATION

6.1 Measures for packaging, handling, storage, shipping, and preservation of materials to prevent damage or deterioration are addressed in the manufacturing procedures and/or Procedure QC-14000. Any request for deviations from these procedures will be processed accordingly to meet the special requirements. Packaging and preservation, when required by customer order, shall be in accordance with specifications MIL-W-10430 and MIL-STD-129.

6.2 The required instructions of marking and labeling for packaging and storage is the responsibility of Production Employees for entering the data on labels and SAP, Chief Inspector for checking all instructions during production, and Tested Order Analyst for reviewing the finished product at storage, prior to certifications, and shipping.

6.3 The markings shall include the heat or lot number as applicable, a control marking code which identifies the materials with the Certified Materials Test Report, and other information such as specification, grade and classification number, ESAB Group Inc., and trade designation.

7.0 STANDARD LOT DEFINITIONS

7.1 Lot classifications are defined in AWS/SFA 5.01.

7.2 Unless otherwise specified by the customer and agreed by ESAB, on ASME Section III orders, lot classes specified below shall apply.

7.2.1 Covered Electrodes: Lot class C3

7.2.2 Flux-Cored electrodes: Lot class T2, where the 24 consecutively scheduled hours applies to fabrication of the wire only. Fabrication is the operation that affects the chemistry of the product. (e.g. baking and packaging does not apply to 24 hr. consecutively scheduled hours,)

7.2.3 Solid Wire: S2, where the 24 consecutively scheduled hours applies to the final drawing and coating of the wire only. (e.g. packaging does not apply to 24 hr. consecutively scheduled hours)

7.2.4 Submerged Arc Flux: Lot Class F2

TEST CONTROLS

1.0 PURPOSE

1.1 This section establishes the policy and practice for test welding and testing, whichis performed by the Product Compliance & Tested Order Supervisor to satisfy Code and customer requirements. The requirements for weld metal tests are as specified on the Product Test Data (PTD) form. Results of all specified tests are recorded on the PTD form and forwarded to the Tested Order Analyst for acceptance. (Exhibit 4-1)

2.0 RESPONSIBILITY

2.1 All welding, machining, post weld heat treating, and testing to meet Code and customer requirements are the direct responsibility of the Quality Manager.

3.0 TEST PROCEDURES

3.1 Test Welding

3.1.1 The welding of test plates shall conform to the specification for the type/class of material being tested. The specifications will be shown on the PTD. Test plates are identified with assigned numbers taken from the PTD.

3.2 Qualification of Test Personnel

3.2.1 All Lab Technicians conducting mechanical testing are qualified by the Product Compliance & Tested Order Supervisor through experience, training and testing by the Product Compliance & Tested Order Supervisor that demonstrates competency to perform tests in accordance with required procedures. Records of the qualifications of the individuals performing the tests are available upon request and maintained by the Product Compliance & Tested Order Supervisor

3.2.2 All Chemists and Quality Technicians conducting chemical testing are qualified by the Chief Chemist through experience and training. The Chief Chemist shall maintain Quality Control Training Records (QC Form 0003) for all Chemists and Quality Technicians. The Chief Chemist shall annually (not to exceed 12 months) complete a Quality Personnel Recertification (QC Form 0005) of all Chemists and Quality Technicians.

3.3 Procedures for Post Weld Heat Treatment

3.3.1 Post weld heat treatment is accomplished under conditions and written procedures according to the applicable specifications. The applicable post weld heat treatment instructions are transcribed on the PTD (Exhibit 4-1) by Tested Order Analyst. (This data includes heating and cooling rate, holding temperature and time, and charge and discharge temperature and time from furnace.) The post weld heat treatment is monitored by the Lab Technician, who maintains the heat treat charts by test number and date.

4.0 WELD METAL TEST CONTROLS

4.1 Equipment

4.1.1 Prior to welding of test plates or testing the weld specimen, the Test Welders shall inspect all equipment for assurance that up-to-date calibration labels are on the equipment.

4.2 Chemical Analysis

4.2.1 Both wet and spectrographic methods are calibrated and used in obtaining chemical analyses. The analyses are based on comparison with nationally recognized standards where such standards exist. When no nationally recognized standards exist, the basis for calibration shall be documented by the Chief Chemist before use in accordance with procedure ESABHAN-OE-1002. The chemical analysis, performed by the Chemist, of the weld deposit shall conform to the material specification and to the Code as applicable.

4.3 Tensile Tests

4.3.1 Tensile bars are welded and machined to comply with the requirements of the designated specifications by the Lab Technicians. The tests are performed on approved and up-to-date calibrated equipment by the Lab Technician. The yield strength is determined by the use of a calibrated extensometer by the Lab Technician and the results are recorded and on file with the Tested Order Analyst.

4.4 Charpy-V-Notch and Drop Weight Impact Tests

4.4.1 Drop Weight tests are performed when required by the customer PO. For ASME III orders, Drop Weight tests are performed in accordance with ASTM E208, edition specified in Table NCA-7100-2 in ASME III NCA.

4.4.2 Charpy V-Notch tests are performed when required by the customer PO. For ASME III orders, Charpy V-Notch tests are performed in accordance with ASTM A370, edition specified in Table NCA-7100-2 in ASME III NCA.

4.4.3 Impact plates are welded and machined to comply with the requirements of the designated specifications. The specimens are broken by an approved and up-to-date calibrated impact-testing machine.

4.5 Bend Tests

4.5.1 Bend plates are welded and machined to comply with the requirements of the designated specifications by the Lab Technician. The bend specimens are examined and shall be free from slag entrapments and cracking in excess of the amount allowed in the designated specifications by the Lab Technician.

4.6 Non-Destructive Examination

4.6.1 Non-Destructive Examinations are performed with approved equipment and by qualified Lab Technicians. (See QA-9)

5.0 RECORDS

5.1 Records for all work performed under Section QA-8 are prepared by the Product Compliance &Tested Order Supervisor and forwarded to the Tested Order Analyst for approval and handling (See QA-4). These records are stored per the requirements of QA-10 Section 4.0.

NONDESTRUCTIVE EXAMINATION

1.0 PURPOSE

1.1 It is the purpose of this procedure to establish the responsibility for Nondestructive testing (NDT) procedures, qualification of personnel and the records of NDT performed. This is performed by the Product Compliance & Tested Order Supervisor.

2.0 RESPONSIBILITY

2.1 The NDT Level III Examiner shall be responsible for the qualification of Level I and Level II NDT Technicians. He shall design and administer all necessary training programs and shall conduct examinations. He shall approve all radiographic procedures or revisions thereto. Radiography is the only method used for code orders.

3.0 PERSONNEL

3.1 Lab Technicians performing NDT operations shall be qualified in accordance with EWI-04-17, which complies with the code and SNT-TC-1A, code required edition.

3.2 Only Lab Technicians qualified to SNT-TC-1A Level II or III shall evaluate radiographic films.

3.3 Records of the education, experience, training, examination, certification, recertification, and interrupted service of personnel shall be maintained by the Product Compliance & Tested Order Supervisor under the supervision of NDT - Level III personnel.

3.4 Eye examinations and operating performances shall be in accordance with EWI-04-17.

3.5 Level III services are subcontracted. If the Level III qualification records are accepted by the Quality Manager and are found to be in accordance with SNT-TC-1A, a letter of appointment will be issued by Quality Manager.

4.0 RECORDS

4.1 Records of all NDT work performed shall be maintained by the Product Compliance & Tested Order Supervisor.

4.2 Records for all work performed are prepared by the Product Compliance & Tested Order Supervisor and forwarded to the Tested Order Analyst for review and approval (See QA-4).

5.0 CALIBRATION OF RADIOGRAPHIC EQUIPMENT

5.1 Radiographic equipment shall be checked and serviced annually by factory check or equivalent for assurance of proper operation. Calibration of radiographic equipment shall be in accordance with ASME Section V, including ensuring the densitometer is calibrated every 3 months and the step wedge annually.

6.0 PROCEDURES

6.1 Procedures shall be prepared by the Product Compliance & Tested Order Supervisor and reviewed and approved by NDT Level III Examiner. Copies of the procedures are on file by the Product Compliance & Tested Order Supervisor. Radiographic inspection is done by the Lab Technicians in accordance with Procedure EWI-04-10.

INSPECTION AND DOCUMENTATION

1.0 PURPOSE

1.1 To determine and define responsibilities for inspection and maintenance of appropriate records and checklists to verify specified requirements, Quality verification and release of completed products for tested orders.

2.0 INSPECTION

2.1 Due to the continuous nature of processing, inspection/test hold points, planned by the Quality Manager, are at the receiving and final product steps.

2.2 Hold points for inspection/test are:

2.2.1 At receiving in accordance with Quality Manual section QA-6 and this section.

2.2.2 At final product in accordance with Quality Manual section QA-4 and this section.

2.3 Receiving

2.3.1 Quality Technicians shall collect all necessary data to release materials and identify such materials as released prior to the start of production (Ref. QA-6). Accepted materials are released through use of the release tags attached by the Quality Technician.

2.3.2 Nonconforming material found at receiving shall be handled according to QA-12.

2.4 In-Process

2.4.1 The Chief Inspector shall be responsible for inspecting and observing all operations throughout manufacturing and for the final inspection of the product.

2.4.1.1 Inspections and testing of the product shall be accomplished and documented in accordance with Quality Control Procedures and Work Instructions specific to the products being inspected.

2.4.1.2 Any nonconformance found shall be identified as described in QA-12.

2.4.1.3 Chief Inspectors shall be qualified in accordance with QC-01003.

3.0 FINAL RELEASE

3.1 Final inspection of the product is part of the Chief Inspector's job. His, signature, or initials and date on the applicable inspection reports will signify his final approval.

3.1.1 Any nonconformance found shall be identified as described in QA-12.

3.2 Final release of finished tested product is accomplished in the following manner.

3.2.1 Review and approval of Product Test Data is performed by the Tested Order Analyst.

3.2.2 The Tested Order Analyst, via a copy of Tested Order Review Form notifies the Customer Service Representative of Product Test Data Approval.

3.2.3 Customer Service Representative prepares shipping documents in SAP. This transaction notifies the Materials Manager that the material is satisfactory and that preparation for shipment should be made.

3.2.4 The final release for shipment is made by the Tested Order Analyst by generating and approving a CertifiedMaterials Test Report.

3.2.5 The CMTR cannot be generated until all tests have been performed and satisfactory results achieved.

3.2.6 In the event of a final product test failure, the Tested Order Analyst will place the material on hold as described in section QA-12.

4.0 QUALITY ASSURANCE INSPECTION AND TEST RECORDS

4.1 Records of inspection, examination, and testing will be retained as established in QC-12000 by the Quality Manager. They shall be traceable to the document and revision to which the inspection, examination, or testing was performed.

4.2 Review of the record storage conditions to assure that the documents are not deteriorating due to improper storage practices of rough handling shall be performed by Lead Auditors during the annual internal audits.

CALIBRATION OF MEASURING & TEST EQUIPMENT

1.0 SCOPE

1.1 A Quality Control Inspection Procedure, QC-9000, shall be in effect to assure that tools, gages, instruments, and other measuring and testing devices used to verify compliance of material with the material specification and the Code, are calibrated and properly adjusted at specified periods or use intervals to maintain accuracy within necessary limits.

2.0 IDENTIFICATION

2.1 Each measuring device shall be assigned a unique serial number, permanently marked and assigned a periodic calibration schedule. This is performed by the Quality Manager. Each item shall bear a marking indicating date of last calibration, calibration due date, and initials of the individual responsible for calibration, on the item or its container if traceable to the item.

3.0 CALIBRATION INTERVAL

3.1 Each item requiring calibration shall be calibrated in accordance with written procedures in Open One or GAGEPack the calibration software.

3.2 Calibration intervals are determined on the basis of stability, purpose, and degree of usage by the Quality Manager and stored in GAGEPack the calibration software.

3.3 Cycles will be shortened if signs of unusual wear are noted and lengthened when calibration data indicated no appreciable wear within the last two years.

4.0 CALIBRATION REPORTS

4.1 Calibration reports which may be electronic, or paper shall show the name of the instrument or measuring device; it's identification or serial number frequency of calibration and calibration date, initials of the person performing the calibration, serial number of reference standards used for calibration, as found and as left results, procedure number and revision.

5.0 CALIBRATION INSTRUCTIONS – For Items Calibrated By ESAB Personnel

5.1 Calibration shall be performed in accordance with written procedures maintained in Open One or GAGEPack thecalibration software by the Quality Manager.

6.0 STANDARDS TRACEABILITY

6.1 All calibrations shall be traceable to the national standards, where such standards exist. Where such standards do not exist, The Quality Manager utilizes the equipment manufacturers' standards. This will be documented in GAGEPack.

7.0 DISCREPANT EQUIPMENT

7.1 When discrepancies in excess of tolerances of measuring or testing equipment are found at calibrations, the Quality Manager shall evaluate the materials affected (material measured and tested since the previous valid calibration) and determine what corrective action is required. If it is determined that the discrepancy may have caused product to be non-compliant, customers whose orders may be affected will be promptly notified of discrepancies, by the Quality Manager as outline in procedure QC 9000. The identification of the material to the device is accomplished by coding (lot number identification system) the product to the line, shift, date produced, the device to the line and date of installation. The out of tolerance gage is documented using QC-Form-0019.

7.2 Any new or repaired test equipment will be calibrated according to the standard calibration procedure and the results verified prior to its use.

8.0 ENVIRONMENTAL CONTROLS

8.1 Measuring and test equipment and calibration standards shall be calibrated in an area relatively free of dust and grit. Acceptable atmospheric conditions shall be determined by the Quality Manager taking into consideration the type of equipment to be calibrated.

9.0 PERSONALLY OWNED TOOLS

9.1 Personally owned measuring devices shall not be used for verification of product quality.

10.0 CONTROL OF SUB-CONTRACTOR CALIBRATION

10.1 The Quality Manager shall be responsible for assuring that all contract sources who perform calibration services are capable and use standards of proper accuracy's which are traceable to NIST standards to accomplish the required calibration. Certifications shall be furnished for all calibrations performed for The ESAB Group, Inc. by Approved Supplier of Services and shall be reviewed and approved by the Quality Manager. Calibration service suppliers shall be approved in accordance with Section QA-6.

10.2 Procedure QC-9000 also details the Commercial Grade Dedication of calibration services as basis components for use in nuclear safety regulated components

NONCONFORMANCE AND CORRECTIVE ACTION

1.0 PURPOSE

1.1 The purpose of this section is to define responsibility for evaluation and disposition of nonconforming items and to define responsibility for the applicability and evaluation of corrective action.

2.0 DEFINITION

2.1 NONCONFORMANCE – A deficiency in characteristic, documentation, process or procedure, which renders an item or activity unacceptable or indeterminate. Examples of nonconformance include physical defects, test failures, incorrect or inadequate documentation, or deviation from prescribed processing, inspection or test procedures.

3.0 RESPONSIBILITY

3.1 It is the responsibility of all employees to promptly report any nonconforming item to the Chief Inspector and/or Quality Manager.

3.2 The Quality Manager shall be responsible for the identification of cause and disposition of all nonconformances. Nonconformances shall be handled in accordance with QC-1001.

3.3 Employees are responsible to identify nonconformances during daily activities.

3.3.1 Nonconformances will be documented in the OpenOne database. Nonconforming products, product will be identified with a Nonconforming Material Hold Tag, segregated and dispositioned.

3.3.2 Reexamination will occur with a rework or repair disposition.

3.3.3 Nonconformance will be communicated to responsible departments or responsible outside organizations.

3.3.4 Scrap disposition will be identified with a red “reject” tag.

4.0 NONCONFORMANCES REQUIRING CORRECTIVE ACTION

4.1 Recurring significant or procedural nonconformances, as determined by the Quality Manager, shall require the issuance of a Corrective Action Request as well as immediate reporting to appropriate levels of management. Corrective Action Requests shall be logged in the OpenOne database. As soon as practical, the root cause, corrective action of the root cause, and the preventative action shall be determined and filled in by the responsible party. After completing the Corrective Action Request, the responsible party shall notify the Quality Manager of completion. After accepting the response, The Quality Manager will take appropriate steps to verify the implementation of corrective action. Upon completion of this verification, the Quality Manager shall approve the Corrective Action Request. The completed Corrective Action Request shall be retained in the Quality database. Corrective actions are processed in accordance with procedure QC 16500.

4.2 The Quality Manager shall review all nonconformances, Nonconforming Material Hold Tags, SCAR and Corrective Actions to identify to determine any of a repetitive nature. This review will be done in conjunction with the QualitySystem Review described in this Quality Manual, Section QA-2.

4.3 Supplier Corrective Actions are described in this Quality Manual, Section QA-6.

4.4 Whenever the United States Nuclear Regulatory Commission Rules and Regulations Title 10, Chapter 1, Code of Federal Regulations-Energy, Part 21, is imposed by the Customer Procurement Document, defects and noncompliance discovered by The ESAB Group, Inc. after the material is shipped will be reported on form 3734 as specified in Inspection Procedure QC-17000.

INTERNAL AUDITS

1.0 PURPOSE

1.1 To define requirements and responsibility for audits to verify compliance with the Quality System Manual, and to determine the effectiveness of the Program.

2.0 FREQUENCY & AUDIT CONTROL

2.1 Internal audits of the Quality System Program and the QA functions shall be conducted annually (not to exceed 12 months) in accordance with QC-18000 to determine compliance with all operations and controls stated in the Manual, and toassure compliance with Code requirements.

2.2 These audits shall be conducted by a Lead Auditor and, as necessary, an Auditor qualified in accordance with QC-18001 using checklists or procedures complete enough to assure compliance with the Manual, procedures and the Code. Auditors shall not audit any area in which they have direct responsibilities.

2.3 The internal Lead Auditor prepares questions and checklists, as required. Use of the actual process flow, operating procedure, or applicable QSM pages are acceptable medium for audit purposes. The Quality Manager is responsible for approving audit questions and checklists and ensuring the auditing of all areas.

2.4 The Plant Director will assign the lead auditor to audit the Quality Department, and shall perform all the duties of the Quality Manager associated with those audits.

3.0 OBJECTIVE EVIDENCE

3.1 Objective evidence shall be examined to verify compliance with the Quality System requirements. In addition, random examples of what was examined shall be documented. If considered necessary by the Lead Auditor, technical and processing activities may be included in the audit checklist or procedure questions in addition to Manual requirements.

4.0 REPORTS AND CORRECTIVE ACTION

4.1 Audit records and results shall be submitted by the Lead Auditor to the Managers of the departments being audited, with copies to the Quality Manager.

4.2 The Quality Manager will list any audit findings on the audit report in accordance with Internal Audit Procedure QC-18000.

4.3 When appropriate, re-audits will be performed to verify the implementation of corrective action by the Lead Auditor. The re-audit date will be determined by the lead auditor after initial review of the response. Documentation of the re-audit and its closure will be entered on the Corrective Action Request by the Quality Manager for all audits other than the audit of Quality Department. The Plant Director shall perform these duties for the audit of the Quality Department. The lead auditor will submit a status report to all affective parties after implementation has been accepted.

4.4 Records of the audits will be retained by the Quality Manager as established in QC-12000.

INDEX OF EXHIBITS

EXHIBIT		REVISION	DATE
3-1	Certificate of Training	0	11/05/2020
4-1	Product Test Data Sheet	0	11/05/2020
4-2	Certified Materials Test Report	0	11/05/2020
4-3	Special Order Sticker	0	10/05/2023
4-4	Tested Order Review	0	11/05/2020
4-6	Controlled Document Receipt Acknowledgement	0	11/05/2020
7-4	Shop Order (Stainless)	0	11/05/2020
7-5	Fabrication Production Data Sheet	0	11/05/2020
7-6	Process/Inspection Flow Chart, Mild Steel Drawing And Cutting (Electrode Core Wire)	0	11/05/2020
7-7	Covered Electrodes Flow Chart	0	11/05/2020
7-8	Flux Cored Wire Flow Chart	0	11/05/2020
10-1	Inspection Report For Covered Electrodes	0	11/05/2020
10-6	Nonconforming Material Hold Tag	0	11/05/2020
13-3	Raw Material Release Tag	0	11/05/2020

CERTIFICATE OF TRAINING

This certifies that I have received the ESAB Welding and Cutting Products New Employee Orientation and New Employee Safety Orientation packet and that the information contained within the packet was reviewed with me by a member of Human Resources and I was given the opportunity to ask questions.

I understand that it is my responsibility to understand the content of this material. If I have questions, I understand that I should ask a member of the Human Resources Department.

Employee Signature

Kirby Tyler Wiest
Employee (Print Name)

Diane Mann
Human Resources Signature

1/28/14
Date

Tests Needed: W(5) X(5) Y(1) Z(1) Ra(F) Rs(F) F M H SI
ESAB Welding and Cutting Products

801 Wilson Ave., Hanover, PA 17331

Product Test Data Sheet

Knowingly and willfully falsifying or concealing a material fact on this form or making a false or fictitious or fraudulent entry on this form could constitute a felony punishable under federal statutes.

Page 1

Specific Product Information - Item # 255325003-21

PTS Test Number	2-61844-00-0-NUC	Cust PO #	908410
Tradename	ATOM ARC 7018SR	Diameter & Length	3/32" x 14"
Classification	E7018H4R	Inspection Level	
Lot	2H026E02	Mfg Track No	
Class		Customer	WELDSTAR COMPANY

Test Specifications / Welding Procedure

Specification Reference #:	ASME SFA 5.1	Welding Procedures:
Test Specification Notes:	1. ASME SEC. II, PART C, SFA 5.1, 2019 EDITION	
	2. ASME SEC. III, SUBSECTION NB2400, CLASS 1 MATERIAL, 2019 EDITION	
	3. SFA 5.01, LOT CLASS C3 & C5, SCHEDULE K	
	4. 10 CFR PART 50.55(e), 10 CFR PART 50 APPENDIX B	
	5. PART 1 REQUIREMENTS OF NQA-1 as APPLICABLE APPLY	

Specific Product & Order Information

Heat/Pkg	89115C	Cored SS Heat #	
Weight	24000	Nuclear #	PPP039
Gross Weight		Wet Mix #	
Customer	WELDSTAR COMPANY	ESAB Order #	923747
End User		End User PO #	
End User Item		End User Line #	
SAP Order No.		Witness Required	

Page	Tests Needed	Required?	Complete?	Page	Tests Needed	Required?	Complete?
1	Test Specs	☒ Yes	☒ Yes	13	Diffusible H2	☒ Yes	☒ Yes
2 & 3	Weld. Parameters	☒ Yes	☒ Yes	14	% Moisture	☒ Yes	☒ Yes
4	Bend Results			15	Special Instructions	☒ Yes	☒ Yes
5	Radiography	☒ Yes	☒ Yes	16	Visual Inspection		
6	Tensiles	☒ Yes	☒ Yes	16	Magnetic Particle		
7	Ferrite Results			- -	Fast Cool/Low Heat		
8	Fillet Results	☒ Yes	☒ Yes	- -	Slow Cool/High Heat		
9	Drop Weights			- -	Weldability Report		
10	Impacts	☒ Yes	☒ Yes	- -	95% Confidence		
11	Chemistry	☒ Yes	☒ Yes	- -	Chart Mods		
12	Additional Chemistry			- -	GSI / CSI?		
14	Concentricity	☒ Yes	☒ Yes	- -	100% Final Inspection?		

Date: _____ Name: _____

Date and sign name verifying that all requirements or the referenced specification have been followed.

DATE : 06/25/2020
PAGE : 1
2-61671-00-0-NUC

CERTIFICATE OF ANALYSIS

CERTIFIED MATERIALS TEST REPORT

CUSTOMER NAME: WELDSTAR COMPANY
1750 MITCHELL RD
AURORA
IL 60504
USA

ORDER # : **856610**

CUSTOMERS ORDER NO: 908305
END USER LINE #:
TEST NO : 2-61671-00-0-NUC
CLASSIFICATION: E7018H4R
DIAMETER & LENGTH: 1/8" X 14"
INSPECTION LEVEL:
LOT NO: 2E011B02
TRADENAME: ATOM ARC 7018SR
CLASS:

END USER :
END USER P.O # :
END USER ITEM #:
HEAT/PKG : 88838D
WEIGHT: 27200 Lb
GROSS WEIGHT:
WET MIX NO:
NUCLEAR NO: PPP-037

ASME SFA 5.1 SEC.II,PART C,SEC.III,SUBSECTION NB2400
FOR CLASS 1 MATERIAL,2019 EDITION,SFA 5.01 LOT CLASS C3
SCHEDULE K,10 CFR PART 21,10 CFR PART 50.55(e),
10 CFR 50 APPENDIX B AND THE BASIC REQUIREMENTS OF
NAQ-1 AS APPLICABLE APPLY.
CERTIFIED TO CSA W48-14(E4918-H4R)

CHEMICAL ANALYSIS :

Carbon	.03
Manganese	1.18
Silicon	.30
Phosphorus	.010
Sulphur	.013
Chromium	.07
Nickel	.05
Molybdenum	.15
Vanadium	.01
Copper	.13

Mn+Ni+Cr+Mo+V = 1.46

RADIOGRAPHY :
AS WELDED : Satisfactory
FLAT: Satisfactory
STRESS-RELIEVED: Satisfactory
FLAT: Satisfactory

MOISTURE :
IR METHOD: **PRIOR :** 0.08 **EXPOSED :** 0.21(12hrs)
CONCENTRICITY : 2%

DIFFUSIBLE HYDROGEN :
METHOD : GC
AMPS : 145
VOLTS : 23
MAXIMUM SINGLE VALUE ml/100 gr: 2.2 2.2 2.0 2.2
AVERAGE VALUE ml/100 gr: 2.2
Atmospheric Temperature: 69°F
Relative Humidity:25%

The ESAB Group, Inc.
1500 Karen Lane
Hanover, PA 17331

www.esabna.com
Fax: 1-800-444-8911
Phone: 1-800-ESAB-123

By: Brian Dell
Quality Specialist
Brian Dell

ESAB

DATE : 06/25/2020
PAGE : 2
2-61671-00-0-NUC

CERTIFICATE OF ANALYSIS

TENSILE :

	AS-WELDED	STRESS-RELIEVED
YIELD STRENGTH (Psi) :	71190	66859
TENSILE STRENGTH (Psi) :	84856	80513
% ELONGATION :	33	33
% REDUCTION OF AREA :	78	78

WELDING PARAMETERS :

SPLIT :	6
AMPS :	140
VOLTS :	23
WELD POSITION :	1G - Flat
HEAT INPUT ACTUAL :	26.44 KJ/in
TRAVEL SPEED :	7.30IPM
POLARITY :	DC+
PREHEAT :	250 F
INTERPASS :	300 F
ROOT OPENING :	1/2"
HEAT TREAT TEMP :	1125 F
HEAT TREAT HOURS :	8
HEATING RATE/HOUR :	100 F
COOLING RATE/HOUR :	100 F

IMPACTS :

AS-WELDED	**TEMP (F)**	**Ft-Lbs**	**LAT EXP**	**% SHEAR**
	-20	113	75	70
	-20	94	62	60
	-20	105	75	70
STRESS-RELIEVED	**TEMP (F)**	**Ft-Lbs**	**LAT EXP**	**% SHEAR**
	-20	105	77	70
	-20	112	76	70
	-20	117	78	70

WELDING PROCESS: SMAW
TENSILE SPECIMEN: .252"
IMPACT SPECIMEN: .394" X .394"
ELONGATION: (1"),%

FILLET :

VERTICAL-UP :	Satisfactory
OVERHEAD :	Satisfactory

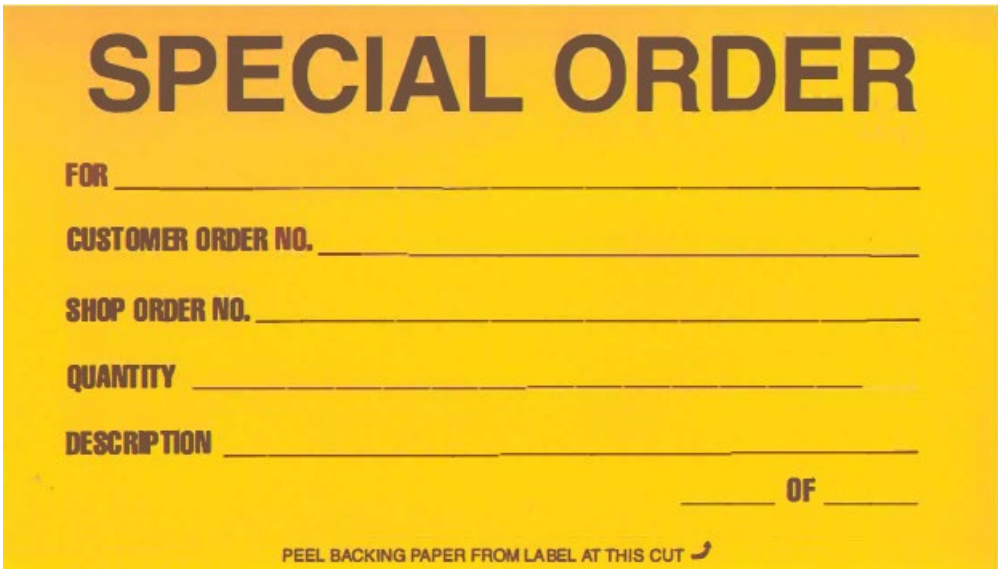
MADE IN USA
COUNTRY OF ORIGIN: USA
No Splicing or Weld Repair with filler metal
was performed on this material.

Quality Systems Manual Issue No. 12 Rev. 2 dated July 31, 2018
Quality Systems Certificate No. Qsc-221 Expiration Date September 8, 2020
Location & Orientation of Charpy-V-Notch/Tensile Specimens is I/A/W ASME NX-2322 and/or AWS/SFA specification as applicable.
The undersigned certifies and affirms that the contents of this report are correct and accurate and that all test results and operations performed by ESAB or its sub contractors are in compliance with the requirements of the material specification and the specific applicable material requirements of ASME Boiler and Pressure Vessel Code, Section III, including Division I, Subsection NCA-3800.
This material is certified to be free of any mercury.

The ESAB Group, Inc.
1500 Karen Lane
Hanover, PA 17331

www.esabna.com
Fax: 1-800-444-8911
Phone: 1-800-ESAB-123

By: Brian Dell
Quality Specialist
Brian Dell


SPECIAL ORDER
FOR
CUSTOMER ORDER NO.
SHOP ORDER NO.
QUANTITY
DESCRIPTION
OF
PEEL BACKING PAPER FROM LABEL AT THIS CUT

Tested Order Review

The current status is **In Process**

The current step and department is **2/Quality Control**, the next step/department is **1/Customer Service**

Order Header:

TOPs Num:	731973	ESAB Order / RMA:	954542	Customer Order:	908443
CSR Name:	Michelle Smolko	End User Customer:		End User PO:	
Location:	Hanover	Private Label:		TOR Type:	Standard

Order Date	Estimated Date	Promised Date	Completion Date
10/05/2020	10/05/2020	11/20/2020	

Complete Date	Complete Person	Escalated Date	Escalated Person
10/05/2020	Michelle Smolko		

Elapsed Days: 0

Tested Order Charge:

Test Costs:

Charge Comments:

Order Detail:

ESAB Order:

BILL TO:	SHIP TO:
623830 WELDSTAR COMPANY 1750 MITCHELL RD AURORA, IL 60504 2160	WELDSTAR COMPANY 1750 MITCHELL RD AURORA, IL 60504 2160

Project Number:

Shop Order Number:

Hold Location:

Nuclear Number:

Item #	Item Description	QTY	UOM	PT	PC	Product Type	Item Codes
255181810	AA 7018-B2L 1/8X14X50#HS	500	LB	M	2	AA 7018-B2L	T

CSR Notes:

ORDER IS SCANNED INTO SAP...MJS

QC Notes:

R&D Notes:

Controlled Document Receipt Acknowledgement

The controlled document listed below has been received, reviewed and accepted.

Document: Quality System Manual – The ESAB Group, Hanover PA

Revision: Issue 13, Revision 0

Dated: November 5, 2020

Sent on: November 5, 2020

Manual Control No: 1

I have reviewed the changes incorporated in this revision and all prior copies of revisions have been destroyed.

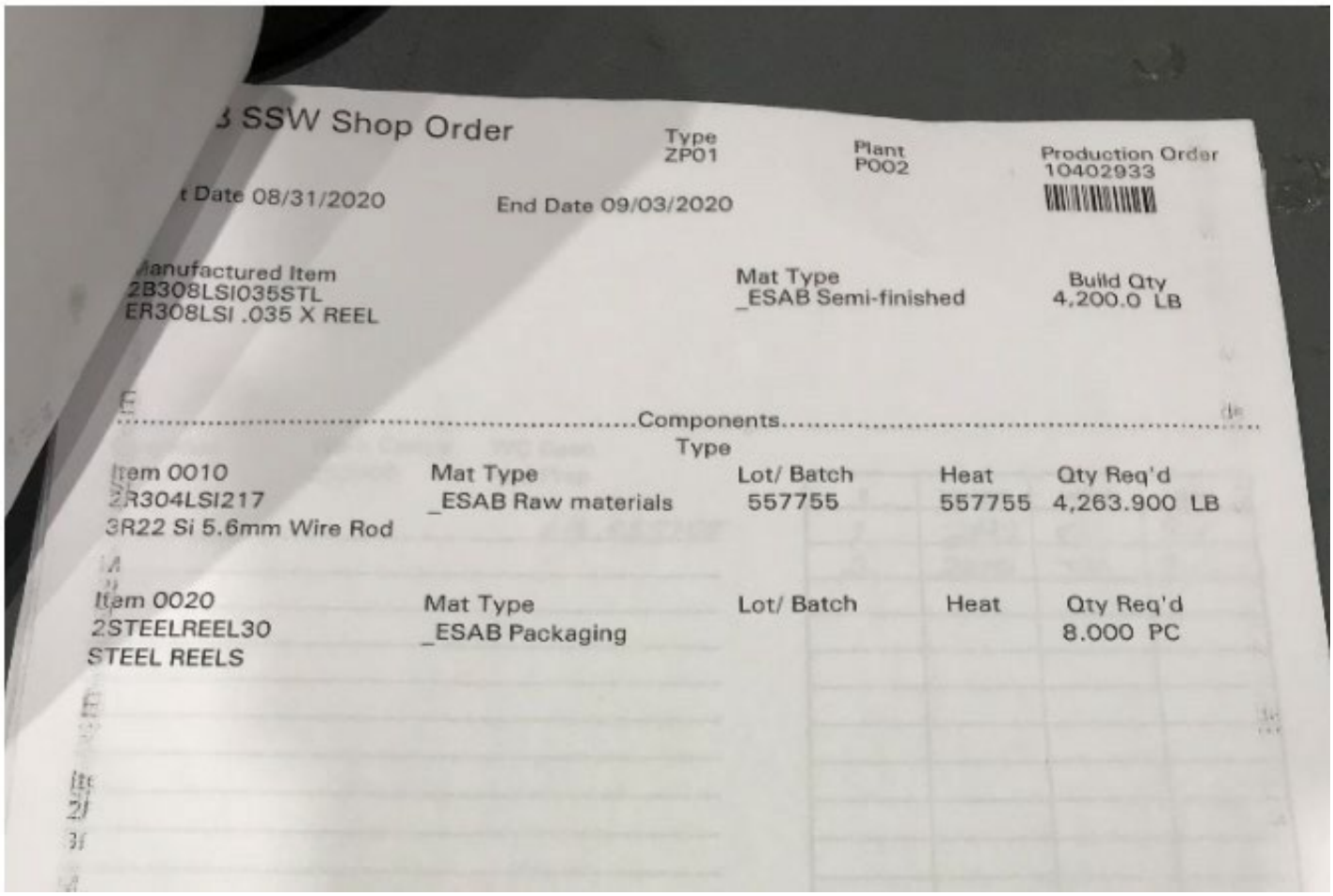
Signature:_____

Name:_____

Company_____

Location:_____

Date:_____



3 SSW Shop Order

Type ZP01 | Plant P002 | Production Order 10402933

t Date 08/31/2020 End Date 09/03/2020

Manufactured Item
2B308LSI035STL
ER308LSI .035 X REEL

Mat Type
_ESAB Semi-finished

Build Qty
4,200.0 LB

Components

Item	Type	Mat Type	Lot/ Batch	Heat	Qty Req'd
0010 2R304LSI217 3R22 Si 5.6mm Wire Rod		_ESAB Raw materials	557755	557755	4,263.900 LB
0020 2STEELREEL30 STEEL REELS		_ESAB Packaging			8.000 PC

Fabrication Production Data Sheet

LA 7-10-14 GN

A of A

1 0 0 2 6 9 5 1

4 3 0 2 9 9

D.L.H. JUL 10 2014 INSP

Product Des.	FW-9443-062 DS II 100 1/16			Fabrication Line 2		Fabline Ord 10026952	
Chart No	9443E	Mix Size (LB)	900	Diameter	1/16	Product ID	430299
Sales Order		Sales Pos.	000000				
Header Text							

Scale Notes

% Fill Aim:	14	% Fill Min:	13.5	% Fill Max:	14.5

Comp Description FS-040-512 OSC 392L SPEC 070033

Fabrication Lube USE 701G ALL BOXES, LAST BOX EMPTY

Fabrication Speed YODER SPEED: 175 FPM/TRAVERSE SPEED: 35%

Die Sequence .160,.132,.110,.096,.086,.077,.069,.062

Fabrication Notes
TAKE % FILL CHECK EVERY 4 HOURS AND FINISH DIA. EVERY REEL.
RECORD RESULTS ON DAILY REPORT.
REEL WEIGHT: 750#
HEAD WATER ON: ALL DIE WATER ON: #3 THRU #8
FINISH DIAMETER: .061 MIN/.0638 MAX

Redraw Lube

Redraw Speed

Die Sequence

Redraw Notes

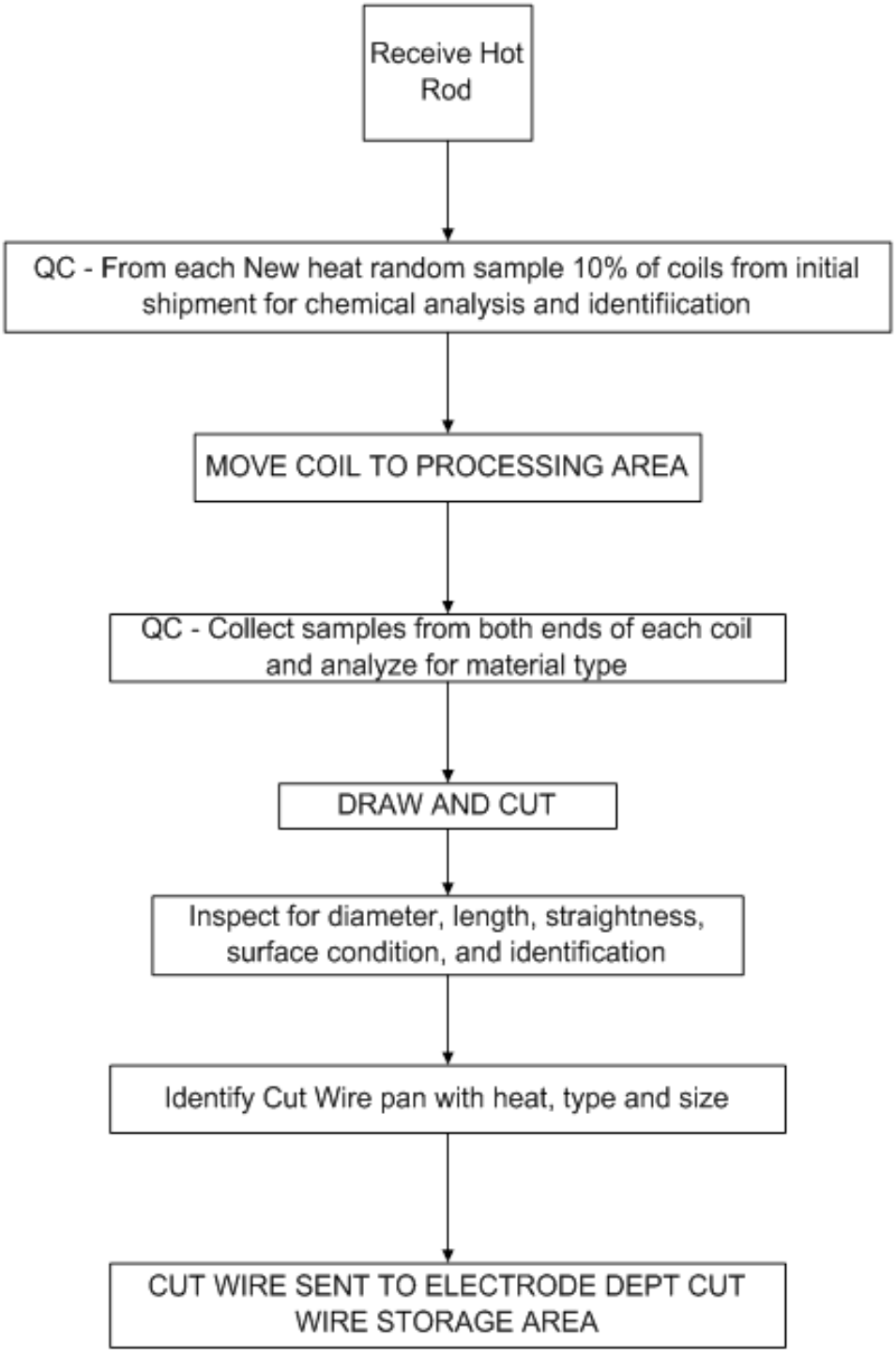
Oven Notes
PROGRAM #1 IN ANY OVEN
IF CANNED OR VAC PACKED, PACKAGE WITHIN 24 HRS AFTER BAKE

Stock No	245013651	DS II 100 1/16X33#PSP VP	Order	000010026954

Rewind Notes
BS-7W ALL (3) BOXES
IF CANNED OR VAC PACKED, PACKAGE WITHIN 24 HRS AFTER BAKE

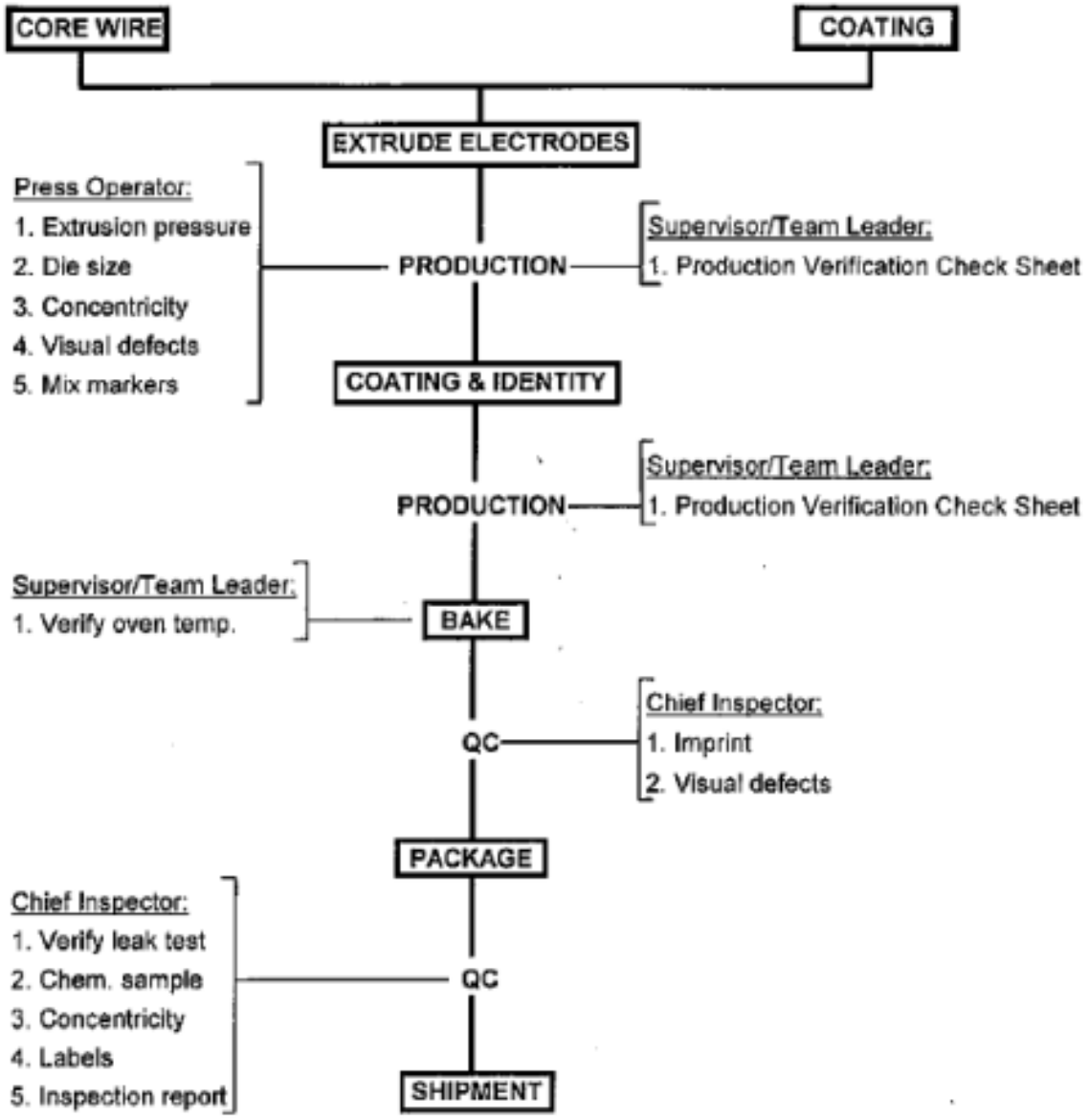
Packaging Notes
PM 311-33
USE PRINTED CARTONS.
[object]
[object]
[object]

PROCESS/INSPECTION FLOW CHART MILD STEEL DRAWING AND CUTTING



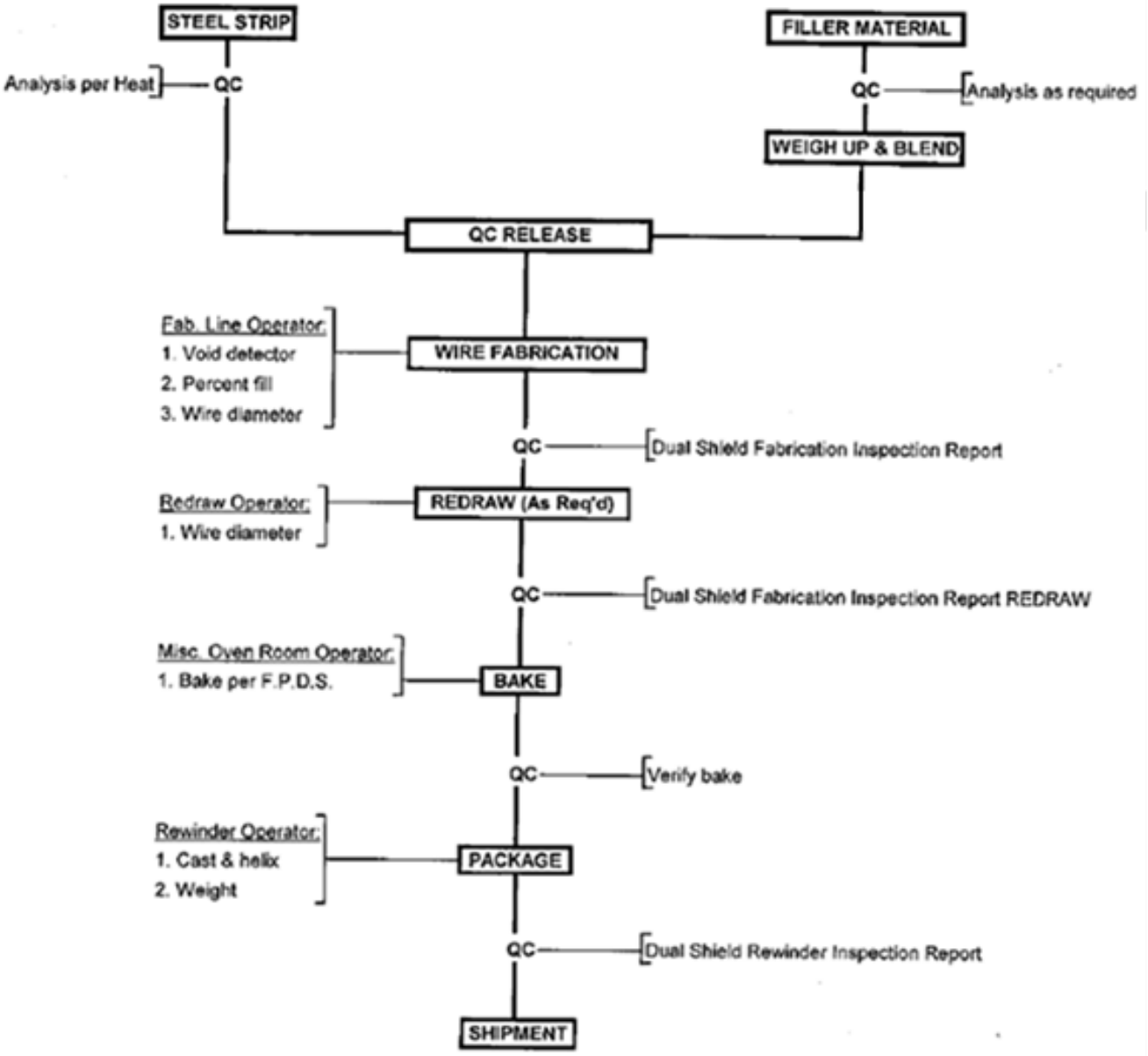
PROCESS & INSPECTION FLOW CHART

COATED ELECTRODES



PROCESS & INSPECTION FLOW CHART

FABRICATED (FLUX CORED) ELECTRODES



CHIEF INSPECTOR'S INSPECTION REPORT FOR COVERED ELECTRODES

QC-WI-005

Covered Electrode Inspection Report

Date: _____

Shift: _____

Inspector: _____

Chart: _____

Coating Diameter: _____

Concentricity: _____

Comments:

(Attach product label here)

Knowingly and willfully falsifying or concealing a material fact on this form or making false, fictitious or fraudulent entries on this form could constitute a felony punishable under federal statutes.

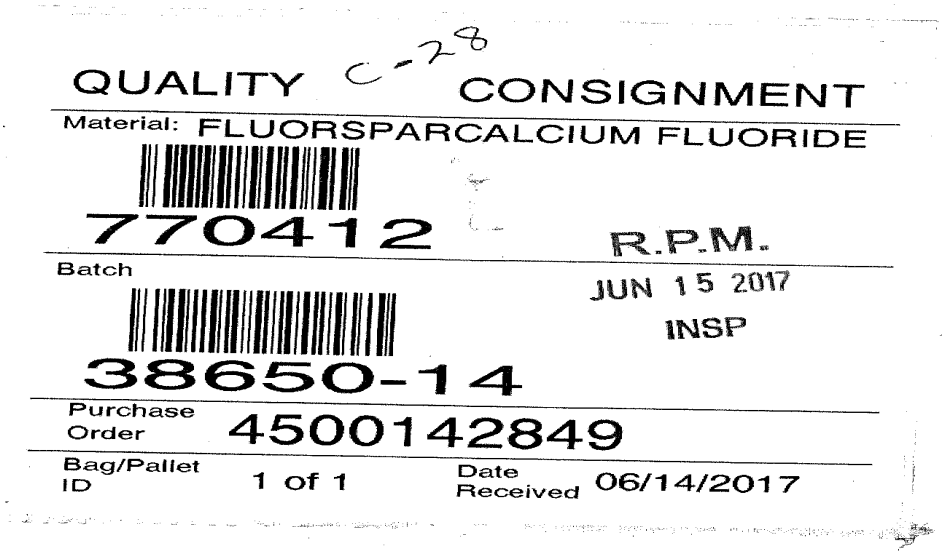
Nonconforming Material Hold Tag

CONTROL Nº 56497
SIZE _____ TYPE _____
LOT & HEAT _____ DATE & SHIFT _____
INSP. _____ AMT. HELD _____

HOLD

ITEM # _____
DEFECT/HOLD _____
_____
DISPOSITION _____
10CFR21 Evaluation Required
_____
G.F. _____ DATE _____ Q.C. _____ Yes ☐ DATE _____ No ☐
VERIFICATION _____ Q.C. _____ DATE _____

RAW MATERIAL RELEASE TAG


QUALITY C-28 CONSIGNMENT
Material: FLUORSPARCALCIUM FLUORIDE
770412
R.P.M.
JUN 15 2017
INSP
Batch
38650-14
Purchase Order 4500142849
Bag/Pallet ID 1 of 1
Date Received 06/14/2017