QUALITY CONTROL MANUAL

REVISION 28

ISSUED NOVEMBER 9, 2015

UNCONTROLLED COPY

ARC Manufacturing Co., Inc.
1651 Loretta Ave., Feasterville, PA 19053

Preface

It is the policy of ARC Manufacturing Company, Inc., Feasterville, Pennsylvania, to provide manufacturing services to our customers with a quality level commensurate with customer requirements and the end use of the product. This requires strict adherence to the customer's drawings and specifications. The proper coordination of all functions of the organization is required to achieve this goal.

For this purpose, ARC Manufacturing's Quality Control Manual and supporting procedures have been developed. The policies outlined herein are essential to assure the necessary control of ARC Manufacturing's intra-organized activity and mode of operation to assure faithful reproduction of the customer's requirements. This manual and supporting procedures have been carefully designed in an effort to meet or exceed the requirements of:

- 10CFR50 Appendix B
- 10CFR21
- MIL-I-45208A
- MIL-Q-9858
- ASME NQA-1-1994 (Basic & Supplemental Requirements*)
- NRC Regulatory Guide 1.28
-ASME BPVC Section III (NCA-3800)

*Note - ARC Manufacturing does not offer design/engineering services. We manufacture parts and assemblies per customer drawings, specifications, and order requirements.

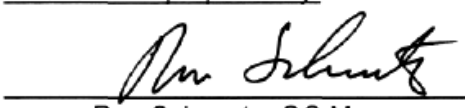
This manual and supporting procedures are annually reviewed and are revised when deemed necessary to meet changing conditions and customer requirements.

This manual describes the only quality system employed at ARC Manufacturing in order to control quality, and it is the single standard by which product conformance is assured.

The current revision of this manual is: **28**

Date of latest manual revision: **11/9/2015**

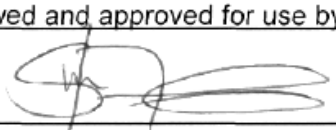
This revision prepared by:



Date: 11/9/2015

Ron Schwartz, QC Manager
ARC Manufacturing Co., Inc.

Reviewed and approved for use by:



Date: 11/9/15

Stephen Feuchter, President
ARC Manufacturing Co., Inc.

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1.0 Scope

This quality manual contains the necessary requirements for ARC Manufacturing's quality system to ensure that the quality requirements of its customers are met.

2.0 Quality Philosophy

It is the philosophy of ARC Manufacturing Company, Inc. to provide manufacturing and inspection services to our customers with the highest quality level commensurate with our customer's requirements. This requires strict adherence to the customer's drawings and specifications, as well as internal procedures and practices.

3.0 Authority and Responsibility of ARC Manufacturing

It shall be the ultimate responsibility of the Quality Control Manager to assure that all elements of the quality system are met. The Quality Control Manager reports directly to the President for all quality related issues. However, all managerial functions contribute in some fashion to meeting the requirements of the quality system and the customer's requirements.

In all cases, quality will be achieved by those assigned responsibility for performing the work. Quality achievement will be verified by those not responsible for performing the work.

Rev 28 changes:
Revised sections 4.4, 4.5, 4.8, 4.11, 4.11B, 4.11C, 4.12, 4.13, 4.15, 4.16, and 4.17. Changes made in those sections are highlighted. Changes were in regard to status indicators and MPO changes (authority and responsibility), training and qualification of suppliers operating under ARC's QA program, significant conditions adverse to quality and what actions are to be taken, safety related records (non-permanent), auditors being relieved of duties when performing an internal audit.

Rev 27 changes:
Preface: added commitment to 10CFR21, clarified commitment to NQA-1-1994 to include basic and supplemental requirements and addenda, clarified commitment to BPVC Sect.III NCA-3800.

Section 3.0: Clarified ARC's commitment to maintaining integrity of quality functions adding to this section - "In all cases, quality will be achieved by those assigned responsibility for performing the work. Quality achievement will be verified by those not directly responsible for performing the work."

Current revision changes in remaining sections of this manual are highlighted.

For revisions prior to those contained in Revision 27 of this manual, copies of previous manuals are on file and section revisions are documented in the index section of each manual.

Quality Systems Requirements Index

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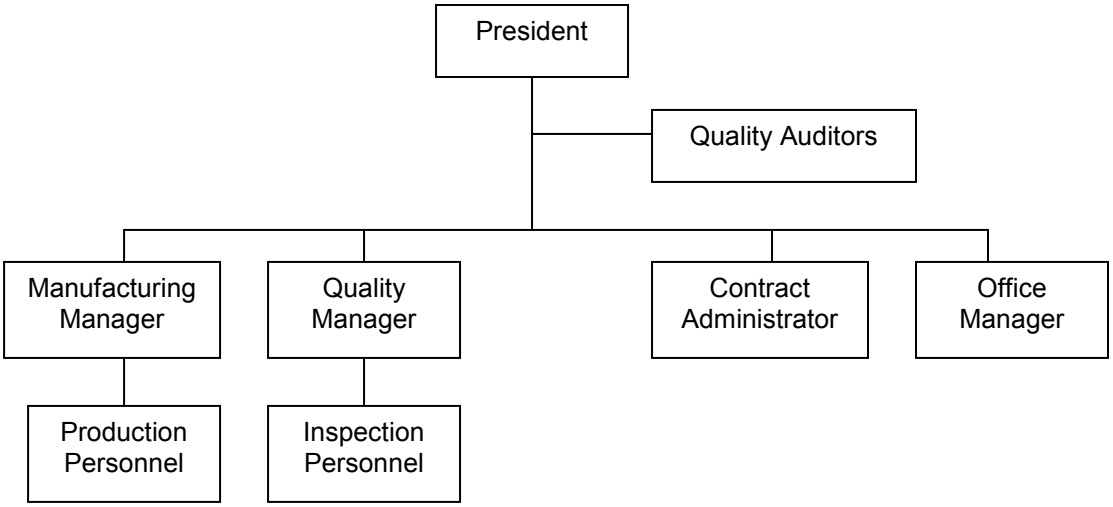
Section	4.1	Management Responsibility	Rev.8	4/5/2013

4.1 Management Responsibility

4.1.1 The managerial functions at ARC Manufacturing all contribute in some measure to the production of a quality product. For this purpose, the various responsibilities must be clearly defined. The functions of the organization are separated in accordance with the organization chart as shown below.



Due to the firm's size, some personnel may be required to perform two or more functions. In all cases, quality will be achieved by those assigned responsibility for performing the work. Quality achievement will be verified by those not directly responsible for performing the work.

4.1.2 Quality Responsibilities

4.1.2.1 President

- Assure that the Quality Control Manager has the authority and organizational freedom to perform his/her duties
- Review the status and the effectiveness of the quality program
- Review the effectiveness of the internal quality assessment program
- Reporting of non-conformances in accordance with 10CFR21

4.1.2.2 Quality Control Manager

- Revision and control of this manual and supporting procedures
- Review of customer and ARC Manufacturing purchase orders for completeness and correctness as required
- Control of non-conforming materials
- Performance of internal audits and monitoring of approved vendors
- Control and documentation of calibration system
- Preparation and control of corrective actions
- Reporting to the President on the status and adequacy of the quality system
- Identification of quality problems and implementation of actions to correct any quality problems, and has authority to halt work when necessary
- Control of inspection personnel
- Report to the President on all 10CFR21 defects and non-conformances

4.1.2.3 Manufacturing Manager

- Assure that facilities, equipment and personnel are adequate to perform the required work
- Assure that work performed under their supervision is in accordance with the Quality System program requirements stated in this manual and supporting procedures
- Preparation of technical operating procedures

4.1.2.4 Contract Administrator

- Prepares work to be estimated by gathering proposals, blueprints, specifications, and related documents, and assesses the scope of work and requirements and determines if they are within ARC Manufacturing's capacity
- Primary contact with customers for questions concerning orders and order requirements and notification of "hold points"
- Review of incoming orders and change orders
- Initial customer contact person for complaints of technical or clerical nature
- Maintains technical knowledge by reviewing specifications and requirements

4.1.2.5 Office Manager

- Assure that all work performed under the supervision of the Office Manager is in accordance with the Quality System program requirements stated in this manual

4.1.2.6 **Quality Auditors**

- Audit and review findings and corrective actions regarding the implementation of this quality control manual

4.1.2.7 **Quality Inspectors**

- Make sure measuring and test equipment used to qualify product for first piece, in-process, or final inspection has current calibration sticker and is in good working order
- Verify parts meet applicable requirements and specifications per approved procedures and accepted practices
- Document the final qualification of finished product
- Maintain traceability and identification of stock product/material

4.1.3 **Responsibilities of ALL Personnel**

- Have proper documents (drawings, procedures, etc.) on hand for the activity being performed
- Achieve and maintain quality for the work they perform
- Maintain material traceability throughout the process and in storage
- Notify Quality Assurance immediately of :
  - -Suspected loss of traceability
  - -Procedural/document discrepancies
  - -Nonconformances and deviations
  - -Suspected fraud or malpractice
- Document the completion of work when applicable
- Be aware of their surroundings and address any safety concerns

4.2 Quality System

4.2.1 ARC Manufacturing has an established and documented quality assurance system as a means of ensuring that all product conforms to specified customer quality requirements. The quality manual covers those requirements within this document.

4.2.2 All elements of this manual, as well as any other pertinent quality system procedures, are available to all members of ARC Manufacturing's organization, as well as our customers and government agencies for their review.

4.2.3 Revisions

4.2.3.1 Sections of the manual shall be revised when necessary to meet changing requirements or conditions. The revision and date of the Index shall document the revision of the manual. Revision changes shall be highlighted for current revision.

4.2.3.2 Whenever portions of the manual are revised, copies of the revised manual shall be distributed to controlled copyholders, and where NCA-3800 applies, to ASME customers. Exhibits and internal procedures may be revised without requiring the revision of the manual however.

4.2.3.3 New issues of the manual shall be distributed as stated above. These issues shall incorporate all revision changes in effect since the last publication.

4.2.3.4 A log is maintained showing the recipients of controlled copies of the manual. The covers of these copies shall be marked with the words "Controlled Copy".

4.2.3.5 If required by customer's specification, revised copies shall be submitted for their review and approval prior to the issuance of the revision as noted above.

4.2.4 Cost Related to Quality

4.2.4.1 The cost related to quality shall be the cost that is incurred to repair or replace defective material or parts. The total cost of quality shall include the cost of material and direct labor necessary to affect the repair or replacement. The review of this data shall be used to determine the adequacy of all aspects of manufacturing and inspection. Appropriate action shall be used to improve areas with high rework or replacement costs.

4.2.4.2 All rework times shall be recorded using a unique, coded identifying number on the shop floor. It shall be readily distinguishable from normal production time. This is known as "dash R time", with "R" representing rework.

4.2.4.3 A management review shall be conducted annually per procedure # QSR-200 Quality System Review to assess the adequacy and effective implementation of the quality program.

Section	4.3	Contract Review	Rev.7	4/5/2013

4.3 Contract Review

4.3.1 Upon receipt of a contract, the ARC Contract Administrator for that customer will review the contract to verify the following:

- the contract is one in the same as stated
- includes appropriate technical and administrative requirements
- is within the scope of ARC's capabilities
- is consistent with ARC quote/estimate information for that order

4.3.2 Quality Control will review the imposed quality requirements to verify our quality program meets those requirements. If changes in our program or supporting procedures are needed, this will be documented and those changes shall be reviewed for adequacy per section 4.4 of this manual.

4.3.3 If upon review, an unusual or unique inspection technique or quality requirement is discovered which requires customer approval prior to application, the technique or requirement shall be documented, reviewed, and approved under ARC's quality program, and then a request for approval shall be submitted immediately by the ARC contract administrator or QC representative.

4.3.4 Quality Control shall confer with Manufacturing for the purpose of integrating inspection operations and hold points into the manufacturing cycle and processes if and when deemed necessary.

4.3.4 Upon completion of the review, the customer purchase order or contract shall be stamped "Reviewed & Approved", QC ID# stamp, and dated by a qualified Quality Control representative. Contract change notices shall also be reviewed as stated in section 4.3.1 and 4.3.2, and if accepted, shall be stamped and dated by a qualified Quality Control representative.

4.3.5 Manufacturing and Quality Control shall review the contract requirements when appropriate so as to make timely provisions for any special processes, tooling, fixturing and skills required for assuring product quality.

4.3.6 When customer requirements are vague, or if there are exceptions to a contract, the customer shall be notified in writing. Any correspondence regarding clarifications or exceptions shall be kept as part of the record for that job/contract.

4.3.6 For contracts/orders where 10CFR50 app.B and 10CFR21 are imposed, ARC form # CR-210 Contract Review Checklist shall be filled out, signed, and dated by a qualified Quality Control representative. A copy of this form, or a copy of an offer or purchase order acknowledged by the concerned departments, will be kept in the job folder for that order as evidence and record of contract review.

Section	4.4	Document Control	Rev.15	11/9/2015

4.4 Document Control

4.4.1 Documents and procedures used to specify quality requirements or to prescribe activities at ARC Manufacturing that affect quality shall be controlled per this section 4.4. These documents may include, but are not limited to, the following:

-Customer Drawings
-Customer Specifications
-Customer Procedures
-ARC Procedures
-Inspections Reports
-Shop Drawings
-Test Procedures

Current revisions of these documents shall be distributed to and used at the location where the prescribed activity they pertain to is performed.

4.4.2 **Customer Documents**

4.4.2.1 Customer documents and drawings shall be kept up to date by the Contract Administrator assigned to that customer. They shall review purchase orders and contracts for current revision levels for applicable drawings and specifications.

4.4.2.2 If drawings or specifications are revised, it is the responsibility of the Contract Administrator to obtain the latest revisions from the customer, and distribute those latest revisions to the affected personnel. It is also their responsibility to make sure all obsolete revisions are removed from circulation.

4.4.2.3 Copies of obsolete documents or drawings may be kept on file for future reference in the Estimating or QA departments, but those copies must be clearly marked "OBSOLETE". Under NO circumstances are obsolete drawings or documents allowed to be kept on the shop floor or in the inspection area.

4.4.3 **ARC Documents**

4.4.3.1 If it is determined that procedures, documents, or drawings not already in existence are needed to prescribe an activity that affects quality, a person familiar with the requirements of that activity shall prepare the document. In all cases, documents shall be reviewed and approved by someone other than the person who prepared the document.

DRAWINGS - ARC drawings shall be prepared by someone familiar with CAD or drafting practices. Drawing shall have a unique number and revision level. Initial revision will be: "Rev. 0 - initial release -*Name of person releasing initial rev.- release date*".

Subsequent revisions will be numerical increments and will document changes made for that revision, or refer to document listing changes for that revision. Initial drawing and subsequent revisions shall be reviewed by someone familiar with the requirements. The drawing shall document who it was drawn by and who it was reviewed and released by and corresponding dates. Drawing number and revision level shall be documented on the Manufacturing Process Outline the drawing is used on.

PROCEDURES - ARC procedures shall be prepared by someone familiar with the requirements of the activity the procedure will prescribe. At a minimum, the procedure shall identify: -the purpose of the procedure
-required tasks and how to complete them
-objectives and/or acceptance criteria

Procedures shall have a unique number/title and revision level. Initial revision will be "Rev. 0 - initial release -*Name of person releasing initial rev.- release date*". Initial procedure and subsequent revisions shall be reviewed by someone familiar with the requirements. Each procedure shall have a cover page identifying the unique procedure # and current revision level, who prepared the procedure (sign and date), and who reviewed and approved the procedure (sign and date) for the current revision.

An index of ARC internal procedures shall be maintained listing all procedures and their current revision levels. When required by contract, procedures shall be submitted to customer for review and approval.

4.4.4 **Implementation of Procedures and Inspection Plans**

4.4.4.1 The Manufacturing Process Outline (i.e. MPO) shall be used to issue manufacturing and quality instructions to the shop for each job. The MPO shall contain all of the necessary operations in order to manufacture, inspect, test, and package the part or assembly. The MPO will be reviewed by Quality Control before release to the shop floor.

4.4.4.2 The MPO shall always specify the customer drawing number and current revision level for that job. Applicable specifications and procedures will be specified where they apply, but will refer to index or list for current revision level.

[ex./ inspect per IR-503 (see ARC IR List for current rev.),or ex./ pack per procedure WPK-100 (see procedure index for latest rev.)].

4.4.4.3 The customer drawing will be attached to the MPO. QC will verify that the correct revision level for that drawing is attached and will stamp and date the drawing verification section on the front page of the MPO. If an ARC shop drawing is used, the drawing number and revision level shall be specified on the MPO and the shop drawing shall be attached.

4.4.4.4 The Inspection Report (i.e. IR) shall be used as the inspection plan and as a document for recording actual characteristic measurements or notating product acceptability. IR’s are only used when specified by contract.

4.4.5 **Revisions**

4.4.5.1 Documents issued to personnel and outside parties who are not affected by the document, but need a copy for information only, are marked as UNCONTROLLED. Such documents are not followed up with revisions. Uncontrolled copies of documents may not be given to personnel or outside parties who manage, perform, or verify work that is directly affected by the document.

4.4.5.2 Changes to documents are reviewed and approved by the same function or department that approved the initial document, unless specifically designated otherwise. Issuing of revised documents follows the same rules that apply to initial issues. Revisions of a document are considered to be formally issued when it is authorized with the required approval signatures.

Note - changes or corrections made to MPO's on the shop floor must be signed and dated by the manufacturing manager if it is a manufacturing change, or by the QC manager if it is quality related. Changes regarding recorded data shall be initialed and dated by the person making the correction. Operators can correct their own mistakes, otherwise only supervisors, manufacturing manager, and QC manager have the authority to correct data for their respective areas. All changes shall be initialed and dated by the person making the change/correction.

4.4.5.3 Inconsequential changes such as editorial corrections or formatting shall not require a revision level change or additional approvals.

Section	4.5	Purchasing	Rev.11	11/9/2015

4.5 Purchasing

4.5.1 Procurement

4.5.1.1 Material or services acquired from vendors or suppliers shall be procured by means of a written purchase order. Contract administrators familiar with the customer requirements and specifications shall generate purchase orders. The purchase order originator is responsible for the accuracy and completeness of the purchase order.

4.5.1.2 Purchase orders shall be complete and specify, either by statement or reference, all technical requirements of the product or service, including, but not limited to quantities, dimensions, material specifications, quality characteristics, special tests, and delivery requirements. The purchase order shall show the required revision level of the specification noted. Also, test reports or certifications furnished for raw material or processes shall show the required specification level.

4.5.1.3 Raw material purchase orders shall contain all necessary requirements for testing to show compliance to applicable specifications.

4.5.1.4 For material and services procured for orders where 10CFR50 and 10CFR21 are imposed by our customer, the purchase order shall clearly specify the following:

- Scope of work to be performed by the supplier
- Technical requirements & acceptance criteria for the work
- Applicable QA program requirements for the supplier
- Right of access for inspection or audit
- Documentation requirements (C of C, inspection report, etc.)
- Requirements for reporting nonconformances or defects

4.5.2 Quality Control

4.5.2.1 Quality Control shall review written purchase orders prior to issue in order to ensure that all quality requirements are noted. Quality Control shall sign, stamp and date written purchase orders as required. In no case shall the purchase order originator perform the quality review of the same purchase order. If a person who also has a quality responsibility originates the purchase order, another individual in the Quality Department must review the purchase order.

4.5.2.2 If a conflict should arise between Quality Control and Purchasing regarding the quality requirements necessary for the purchased product or service, the issue shall be referred to the President for final judgment. Under no circumstances shall the quality requirements be compromised for price or schedule.

4.5.2.3 When changes to the original purchase order are required, written purchase order change notices shall be issued. The change notice is subject to the same degree of control as stated above for the original document.

4.5.2.4 When materials or services are procured for commercial customers as defined in section 4.15 of this manual, purchase orders may be issued by the contract administrator for that customer without review and approval by quality control if all of the following conditions apply:

- Our customer's quality program requirements allow us to issue P.O.'s to our suppliers without quality review (i.e.- our customer is neither military, government, nuclear, utility, etc.)

- Order requirements have been specified by customer (material type, coating requirement, heat treat, etc.)

- MPO clearly states vendor operations required and when they should be performed for the commercial job they are procured for

- Job is repeat or similar (same part family) to previous job for that customer

4.5.3 Vendor Selection

4.5.3.1 Vendor shall be selected based on their ability to meet quality system requirements and their ability to provide acceptable products or services at competitive prices. Vendors shall be evaluated per ARC Procedure SPP-100 Supplier Performance .

4.5.3.2 The selection of vendors shall be determined by:

- Performance
- Maintaining a satisfactory quality level (ref. Procedure SPP-100)
- Customer requirement or customer approved supplier
- Qualification testing, when required for special processes

4.5.3.3 When specified by contract, ARC Manufacturing's supplier shall afford the right of entry to ARC Manufacturing's customer.

4.5.4 Product or Service Quality

4.5.4.1 When required by contract, vendors shall maintain quality records, such as test and inspection results, and they should be utilized by the vendor to assure effective quality control.

4.5.4.2 When required by contract, certifications attesting to the conformance to contractual and quality requirements shall be supplied by the vendor.

4.5.4.3 Test reports for materials or supplies shall be checked for compliance to requirements or specifications.

4.5.4.4 Incoming inspection shall be performed on all job related supplies or material services by vendors.

4.5.5 Use of Approved Sources

4.5.5.1 Whenever possible, ARC Manufacturing shall use customer approved sources for service or material procurement. (Note - the use of government source shall not be used by ARC Manufacturing as a control of ARC Manufacturing's suppliers)

4.5.5.2 For ASME customers only, ARC Manufacturing shall only use customer approved sources, or perform the necessary audits to assure that the vendor is qualified to perform the service or furnish the material for that program.

4.5.5.3 When customer approved sources are not available, suppliers shall be selected from ARC Manufacturing's Approved Vendor's List. The performance of suppliers shall be monitored by Quality Control on an annual basis. Suppliers whose performance record is not satisfactory shall be removed from the Approved Vendor's List and not used. A copy of this list is available to inspection and purchasing personnel.

4.5.5.4 Only accredited gage laboratories and test facilities shall be used. Such suppliers must be accredited to appropriate or recognized standards (ISO/IEC 17025, A2LA, Nadcap, etc.). Suppliers shall only be used for the scope of work they are accredited for. Calibration suppliers shall be commercially dedicated per ARC procedure CGD-100 for Commercial Dedication.

4.5.6 Source Inspection

4.5.6.1 When customer, government, or ARC Manufacturing source inspection is required, the purchase order shall include the requirement for this coverage.

4.5.7 Non-Conformance of Incoming Material

4.5.7.1 Whenever non-conforming material is received from a vendor, immediate notification to the vendor shall be made concerning the non-conformance. The vendor shall provide a cause and corrective action to prevent a recurrence. The vendor shall provide this response within thirty days of notification. Failure to provide the cause and corrective action will result in the removal of the vendor from the Approved Vendor's List.

4.5.8 Stock Material Upgrade

4.5.8.1 This section applies only to those contracts where the customer approves stock material upgrading.

4.5.8.2 As defined in ASME Section III, NCA-3867.4, stock material may be purchased providing that the following is performed and/or subcontracted by ARC Manufacturing:

- Each piece of stock material, as received from the material supplier, will be tested for all requirements of the material specification on each heat and heat treat lot.
- Traceability will be maintained on all material.
- The purchase order shall state that welding is not permitted on the material.
- All processing and testing will be performed to the requirements of this quality program.
- Certifications will include all test results and identify that the material was processed as stock material.

4.5.9 Commercial Dedication

4.5.9.1 Vendors or suppliers who do not have a 10CFR50 app.B quality program, but are supplying a commercially available item or service that is not unique to the nuclear industry, may be commercially dedicated per ARC procedure CGD-100 for Commercial Dedication and may be used for customer orders where 10CFR50 app.B is imposed.

4.5.9.2 Calibration services shall be commercially dedicated per ARC procedure CGD-100 for Commercial Dedication.

4.5.9.3 Suppliers who do have a 10CFR50 app.B quality program and are supplying material or services for a customer order where 10CFR50 app.B is imposed must be audited every 3 years per ARC procedure NQSA-100 for Nuclear Supplier Quality Audit.

4.5.10 Suppliers Performing Work Under ARC's QC Program

Suppliers performing work under ARC's QC program shall be trained and qualified on the applicable procedures they are working to per section 4.17 of this manual. Applicable procedures and training shall be documented for these suppliers as if they were ARC employees. Any required qualifications shall also be documented and kept on file for each supplier. This includes, but is not limited to, welders and auditors (internal or external). Required training for applicable procedures shall be documented on a training matrix for all supplier personnel operating under ARC's QC program.

Section	4.6	Control of Customer Supplied Product	Rev.7	4/5/2013

4.6 Control of Customer Supplied Product

4.6.1 When customer or government furnished material or product is shipped to ARC Manufacturing, the following control, verification, storage and maintenance shall apply.

4.6.2 All customer or government furnished material shall be inspected through the receiving inspection process as detailed in QC Manual Section 4.11A (Receiving Inspection).

4.6.3 Customer supplied product shall be identified and tagged per ARC procedure HSD-100 for Handling, Storage, and Delivery, and traceability of materials shall be maintained per procedure MT-100 for Material Traceability.

4.6.4 If required by contract, receiving inspection shall prepare a listing of the customer or government furnished material stating source, owner description, condition and date of receipt. The listing shall be forwarded to the Quality Control Manager who is responsible for maintaining a file for all customer or government furnished materials.

4.6.5 When not in use, the customer or government furnished material shall be properly protected and stored per procedure HSD-100 for Handling, Storage, and Delivery.

4.6.6 A customer or government contact person must be immediately notified when material or product is received and found to be damaged or discrepant.

4.6.7 If required by contract, functional testing of customer or government supplied property will be performed as specified.

4.6.8 As directed by contract, the inventory of customer or government furnished material shall be checked for accountability and the record shall indicate date checked and by whom.

4.7 Product Identification and Traceability

4.7.1 Manufacturing has adequate, documented procedures for identifying and maintaining traceability on ARC Manufacturing purchased materials and products, as well as customer or government furnished materials and products (ref. procedures MT-100, HSD-100).

4.7.2 Upon receipt of ARC Manufacturing purchased materials or products, or customer or government furnished materials or products, receiving inspection is performed on that item. The material or product shall be inspected for size, quantity, material type, and material heat/lot/serial number.

4.7.3 The material or product will be marked or tagged with the appropriate, unique ARC Manufacturing job or lot number. This number will remain with the material or product during the entire manufacturing cycle. Raw material that has not been issued an MPO shall be tagged with heat number and/or receiving lot number.

4.7.4 Upon acceptance, a Quality Control representative will complete the material control section of the Manufacturing Process Outline. The material control section of the Manufacturing Process Outline has space provided for documenting the size, quantity, material type, material heat information and the part for which the material shall be used. The material or product will then be released for processing through the shop.

4.7.5 During all processing operations, the Manufacturing Process Outline shall accompany the part(s) throughout the shop. If for any reason it becomes necessary to split lots, the original MPO shall be reduced for the quantity specified and signed off by an authorized person. The second or subsequent lots shall receive MPOs for each additional release, or quantity. The starting operation shall be so noted and an explanation provided for the completed operations. From the time the lots are split, each lot shall have an appropriately executed MPO.

4.7.6 When the part(s) are ready for final dimensional inspection, the material control section of the Manufacturing Process Outline shall be crosschecked for correct identification. After the proper documents are available for the finished parts, dimensional inspection shall occur.

4.7.7 When the part(s) are accepted, they shall be cleaned and packaged for shipment to the customer. If required by contract, each purchase order item shall have an inspection documentation package prepared which includes, ARC's certification-of-compliance, inspection report and material test reports. This documentation package shall make reference to the identifying information as noted on the material control section of the MPO.

4.7.8 Serialization - When required by contract, raw material, prior to release for processing, shall be serialized and the heat number and/or serial number recorded for future reference. Customer furnished material is not to be released for production until a customer release is obtained, or until ARC Manufacturing has been instructed to do so by the customer.

4.7.9 Material Verification - Only if required by contract, verification of ARC Manufacturing purchased raw material test reports' accuracy shall be accomplished using an independent test laboratory. The laboratory shall perform a chemical check analysis and shall compare the results with the original mill test report. Laboratory test results shall be stamped and dated upon review at ARC Manufacturing by a qualified Quality Control representative.

4.8 Process Control

4.8.1 In order to establish measures and documentation in order to control and monitor work in process, the Manufacturing Process Outline is utilized.

4.8.2 Manufacturing Process Outline

4.8.2.1 The Manufacturing Process Outline, or MPO, will show all necessary inspection, machining, special processes, and tests required to produce product in order to meet customer drawing, specification, and contractual requirements. The MPO will provide instructions for identifying and maintaining product traceability throughout the manufacturing cycle. This identification shall be for the purpose of maintaining serial numbers, material heat numbers, heat-treat lots, etc. MPO's for orders where 10CFR21 and 10CFR50 app.B are imposed shall be identified as "Safety Related". Employees shall be trained to recognize these MPO's and what "Safety Related" implies.

4.8.2.2 The MPO shall be prepared by the President or the Manufacturing Manager. The President, Manufacturing Manager, and the Quality Control Manager are the only personnel authorized to approve changes to the MPO’s in process.

4.8.2.3 The MPO shall be reviewed by a Quality Control representative prior to issuance to the shop. This quality review shall be made to ascertain that all required inspection and testing operations are included. Quality Control shall indicate approval by stamp and date in the space provided.

4.8.2.4 As a minimum, the MPO will show receiving inspection, inspection operations immediately preceding and following vendor operation, and a final inspection operation when all manufacturing operations, special processes and tests are completed.

4.8.2.5 The MPO has space provided at every operation for operation completion sign off and date. Operations that require first piece inspection shall have entry for inspector stamp and date of acceptance. Only operations where size and shape of material is altered are required to have first piece inspection. Cleaning, deburring, and inspection operations do not require first piece inspection. Acceptance inspection stamps are for use by inspectors only. Operation complete sign-offs are used by the operators performing the work.

4.8.2.6 Changes that may be necessary to the process, due to customer or ARC Manufacturing’s requirements, shall be incorporated into the shop copy of the MPO. The changes shall be made by the Manufacturing Manager or Quality Control Manager. These changes shall be written in ink and the originator shall sign and date at the appropriate location. This amended MPO shall be retained in the master job file. Upon release for a repeat order of the same part, the amended MPO shall be retrieved and reviewed. The new MPO shall be revised to incorporate and changes as previously mentioned.

4.8.2.7 Where the MPO releases into the manufacturing cycle a quantity of parts that must be identified for the purpose of raw material, heat-treat or serialization control, the MPO shall have attached the necessary documents to properly identify the group, lot, or batch for which such control is required.

4.8.2.8 For any reason it becomes necessary to split lots, the original MPO shall be reduced for the quantity specified and signed off by an authorized person. The second or subsequent lots shall receive MPOs for each additional release, or quantity. The starting operation shall be so noted and an explanation provided for the completed operations. From the time of lot splitting, each lot shall have an appropriately executed MPO.

4.8.2.9 The MPO shall be used to track the status of rejected or reworked parts as the operation progresses. The MPO shall show accepted and rejected quantities at each operation. As per standard procedure, these operations shall be stamped and dated by inspection personnel.

Note - changes or corrections made to MPO's on the shop floor must be signed and dated by the manufacturing manager if it is a manufacturing change, or by the QC manager if it is quality related. Changes regarding recorded data shall be initialed and dated by the person making the correction. Operators can correct their own mistakes, otherwise only supervisors, manufacturing manager, and QC manager have the authority to correct data for their respective areas. All changes shall be initialed and dated by the person making the change/correction.

4.8.3 Customer Approval

4.8.3.1 This section applies only when customer approval of the MPO is required.

4.8.3.2 The MPO shall be prepared and submitted for customer approval prior to release for manufacturing on the shop floor. Changes to the MPO must be submitted and approved prior to implementation. The MPO shall state that customer approval is required prior to use. Where serial numbers are assigned, the MPO shall show the requirement for the need of this identification and shall describe the marking method. Where physical marking is not feasible, or permitted, appropriate identification shall be used (i.e. tags, labels, containers, etc.).

4.8.4 Process Documentation

4.8.4.1 Job folders containing all purchase orders, material and process certifications, inspection reports, final inspection check sheets, and completed MPOs shall be collected and stored in accordance with Section 15 (Control of Quality Records) of this manual.

4.8.4.2 The manufacturing plan will show all required special processes such as, but not limited to, welding, cleaning, etc.

4.8.4.2 For orders where 10CFR50 app.B is imposed, the MPO shall be logged with the unique MPO number and current revision level, and corresponding inspection report number and current revision level for each part number. This log shall be reviewed and updated at a minimum of every 6 months by Quality Control representative.

Section	4.9	Inspection and Testing	Rev.15	12/1/2001

4.9 Inspection and Testing

4.9.1 In order to establish procedures and documentation in order to control and monitor work in process, the Inspection Report is utilized. This section assures that required inspections and tests are performed and that the acceptability of product, with regard to inspections and tests, is known throughout the manufacturing cycle.

4.9.2 Inspection Report

4.9.2.1 The inspection report, or IR, shall be used as the inspection plan and as a document for recording actual parts values or acceptance status. IR's are only used when specified by contract. The IR shall be prepared and completed by qualified inspection personnel only.

4.9.2.2 In addition to the use of the IR to record actual dimensions for each lot or serial number (or as specified by the contract), the form shall also be used to indicate that all material test reports, special process certifications, and tests (including all NDEs) are correct and are attached to the IR when applicable. When all data has been accumulated and is correct and complete, the inspection data package shall be presented with the parts for source inspection (if required), or the parts will be released for shipment to the customer. The IR form provides for the gage number of the measuring instrument to be recorded for each characteristic that is inspected. The inspector shall record the actual gage number on the IR as each gage is used.

4.9.3 Customer Approval

4.9.3.1 This section applies only when customer approval of the IR is required.

4.9.3.2 The IR shall be prepared and submitted for customer approval prior to release for manufacturing on the shop floor. Changes to the IR, must be submitted and approved prior to implementation.

4.9.3.3 The IR, as described in this section, shall be used to report actual physical part configuration and to show results or acceptability of all tests. Furthermore, the IR shall show the actual inspection method to be used to check all part characteristics or features.

4.10 Control of Inspection, Measuring and Test Equipment

4.10 The quality of any manufactured item is dependant upon the ability to control its size and shape to specified accuracies. Proper control of measuring and test equipment is a necessary function of Quality Control in order to assure compliance to drawing limits.

4.10.1 Identification of Tools and Gages

4.10.2 Each gage shall be identified by permanent marking with a unique identification number, and a calibration sticker with the same i.d. number, calibration due date, last date calibrated, and who performed the calibration on that last date.

4.10.3 Calibration System Records

4.10.4 The entire company owned gage calibration system is entered into a computer software package called *GAGEpack*. This system records and retrieves the following calibration information:

- Calibration worksheets
- Complete gage inventory by gage number and gage history
- Gage calibration procedures
- Gage calibration periods and calibration frequencies

The software package allows for other data to be entered and retrieved as desired.

4.10.5 Calibration of Tools and Gages

4.10.6 The frequency of calibration for each tool or gage is determined by the type, tolerance, and amount of usage. When a gage is found to be out of gage tolerance, the condition and date shall be noted. If a gage accumulates a history of two consecutive outages, the gage shall be considered for a shortened frequency cycle, repair or replacement.

4.10.7 In the case of small measuring instruments, such a 0-1” and 1-2” micrometers and super micrometers, where multiple sets of these gages exist, spot checking is mandatory and is performed on a frequent, as used basis.

4.10.8 The calibration system shall meet the requirements of MIL-STD-45662A. The method of calibration shall be in accordance with MIL-STD-120 and ARC Manufacturing’s calibration procedure number 285.

4.10.9 The standards used for calibration of measuring instruments shall not exceed 25% of the required accuracy of the gage being calibrated. For example, the gage block used to set a 1-2” micrometer to an accuracy of .0001” must be accurate to within .000025” (i.e. .000025” is the maximum allowable collective uncertainty of the standard or master used for calibration).

4.10.10 Evidence of the calibration for each tool or gage shall be found on a calibration label attached to each tool or gage. The label shall note the date of last calibration and the due date of the next calibration. These dates shall show day, month and year. The inspector performing the calibration shall affix his stamp or inspector # to the calibration label. If size or configuration of the tool or gage prohibits the application of a calibration label, a white calibration tag shall be attached to it. The information noted shall also be noted in *GAGEpack.*

4.10.11 Calibration shall be performed per ARC procedure # 285 by qualified ARC inspectors or by approved vendors per section 4.10.16 of this manual.

4.10.12 Standards used for gage calibration shall be traceable to the National Institute of Standards and Technology (NIST).

4.10.13 Only company owned, calibrated gages and tooling, which are controlled under this manual section, shall be used for final product acceptance.

4.10.14 Employee owned personal tools or gages shall not be used for final product acceptance. Calibrated company owned tools and gages are the only determination of a quality product.

4.10.15 Commercial Calibration Laboratory

4.10.16 Only qualified, commercial calibration laboratories shall calibrate gages or measuring standards that cannot be calibrated at ARC Manufacturing. These calibration suppliers shall be accredited (ISO/IEC 17025) for the scope of work they shall perform. Calibration services shall be procured in accordance with section 4.5 of this manual.

4.10.17 Special Gaging

4.10.18 Special gages may be required to verify acceptance of part characteristics due to lack of availability of commercial gages for that verification, or to improve efficiency, ergonomics, and reliability of the verification for a particular part. Each new gage is submitted to the Inspection Department for approval. Upon acceptance of a gage, a calibration sticker is attached and the gage is then entered in ARC's Gagepack calibration system and stored in the Inspection Department.

4.10.19 Storage and Protection of Tools and Gages

4.10.20 Tools and gages not in use shall be properly stored with adequate protection to prevent damage by contact with one another.

4.10.21 Gages shall kept in a drawer or cabinet, or they shall be in a case or box that is identified with the gage number on the outside. They should be protected from dirt, abrasives, chips, etc.

4.10.22 If a gage fails calibration, the Quality Control Manager shall be notified immediately. If it is confirmed that the gage is indeed out of calibration and the readings are outside of required accuracy, Quality Control investigates and assesses the validity of measurements for which the equipment was previously used. Identification of such equipment and the impact of its use on acceptance of products are reported in an ARC Deviation Report. If suspect material has been shipped, the customer is notified.

4.10.23 All new and reworked tools and gages are calibrated before being released into the system.

4.10.24 Prior to use, customer or government furnished gages shall be placed into the calibration system as specified in this section. When the customer or government requires calibration to be done at a location other than ARC Manufacturing, the calibration record shall show the frequency and location of the calibration. The gages shall remain in the system for the active period of gage use.

4.10.25 If measuring tools or gages are damaged due to accident or misuse, the tool or gage shall be immediately removed from the system. The item shall be identified with a red tag and placed in the "hold area". Also, the gage record shall be noted to indicate the condition. When possible, the item shall be repaired or replaced. The new or repaired gage shall be calibrated as required by this section and the gage record shall show its new status.

4.10.26 Availability of Inspection Equipment

4.10.27 When it is necessary for a customer or government representative to perform inspection at ARC Manufacturing's facility, the necessary gaging, testing equipment, measuring tools, and facility shall be made available.

4.10.28 When at times, as in the case of using specialized equipment, it is necessary for ARC Manufacturing's personnel to operate this equipment, they shall provide assistance to add the customer or government representative in the inspection process.

Section	4.11	Inspection and Test Status	Rev. 3	11/9/2015

4.11 Inspection and Test Status

4.11.1 ARC Manufacturing has established documented processes for identifying inspection and test status. They are as follows:

4.11A Receiving Inspection

4.11B First Piece Inspection

4.11C In Process Inspection

4.11D Final Inspection

4.11E Non-destructive Testing

4.11F Government Source Inspection

For all inspection operations, quality shall be verified by those not responsible for performing the work.

4.11.2 Only ARC inspectors and ARC QC Manager have the authority to tag parts for disposition or status. Only ARC inspectors and ARC QC Manager can remove tags if disposition or status is changed. In all cases, ARC QC manager shall be notified when parts are tagged or when tags are changed or removed.

Section	4.11A	Receiving Inspection	Rev.11	12/1/2001

4.11A Receiving Inspection

4.11A.1 Upon receipt of ARC purchased material, customer supplied material, or vendor processed material, receiving inspection shall inspect the material for contractual, physical characteristics and all other requirements as stated in the purchase order or any other relevant specifications, drawings, and ARC Manufacturing's Manufacturing Process Outline (MPO). Incoming material shall be located in a cordoned off, restricted area. The material shall remain in this area until released with the proper documentation by a Quality Control representative.

4.11A.2 Parts such as castings, forgings and hardware shall be sample inspected in accordance with ARC Manufacturing Sampling Plan Procedure, SP-100.

4.11A.3 All documentation shall be forwarded to Quality Control for review. Certifications of raw material shall be reviewed for chemical and physical properties to assure that they meet the specifications as stipulated. A qualified Quality Control representative shall stamp and date all documentation to show acceptance. If imposed, shipping documentation shall be reviewed for evidence of government source inspection.

4.11A.4 When material is released for production, the material control section of the MPO shall be used to show acceptance and identification. Also, each bundle of raw material, or loose piece, shall be marked or tagged to show the appropriate internal job number.

Section	4.11B	First Piece Inspection	Rev.10	11/9/2015

4.11B First Piece Inspection

4.11B.1 Prior to starting work on the first piece of any lot, the operator is required to ascertain that all documents meet the requirements for the revision level of part number/drawing number as noted on the Manufacturing Process Outline(MPO). When the operation is performed on a CNC machining center, the computer-generated program shall be reviewed to make sure it will meet the requirements stated for that operation per MPO. The computer programmer shall also be responsible to check programs, and to make sure a unique program number is issued for each program. All programs shall be checked before use.

4.11B.2 Immediately after producing the first piece of a manufacturing run, the operator shall present the part to the inspection department. The inspector shall inspect any characteristic or feature created during that operation.

4.11B.3 All dimensions listed on the individual operations within the MPO shall be inspected and the first piece inspection operation noted in the space provided. The inspector shall stamp and date the MPO for each first piece inspection performed.

4.11B.4 Dispositions

4.11B.5 If the first piece is found acceptable, the operation shall be allowed to continue on the remainder of the lot. If the first piece is not acceptable, the operation shall be stopped and the cause of the problem shall be determined. After the resolution of the problem, a second part shall be produced and presented to Quality Control for inspection.

4.11B.6 If the first piece is found not acceptable, and is not reworkable, the first piece shall be marked/tagged/identified as scrap and removed from the production area. Furthermore, the operation shall not be allowed to continue until an acceptable first piece is produced and verified by inspection.

4.11B.7 Only ARC inspectors and ARC QC Manager have the authority to tag parts for disposition or status. Only ARC inspectors and ARC QC Manager can remove tags if disposition or status is changed. In all cases, ARC QC manager shall be notified when parts are tagged or when tags are changed or removed.

Section	4.11C	In-Process Inspection	Rev.8	11/9/2015

4.11C In-Process Inspection

4.11C.1 The use of in-process inspection performed by the Quality Control department provides a control to assure that high standards of workmanship are maintained throughout all manufacturing operations. The purpose of this inspection is to provide information that will alert the manufacturing personnel to initiate corrections before the parts have reached a stage of completion where correction is either difficult, uneconomical, or unattainable.

4.11C.2 The Manufacturing Process Outline (MPO) will show inspection points, which must be made during the manufacturing cycle. While the operation is in process, the inspector shall review a copy of the applicable drawing and inspection report to determine which characteristics are to be inspected. The Quality Control Manager, or his designee, shall determine any additional dimensions that should be monitored by in-process inspection, depending on the criticality of certain dimensions or features. They shall establish the frequency for these additional inspections.

4.11C.3 Dimensions which can not be inspected at final inspection, such a pre-plating diameters, shall be inspected in-process. Dimensions that are deemed critical, shall be recorded on the inspection report.

4.11C.4 If upon completion of an in-process inspection, a non-conforming condition is discovered, the part shall be placed on hold pending proper disposition of the non-conformance. The part on hold shall be processed in accordance with section 4.12.

4.11C.5 Only ARC inspectors and ARC QC Manager have the authority to tag parts for disposition or status. Only ARC inspectors and ARC QC Manager can remove tags if disposition or status is changed. In all cases, ARC QC manager shall be notified when parts are tagged or when tags are changed or removed.

Section	4.11D	Final Inspection	Rev.12	4/5/2013

4.11D Final Inspection

4.11D.1 When parts are received for final inspection, the inspector assigned to that particular job shall gather the applicable documents needed to perform a final inspection. These documents are in the form of drawings, specifications, inspection reports, and any other form of contractual documentation needed. The items shall be used as criteria to inspect the parts for compliance.

4.11D.2 Inspection shall be performed on 100% of the parts on all lots, unless customer approved frequency or approved sample size is allowed. Sampling must be based on recognized standard practices and customer approval must be documented when applicable. If required by contract, the recording of actual dimensional data for each characteristic shall be for a sufficient number of parts to show compliance. However, where the contract requires that all parts must show recorded data, the Inspection Report (IR) shall show data for 100% of the parts.

4.11D.3 Quality Control shall prepare a documentation package in accordance with customer purchase order or quality requirements. This includes material, heat treat, plating, painting, and other certifications that shall accompany the shipment.

4.11D.4 When customer or government source inspection is specified in the purchase order, the appropriate representative shall be notified in a timely manner.

4.11D.5 Upon customer or government source approval, the parts shall be cleaned and packaged. If required, prior to shipment customer or governmental approval of cleaning and packaging shall be received.

4.11D.6 Upon acceptance, the part or tag (whichever is required by contract), shall be properly marked. If required, the marking shall include the inspector's acceptance stamp.

4.11D.7 When all inspections are completed, the parts shall be properly boxed and readied for shipment to the customer.

4.11D.8 At final inspection, if parts are found to a have a non-conforming condition, the parts shall be placed on hold. Parts placed on hold shall be processed in accordance with Section 4.12.

4.11D.9 The inspector performing the final inspection operation shall indicate acceptance by affixing his stamp to the Manufacturing Process Outline and if applicable, to the Inspection Report.

4.11 D10 Measuring and test equipment used to qualify product at final inspection shall be company owned equipment controlled and calibrated per section 4.10 of this manual. For all jobs where 10CFR50 app.B and 10CFR21 are imposed, measuring and test equipment used to qualify product shall be recorded on the IR for that job.

4.11E Non-Destructive Inspection and Testing

4.11E.1 Non-Destructive Testing

4.11E.2 When non-destructive testing is required on machined components, the non-destructive testing shall be performed by qualified vendors only.

4.11E.3 As applicable, all non-destructive testing shall be performed in accordance with approved procedures.

4.11E.4 Inspection

4.11E.5 Evaluation of non-destructive testing results shall be performed by inspectors who have been certified for this purpose.

4.11E.6 Qualification of Personnel

4.11E.7 As applicable, personnel performing non-destructive testing shall be qualified in accordance with the required specification.

4.11E.8 Non-destructive testing operators and inspectors shall be re-qualified at intervals as designated in the applicable specifications and contractual requirements.

4.11E.9 If required by contract, ARC Manufacturing shall maintain a record of the qualification status of the operators performing non-destructive testing at the vendor's facility.

4.11E.10 Suppliers used to perform ultrasonic inspection for orders where 10CFR50 app.B and 10CFR21 are imposed shall be audited per ARC procedure NQSA-100 (which which will include requirements of SNT-TC-1A). All applicable requirements and procedures shall be specified per section 4.5 of this manual on each purchase order procuring ultrasonic testing services.

Section	4.11F	Gov't Inspection at Subcontractor's Facility	Rev.4	12/1/2001

4.11F Government Inspection at Subcontractor's Facility

4.11F.1 Orders to Subcontractor's Requiring Government Source Inspection

4.11F.2 When a purchase order is to be placed with a subcontractor for supplies or services, the local government representative will be advised and presented with a copy of the purchase order.

4.11F.3 If the government representative decides that government source inspection is required at the subcontractor's facility, the following statement shall be added to the purchase order:

"*Government source inspection is required prior to shipment from your facility. Upon receipt of the order, promptly notify the government representative who normally services your facility so that appropriate planning for government source inspection can be accomplished".*

4.11F.4 Copies of the purchase order will be furnished to the subcontractor government representative and shall be instructed by the following statement, which shall be included in the purchase order:

"Upon receipt of this order, promptly furnish a copy to the government representative who normally services your facility, or, if none is available, to the nearest U.S. Army, U.S. Navy, U.S. Air Force, or U.S. Defense Supply Agency inspection office. In the event that the representative of office can not be located, ARC Manufacturing's purchasing agent should be notified immediately".

4.11F.5 When shipping parts, the shipping document of the subcontractor's shall be presented to the government representative for a concurring stamp or signature.

4.11F.6 When parts are received from the subcontractor's facility, the shipping document will be checked for government concurrence. If there is no government signature, the material shall be rejected and returned to the subcontractor.

4.11F.7 The subcontractor shall make available to the government representative, reports of non-conforming material found on government source inspected supplies and shall, when requested, require the supplier to coordinate with the government representative on corrective action to be instituted in order to prevent future occurrences on material shipped.

4.12 Control of Non-Conforming Product

4.12.1 Deviated Product

4.12.1.1 If upon inspection of a part, it is found to have a deviated condition, an *ARC Deviation Report* (form ADR-01)is utilized to document the deviation. If the part is nuclear or safety related, the QC Manager shall be notified immediately per ARC procedure 10CFR21CP. The deviation report shall be filled out as necessary and submitted to the Quality Control Manager, who shall confer with the Manufacturing Manager as to the disposition of the deviation. Pending this disposition, the part shall be withdrawn from production & placed in the "hold area" with a white hold tag attached. The QC Manager shall determine if the defect may exist in a shipped part and notify the customer per procedure 10CFR21CP if the part is safety related. The QC Manager shall report all potential 10CFR21 conditions to the President.

4.12.1.2 The *ARC Deviation Report* form ADR-01 shall be sequentially numbered by year and number (i.e. 13-0001, 13-0002, 13-0003, etc.). Completed deviation reports shall be filed by customer in a master binder for deviations.

4.12.1.3 Only ARC inspectors and ARC QC Manager have the authority to tag parts for disposition or status. Only ARC inspectors and ARC QC Manager can remove tags if disposition or status is changed. In all cases, ARC QC manager shall be notified when parts are tagged or when tags are changed or removed.

4.12.1 Disposition – Rework

4.12.2.1 If the disposition is to rework the part, the deviation shall be noted as such. A yellow rework tag, with the deviation noted thereon, shall be attached to the part. The part will then be routed through the shop and reworked as necessary.

4.12.2.2 Upon the completion of the rework, the reworked part shall be re-inspected. Upon acceptance, the part shall be routed for any remaining operations.

4.12.3 Disposition – Scrap

4.12.3.1 If the disposition is to scrap the part, a red scrap tag shall be attached to the part and the part shall be removed from the "hold area" and the manufacturing area and placed in the "scrap area". If the material was customer furnished, the customer shall be asked to make a disposition on the scrap. Material shall be returned to the customer, or scrapped, to comply with the customer's instructions. If ARC Manufacturing furnished the material, ARC Manufacturing shall scrap (i.e. remove from the premises) the material within a reasonable length of time. Immediately subsequent to the scrap disposition, the material shall be defaced or stamped with the "R" scrap stamp.

4.12.3.2 When scrap pieces are used for set up machining purposes only, and are not used for production parts, the set up pieces shall be permanently identified as scrap pieces with the red "R" stamp.

4.12.3.3 Unless specified by contact or permitted by a customer, it is not permitted to use a scrap part of one customer's design and re-configure that scrap part to suit the design of another customer's part (i.e. "regrading" of that part).

4.12.4 Disposition – Preliminary Material Review

4.12.4.1 The Quality Control Manager and the Manufacturing Manager shall determine if the deviated part is reworkable or not. If it is deemed not reworkable, the condition shall be reported to the customer for final disposition. White hold tags shall be attached to the part and the parts shall be placed in the “hold area”.

4.12.4.2 If required, the appropriate customer’s form, noting the deviation, shall be utilized. The form shall be submitted to the customer for disposition.

4.12.4.3 While deviated parts are awaiting customer disposition, they shall be stored in a locked cabinet, or segregated hold area, if possible. The cabinet and hold area shall be clearly identified as such.

4.12.5 Disposition – Final Material Review

4.12.5.1 Upon receipt of the customer disposition, the part shall be used “as is”, repaired, or scrapped as directed by the customer.

4.12.5.2 If the decision is to repair the part, the part shall be repaired as required. Upon completion of the repair, the part shall be inspected for compliance to the customer’s instructions.

4.13 Corrective Action

4.13.1 If a deviated condition is discovered, an *ARC Deviation Report* (ADR-01) shall be properly completed in order to document the deviation (see exhibit). This report shall identify the part, the drawing or specification requirement and the actual condition. The report shall also be used to give proper disposition for the discrepancy (i.e. rework, repair, scrap, or accept as is). The QC Manager shall determine if the defect may exist in a shipped part and notify the customer per procedure 10CFR21CP if the part is safety related. The QC Manager shall report all potential 10CFR21 conditions to the President.

4.13.2 When customers provide forms for reporting deviations or discrepancies, the customer's form shall be properly executed and submitted to the customer for disposition.

4.13.3 Quality Control shall distribute the deviation report to the supervisor responsible for the area where the deviation occurred. The supervisor has one week to respond with a valid cause and corrective action. Failure to respond within the required time may lead to disciplinary action.

4.13.4 Corrective actions taken to prevent reoccurrence shall be noted on the forms used.

4.13.5 The Quality Control Manager shall analyze the corrective action and verify its effectiveness. Quality Control personnel have the authority to stop any manufacturing operation when the same deviation occurs more than once.

4.13.6 Supplier/Vendor Corrective Action
Upon receipt of material or services from a supplier, inspection shall be performed to verify compliance to the purchase order requirements. If a deviation is discovered, an *ARC Deviation Report* shall be issued to the supplier and cause and corrective action shall be required. The supplier must provide a valid cause and corrective action within thirty days of notification. Failure to properly respond in the allotted time period will be cause for suspension of activities with this supplier. The next order received from this supplier shall be inspected for verification as to the effectiveness of the corrective action.

4.13.7 Programmatic Corrective Action
If during the course of investigation of non-conforming product (ARC Deviation Report) a problem or condition is found with our operational procedures or system that may lead to another non-conformance, such a condition shall be documented on ARC Corrective Action Form CA-01. It will then be determined if any other product may have been affected and what course of action shall be taken (customer notification if shipped item, etc.). ARC form CA-01 may also be used if such a problem or deficiency with our operations is found that has not yet resulted in a non-conforming part.

4.13.8 Significant Conditions Adverse to Quality
ARC Manufacturing supplies machining services for basic components per customer drawings and purchase orders. ARC does not design or determine the end use of any component, and it is not within our scope to determine if any potential hazard may exist in a shipped component. When 10CFR21 is imposed by the buyer (customer), ARC will report any defect or non-conformance that may exist in a shipped component to the buyer per ARC procedure 10CFR21CP. In that respect, any significant condition adverse to quality shall be determined by the buyer for the affected components where 10CFR21 applies.

4.13.8 Significant Conditions Adverse to Quality (cont'd)

Corrective actions at ARC shall be documented on form CA-01. During an investigation or processing of an ARC corrective action, it shall be determined if the condition that exists **may** have a serious negative impact on parts or activities performed under ARC's QA program if left uncorrected. If it is clear that the condition would not have a serious negative impact, then it shall be documented on form CA-01 that it is not a significant condition adverse to quality and why (administrative error, isolated incident, etc.). If it is not clear, or it appears the condition **may** have a serious negative impact, then severity of condition and its potential to affect the function or conformance of a part or activity shall be verified by personnel familiar with the part or activity (manufacturing, inspection, programming, etc.). If it is determined that the condition would not have a serious impact, it shall be documented on form CA-01 that it is not a significant condition adverse to quality and why. If it is then determined that the condition **may** have a serious impact, then the following actions must be taken:

- it shall be documented on ARC form CA-01 that it is a significant condition adverse to quality (check box 'yes') and why

-ARC president shall be notified immediately

-an extent of condition shall be determined and documented by the QA Manager

-if it is determined that a shipped basic component subject to 10CFR21 may be affected, buyer shall be notified within 5 working days per ARC procedure 10CFR21CP

-action to prevent recurrence shall be taken within 30 days

-effectiveness of corrective action shall be verified by QA Manager 90 days after completion or implementation of corrective action

4.13.9 Statistical Analysis

All deviation reports shall be compiled and analyzed on an annual basis. Causes of deviations shall be analyzed and reported with percentages. The purpose of this is to show repetition or trends with a particular process, machine, work center, tool or supplier. When such trends indicate that a continuing problem exists, corrective action shall be instituted. The initiator of the corrective action shall follow up and evaluate the effectiveness and implementation of the corrective action. In the case of a supplier created discrepancy, the supplier shall be notified of the problem and will be required to correct the problem as stated above.

4.14 Handling, Storage, Packaging, Preservation and Delivery

4.14.1 Handling

4.14.1.1 Parts moving through the manufacturing facility shall be transported on or in appropriate skids or containers in order to prevent damage to finished machined surfaces. As required, individual containers shall be used for delicate or fragile parts.

4.14.2 Storage

4.14.2.1 Storage facilities shall be provided for material and finished machined parts which shall protect the parts from physical damage. If the atmosphere is such that there is a possibility of atmospheric corrosion, appropriate protection shall be provided for the material (reference ARC Procedure #HSD-100).

4.14.2.2 Excess material shall be properly identified prior to placement into the storage area. Identification is accomplished by affixing a material identification label to each bar, plate, etc. As a minimum, the label shall show the following: material type, size, applicable heat number, part number that material was issued for, and the initial internal job number (see example in exhibits section).

4.14.2.3 Age sensitive materials, with limited use or shelf life, shall be stored in a separate area. Prior to use, the expiration date shall be checked. If the material has passed it's last allowed usage date, the material shall be discarded, or if allowed by specification, shall be retested and a new use date applied.

4.14.3 Cleaning

4.14.3.1 Cleaning of parts shall be accomplished as specified by applicable specifications or special contractual requirements.

4.14.3.2 When required, separate cleaning procedures shall be originated and submitted to the customer for approval prior to use.

4.14.4 Packing

4.14.4.1 The materials for packing shall comply with the appropriate packing procedure, the applicable material specification, or the customer's purchase order requirements.

4.14.4.2 Packaging will be performed in the shipping area unless special cleanliness requirements are specified in the customer's purchase order.

4.14.4.3 When used, internal packing will assure that parts are protected from damage to each other and from any atmospheric effects.

4.14.4.4 Customer requirements for packaging, when defined in the purchase order, shall take precedence over the above and shall be described in a separate procedure, or as part of the cleaning instructions in the Manufacturing Process Outline.

4.14.4.5 Quality Control will monitor for compliance to this procedure by means of scheduled internal audits. However, inspection for cleanliness and packaging are part of ARC Manufacturing's standard inspection procedure.

4.14.5 Delivery

4.14.5.1 Parts will be packaged to assure safe delivery in accordance with practices which conform to the requirements of common carriers and with specified federal or industry regulations. Parts which require special packaging in order to comply with contractual requirements shall be packaged as such.

4.14.5.2 When required by contract, ARC Manufacturing issued packing lists shall be stamped by the final inspector's acceptance stamp.

4.15 Control of Quality Records

For this section, the following definitions apply:

Safety Related - 10CFR50 app.B and 10CFR21 QA program requirements imposed

Military - MIL spec QA program requirements imposed (MIL-I-45208A)

Commercial - commercial standard or no QA program requirements imposed

Quality Records - documentary evidence of part quality and conformance for a closed job, or documentary evidence of QA program compliance

Job Folder - the file folder for a particular job containing the purchase order and any other required documents while that job is in process or active, and the same folder used to store quality records for that same job after it is closed

4.15.1 For **ALL** orders, the cognizant Contract Administrator for an order shall issue a unique job number and a job folder will be created. This job folder will be labeled on the ID tab with:

- Job Number
- Customer
- Customer P.O. number
- Part number and Revision
- Description
-Order Quantity

It is the responsibility of the Contract Administrator to list the required documentation which will constitute the quality records for that job on the outside of the folder for that particular job. The first document that shall be placed in this folder is a copy of the customer's purchase order with the line item(s) identified for that job. For safety related orders, the Contract Administrator shall stamp the folder "Safety Related", and ARC form # CR-210, or documentation for evidence of contract review, shall also be placed in the folder at this time.

4.15.2 **ALL** job folders shall be kept in the front office while the job is in process or active. Commercial and military jobs shall be kept in the standard steel file cabinets. Safety related job folders shall be kept in the 1 hour fire rated file cabinet marked "Safety Related".

4.15.3 For **ALL** orders, records reflecting the applicable drawings and revisions shall be retained in the job folder for the duration of the job while it is in process or active.

4.15.4 For all safety related and military orders, and for commercial orders when applicable, a copy of certified material test reports for ARC purchased material or documentation of lot #'s or serial numbers for customer supplied material to be used for a job shall be placed in that job folder before the job is released for manufacturing.

4.15.5 For all safety related and military orders, and for commercial orders when appropriate, work instruction documents shall consist of customer drawings, manufacturing process outlines and the applicable manufacturing procedures. For commercial repair or rush jobs only, a marked up drawing with job number, quantity, due date, and material lot (if applicable) is acceptable provided the work scope is limited to a few operations.

4.15.6 For all safety related and military orders, or when required by contract, acceptance and rejection data shall be in the form of documented inspection reports (either using ARC Manufacturing generated or customer supplied forms). Inspection reports shall be stamped, signed, and dated by the ARC inspector qualifying those parts for shipment.

4.15.7 For each shipment, the required quality records shall be copied, the original will go in the job folder with the packing slip, and the copy shall be sent to the customer as listed below:

Safety Related - quality records for each shipment includes ARC Certificate of Conformance, ARC Inspection Report, Certified Material Test Reports or documentation of customer supplied material, and Source Inspection/Customer Release (if applicable)

Note - ARC offers only machining services for safety related orders at this time. If outside vendor operations are required such as plating, heat treat, etc., ARC will work with the customer regarding approved sources and procurement per imposed requirements. If it is determined order requirements and the scope of work are within ARC's capacity, we will then develop supporting procedures to support that work.

Military - quality records for each shipment includes ARC Certificate of Conformance, ARC Inspection Report, Certified Material Test Reports or documentation of customer supplied material, outside vendor certifications (heat treat, coating, etc.), and Government/Source Inspection Release (if applicable)

Commercial - quality records for each shipment are as required by contract, and may include ARC Certificate of Conformance, ARC Inspection Report, Certified Material Test Reports or documentation of customer supplied material, outside vendor certifications (heat treat, coating, etc.), and source inspection release (if applicable)

4.15.8 After all parts have shipped and a job is closed, the MPO (manufacturing process outline) and drawing shall be placed in the job folder. Job folders will be checked to make sure all of the required documents listed on the outside of the folder per section 4.15.1 are in the folder. Safety related job folders shall be audited per procedure JFA-100.

4.15.9 When a job folder is found to be missing documentation, the QC Manager or President shall be notified and they will determine corrective action (review Jobboss data, other job numbers that may have been issued for the same PO, customer contact, etc.).

4.15.10 **RECORD STORAGE**

JOB RELATED RECORDS:
When a closed job folder is audited and found to be complete, it shall be stored as stated below:

Military and Commercial - job folders will be stored in the front office in the 'closed job' steel file cabinets until cabinets are full and are ready to be purged. When cabinets are purged, those job folders will be placed in a file storage box with the range of job numbers it contains identified on the outside of the box. The file storage box will be taken to the records storage area where it will be placed on a steel shelf with the identified range of job numbers in plain view. The records storage area is a restricted area with a locked steel door. Only the President, QC Manager, and Office Manager shall have a key.

Safety Related - job folders to be audited shall be kept in the 1 hour fire rated cabinet in the front office labeled "Safety Related". After folders have been audited per procedure JFA-100, they shall be moved to the "Safety Related" record storage room and placed in a steel file cabinet. The "Safety Related" record storage room is a 2 hour fire rated room with a 3 hour fire rated door located in the back of the records storage area. This room is locked, the door is self closing, and the room is monitored for fire or entrance 24 hours, 7 days a week from a remote location. Keypad at door disarms alarm and only the President and QC Manager have the code and the key to the door. Only steel file cabinets enclosed on all 6 sides are used to store records in this room. A log shall be kept for records received and removed per procedure JFA-100.

QUALITY RECORDS

Documentation of the completion of activities that affect quality that are not job specific shall also be stored in the "Safety Related" record storage room per procedure JFA-100. These records are as stated in JFA-100 and include, but are not limited to, the following:

-ARC Inspector Qualifications
-ARC Auditor and Lead Auditor Qualifications
-Records for commercially dedicated services
-Procurement documents for safety related raw material and material testing
-Welder Qualifications
-Internal Audits
-Supplier Audits and Evaluations
-Deviation Reports and Corrective Actions
-Calibration Records

4.15.11 **RETENTION PERIOD**

ALL job related records shall be retained for a minimum of ten years after the delivery of parts and job is closed, or longer if required by customer contract.

The following quality records shall be retained for the period stated below:

ARC Inspector Qualifications - 10 years from end of employment as Inspector
ARC Auditor / Lead Auditor Qualifications - 10 years from end of employment as Auditor
Records for commercially dedicated services - WJ cutting and DD grinding - 10 years
Records for commercially dedicated services - Calibration - 10 years
Procurement documents for raw material and material testing - 5 years
Welder Qualifications - 10 years from end of employment as Welder
Internal Audits - 5 years
Supplier Audits and Evaluations - 6 years
Deviation Reports and Corrective Actions - 10 years
Calibration Records - worksheets - 1 year, GagePack calibration event - 10 years

4.15.12 All quality records shall be available to customer and regulatory agencies as needed. Safety related records shall be retrievable within 24 hours. All records at ARC are "NONPERMANENT RECORDS" that show evidence that an activity was performed in accordance with the applicable requirements (ref. NRC Reg.Guide 1.28 Rev.4).

Section	4.16	Internal Quality Assessment	Rev.14	11/9/2015

4.16 Internal Quality Assessment

4.16.1 ARC Manufacturing's Internal Audit Program provides for the annual evaluation of its quality system to assure its adequacy and implementation. Audits shall be scheduled in a manner to provide coverage and coordination with ongoing activities, based on the status and importance of the activity. Scheduled audits shall be supplemented by additional audits of specific subjects when necessary to provide adequate coverage.

4.16.2 The Quality Control Manager shall schedule the audit and select the audit team. Auditors shall be qualified in accordance with ARC procedure QA-100. Personnel not having direct responsibilities in the areas being audited shall perform the audit in accordance with applicable procedures. Auditors shall be relieved of their job responsibilities while while performing their audit so that they can complete the audit in a timely manner. They will be allotted enough time to complete the audit sections they are delegated and will only perform audit activities during that time.

4.16.3 The Quality Control Manager shall advise the audit team members prior to the scheduled audit what the scope and sections they will be auditing and what the expected completion date will be. This audit plan shall be distributed before the audit will commence.

4.16.4 Prior to the audit, all auditors are required to review the established internal quality policies and procedures, and any contractual requirements of current contracts.

4.16.5 The audit shall consist of a practical study of the operations being performed in the area of the element assigned. In general, the audit shall be directed toward the following:

- Is the quality system, as outlined in the manual, adhered to?
- Are all contractual obligations fulfilled?
- Are there conflicts or omissions in the system which could result in errors or lead to inefficient operations?

4.16.6 Auditors shall prepare a report for management containing the following:

- Areas included in the element audited
- Findings – acceptable or not acceptable
- Any recommendations for improvement

4.16.7 The Quality Control Manager shall review the report and evaluate any recommendations made. A summary of the evaluation and the action taken shall be prepared. The Quality Control Manager shall be responsible to effect the necessary corrective actions in inadequate areas and shall require follow up audits as necessary to assure the effectiveness of the corrective action.

4.16.8 The audit findings and recommendations shall be presented to the President for review. The President shall acknowledge the audit review by signature and date.
The Quality Control Manager shall maintain all completed audits per section 4.15 of this manual.

4.17 Qualification and Training

4.17.1 Personnel

4.17.1.1 ARC Manufacturing requires qualification of operators or inspectors for those processes in which the knowledge and experience of the personnel can affect the results of the process. The qualification of personnel will normally be in the area of welding, or dimensional inspection.

4.17.1.2 Inspectors performing dimensional operations shall demonstrate their ability to accurately use standard measuring instruments and gages, and are capable of determining whether parts or assemblies are in compliance with drawing and specification requirements. Objective evidence in the form of inspection reports or other document recording the inspection activities performed shall be used to evaluate the inspector's abilities.

4.17.1.3 Inspectors shall be qualified per ARC procedure QA-200.

4.17.1.4 Inspectors shall be evaluated on an annual basis. Evaluations may be supported as described in section 4.17.1.2. Inspectors shall be re-qualified every three years. The re-qualification shall include evidence that inspector has been performing operations without lapse in excess of one year. Copies of the re-qualification and supporting documentation shall be maintained by the Quality Control Manager.

4.17.1.5 All quality auditors shall be qualified per ARC procedure QA-100. This includes subcontractors hired to perform internal audits, or external audits of our suppliers. All qualification records shall be kept on file by the Quality Control Manager. Required training for applicable procedures shall be documented on a training matrix for each auditor.

4.17.1.6 Welders shall be qualified for the procedures they are welding to. Welders shall be re-qualified if there is a lapse of more than 12 months. A log shall be maintained by QC Manager to document weld operations and this log shall be assessed every 6 months. Similar procedures shall be acceptable to demonstrate continuous proficiency if a particular procedure has not been performed as long as the same equipment and materials are used (ie - same torch, arc welder, 304 SST, TIG, etc.).

4.17.1.7 Employees shall be trained on the sections of this QC Manual and the supporting procedures that pertain to the activities and tasks they perform. This training shall be documented and those sections and procedures shall be identified for each employee. Records of training shall be kept on file by QC Manager.

4.17.2 Equipment

4.17.2.1 Equipment utilized for special processes shall also be qualified by actual use to demonstrate its ability in performing the task properly.

4.17.3 Procedures

4.17.3.1 Procedures shall be originated which describe the method of performing special processes or prescribe tasks and acceptance criteria for activities that affect quality. These procedures shall be as detailed as possible to provide precise instructions for performance of the operation.

4.17.3 Vendors

4.17.3.1 Vendors who are to perform special processes shall have been qualified and approved by ARC Manufacturing, ARC Manufacturing's customer, or shall qualify themselves as required by the applicable specifications or by contract. The vendor's qualification approval shall be kept on file at ARC Manufacturing as evidence of vendor approval.

4.17.4 Process Monitoring

4.17.4.1 All processes requiring special qualifications shall have the qualification accomplished prior to the performance and acceptance of any production parts. All qualifications shall be in accordance with contract requirements or referenced specifications.

4.17.4.2 Quality Control shall monitor all special in-plant processes. Monitoring shall consist of checks for adherence to the applicable procedures. This monitoring shall be exercised during qualification and through production, and shall include verification of the application of the proper process parameters, equipment and physical checking of the components tested.

4.17.4.3 The control of special processes at vendor's or supplier's facilities shall be accomplished by a Quality Control witness of the process or by inspection of specimens or samples included with each process lot. Verification can also be performed on a sample basis at another facility.

4.18 Statistical Techniques

4.18.1 ARC Manufacturing shall give consideration to statistical techniques. The implementation and application of statistical control methods shall be documented. It shall be implemented when deemed beneficial by Quality Control or if it is required by contract.

4.18.2 When required by contract, ARC Manufacturing shall perform sampling inspection in accordance with internal ARC Procedure SP-100.

EXHIBITS

Exhibit	5.1	ARC MPO (Manufacturing Process Outline)	---	8/2/2012

25-Apr-12 12:21PM

ARC MANUFACTURING CO., INC.

Traveler
Job: 19095

Part : 45555D97 B54
BELL HOUSING
Rev : C
Order Qty : 50
Make Qty : 52
Customer PO : 1125970
Line: 010

Order Date: 12-Feb-11
Est Hours : 56.75

Customer
Sample Metal Inc.
1313 Lister St.
Listerine, MN 29054

Ship To
Sample Metal Inc.
1313 Lister St.
Listerine, MN 29054

Contact
Dave Buyer
Phone
215-555-1212
Fax
215-555-1414

Ship Via
Reliable Trucking, Inc.

NOTE - KEEP THIS LOT OF MAT'L SEPARATE FROM ALL OTHERS

MAT'L SIZE: QTY. :

MAT'L TYPE:

MAT'L HEAT NO.:

USE THIS MAT'L TO MAKE PART NUMBER:

VERIFY DRAWING HERE :

REMARKS :

MANUFACTURING PROCESS OUTLINE

PROCEDURE NO. : MPO-551 REV : 0

PREPARED BY : S.E.F. DATE: 4/25/2012

Q.C. REVIEW : DATE:

MATERIAL TYPE : ASTM A564, TYPE 630 SST ANNEALED COND.

Part : 45555D97 B54
BELL HOUSING

25-Apr-12 12:21PM — **Traveler** — page 2 of 2

ARC MANUFACTURING CO., INC. — **Job: 19095**

ROUTING

WC OPER	OPER KEY	DESCRIPTION	SETUP(HRS)	RUN(HRS)
13 INSP 005	140932	RECEIVING INSPECTION INSPECT MATERIAL FOR QTY. AND SIZE PER DRAWING AND/OR P.O. - RECORD SERIAL AND/OR HEAT NUMBER. PREPARE IR-551 (LATEST REVISION) 1ST PIECE & DATE OPER. COMPLETION DATE	0.25	0
13 SAW 010	140933	SAWING OPERATION SAW PARTS TO 8.00" +.03"/-0 DEBURR ALL EDGES AND STORE PARTS ON CART. TAG REMAINING BARS. 1ST PIECE & DATE OPER. COMPLETION DATE	0.25	2
13 INSP 015	140935	INSPECT OPER. 10 1ST PIECE & DATE OPER. COMPLETION DATE	0.25	0
04 CNC TURNING 020	140942	CNC TURNING OPER. TURN OD AND I.D. PER ATTACHED DRAWING. ANY SPECIAL INSTRUCTIONS OR SPECIAL PARAMETERS WOULD BE STATED HERE. 1ST PIECE & DATE OPER. COMPLETION DATE	2	7
13 INSP 025	140932	FINAL INSPECTION FINAL INSPECT AND COMPLETE IR-551 (LATEST REV) PRINTOUT CMM REPORTS AND ATTACH TO IR. 1ST PIECE & DATE OPER. COMPLETION DATE	0.25	1.5
13 PACK 030	140932	CLEAN/PACK/SHIP CLEAN PER CP-100 AND PACK PARTS INDIVIDUALLY 1ST PIECE & DATE OPER. COMPLETION DATE	0.25	1.5
13 INSP 035	MPO COMPLETION DATE :	VERIFIED BY:		

Part : 45555D97 B54
BELL HOUSING

Exhibit	5.2	ARC Inspection Report (Accept/Reject)	---	8/2/2012

INSPECTION REPORT

Arc Manufacturing Co., Inc.
1651 Loretta Avenue
Feasterville, PA 19053

Source
Insp.Lot # : _____

IR No. : _____
Rev. : _____

Customer : _____ Arc Job # : _____
P.O.# : _____ Item : _____ Qty. Inspected : _____
Drawing # : _____ Rev. : _____ Qty. Accepted : _____
Part Name: _____ Date : _____

Drawing Location	Characteristic	Gage Number	Inspection Procedure	Frequency Inspect	Qty. Accepted	Inspector (stamp/initial)
A	Material	Certs.	Rec'v Lot / Heat # (material):	per lot		
B	No Burrs	visual	visually inspect all edges	100%		
C	Cleanliness	visual	inspect for dirt, oil, stains, chips...	100%		
D	Workmanship	visual	inspect all surfaces - part should be free from flaws and marks (excessive toolmarks, etc.)	100%		
E	1.875 diam. +/-.002	SG-5150	check outside diam. w/ 1-2 mic (snap gage)	100%		
F	1.499 diam. +.000/-.002	SM-02	check outside diam. w/ 1-2 mic (super mic)	100%		
H	.850 diam. +/- .015	gage pins	use .837 go pin / .863 no go	96/95 sample		
J	.510 +/- .005	DM-01	check dim. w/ 0-1 depth mic	100%		
K	.05 radius +/- .010	OC-02 casting	cast feature w/ Reprorubber and compare on optical comparator	2 pcs./lot, visual balance		
		SAMPLE - ACCEPT/REJECT FORMAT				

Inspected by: _____ page 1 of 1
(sign and date)

Exhibit	5.2	ARC Inspection Report (Actual Measurement)	---	8/2/2012

INSPECTION REPORT

Arc Manufacturing Co., Inc.
1651 Loretta Avenue
Feasterville, PA 19053

IR No. : _____
Rev. : _____

Customer : _____ Arc Job # : _____
P.O.# : _____ Item : _____ Qty. Inspected : _____
Drawing # : _____ Rev. : _____ Qty. Accepted : _____
Part Name: _____ Date : _____

All dimensions are in inches.

Drawing Location	Characteristic	Inspect. Code	Gage Number/ Method	s/n sample 1 Accept/Reject or Measurement	s/n sample 2 Accept/Reject or Measurement
	Material	B	Rec'v Lot / Heat # (mtl.) :	Accept	Accept
	No Burrs	B	visually inspect all edges	Accept	Accept
	Cleanliness	B	inspect for dirt, oil, stains, chips...	Accept	Accept
	Workmanship	B	inspect all surfaces - part should be free from flaws and marks (excessive toolmarks, etc.)	Accept	Accept
Main View	keyway width .250/.252	B	gage blocks set# 312 (GO=.250 & NOGO=.252)	Accept	Accept
Main View	⌖	A	DHG-01 height stand DI-96-01 indicator	.0001	.0006
Main View	keyway radius typical	B	R240, R260 radius gage	Accept	Accept
Main View	thread relief .835/.825 diameter	A	BM-01 0-1" blade mic	.8315	.8310
Main View	length to keyway 11.76 +/- .02	B	DHG-01 height stand DI-96-01 indicator	Accept	Accept
Main View	length to diameter -A- 8.63 +/- .02	B	DVC-12-23 dial calipers	Accept	Accept
Main View	length to CL of hole .54/.53	A	MA-01 multi-anvil mic	.538	.537
Main View	overall length 22.75 +/- .030	SAMPLE-ACTUAL MEASURE FORMAT		Accept	Accept
Main View	hole thru .624/.626 diameter			.6244	.6247
Main View	⌖	A	DHG-01 height stand DI-96-01 indicator	.001	.001

Inspection Codes:
A = Actual recorded dimension or range (high/low) required
B = Record as 'accept' or 'reject' (reject requires note or attachment regarding reject condition and ref. to customer disposition)

Inspected by: _____ **page 1 of 1**
(sign and date)

Exhibit	5.3	ARC Deviation Report	---	4/5/2013

ARC MFG. DEVIATION REPORT

Report Number: *last 2 digits year - sequential 4 digit #*

Customer : Arc Job # :
P.O.# : Item : Lot Size:
Drawing # : Rev. : Qty.Deviated:
Part Name: Report Date :

Section 1

Drawing Location	Characteristic	Description of Deviation

Inspector: Stamp: Date:

Is deviation 10CFR21 reportable? YES [ ]*** _____
(Explain Yes/No) NO [ ] _____

*** *If deviation exists in a shipped component, QC Manager must notify customer in writing within 5 days.*

Section 2

Cause of Deviation:

Responsible Employee or Vendor :
Supervisor Sign and Date:

Deviation Corrective Action:

Deviation C/A Sign Off:
Manufacturing: Date:
Quality: Date:

Section 3 (Disposition)

[ ] Accept As Is (Customer Approval Required) Customer Ref./Doc. # :
[ ] Repair (Customer Approval Required) Remarks :
[ ] Rework (Corrected to Meet Required Specs)
[ ] Scrap

ARC Form CA-01 Required? YES [ ] ARC CA # : _____
NO [ ]

Q.A. Manager Sign/Stamp & Date : _____

President Review Sign and Date : _____

ARC form # ADR-01 rev.4

Exhibit	5.4	ARC Corrective Action Form	---	11/9/2015

MANUFACTURING CO., INC.

ARC - Corrective Action (Form CA-01 Rev. 3)

CORRECTIVE ACTION NUMBER	INITIATED BY :	DATE:
CA- _ _ - _ _ _ _		

1.) Description of Finding / Condition

2.) Cause of Condition:

3.) What parts/operations may have been affected by this condition?		
4.) Corrective Action Taken :		
5.) Action to Prevent Recurrence:		
6.) Is this a significant condition adverse to quality ?	☐ Yes ☒ No	
7.) Could the condition create a substantial safety hazard in a delivered basic component ? *(PROVIDE EXPLANATION FOR YES/NO)*	☐ Yes ☒ No *If condition may have affected a shipped item & is 10CFR21 reportable, customer must be notified in writing within 5 days.*	
8.) Corrective Action assigned to:		Due Date for completion:

CORRECTIVE ACTION COMPLETED AND ACCEPATABLE

ARC Q.A.MANAGER REVIEWED & APPROVED : Date:

ARC PRESIDENT REVIEWED AND APPROVED : Date:

FOLLOW-UP : [ ] ACCEPTABLE [ ] UNACCEPTABLE [ ] NOT REQ'D Sign: Date:

CA-01 rev.3 7/28/2015

Exhibit	5.5 & 5.6	Inspection Stamps and Material Storage Tag	---	8/2/2012

Inspector Stamps:

Rubber stamps are used by ARC inspectors to stamp IR's, MPO's, and other documents that require inspector stamp.

Steel stamp is used to identify reject/scrap parts or set-up pieces.

Material Storage Tag:

This tag is used to identify raw material that will go into stock room or is waiting for MPO release.

MATERIAL TYPE	UNIT SIZE
QUANTITY	HEAT NO.
DATE RECEIVED	ISSUED FOR PART NO.
MISC. DATA	FOR INITIAL JOB NO.

Exhibit	5.7	Inspection Tags	---	8/2/2012