



# Trinity Forge & Machine Quality Manual

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## Section I: Scope

Trinity Forge & Machine (or simply “Trinity Forge”) maintains a quality system compliant with the ISO 9001:2015 and AS9100:2016 (rev D) standards, and meeting standard MIL-I-45208. The only areas of those standards which we exclude are the provisions related to product design because we produce components for products that our customers, not we, design and develop. This quality manual provides the basis of our quality system including our corporate mission statement, our quality policy, and a depiction of the interaction of the core processes within our quality system. Finally, it maps the elements of our quality system to ISO 9001:2015 and AS9100:2016 with reference to the applicable procedures, documents, records, and responsibility. The Trinity Forge quality system is extended to include the additional requirements of ASME NCA-3800, ASME NQA-1 (Part I) and Code of Federal Regulations 10 CFR 21, appropriate for a supplier of forging and machining services related to products destined for service to nuclear facilities, and to 27 CFR 478 (Type 7) regarding firearms.

The current, controlled master of the quality manual is freely available over the Internet at <http://www.trinityforge.com/QMS/QualityManual.html>. Some documents referenced within the manual are available only to persons with authorized access.

Our environmental management system (EMS), embodied in the [EMS Manual](#), utilizes the same processes and management framework as does the quality system, plus extensions to meet the requirements of ISO 14001.

## Section II: Corporate Mission

Trinity Forge & Machine is in the business of providing manufacturing services related to the hot forging and machining of metals according to legal requirements and to the specifications of our customers. We will strive to do this better than anyone else, continually improving our processes and managing risk so that Trinity, its team, and its partners can share in the prosperity of long term growth.

Our Motto: VALUE, SERVICE, INTEGRITY.

- John Fairbanks, President
- John Fairbanks, Sales Manager
- Todd Sheppard, VP-Quality & Engineering
- Price Owens, Controller

## Section III: Quality Policy

We at Trinity Forge:

- Are all full members of the Trinity Team, focused on the same objectives.
- Effectively communicate all information concerning performance toward our objectives.
- Collaborate with our customers and suppliers to develop product and delivery requirements to which we can commit.
- Strive to meet or exceed any commitment we make to a customer, complying with all statutory and regulatory requirements.
- Continually seek to improve the satisfaction of our customers and the effectiveness of our quality system.
- Operate and develop our business using risk-based thinking within a system of structured processes.

## Section IV: Core Processes

Trinity Forge's quality system is customer-centered, process-based, risk-managed and continually-improving. Five core processes comprise the system:

- [Policy Establishment](#)
- [Resource Management](#)
- [Product Development](#)
- [Order Fulfillment](#)
- [Review & Improvement](#)

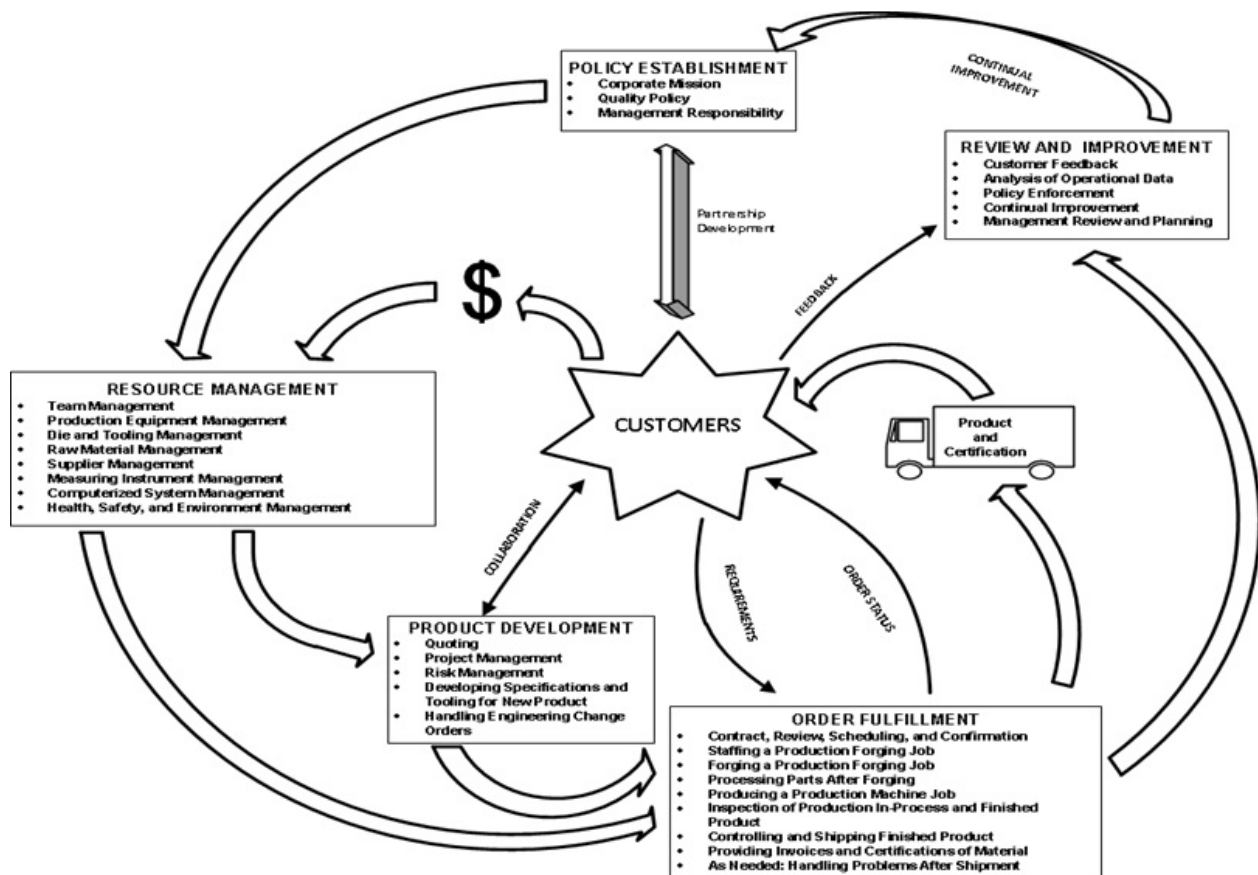


Figure 1: Generalized depiction of the sequence and interaction of core processes.

## Section V: Quality System - ISO 9001:2015 and AS9100:2016 Outline

Following are the details of Trinity Forge's quality system presented according to the ISO 9001:2015 paradigm as extended by AS9100:2016. The sections cited by each subheading are cross-references to these identically structured standards.

### ***Context and Policy of the Organization (Ref: Sections 4, 5.2, and 6)***

Trinity Forge maintains a program to identify, monitor, and review the external and internal issues that are relevant to the company's purpose and its strategic direction and that affect its ability to achieve the intended results of its quality management system. To ensure its ability to consistently provide products and services that meet customer and applicable statutory and regulatory requirements, Trinity Forge determines the interested parties that are relevant to the quality management system and identifies their requirements. Though this analysis, with consideration of the products and services it might reasonably provide, the management of Trinity Forge determines the quality system's [scope](#), [mission](#), [quality policy](#), and [core processes](#) as reflected above.

Trinity Forge has a documented quality system for the primary purpose of ensuring that the products of our manufacturing service conform to requirements specified by our customers as well as by statute and regulation. ISO 9001:2015, as expanded by AS9100:2016, is the basic model for this system. All team members have direct access to quality system documentation and are trained in the procedures relevant to their individual positions.

This system is controlled by:

- [Trinity Forge & Machine Quality Manual](#): Overview explaining the philosophy, policy, and structure of the Trinity Forge quality system.
- [Trinity Operating Procedures \(TOPs\)](#): A compilation of operating procedures for the processes and related activities of our business. These documents are available to all team members on Trinity Forge's intranet, with access freely provided to any customer or regulatory authority.
- [Trinity Documents \(TDocs\)](#): A explanation of each document, record and form used in the Trinity Forge quality system. Like TOPs, TDocs are available on Trinity Forge's intranet and freely provided to customers and regulatory authorities.
- [Policy Establishment Process](#): Overview of the methodology by which the context of the business is analyzed and managed.
- [Management Review](#): Activities by which the management of Trinity Forge periodically reviews the company's status, risks and opportunities, reevaluates its strategy and quality system, and sets forth corporate and quality objectives.
- [Quality Objectives](#): Trinity Forge's strategic plan embodied in specific, process-based objectives with monthly progress metrics. Posted throughout the facility.

### ***Leadership, Commitment and Customer Focus (Ref: Section 5.1)***

As stated in our [mission](#), "Trinity Forge is in the business of providing manufacturing services... according to the specification of our customers." Also stated is the fact that we "strive to... continually improve".

The [Trinity Forge & Machine Quality Manual](#) outlines the development and implementation of the quality system as well as our quality policy and objectives, our management review and goal setting process, and the management of our resources. The [Quality Policy](#) is the backbone of the quality system which has at its heart our customers' evolving requirements. The quality policy is regularly reviewed by management and is communicated throughout the organization. Of particular importance are the [Quality Objectives](#) which are continually tracked and posted throughout the workplace.

### ***Roles, Responsibility and Authority (Ref: Section 5.3)***

Trinity Forge is a "team" of "team members." Operational responsibility is depicted in our [Organizational Structure](#).

Each manager is responsible for all activities of his/her area, especially for ensuring that the quality system is observed and that all ideas regarding improvements are given careful consideration. Delegation to the lowest possible level is encouraged. A manager may delegate any task he/she chooses to any team member he/she

chooses. The manager must ensure that the team member has the training, tools, and authority to fulfill the task and the manager remains accountable for the proper execution of the task.

The concept of "not my job" is foreign to Trinity Forge. We each must fill a variety of positions on the team during the normal course of our day. Everyone is expected to assist other members of the team in whatever way may be needed. Still, the functional responsibilities of the formal organizational structure must always be observed and any task must be performed to the satisfaction of the responsible manager. Likewise, when necessary a manager may temporarily assume or reassign the responsibilities of any subordinate team member as long as the person assuming those responsibilities is competent to perform the tasks involved.

Trinity Forge encourages two-way communication that relates to the effectiveness of its quality system. [Quality Objectives](#) and the progress being made toward them are communicated by means of bulletin board postings and meetings.

Trinity Forge has an open-door policy. A team member is responsible to report to his/her manager anytime he/she believes that the quality system has been violated. He/she has the same responsibility if he/she has a suggestion for improvement. If he/she feels that his/her thoughts have not been properly considered, he/she has the authority to approach any manager at any level.

On a specific person (identified in the [Organizational Structure](#)) upper management vests the responsibility and authority of "Management Representative" as defined by AS9100:2016. This responsibility includes reporting to upper management on the performance of the quality system as a basis for review and improvement, ensuring that the processes needed for the quality system are maintained and for promoting the awareness of our customer's requirements throughout the company. The Management Representative has the authority to resolve quality-related matters as they arise.

### ***Resource Management (Ref: Section 7.1.1)***

Through its [Resource Management Process](#) Trinity Forge identifies resource requirements and provides adequate resources, including infrastructure, people, work environment, and relationships with external providers, to maintain and continually improve the quality system, to operate and control the company's processes, to meet legal and customer requirements, and to ensure customer satisfaction.

### ***Human Resources (Ref: Sections 7.1.2, 7.1.6, 7.2, 7.3)***

Trinity Forge carefully selects the people with the knowledge and competence necessary for the effective operation and control of its quality management system and processes. We administer a [training program](#) to support the requirements of the various team positions and the needs of individual team members. [Trinity Forge Team Positions](#) are the central documents of this program. [Records](#) are maintained of team members' education, training, skills, and experience related to our business.

The training program encompasses the [Quality Policy](#), the [Quality Objectives](#), the quality system documents relevant to the individual and how those documents evolve over time, the individual's role in the quality system and product conformity, the benefits to the individual of performance improvement and the implications of not complying with the system, the individual's contribution to workplace safety and product safety, and the critical importance of ethical behavior.

Each manager is responsible for ensuring that each team member in his/her area is competent to perform their duties: a) has prerequisite training before being allowed to work in a given position; b) successfully completes any concurrent requirements within a reasonable time frame to continue working in the position; c) demonstrates competency or receives further development or reassignment; and (d) is aware of the importance of their tasks and how they contribute to the mission of the company.

As a part of our [Review & Improvement Process](#) upper management weighs the competence and knowledge of the current workforce versus what is anticipated to be needed for changing needs and trends.

### ***Infrastructure and Work Environment (Ref: Sections 7.1.3 and 7.1.4)***

The maintenance of our plant, particularly our production equipment, is a critical activity in our business. Safety and integrity are our paramount concerns, as reflected in our [General Guidelines](#) for team members. We monitor and manage the infrastructure and work environment needed to operate our processes, produce

conforming products, and fulfill our quality policy through our [Resource Management Process](#). Additionally, capacity constraints are reviewed monthly via [Capacity Analysis](#).

### ***Monitoring and Measuring (Ref: Section 7.1.5)***

No measurement is better than the instrument which takes it so we carefully control our inspection, measuring and test equipment. The Quality Assurance Manager has the responsibility for ensuring that all such equipment used at Trinity Forge, even that owned by customers and individual team members, is subject to a [formal calibration and maintenance program](#) which complies with ANSI/NCSL Z540-1-1994 and meets MIL-STD-45662, and that accurate [records](#) are maintained. Wherever possible, we require traceability to National Institute of Standards and Technology (NIST) standards. Equipment requiring outside calibration is sent to labs that are certified to ISO/IEC 17025. Calipers, micrometers, hardness testers, coordinate measuring machines, gages, templates, patterns and the like are all considered to be measuring equipment subject to the calibration and maintenance program. Whenever equipment is found to be out of calibration the Quality Assurance Manager is responsible for [assessing and documenting](#) the validity of results made since the equipment was last known to be calibrated.

Each Engineer is responsible for identifying the measurements to be made and the accuracy required when working on the design of forgings and tooling. He/she is additionally responsible for working with the Quality Assurance Manager to [select the appropriate inspection, measuring and test equipment](#) for all required readings and for assuring that we have suitable equipment of the accuracy and precision necessary.

The Quality Assurance Manager is responsible for ensuring that all stationary inspection, measuring and test facilities (such as coordinate measuring machines and calibration areas) are located in environments whose conditions are maintained suitable for the calibrations, inspections, measurements, and tests carried out.

It is the responsibility of each manager to ensure that the handling, preservation, and storage of inspection, measuring and test equipment is such that the accuracy and fitness for use is maintained, and that the equipment is safeguarded from adjustments which would invalidate the calibration settings. Except as may be included by the manufacturer as a standard component of digital measuring equipment, Trinity Forge uses no computer software for monitoring or measurement of the requirements specified for our products.

Our customers, as well as regulatory agencies, always have the right to verify the accuracy of equipment that we use to judge the quality of their products. They also have the right of access to all data relating to that equipment so that they may verify it to be functionally adequate.

### ***Communication (Ref: Section 7.4)***

Trinity Forge communicates information relevant to our quality management system as follows:

- To the world at large, a controlled copy of the [Trinity Forge & Machine Quality Manual](#) is continuously provided on the Internet.
- To customers, regulatory agencies, and other stakeholders, changes to the quality system are communicated per the [Stakeholder Notification Registry](#).
- To our team members, [Quality Objectives](#) are posted and tracked monthly throughout the workplace.
- To our team members and other interested parties, controlled [Trinity Operating Procedures \(TOPs\)](#) and related documents are continuously communicated via Trinity Forge's intranet.

Please direct feedback to [quality@trinityforge.com](mailto:quality@trinityforge.com).

### ***Documented Information (Ref: Section 7.5)***

The documented information required for our quality system is provided in the [Trinity Forge & Machine Quality Manual](#) and the documents linked therein. Before an update of the quality manual may be released, the VP-Quality and Engineering or higher officer must review and approve it to be posted. Each version of the quality manual is identified by a unique revision date, with the revision history shown at the end of the manual.

The control procedures for the various types of controlled documents are described in [Trinity Documents \(TDocs\)](#). The team members designated in each TDoc are responsible for observing the [Document Control, Distribution, and Retention Trinity Operating Procedures \(TOPs\)](#), changes to documents must be reviewed and

approved by the same person who originally approved the document or by someone else in the same or superior capacity. No document may be issued which does not comply with the quality manual and the other standards with which Trinity Forge complies as stated in [Section I](#). Document changes are coordinated with customers or regulatory agencies as required by contract or regulatory requirements. procedure ensuring that all documents are reviewed and approved for adequacy prior to issue, that pertinent control procedures are observed, that current documents are available at all locations where needed and that obsolete documents are promptly removed from service. Where necessary for legal or historical purposes obsolete documents may be retained, but they must clearly be identified as being obsolete. Unless otherwise specified in [Trinity Operating Procedures \(TOPs\)](#), changes to documents must be reviewed and approved by the same person who originally approved the document or by someone else in the same or superior capacity. No document may be issued which does not comply with the quality manual and the other standards with which Trinity Forge complies as stated in [Section I](#). Document changes are coordinated with customers or regulatory agencies as required by contract or regulatory requirements.

Reference standards, such as ASTM standards, are maintained in the [Reference Specifications Library](#) under the oversight of the Quality Assurance Manager and are made available to all team members and suppliers.

We carefully [maintain records](#) to demonstrate our achievement of quality requirements, to reflect the effectiveness of our quality system, to demonstrate our adherence to customer and regulatory requirements, and to monitor the performance of our suppliers. These records must be identifiable, legible, traceable to the product involved, and carefully stored for easy retrieval.

### ***Operational Planning and Control (Ref: Section 8.1)***

Through the [Product Development Process](#), Trinity Forge works with our customers to establish specifications and delivery that we can satisfy with our processes, equipment and other resources at an acceptable level of risk. The output of such collaboration includes engineering prints, process specifications and quality control specifications. For customers who do not designate process or inspection requirements we maintain [Internal Specifications \(ISpecs\)](#). Activities and outsourced requirements are recorded in [Bills of Material](#) and [Routers](#), with [Engineering Prints](#) and [Machining Procedure Specifications](#) providing dimensional and quality control requirements.

### ***Operational Risk Management (Ref: Section 8.1.1)***

Trinity Forge utilizes a "Living" Process Failure Modes and Effects Analysis (PFMEA) to plan, implement and control all processes that pose an operational risk to meeting the requirements and specifications set forth by our customer. This document is utilized to calculate all risk associated with new projects and, in turn, better serve our customers. Once a new purchase order or contract is received, the "Living" PFMEA is used to analyze the risks and create a PFMEA specific to the project.

[Records](#) are maintained of the requirements, contract review, and resulting actions from the PFMEA review. Once all risks have been mitigated and documented as acceptable, the contract or purchase order is acknowledged to the customer as accepted. Anticipated points of risk are highlighted in the PFMEA to insure mitigation risk are addressed. If issues cannot be resolved to the satisfaction of senior personnel, the order is considered "high risk". On high risk orders upper management investigates, confirms, and documents any risk associated with the order. If the decision to accept risks is made, the appropriate personnel will be notified and the mitigation process will continue; otherwise the contract or purchase order will be refused.

### ***Configuration Management (Ref: Section 8.1.2)***

Trinity Forge's products are conceptually simple with "configuration" being that combination of customer-provided specifications and broadly-accepted reference standards to which a given product is to be produced. Our [Product Development Process](#) defines how we manage product configuration and our [Order Fulfillment Process](#) defines how we control traceability of product.

### ***Product Safety (Ref: Section 8.1.3)***

The customer designs the products they engage Trinity Forge to produce, so to Trinity Forge "product safety" is synonymous with "adherence to specification." Where there is reason to believe we have failed to comply with

specification we follow procedures for [control of non-conforming product](#), [recall of product](#), and [control of parts returned by customer](#).

We have a special Foreign Object Debris program addressing the concerns related to [flight and nuclear safety](#). Final packaging is performed in a manner to prevent the possibility of FOD.

### ***Prevention of Counterfeit Parts (Ref: Section 8.1.4)***

Trinity Forge subjects all material and component suppliers to an ongoing [supplier approval program](#), seeking to do business with only companies of integrity with solid quality systems. Upon receipt of a product ([bar stock](#), [other materials](#), [customer-supplied](#)) supplier representations as to the grade, quality, and manufacturer are reviewed for conformance. Where required by customer specification, [chemical analysis](#) or other testing is performed to ensure the product is what it is claimed to be.

Counterfeit part measures are flowed down to all sub-tiers through the use of our "P.O. Supplemental" which is attached to each purchase order.

### ***Customer Communication (Ref: Section 8.2.1)***

Since Trinity Forge provides a manufacturing service, it is critical that we initiate and maintain a high level of communication, specifically regarding:

- [Quoting](#)
- [New products](#)
- [Orders and contracts](#)
- [Order changes](#)
- [Information requests](#)
- [Feedback](#)
- [Complaints](#)
- [Customer property](#)

### ***Determining Customer Requirements (Ref: Section 8.2.2)***

When proposing a new product, through the [Product Development Process](#) we determine the customer's requirements and any statutory or regulatory requirements, as well as Trinity Forge's own requirements. We review all requirements and consider the attendant risks to ensure that we have a high likelihood of meeting all product and delivery requirements even if there are unexpected circumstances. can meet all requirements, including any special or unusual requirements. We will work with the customer to resolve any issues identified, but will refuse the order if such a resolution cannot be found.

On re-orders of an established product, through our [Order Fulfillment Process](#) we first verify that the product requirements of the new order are exactly the same as previous order(s) and that we have the capability of meeting the customer's delivery requirements. If there seems to be any change in specification from previous order(s) the new order receives an engineering review to determine if it needs to be subject to the [Product Development Process](#).

### ***Design and Development (Ref: Section 8.3)***

Trinity Forge excludes product design from the scope of its quality system for the purposes of ISO 9001:2015 and AS9100:2016. This exclusion reflects the fact that Trinity Forge does no product design, but strictly provides manufacturing services and products to fulfill customer-provided specifications or broadly-accepted reference standards. Nonetheless, Trinity Forge is involved in design to the extent that we develop the tooling and processes needed for us to manufacture the components. Our [Product Development Process](#) details what inputs are used, how quotations for new products are developed, how the manufacturing processes are developed when a customer awards us a new product, where authority and responsibility lie, how the various parties interact, how risk is considered, what controls are in place, how review and approval is conducted, how changes are handled, and how records of the process are maintained

### ***Control of Suppliers (Ref: Section 8.4)***

Trinity Forge recognizes that it is responsible for ensuring that externally provided processes, products and services conform to requirements. Doing so is controlled through the [Resource Management Process](#) and the [Quality Control Program](#). We comply with any customer limitations regarding choice of supplier. We identify and manage the attendant risks when deciding what and to whom to outsource. To ensure that requirements are met, we also require that external providers apply appropriate controls to their direct and sub-tier providers. We have a [procedure](#) to define the steps, authority and responsibility to approve suppliers and to limit the scope of approval, then to continually monitor their performance regarding conformance and delivery, and to de-list where necessary.

It is the responsibility of each manager to seek out good companies to be considered as suppliers to Trinity Forge and to recommend these companies to the Quality Assurance Manager. In turn, the Quality Assurance Manager:

- is responsible for ensuring that suppliers are selected on the basis of their ability to meet our requirements, with consideration of the effectiveness of the supplier's controls and the potential impact on our ability to consistently meet customer, statutory, and regulatory requirements
- reviews the risks involved and determines the extent of verification and control that needs to be exercised for each product, service and supplier
- continuously monitors the demonstrated ability and performance of each supplier and uses records thus produced to establish the level of control to exercise on that supplier and to define the actions to be taken up to and including disapproval if the supplier has failed to meet requirements
- maintains the [list of approved suppliers](#) for each type of product and service, including the scope of their approval
- retains records of supplier evaluations and subsequent action
- for laboratories and heat treat facilities that perform work on nuclear parts, performs annual onsite audits
- determines and manages the risk when selecting and using suppliers

Where required, the Quality Assurance Manager is also responsible for ensuring that both Trinity Forge and our suppliers use sources, including those for "special processes," approved by the customer.

To ensure that our suppliers know what requirements they are expected to meet, it is the responsibility of every manager to ensure that all purchasing documents clearly describe exactly what is being ordered. The documents are to provide positive identification and cite any applicable specifications, as well as the details of any special requirements related to process, inspection, test, specimens, approvals, personnel qualification or training, documentation, quality system, handling of nonconformances, notification of changes, or flow-down to lower-tier suppliers. Likewise, every manager is responsible for ensuring that all purchasing documents issued by his/her area are reviewed and approved prior to release. Computer systems are to be utilized in purchasing to ensure that products or services are ordered the same way each time.

We reserve the right to review products at a supplier's facility prior to shipment and we so specify in our purchasing documents. We recognize our customers' right, if they so wish, to personally inspect our suppliers and our suppliers' products and services; however, verification by the customer absolves us of nothing and we cannot use the customer's verification as proof of our quality.

Whenever we receive materials from suppliers, or products that have received subcontract services, we perform an incoming verification for conformance of the material to our requirements. The nature of this verification is defined in our [Quality Control Program](#)

We utilize supplier-provided test reports for raw material and we verify that the data contained in those reports indicate that the material meets all applicable specifications. To ensure the reliability of the information we accept from our suppliers we periodically perform random [validations](#) of raw material test reports.

As part of the list of approved suppliers, the Quality Assurance Manager maintains a record of any verification activities we delegate to each supplier. The specifics of delegated verification activities are detailed in purchasing documents.

### ***Production Control (Ref: Section 8.5.1)***

Trinity Forge's [Order Fulfillment Process](#) consists of the customer- and production-related activities necessary to fill incoming orders for forged and/or machined parts. The documents necessary for production and inspection



of product come from the [Product Development Process](#). Management of the resources necessary for order fulfillment, including people, materials, tooling and measuring equipment, is provided by the [Resource Management Process](#). All of these processes are subject to the [Quality Control Program](#).

In our [Product Development Process](#) we identify the product's key characteristics and plan the related workmanship standards, process controls and verification strategies. The development of appropriate documentation, as well as later change to that documentation, is controlled by this process.

The [Resource Management Process](#) controls the resources used for production. Tooling is subject to close review both before and after use. Equipment is subject to validation upon installation and major maintenance events. We pursue an aggressive preventive maintenance program on our equipment. CNC programs are subject to validation prior to use and when modified. We perform first article inspections of each production run as well as any time there is a significant change to equipment, tools, program or process during a run. Whenever we receive materials from suppliers, be it raw material, tooling or forgings that have received subcontract services, we perform an incoming verification for conformance of the material to our requirements. The nature of this verification is defined in various procedures in the Resource Management Process, as are the procedures to be followed when urgency requires us to begin production before completing incoming verification.

[Team members](#) must have documented completion of all prerequisite training and experience before being allowed to serve in a position.

Trinity Forge pursues a [program for monitoring and measuring devices](#) that ensures such equipment is maintained and calibrated, available when needed, and controlled in use.

Production documentation, process verification, manufacturing, traceability, inspection, accountability, verification of process completion, product approval and accountability, storage and preservation, release of product, shipment and subsequent activities are controlled by the [Order Fulfillment Process](#). This process also controls "special process" activities where we procedurally control review and approval criteria, equipment approval, personnel qualification, methods and procedures, record requirements, and process validation and revalidation. Destructive testing is necessary in many cases where the customer's quality requirements cannot be achieved any other way. A point of particular focus is the validation of the "special process" related to high-temperature heating whereby the results achieved for any given part cannot fully be verified other than by destructive testing or placement in service.

Trinity Forge's business of forging is a series of activities whereby thousands upon thousands of parts are individually hand produced at extremely high temperatures from constantly eroding tooling. Each forging is the product of the overall process as well as individual craftsmanship. Control of product quality is achieved through continuous process monitoring and final inspection per *ANSI/ASQ Z1.4: Sampling Procedures and Tables for Inspection by Attributes*, using the customer's specified sampling plan or, if none is specified, using the acceptance quality limit per Trinity Forge [Internal Specifications \(ISpecs\)](#).

If work must be temporarily transferred outside our facilities we fully define the process in our purchasing documents and validate the quality of the work.

We thoroughly inspect finisher impression casts made of new and reworked forging tooling prior to releasing the tooling for production. We perform first article inspection during the first run of a new product and upon any significant change to a product or production process. We document and verify the results of these inspections. During our production processes, we monitor samples both randomly and on a planned basis to be sure the products' key characteristics are in conformance. We finally perform a last article inspection for forging runs except for low order quantities for which the first and last articles substantially represent the same degree of tooling wear. As quickly as cooling and cleaning allow, we visually inspect all forgings produced. If special testing or reporting is required, this information is provided in the [Traveler](#). Where a sampling inspection is required, the Quality Assurance Manager is responsible for ensuring that the plan is appropriate, statistically valid, precludes acceptance of any lot with a known nonconformity, and, if required by contract, has been submitted for customer approval. Whenever a process nonconformity is identified, we take immediate action to correct the process, determine whether there have been nonconforming products produced, and control any nonconforming products.

We do not normally release any product until all required inspection, testing and reporting is complete and verified. In the limited case where an urgent need causes our customer to direct us to ship products before the results of all tests have been reported, we release the products under procedures whereby we could identify exactly which ones to recall if the results of testing were to show the products to be defective.

We maintain records for all orders showing the results of all monitoring, inspection and testing, including an indication of the person(s) authorizing product release.

### ***Identification and Traceability (Ref: Section 8.5.2)***

Trinity Forge serves a broad spectrum of industries with products (forgings or machined parts, with or without subsequent processing) whose materials and specified requirements range from the mundane to the highly regulated. For some specifications, material tracking simply by grade is sufficient while others require tracking of material heat and even heat treat lot. The level of documentation required similarly varies by customer specification, contract or regulation. As required we provide for perpetual identification, batch or serialized traceability and traceability of the components of an assembly or subassembly.

It is crucial that at all points in our process until the product is in the customer's hands we track (as applicable) which order number, die number, print revision, specification, grade, heat code and heat treat lot that raw materials, containers, tools, documents and products represent. We maintain controls for the recording of acceptance, including controls on special media such as stamps and electronic passwords. Procedures in the [Resource Management Process](#) and the [Order Fulfillment Process](#) controls how we perform the various levels of tracking and reporting.

### ***Customer Property (Ref: Section 8.5.3)***

Customers, and potentially other external parties, are encouraged to supply their own shipping containers and even raw materials or tooling. To the degree possible such products are handled through the same [procedures](#) we observe for similar products from suppliers. For example, when a customer provides raw material the customer is treated within our system both as a customer and as a supplier. If the usual procedures clearly do not apply in a particular instance, then an individual manager must accept personal responsibility for the handling of the customer supplied material as long as it is in our care. In any case, we record and report any loss, damage or unsuitability to the customer.

We treat customer-provided intellectual property such as prints and specifications with the utmost care as part of our [Product Development Process](#).

### ***Preservation of Product (Ref: Section 8.5.4)***

Metal products are rugged items and suffer virtually no deterioration from handling or storage if minimal care is taken. Still, this "minimal care" must be provided, as must the care needed to properly package, label and control products until they are in the customer's hands. We observe the [Trinity Operating Procedures](#) and customer requirements regarding how our products and customer-supplied products are handled, marked, cleaned, stored, packaged, preserved, and delivered. This care extends to documents that accompany products in shipment.

### ***Post-Delivery Activities (Ref: Section 8.5.5)***

Since Trinity Forge's products are made to customer specification there is little post-delivery activity unless the customer were to have a [complaint](#) or make a [return](#), or we were to have a [recall](#). To provide feedback under normal circumstances we conduct [customer surveys](#).

### ***Control of Changes (Ref: Section 8.5.6)***

Changes to production processes may only be approved by team members authorized to do so per our [Product Development Process](#), with appropriate documentation. Such changes to production processes are reviewed to verify that they achieved the desired effect without adversely affecting product quality and, where required by contract or regulation, must have documented customer or regulatory authority pre-approval.

### ***Release of Product for Shipment (Ref: Section 8.6)***

Our [quality control program](#) and our [shipping procedure](#) control the steps involved in releasing a product and documentation for shipment after verification that it is compliant with all specifications, or that there is a valid customer waiver for any nonconformity. Full [records](#) are maintained.

### ***Control of Non-Conforming Product (Ref: Section 8.7)***

Our [quality control program](#) defines our methods of control to provide for identification, documentation, evaluation, segregation, rework, regrade, disposition and reporting of nonconforming product. The Quality Assurance Manager is responsible for ensuring that the procedures are observed and that any product repaired or reworked is reinspected. Only personnel approved by the Quality Assurance Manager may make decisions regarding the disposition of nonconforming product and no nonconforming product may be approved for shipment without documented evidence of customer concession.

The Customer Service Manager is responsible for making any request to a customer for a concession regarding nonconforming product. Additionally, the Customer Service Manager is responsible for recording the nature of such nonconformity, any subsequent action taken, and the documentation and communication of the conditions and limits of any customer concession to accept the non-conforming product. [Product returned from a customer](#) is considered to be nonconforming from the time of arrival.

Except for those few cases where a [Traveler](#) specifies differently, all of our nonconforming product not subject to rework or concession is placed in scrap bins with other scrap material and sold for remelt. Scrap bins line the south side of the forge shop. Wheelbarrows are used at forging hammers to convey flashings and scrap to these bins. Other containers used for scrap are clearly tagged as being for that purpose. No material may be taken from a scrap container or bin and placed back into production except by the Quality Assurance Manager or other person approved by the Quality Assurance Manager to do so.

When nonconforming product is detected or suspected after delivery, we immediately notify the customer, and any other interested party such as suppliers or regulatory agencies, with full details of the nature of the nonconformity and of which products and deliveries are possibly affected. We take [corrective action](#) appropriate to the specific incident.

### ***Monitoring, Measurement, Customer Feedback, Analysis and Evaluation (Ref: Section 9.1)***

Through the [Review & Improvement Process](#), Trinity Forge measures, analyzes and improves both at the product level and companywide. In particular, we formally track customer satisfaction by carefully [tracking customer complaints](#) and through a [structured program of customer surveys](#). The results of our internal metrics and customer feedback are analyzed, risks and opportunities are evaluated, plans are established, and all team members are involved in continual improvement.

### ***Internal Audits (Ref: Section 9.2)***

No matter how well each of us thinks we are doing at the business of quality, we need the perspective of someone from the outside to truly evaluate our performance. For this reason, Trinity Forge uses both external and internal audits.

External audits are performed by an independent quality systems registrar selected by upper management to ensure that Trinity Forge meets the requirements of ISO 9001:2015 and AS9100:2016. The registrar determines the nature and schedule of these audits and reports directly to upper management.

[Internal audits](#) are performed from two different perspectives: top down and procedural. They are scheduled such that each functional area covered by the quality system is audited at least once every two years. These audits are conducted by team members whose duties are predominantly outside the area being audited. Top down audits focus on each section of the ISO 9001:2015 and AS9100:2016 standards to ensure that our quality system and procedures fulfill the requirements of the standards. Procedural audits focus on individual [TOPs](#) to verify that the company's activities effectively comply with the quality systems laid out in the [Trinity Forge & Machine Quality Manual](#) and [Trinity Operating Procedures](#). For both types of audits the Quality Assurance Manager documents the findings. The [corrective action program](#) is our vehicle for ensuring timely, effective resolution of adverse audit findings.

The Quality Assurance Manager reports the results of audits to the VP-Quality & Engineering. These results as well as the effectiveness of our auditing methodology are subject to annual review as part of [management review](#).

**Management Review (Ref: Section 9.3)**

Trinity Forge has an aggressive annual process of [management review and planning](#) composed of several steps. First, we gather the [key metrics](#) pertaining to the operation and progress made toward previously-stated [Quality Objectives](#). This data is provided to all officers as well as to a special review committee appointed by the VP-Quality & Engineering. The review committee uses the data provided to formally review the quality system to ensure that it is continuing to be suitable, adequate and effective, then presents a report to upper management detailing the committee's findings and suggestions. The VP-Quality & Engineering calls a strategic planning meeting of upper management where the data and the committee's suggestions are considered in the context of changing circumstances, resources, developing risks and opportunities for improvement. Subsequent to this meeting the President produces a [Strategic Plan](#) and related [Quality Objectives](#). Corrective action for any deficiencies identified, such as those related to resources or to the quality system, as well as any projects initiated to address risks or opportunities, are pursued through the [corrective action program](#). Full [records](#) are maintained of the management review and planning process.

**Nonconformity and Corrective Action (Ref: Section 10.2)**

It is not enough to simply avoid shipping bad product. To properly serve our customers and ourselves we take each product or procedural nonconformance, and particularly any [customer complaint](#), as an opportunity to improve our quality system. Likewise, where we can foresee that there is risk of nonconformities, we take preventive action to improve our quality system.

Trinity Forge's [program for corrective and project action](#) formally seeks to identify quality system shortfalls or opportunities for improvement, to determine root cause of nonconformities, then plan and implement corrective or preventive actions. Each step of the process is assigned to specific individuals and has a clearly identified due date. Where suppliers are potentially responsible for the root cause of nonconformities the program "flows down" to them. Several months after completion, the results of corrective action are subjected to effectiveness review and, if necessary, the process is reopened. Records are maintained for all steps of this activity.

Minor internally identified processes and product nonconformities are handled within our [quality control program](#).

**Continual Improvement (Ref: Sections 10.1 and 10.3)**

We at Trinity Forge continually seek to improve the suitability, effectiveness, and effectiveness of the quality system. We utilize the [Review & Improvement Process](#) as the means of gathering all appropriate information, evaluating the company's performance and the effectiveness of the quality system, specifying objectives for improvements, then following through. Customer satisfaction, quality results, trends, risks, opportunities and resources are all considered.

There are also certain points of specific responsibility regarding improvement. We continually review dies and other tooling to identify ways in which we can more reliably or efficiently meet the customer's requirements. We solicit team members' [suggestions](#) for improvement. We [survey customers](#) throughout the year.

Upper management is responsible for evaluating the progress being made throughout the company and for generating plans and objectives for overall improvement.

**Section VI: Revision History**

| <i>Release Date</i> | <i>Description of Change</i>   | <i>Owner</i> | <i>Approver</i> |
|---------------------|--|--------------|-----------------|
| 01/11/2018          | Updated for quality system migration related to ISO 9001:2015 and AS9100:2016. | Tim Ellis    | Todd Sheppard   |
| 01/15/2016          | Updated Exclusion Clauses in Section I.  | Tim Ellis    | Todd Sheppard   |
| 10/29/2015          |  | Tim Ellis    | Todd Sheppard   |

|          |   |             |               |
|----------|---|-------------|---------------|
|          | In Section I added in second sentence other than repair of non-conforming product. In Section II at the end replaced Dennis Withers, Chief Executive Officer with Dick Johnston, President. |             |               |
| 3/5/2020 | Updated management team, Revised "Operational Risk Management Section". Added packaging note to "Product Safety". Updated notes under "Prevention of Counterfeit Parts".                    | Dustin Jump | Todd Sheppard |
|          |   |             |               |

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