CAM Engineered Products

Corporate Overview

CAM has grown to become one of the world's leading suppliers of highly engineered V-retainer couplings, mated flanges, T-bolt band clamps, strap assemblies, and special fabricated products to an extensive list of industries including aerospace, food, chemical processing, medical, telecommunications, and transportation.

Corporate Mission

Provide a caring, proud, safe, and challenging environment that allows employees to thrive with resolute integrity to exceed our customers' needs. We will proactively leverage the creative thinking and problem solving of all the employees. We will grow our company through open communication, strong leadership, and continuous improvement that ultimately benefits our customers, employees, and their families.

1. **Introduction**

1.1. Suppliers are responsible for the quality of their products and services.

1.1.1. The goal of the CAM Engineered Products Supplier Quality Manual is to clearly communicate the conditions for doing business with CAM by setting high quality expectations. The quality of purchased parts, materials, and services is a direct reflection of the supplier's quality management system, product development cycle, manufacturing processes, customer focus, organizational leadership, and continual improvement efforts. Therefore, CAM suppliers are expected to operate within a "Zero Defects" philosophy while maintaining flawless on-time delivery schedules.

1.1.2. This standard applies to all purchased direct materials, select indirect materials, and supplier services that become a part of the products sold by CAM Engineered Products.

1.1.3. Suppliers are expected to comply with all sections of this Supplier Quality Manual as well as to the General Terms and Conditions of the Purchase Order. Any requirement section not referenced in this document indicates there are no additional requirements from CAM. CAM Purchasing and Quality will provide additional clarification or direction, as needed.

1.1.4. In this manual, the terms "shall" and "must" mean that the described action is mandatory; "should" means that the described action is necessary and expected with some flexibility allowed in the method; and "may: means that the described action is permissible or discretionary.

1.1.5. Direct Materials: are materials (raw material, hardware) that become a part of the products sold by CAM. It also includes services used to produce (in whole or part) products sold by CAM.

1.1.6. The scope of this manual applies to the product quality of all suppliers of direct production materials, production or service parts, and manufacturers of machinery and related components.

1.1.7. The original of this manual is a controlled document. Copies of the CAM Supplier Quality Manual distributed to suppliers, printed, or downloaded are considered uncontrolled and will not be automatically updated.

1.1.8. Suppliers to CAM Engineered Products are responsible for obtaining and following this document via the CAM website at https://www.camaerospace.com/voss. Suppliers are required to check the website periodically for revisions and updates to this document.

1.1.9. Suppliers are responsible for ensuring that products and services they supply conform to the latest revision of this document when shown on purchase orders, supply agreements, or as mailed, electronically transmitted or viewed online at https://www.camaerospace.com/voss.

1.1.10. Failure to include reference to the CAM Supplier Quality Manual in a request for quote, purchase order or supply agreement does not excuse suppliers from compliance.

1.1.11. This manual defines the specific processes and information necessary to fulfill the intent of our Quality Policy. It is expected that our suppliers will use a continual improvement approach to assist CAM Engineered Products in creating a lean supply chain that minimizes the total cost of ownership for the supplier and CAM Engineered Products through:

1.1.11.1. Customer focused leadership – striving to understand and anticipate the needs of CAM Engineered Products, and proactively establishing the infrastructure to meet those needs. This includes innovation, collaboration, speed, inventory management, and cost competitiveness.

1.1.11.2. Execution excellence – flawless delivery performance with zero disruptions and zero quality issues.

1.1.12. The remainder of this manual provides additional details of how CAM Engineered Products will manage its supplier relationships.

2. Supplier Code of Conduct

2.1. Suppliers shall ensure operations are being performed in a manner that is appropriate, as it applies to their ethical, legal, environmental, and social responsibilities. Below is a listing of the basic requirements:

2.1.1. Compliance with local laws and regulations

2.1.1.1. Suppliers must adhere to the laws and regulations in the locality in which they reside. This includes all local, state, and federal laws/regulations in the country of origin.

2.1.2. Compliance with Environmental, Health, and Safety Laws

2.1.2.1. The supplier must maintain and operate its manufacturing/production facilities and processes in accordance with local, state, and federal laws/regulations in the country of origin. At no time shall any CAM person be exposed to hazardous materials or unsafe conditions as a result of supplier shipments to a CAM locations, or while visiting a supplier's location. For items with inherent hazards, safety notices must be clearly visible. As applicable, documented safety handling and protection information must be provided.

2.1.3. Product Conformity and Safety

2.1.3.1. In all instances where a product is manufactured to a new design, for a new system, or for a new application, it is important that the supplier and CAM allocate responsibility for assuring that all conformity, performance, endurance, maintenance, safety, and warning requirements are met. It is preferred that this allocation of responsibility be in writing.

2.1.4. Workmanship

2.1.4.1. In all instances where a product is manufactured to a new design, for a new system, or for a new application, it is important that the supplier and CAM allocate responsibility for assuring that all conformity, performance, endurance, maintenance, safety, and warning requirements are met. It is preferred that this allocation of responsibility be in writing.

2.1.5. Non-Discrimination

2.1.5.1. Suppliers shall not discriminate against race, color, sex, religion, age, physical disability, political affiliation, or other defining characteristics as prohibited by local, state, and federal laws/regulations in the country of origin.

2.1.6. Ethics

2.1.6.1. Evidence of corruption, bribes, improper advantage, or any other form or illegal practice by the supplier or associated operations will terminate all relations with CAM. Suppliers will conduct their business in a manner that meets the 'Code of Ethics' policy of AS9100. In addition, for those suppliers contracting with CAM

for U.S. Government contracts, aerospace policy on contracting with the United States Government shall apply.

2.1.7. Confidentiality

2.1.7.1. The supplier shall ensure the confidentiality of CAM-contracted products and projects under development, and related product information, as well as intellectual property shared as a result of the working relationship.

2.1.8. Intellectual Property

2.1.8.1. To respect the intellectual and other property rights of CAM Engineered Products and of third parties, including all patents, trademarks, and copyrights.

3. AS9145 Standard Quality Requirements

3.1. To be a supplier to CAM Engineered Products, all suppliers must meet our requirements for quality. Our standard requirements include:

3.1.1. Advanced Product Quality Planning (APQP): Supplier must have resources available and be capable of participating in quality planning activities.

3.1.2. Failure Mode and Affects Analysis (FMEA): Supplier must have FMEA documentation available for review upon request.

3.1.3. Measurement System Analysis (MSA): Supplier must have records available for review when assessing measurement capability.

3.1.4. Statistical Process Control (SPC): Supplier must have data ready for review upon request of process capability.

3.1.5. Product Part Approval Process (PPAP): Supplier must be ready and capable of providing first production run validation data.

3.1.6. Corrective Action: In the event of a quality issue related to a supplier's product, the supplier will be required to provide a written corrective action report, filed electronically.

3.1.7. Management of Change: Suppliers must agree to notify CAM of any intended process change and receive CAM approval prior to the implementation. Suppliers are also required to make this a condition of their entire supply chain.

3.1.8. Non-Conforming Product: Suppliers must ship only products that meet specifications or submit a deviation request to receive written approval to ship the product. Consent to

shipping the non-conforming product does not relieve the supplier of its responsibilities to CAM.

3.1.9. Shipment and Packaging Requirements: Suppliers must comply with CAM specifications unless not included on purchase order. In this event the supplier must package the material to provide adequate protection to prevent damage during shipping and handling.

3.1.10. Traceability: Product traceability is a requirement. Suppliers must provide unique identification of product batches/lots as required by CAM.

3.1.11. Verification of Purchased Product: Suppliers must allow on-site product verification by CAM, its customer, or customers' representatives.

3.2. In the case where a supplier may not have the above processes in place due to business conditions, CAM will determine the supplier's eligibility based on product, application, value, criticality, and other pivotal considerations.

4. Supplier Quality Management System – Maintenance

4.1. As a minimum, suppliers to CAM Engineered Products are required to conform and may be required to acquire the latest revision of ISO9001:20XX, AS9100:20XX, or ISO/TS16949:20XX registration unless otherwise specified or approved by CAM Engineered Products Quality Department.

4.2. In the event that a supplier to CAM Engineered Products is so small as to not have adequate resources to develop a Quality Management System according to of ISO9001:20XX, AS9100:20XX, or ISO/TS16949:20XX, CAM Quality Department will conduct audits on-site using Supplier Risk Assessment audit or via the desk audit approach to assess gaps, identify risks, and take appropriate actions to protect CAM and subsequent customers.

4.3. Suppliers are required to notify, in a timely manner, the appropriate CAM contact if an ISO/TS/AS registered supplier quality management system is notified of special status conditions (such as new business hold – quality, needs improvement status, Q1 revocation) by any of the IATF (International Automotive Task Force) or other organizations.

4.4. CAM Engineered Products reserves the right to perform an on-site audit as deemed appropriate to verify conformance of supplier quality management system or to verify effectiveness regarding corrective or preventive actions related to supplier escalation.

4.5. Direct material suppliers must allow CAM customers, the customer's representatives, government, or regulatory agencies the right to conduct surveillance of the supplier's quality systems at the supplier's location. This may include visits extended to sub-tier suppliers.

4.5.1. All such visits will be approved and arranged by CAM Engineered Products

4.5.2. Direct material suppliers sub-contracting products or services to sub-tiers are required to provide sub-tier supplier the applicable requirements in the purchasing documents, including key characteristics and material or process requirements as applicable.

5. Inspection of Product

5.1. All products or services provided to CAM Engineered Products shall be inspected by the supplier according to an agreed upon control plan. In the absence of a purchasing or supplied agreement, the supplier must develop, implement, and maintain inspection methods necessary to assure the product conforms to the requirements of CAM Engineered Products. The supplier shall conduct in-process and outgoing audit inspection, or tests as defined in the product/process control plan. Inspection data shall be retained by the supplier and be made available upon request.

5.2. Suppliers must allow CAM, its customer(s), its customer's representative(s), and government or regulatory agencies the right to verify at the supplier's premises that the purchased products conform to specified requirements. The supplier shall not use such verification as evidence of effective control of quality.

5.3. Verification by CAM, its customer(s), or its customer representative(s) shall not absolve the supplier of the responsibility to provide acceptable products or services, nor shall it preclude subsequent rejection by CAM or its customer(s) subject to final acceptance at its destination.

5.4. Where applicable, a quality history for the product or service shall be provided to CAM Engineered Products. The quality history shall contain all verification documents generated during manufacturing, processing, or fabrication.

6. Non-conforming (Discrepant) Product

6.1. Non-conforming or discrepant product is defined as: deviation from drawing specifications, purchase order requirements, CAM Engineered Products product and process specifications or standards and industry product and process specifications and standards, including but not limited to the areas of quantity, appearance, material, metallurgy, packaging, handling, shipping, delivery, cleanliness, and dimensions. Counterfeit parts shall be treated as nonconforming material.

6.2. When non-conforming product is detected by the supplier after product has shipped, is in transit, or delivered to CAM, supplier shall take appropriate action to mitigate the effect including formal, detailed notification to CAM Engineered Products.

6.3. Notification shall include clear description of the non-conformity, which includes as required: parts affected, part numbers, quantities, and dates delivered or in-transit. If required by CAM, supplier shall provide traceability information for lots or batches of material or product.

6.4. Non-Conforming Tag (NCT) is used to notify the supplier of non-conformance, discrepancy and/or rejection. The NCT is sent via e-mail directly to the supplier contact using CAM internal delivery system and can be initiated from any CAM facility receiving direct material. A NCT may be initiated upon detection of non-conforming product. Request for corrective action may be required from the supplier.

6.5. The supplier must respond directly to the NCT issuer within the directed time frame using email.

6.6. Supplier Responsiveness – CAM Engineered Products will monitor speed, timeliness, and effectiveness of corrective or preventive actions, and may use the supplier's response as input for awarding future business and monitoring performance.

6.7. Specific timing requirements will be stated on the NCT, if required. The provided general or default requirements are:

6.7.1. An initial response (team/person assigned, problem description, containment action) for a NCT shall be supplied to CAM Engineered Products within 3 working days.

6.7.2. Aerospace suppliers must respond within 24 hours.

6.8. If CAM Engineered Products required an 8Dpricess, the initial 8D report shall be submitted within 15 calendar days.

6.8.1. Aerospace suppliers must submit within 5 calendar days.

6.8.2. A complete 8D report must be submitted to CAM Engineered Products within 30 calendar days.

6.9. If a supplier's product is determined to be defective in material and/or workmanship, as defined by the design requirements, product(s) will be immediately contained.

6.10. CAM Engineered Products and the supplier shall determine if the product can be inspected to remove defects from the "lot" that has been contained.

6.11. If time does not allow the supplier's personnel to arrive, the supplier shall provide detailed inspection instructions to CAM Engineered Products.

6.12. CAM Engineered Products reserves the right to approve all inspection methods.

6.13. If it is determined that inspection alone cannot detect the defect, the product(s) will be returned to the supplier or scrapped as agreed upon by the supplier and CAM.

6.14. CAM Engineered Products will identify any costs incurred from these defective parts and will initiate the Supplier Cost Recovery Chargeback procedure with the supplier.

6.15. If the purchased product or service is needed for urgent production at CAM Engineered Products, the supplier shall provide a rapid inspection team to CAM production facility for inspection or agree (by providing purchase order to third part) to the use of a third-party inspection service with the cost of service being assumed by the supplier.

6.16. In most cases, as appropriate, the supplier shall be given the option regarding sorting methodologies by the effected CAM facility.

6.17. The use of a third party to sort defective products does not relieve the supplier of their responsibility for the quality or delivery of a product.

6.18. CAM Engineered Products shall have the right to perform any and all necessary safe, destructive, and non-destructive tests to evaluate the performance of the supplier's products or services.

6.19. CAM Engineered Products shall have the right to utilize the service of an independent ISO17025 accredited testing laboratory.

6.20. The supplier shall reimburse CAM Engineered Products for the expense of said tests only if testing confirms the product or service is defective.

6.21. CAM Engineered Products must provide proper accurate hours for inspection to the supplier.

6.22. If the purchased product is determined to be defective or non-conforming for reasons other than those defined on the drawing(s), the two parties will discuss and determine if containment action is required.

6.22.1. If containment action is required, inspection criteria will be established. If containment action is not required, the supplier's product will be approved for use in production with a proper record of using the deviation process.

7. Management of Design and Process Changes

7.1. After product approval, suppliers shall not make any type of change without prior written notification and approval from CAM Engineered Products. Suppliers must also make this a condition of their entire supply chain.

7.2. Changes are defined as alteration in the product design, product specification, purchased parts, material, service supplier or provider, manufacturing location, method of manufacturing, processing, testing, storage, packaging, preservation, or delivery.

7.3. Changes shall be communicated through the Supplier Product/Process Change Request Form. These include changes to part design, material, sub-tier supplier, manufacturing location, or process. When in doubt, suppliers are encouraged to contact their respective CAM representative.

7.4. The supplier shall notify CAM Engineered Products in advance and obtain approval for all design or process changes affecting the product manufactured, processed, or serviced for CAM Engineered Products.

7.5. Changes are classified based upon impact or the most adverse effect, either in the subsequence processing of a part, in its handling, or in its intended or foreseeable application.

7.6. The supplier change can be initiated by:

7.6.1. CAM Engineering Department

7.6.2. Customer-initiated change communication to CAM Engineered Products.

7.6.3. CAM Purchasing Department

7.6.4. CAM Quality Department

7.6.5. CAM Manufacturing Plant

7.6.6. Supplier

7.7. The supplier shall issue the change request using the Supplier Product/Process Change Request Form. Submit the request to CAM Engineered Products for approval to proceed with a defined validation plan. This plan may include or require a new Production Part Approval Process (PPAP) submission or FAI (First Article Inspection).

7.8. For permanent changes, CAM Engineered Products' representative determines if a new Production Part Approval Process is required and advises the supplier accordingly.

7.9. Following validation and/or Production Part Approval Process (PPAP) approval, the Supplier Product/Process Change Request is granted or denied, and the supplier is advised accordingly. At this stage, the timing to phase in the approved change is established and communicated to the supplier and all interested parties.

8. Purchase Product Submission and Approval Process

8.1. Purchased Product Submission and Approval Process is implemented to determine if all design and specification requirements of purchased product are properly understood by CAM suppliers and to ensure that the supplier production process is capable of meeting CAM and the CAM customer's technical and quality requirements.

8.2. The submission requirements will typically include initial sample parts, design review, dimensional layout, performance test results, material certifications, capability studies, process flow diagram, design FMEA (Failure Modes and Effects Analysis), process FEAM, and supplier process control plan.

8.3. This process follows CAM customer and CAM internal requirements in accordance with the latest version Production Part Approval Process (PPAP) manual for First Article Inspection (FAI) manual.

8.4. Unique customer specific requirements are addressed as defined and required. CAM Engineered Products follows Production Part Approval Process notification and submission requirements defined in the Production Part Approval Process Manual, unless otherwise specified by the customer.

8.5. CAM-specific requirements related to the initial sample parts and identification include the following:

8.5.1. Samples must be from production tooling operating under production conditions.

8.5.2. Samples are to be uniquely identified, so that measurement correlation may be performed.

8.5.3. Sample quantity may vary according to the nature of the product and the manufacturing process.

8.5.4. Production material and processes.

8.5.5. Analysis/Development/Validation Documentation (when requested).

8.5.6. Unless sample quantities are defined in a CAM standard or specification, the following guidelines may be used:

8.5.6.1. A minimum of 5 samples (out of a 300-piece production run) is required from any single part producing tooling.

8.5.6.2. A minimum of 1 sample per cavity is required from multiple part tooling.

8.6. Suppliers are strongly encouraged to work with their CAM Quality representative to obtain full approval on time.

8.7. Supplier production parts are not to be released for shipment to CAM until the supplier receives notification from CAM that the PPAP has been approved or interim approved for volume production.

8.8. When requested by CAM Quality personnel, the supplier shall establish a Safe Launch process, which will serve to validate the Production/Process Control Plan (PCP) and ensure that all shipped products meet CAM expectations. (Reference Supplier Safe Launch)

9. Measurement System Analysis

9.1. To fully understand the supplier measurement capabilities, as appropriate and defined by the Quality representative, the supplier shall perform a measurement system analysis (MSA) in accordance with the latest version of the AS9145 Measurement System Analysis manual.

10. Prototype Submission Requirement

10.1. The intent of the prototype activity is to assemble and test products, processes and assembly systems, and perform conformance/measurement/design evaluation.

10.2. Part approval at Prototype ensures component part problems are identified and corrected to minimize the impact of part variation upon design evaluation, manufacturing, and assembly.

10.3. Suppliers of prototype parts are required to have completed, documented, and available for review the items listed below:

10.3.1. CAM Supplier Warrant of Material for Prototype

10.3.2. Design records.

10.3.3. Inspection results and inspection and/or test devices.

10.3.4. Material certification(s).

10.3.5. Part weight (mass)/Serialization information.

11. Documentation, Certification, and Data Requirements for Proprietary Information

11.1. CAM Engineered Products and its customers may review, in the presence of the supplier and on the supplier’s premises, documentation that contains confidential and proprietary supplier information pertaining to the product manufactured for CAM Engineered Products.

11.2. Where applicable, a quality history for the entire product shall be provided to CAM Engineered Products. The quality history shall contain all verification documents generated during fabrication of the product or service.

11.3. The supplier shall provide CAM Engineered Products with appropriate documentation during the course of design, manufacturing, inspection, and testing. Documents shall include (where applicable) design records such as:

11.3.1. Design Failure Mode and Effects Analysist (DFMEA)

11.3.2. Design Validation Plan and Report (DVP&R)

11.3.3. Quality Planning / Advanced Product Quality Planning (APQP) Status Report.

12. Hazardous Materials (Chemicals)

12.1. All materials used or incorporated into CAM Engineered Products products shall satisfy current governmental and safety constraints on restricted, toxic, and hazardous materials; as well as environmental, electrical, and electromagnetic considerations applicable to the country of manufacture and sale.

13. Shipment and Packaging Requirements

13.1. In some cases, CAM designates “VS” specifications to define shipping and packaging requirements.

13.2. Requirements in any “VS” specification shall be considered an extension of the purchase order and/or product drawing/agreement. General packaging requirements can also be found included within the Terms & Conditions of the Purchase Order.

13.3. Unless alternate methods have been agreed upon in writing with the receiving location, all production shipments must include or be preceded by the following:

13.3.1. Material certification(s) as specified in all applicable material specification(s).

13.3.2. Applicable Statistical Process Control (SPC) data (for all print designated special or critical characteristics) unless instructed differently from CAM Quality or the receiving location.

13.3.3. labeling, or bar code labeling, must be in accordance with appropriate AS9145 guidelines or plant specific requirements.

13.4. Production shipment and packaging requirements discussions should begin during APQP activities of Feasibility review. All requirements shall be finalized prior to first shipment and PPAP submission.

14. Supply Chain Management

14.1. Suppliers must be willing to identify and manage, as appropriate, their entire supply chain. This includes raw material suppliers or manufacturers and any suppliers of components or processing used for products supplied to CAM Engineered Products.

14.2. As appropriate, suppliers shall impose all of CAM quality requirements on the entire supply chain used to produce the items supplied to CAM Engineered Products.

15. Supplier Material Traceability

15.1. As required, suppliers shall be able to demonstrate adequate product traceability. Specific traceability requirements are identified and reviewed at initial feasibility, planning for Quality or APQP meetings. Suppliers to CAM Engineered Products shall establish and maintain documented methods for unique identification of product, batches, or lots, including product marking as necessary for identification or traceability purposes.

15.2. Lot numbers, as identified on shipping labels, must provide traceability from receipt and during all stages of production by the supplier, including shipment to CAM Engineered Products.

15.3. CAM Engineered Products reserves the right to perform an on-site audit or request appropriate, timely documentation to verify conformance to traceability requirements.

15.4. Traceability information must include and begin with an individual raw material heat/batch number, or equivalent.

15.4.1. A lot cannot contain more than one material heat/batch number.

15.4.2. Control Item Part & Special Product or Process Characteristics.

15.5. Control Item Parts are products with characteristics normally identified on drawings by the arrow preceding the part and/or raw material code number. Control Item parts may affect the safe operation and/or compliance with government regulations.

15.6. Special characteristics are those product or process requirements for which reasonably anticipated variation is likely to affect a fit, function, or the ability to process or build the product.

15.7. Requirements for Special/Specific Characteristics are:
15.7.1. All Special Characteristics must be made in a process having special control method(s).

15.7.2. SPC is the most common and preferred special control method.

15.7.3. To be considered valid, Cpk values cannot be calculated until there is a stable and capable process.

15.7.4. Cpk is typically calculated based on data from 20 days of production; minimum is 100 individual sample or data points.

15.7.5. The Cpk value must be noted on control charts.

15.7.6. Reaction plans to out-of-control signals must be indicated on the chart. Both parts and processes must be described.

15.7.6.1. Refer to the AS9145 SPC manual for out-of-control signals.

15.7.7. On occasion, the Special Characteristic designation will be applied to characteristics, such as raw material, hardness, etc., and therefore, typical SPC cannot be applied. In such cases, the supplier must identify the special controls used for these characteristics in the supplier quality control plan.

15.8. The supplier control plan will require concurrence from CAM prior to PPAP. This discussion should begin at the initial Quality Planning, APQP, or Feasibility meetings.

16. Records

16.1. Suppliers shall maintain appropriate records on file according to requirements of the supplier, CAM Engineered Products, or regulatory bodies.

16.2. Quality performance records, including control charts, inspection, and test results for orders of direct products or services shall be retained for seven calendar years minimum from the date of creation.

17. Supplier Evaluation and Performance

17.1. CAM has recognized that certain processes and operations in our supply base required to make our product have levels of risk that must be managed appropriately. CAM has processes to evaluate levels of risk with our supply base. If during the course of business, we determine a process or operation to have an unacceptable level or risk, we will contact the supplier directly with specific measures that will need to be implemented to bring the level of risk to a manageable level.

17.2. The CAM Engineered Products supplier evaluation process is designed to measure supplier performance order time. The evaluation focuses on the below performance areas:

17.2.1. Zero Major Quality Concerns in the previous six months.

17.2.2. Zero Lot Rejection(s) in the previous six months.

17.2.3. Supplier Quality Assurance and Effective Problem Solving

17.2.4. Zero Past Due Deliveries in the previous six months.

17.3. The evaluation is completed on a periodic basis by a cross-functional team, which typically consists of CAM purchasing and quality personnel.

18. Supplier Escalation Process

18.1. The supplier escalation process is an increased level of activity with a supplier resulting from the supplier's continuing failure to perform in the areas of quality, delivery, or cost. Escalation may also be initiated when there are noticeable trends that indicate that quality systems may be stressed or deteriorating at a supplier.

18.2. Supplier Quality Escalation is the methodology used by CAM personnel to define actions, resolve, and improve overall supplier performance.

18.3. Supplier escalation definition, consequence, and entrance criteria, refer to below link: Supplier escalation process.

18.4. Escalation stages vary up to and include notification of the supplier's registrar of ongoing systemic quality issues or recognition that it may be in the best interests of CAM Engineered Products and supplier to discontinue doing business.

19. Supplier Development and Recommended Best Practices Advanced Product Quality Planning and Prevention

19.1. When requested, the supplier shall provide CAM Engineered Products with a product quality plan prior to or upon receipt of a purchase agreement.

19.2. For each stage of product/process design and development, product and process validation and verification, feedback, assessment, and corrective action, the product quality planning process shall include but not be limited to:

19.2.1. Advanced Product Quality Planning

19.2.2. Special characteristics

19.2.3. Feasibility reviews.

19.2.4. Product safety.

19.2.5. Process Failure Mode and Effects Analysis

19.2.6. Mistake/error proofing

19.2.7. Control Plan to cover three distinct phases: prototype, pre-launch, and production.

19.2.8. Supplier design integrity. Suppliers that use CAM-generated designs are not responsible for Design FEAM activities but those that are design responsible for Direct material are expected to use the DFMEA approach for robust product design. Suppliers may participate in DFMEA planning activities with CAM.

19.3. CAM requirements and reference to its technical specification shall be included (documented) in the planning of product manufacturing or processes as a component of the quality plan. Suppliers shall incorporate lessons learned from previous experiences, process knowledge, or other sources into quality planning documentation.

19.4. Lessons learned are to be identified as such throughout the entire quality planning documentation process and available to CAM personnel upon request.

20. Goal Setting and Problem Resolution

20.1. CAM and its suppliers strive to achieve excellence in manufacturing and may review certain units and other companies for examples of best practices.

20.2. Best practices are business principles, often identified through benchmarking, that produce better results. Suppliers are strongly encouraged to become familiar with these concepts and become effective practitioners of continual improvement.

20.3. Supplier shall be able to determine areas that need correction and improvement:

20.3.1. Quality Results – Supplier quality performance indictors (e.g., PPM< number of Discrepant Materials Reports, etc.)

20.3.2. Delivery – On-time delivery, deviations in deliveries, etc.

20.3.3. Cost – Price reduction, cost of quality, etc.

20.3.4. Service and Innovation – Continual improvement initiative, capacity planning, invoicing problems, responsiveness to change notices, etc.

20.4. The supplier should be able to relate all goas to CAM requirements and priorities.

20.5. It is very important to determine the scope of the issues or processes to be studied. The supplier should identify any gaps between current processes and the requirements, determine severity of the gaps, and prioritize its efforts to minimize and eliminate gaps, using a structed improvement methodology.

20.6. CAM Engineered Products recognizes the 8D process for problem solving. Especially in the resolution of a nonconforming (discrepant) product using CAM 8D Process spreadsheets.

20.7. It is a disciplined eight-step problem-solving process and report format. This technique is appliable also to continual improvement initiatives.

20.7.1. Use the team approach – Establish a key group of people with the process/product knowledge, allocate time, authority, and skill in the required technical disciplines to solve the problem and implement corrective actions. The group must have a designated champion.

20.7.2. Describe the Problem – Specify the internal/external customer problem by identifying in quantifiable terms the who, what, when, where, why, how, how many (5W, 2H) for the problem.

20.7.3. Implement and Verify Interim (Containment) Actions – Define and implement containment actions to isolate the effect of the problem from any internal/external customer until corrective action is implemented. Verify the effectiveness of the containment action.

20.7.4. Define and Verify Root Causes – Identify all potential causes, which could explain why the problem occurred. Isolate and verify the root cause by testing each potential cause against the problem description and test data. Identify alternative corrective actions to eliminate root cause.

20.7.5. Verify Corrective Actions – Quantitatively confirm that the selected corrective actions will resolve the problem for the customer and will not cause undesirable side effects. Define contingency actions, if necessary, based on risk assessment.

20.7.6. Implement Permanent Corrective Actions – Define and implement the best permanent corrective actions. Choose on-going controls to ensure the root cause is eliminated. Monitor the long-term effects and implement contingency actions if necessary.

20.7.7. Prevent Recurrence – Modify the management systems, operating systems, practices, and procedures to prevent recurrence of this and similar problems.

20.7.8. Congratulate Team / Rad Across – Recognize the collective efforts of the team.

20.8. The supplier shall apply (Read Across) to similar processes, services, or products the corrective action, and controls implemented, to eliminate the cause of potential nonconformance in other areas.

21. Cost Recovery Process

21.1. CAM Engineered Products, when appropriate, can recover costs associated with a supplier not meeting defined expectations. The issuance of an 8D NCT initiates the recovery process.

21.2. CAM Engineered Products may recover additional costs using the CAM Engineered Products Supplier Chargeback process or by direct negotiations with the supplier.

22. Mistake-Proofing

22.1. CAM Engineered Products' expectation is zero defects.

22.2. Achieving this level of quality requires capable processes combined with statistical process control techniques and the utilization of mistake-proofing methodology.

22.3. When potential causes of non-conformance are determined, the supplier shall employ solutions in the process to prevent or detect these non-conformances. These solutions shall be independent of the operator's actions.

22.4. Solutions should be designed and installed integral to the process to prevent or detect a wring setting of an element (e.g., the proper position), defects in the element, machine, or standard, thereby making further use impossible.

23. Statistical Techniques

23.1. Suppliers shall monitor process performance using the appropriate statistical techniques in accordance with the lates revision of AS9145 Statistical Process Control manual. The determination of need is based on the ability to control and verify the process capability and product characteristics. The use of quality planning tools such as Design Failure Mode and Effects Analysis (DFMEA) and/or Process Failure Modes and Effects Analysis (PFMEA) is essential. The supplier shall submit capability data for key characteristics when requested by CAM personnel.

23.2. The supplier is encouraged to use statistical techniques including:

23.2.1. Gage R&R Study

23.2.2. Predictive Maintenance

23.2.3. Defect Analysis

23.2.4. Sampling and C=0

23.2.5. Process analysis and control charting methods

23.2.6. Regression analysis – analysis of variance

23.2.7. Other graphical methods

24. Continual Improvement Process

24.1. The supplier should promote and implement a continual improvement philosophy that provides a sustained approach to achieving competitively superior performance in those areas critical to business success by rigorously applying proven methodology and processes.

24.2. CAM recognizes that the CAM Quality Department System provides elements that provide a foundation for continual improvement.

24.3. CAM Quality Management System Supplier Fundamentals provides a systematic approach that helps suppliers achieve flawless launches, zero defects, and a higher level of customer satisfaction, enabling continual process improvement.

24.4. CAM Quality Management System Supplier Fundamentals complements the supplier quality management system by applying tools to reduce errors, improve productivity, and ensure closed-loop feedback.

24.5. Supplier CAM Quality Management System elements include:

24.5.1. Quality System Certification

24.5.2. RPN Reduction Methodology

24.5.3. Standard Work

24.5.4. Standard Training

24.5.5. Layered Process Audits

24.5.6. Control of Non-conforming Material

24.5.7. Error Proofing Verification

24.5.8. Fast Response

24.6. These methods and processes shall be used throughout the supplier organization to continually improve the quality, delivery, service, and cost of supplier products to the benefit of its customers and associates.

24.7. The supplier should perform the functions of leading importance to continual improvement by means of:

24.7.1. Continual improvement of own actions and distribution of resources.

24.7.2. Advising the employees of objectives and tasks.

24.7.3. CAM Supplier Quality Manual current revision

24.7.4. Providing an environment which encourages open communication.

24.7.5. Supporting every employee and any process improvement efforts covering all employees with a training system.

24.8. Additional recommended tools that assist in the implementation of the continual improvement process are:

24.8.1. Benchmarking

24.8.2. Brainstorming

24.8.3. Pareto Analysis

24.8.4. 5-Why Analysis

24.8.5. Affinity Diagram

24.8.6. Involvement Worksheet

24.8.7. Cost Benefit Analysis

24.8.8. Cause and Effect Diagrams

24.8.9. Process Capability/Performance

24.8.10. Process Mapping

25. Environmental, Health, and Safety

25.1. Suppliers are expected to adhere fully to all applicable governmental laws and regulations to protect the environment and ensure the health, safety, and quality of life within their communities.

25.2. Suppliers must adhere to laws and regulations that apply to the health and safety of their workers.

25.3. No abnormal or harmful radioactivity levels shall be permitted in any material. Nor harmful elements or additives shall be permitted that are listed in any EU, ISO, or local standards banning such materials at the time of shipment to CAM.

25.4. All materials used in product manufacture shall satisfy current government and safety constraints on restricted, toxic, and hazardous materials.

25.5. Suppliers shall not supply chemicals detailed on the following list:

25.5.1. Controlled Substances List

25.5.2. Suppliers are required to comply with appropriate restricted or reportable substance notification on PPAP submissions.

25.6. Suppliers are encouraged to define, implement, and maintain environmental management systems such as ISO14001:20XX.

25.7. Goals of the supplier environmental management program should be:

25.7.1. Commitment to compliance with all applicable laws, regulations, and company policies relating to environmental protection, to prevent pollution at its source by minimizing emissions, effluents, and waste in the design, operation, and maintenance of their facilities.

25.7.2. Commitment to prevention including source reduction, recovery, reusing, and recycling. Where feasible, eliminating negative environmental impacts associated with supplier's operations and products.

25.7.3. Commitment to continual improvement to increase the general awareness of environmental requirements among associates, facilitating and understanding of the environmental implications and their day-to-day responsibilities. Developing the capabilities and support mechanism necessary to achieve the supplier's environmental policy, objectives, and targets.

26. Supplier Quality Assurance Aerospace Provisions Sample Plan Requirements.

26.1. Sampling inspection must be in accordance with the latest revision of ANSI/ASQC Z1.4, “Sampling Procedures and Tables for Inspection by Attributes”.

26.2. Acceptance criteria shall be defined by the supplier and, where required, approved by CAM. For all data sampling, the acceptance level shall be zero defects C=0.

27. Inspection and Test Report

27.1. The seller shall maintain on file and submit upon request a report for the delivered end items or assemblies with the following information included as a minimum: part number, revision letter, part name, purchase order number, lot number, lot quantity, inspection sample size, characteristics/parameters inspected and/or tested, inspection test data, quantity passed/rejected by characteristic, date of inspection/test, and signature/stamp of seller’s inspection/test representative.

28. Certificate of Conformance (C of C)

28.1. The seller shall prepare and submit a certification of conformance to CAM for each shipment made under a purchase order (or each designated item if specific items are designated in the body of the purchase order). The certification shall be signed by the seller’s responsible quality representative as evidence that the deliverable product conforms to stated requirements (i.e., material certifications, process requirements, supplier qualification status, hardware qualification, etc.).

28.2. Completion of the certificate shall not modify or limit any representations, warranties, or commitments made or in any way affect the obligation of the seller to perform strictly in accordance with the provisions of the purchase order.

28.3. The following information shall be provided as a minimum: seller’s name, quantity of shipment, lot numbers/date codes/serial numbers if applicable, CAM part number and drawing revision, country in which the part was manufactured, CAM purchase order number and revision, and a statement that all other applicable requirements as called out by the purchase order, drawings or specifications have been met.

29. First Article Inspection

29.1. On the first initial production and the first article produced, subsequent to design change incorporation, the seller shall perform and document a comprehensive inspection and test of that article to assure article’s conformance with all drawing and specification requirements. When multi-cavity molds/dies are used, First Article Inspection is required for each cavity.

29.2.

A new First Article Inspection shall be required if:

29.2.1. A significant design or process change has been made that affects the original First Article and is applicable only to those characteristics affected by the change.

29.2.2. The item has not been produced for a period of one year.

29.2.3. A change in manufacturing location.

29.3. The seller's report shall provide, as a minimum: purchase order number, part number, revision level, part name, seller's name, drawing requirements (including tolerances), method used to obtain results, and actual results of each measurement. Part(s) used for the inspection shall be identified when shipped to CAM as "First Article Inspection Sample". First Article data, regardless of format, shall accompany the first shipment to be delivered.

30. Traceability

30.1. The seller shall establish and maintain a system for traceability of supplier to their source (including sub-tier suppliers) by lot, batch, heat, melt, and part. Records of traceability shall be maintained by the supplier as a part of this objective evidence of quality control and acceptability, and such records shall be made available to representatives of CAM. See section 1.13 for additional details.

31. Documentation Retention

31.1. All aerospace suppliers, unless otherwise specified by the purchase order, require indefinite record retention. All other requirements of the modified note(s) are still applicable. Compliance with documentation required by the drawing or specification is required.

32. Change Approval

32.1. Upon approval by CAM as a qualified source, through first article or first lot acceptance, the seller shall not make any changes in design, materials, or processes which may affect the acceptability (dimensionally, visually, functionally, durability, etc.) of the items to be delivered to CAM without prior notification and approval of CAM. For the purpose of this clause, a process is defined as any procedure, system, or practice used during the manufacture or production of a deliverable item (i.e., machining, de-burring, heat treating, soldering, cleaning, finishing, etc.).

32.2. Examples of process changes that require customer notification and approval are as follows:

32.2.1. Change in inspection and/or testing methods.

32.2.2. Changes in product or processing of components used in the manufacture of the end item including components manufactured by the seller or a sub-tier supplier.

32.2.3. Change of sub-tier suppliers.

32.2.4. Production from new or modified tools, dies, molds, including replacements. (Excluding perishable tools).

32.2.5. A change in manufacturing location

32.2.6. A special process change.

33. MRB Authority

33.1. Unless otherwise specified in the purchase order, the seller and/or any of their sub-tier suppliers do not have authority to process “USE-AS-IS”, “REPAIR”, “STANDARD REPAIR PROCEDURES (SRPS)”, or “NON-SRPS” via their internal material review board (MRB).

33.2. These dispositions, as well as deviations and requests for waivers, requiring MRB disposition shall be submitted to CAM for approval (this does not include rework or scrap). The seller shall contact CAM to obtain a waiver form.

34. Government Property

34.1. In furtherance of the performance of a purchase order, CAM may deliver Government Property to the supplier. “Government Property” is property owned by or leased to the U.S. Government or acquired by the U.S. Government and placed in the possession of a supplier.

34.2. Supplier shall comply with the requirements of FAR 52.245-1 with respect to any Government Property delivered to the supplier in connection with a CAM purchase order. Without limiting the foregoing, supplier shall not remove, rework, repair, or scrap Government Property without the prior written approval of CAM.

35. Right of Access

35.1. CAM and/or its customers may conduct an audit of supplier’s and/or supplier’s sub-tier supplier’s facility, including without limitation all manufacturing processes and documentation used in the manufacturing of products under the purchase order, to determine compliance with the requirements of the purchase order.

35.2. Suppliers to CAM are subject to source and surveillance inspection by CAM Engineered Products, agencies of the U.S. Government, and CAM Engineered Products customers. The supplier shall, without additional cost, provide all reasonable facilities and assistance for the safety and convenience of such inspectors. At all times of inspection, supplier shall make available to the inspectors, copies of drawings, specifications, and process preservation and packaging data applicable to the goods or services purchased.

36. DFARS 252.225-7009 Restriction and Acquisition of Certain Articles Containing Specialty Metals (Supersedes 252.225-7017)

36.1. Pursuant to contracts with the U.S. Government and U.S. Government contractors, CAM is subject to DFARS 252.225-7009, which places certain restrictions on the acquisition of articles containing specialty metals. This regulation requires that specialty metals be melted or produced in the United States, its outlying areas, or a qualifying country. To the extent that articles supplied by supplier contain specialty metals, as defined in paragraph (a) below, the articles must comply with the requirements of DFARS 252.225-7009. Additionally, suppliers must insert this clause in its contracts with vendors supplying articles in support of a CAM purchase order.

37. NADCAP Required for Special Processes

37.1. Special processes are defined as heat treatment, welding, plating, passivation, coatings, non-destructive testing, and eddy current. The use of a NADCAP certified supplier is required when special processes are performed for CAM. CAM must be notified if the vendor loses NADCAP accreditation or if there are findings as a result of an audit conducted by NADCAP/PRI.

38. Foreign Object Damage (FOD)

38.1. Suppliers must have a program in place to protect products from damage during production and handling from foreign debris.

39. Government Rated Order (DPAS)

39.1. CAM received rated orders from the U.S. Government and U.S Government contractors for national defense use. In turn, CAM is required to flow priority ratings to suppliers of items needed to fulfill these rated orders. Likewise, supplier receiving rated orders from CAM must comply with the requirements of 15 CFR 700 and give dur priority to rated orders to meet required delivery dates.

40. Compliance with International Traffic in Arms Regulations (ITAR)

40.1. Terms in quotations below in this section 3.16 are as defined in the Arms Export Control Act (“AECA” at 22 U.S.C. 2778) and the International Traffic in Arms Regulations (“ITAR” at 22 CFR 120-130).

40.2. If supplier is providing to, or on behalf of CAM, a “defense article” or a “defense service” then the following apply:

40.2.1. Supplier shall be registered with the Directorate of Defense Trade Controls (“DDTC”), U.S. Department of State

40.2.2. Supplier shall not permit any “Foreign Person” (not a U.S. citizen or permanent resident alien) access to any technical data relating to the defense article or defense service.

40.2.3. Supplier shall not “Export” and “defense article” or “defense service” unless supplier has first obtained a license from DDTC and provided prior notification to CAM.

40.2.4. Supplier shall otherwise comply with the ITAR and AECA

40.2.5. Supplier shall indemnify and hold CAM harmless from and against any cost or other liabilities arising out of supplier’s failure to perform the above.

41. Non-Disclosure of Proprietary Information

41.1. CAM Non-Disclosure Agreement shall be reviewed and signed by all suppliers having access to material that is considered intellectual property of CAM. Compliance to CAM Terms and Conditions apply.

42. CAM Engineered Products Supplied Gauges

42.1. Gauges supplied to suppliers (including sub-tier suppliers) by CAM Engineered Products are still controlled under the CAM Engineered Products calibration system and procedures, in accordance with QSP-Monitoring and Measuring Resources and Calibration.

43. Flow Down of Inspection at Supplier Location

43.1. When inspection/verification has been flowed down to the supplier for completion the following apply:

43.1.1. Such inspections are to be used by the supplier as evidence of effective control.

43.1.2. Verification by customer does not relieve the supplier of the responsibility to provide acceptable products or services including those from customer designated sources.

43.1.3. Verification by CAM does not warrant subsequent rejection by the end customer.

44. Government Inspection Requirements

44.1. When Government inspection requirements are required as a part of the purchase order, inspection is required prior to shipment from the supplier’s location. Upon receipt of a Government order or a purchase order from CAM Engineered Products flowing down Government inspection requirements, the supplier is responsible to promptly notify the Government representative who normally services their plant so that appropriate planning for Government inspection can be accomplished.

Change Sheet

Requisitioner: Scott Minadeo
Title: CAM Supplier Quality Manual
Document: CSQM
Revision: 2
Owner: Supply Chain Manager

Training Required		
	X	Yes
		No

From: _____

To: rewrite to current practice

Reason: To reflect current process and incorporate additional requirements

Requisitioner	_____	Date	_____
Quality	_____	Date	_____
Manufacturing	_____	Date	_____
Engineering	_____	Date	_____
Department	_____	Date	_____
Document Control	_____	Released	_____