GENERAL REQUIREMENTS FOR QUALITY ASSURANCE PROVISIONS

1. SCOPE.

This document is applicable for the inspection of all materiel. It establishes general quality assurance provisions used in addition to the specific quality assurance provisions or verifications contained in a specification or a Quality Assurance Provision (QAP). The contractor requirements and inspection provisions contained in this document are applicable to a Technical Data Package (TDP). Quality conformance and first article inspection(s) shall consist of inspection of all contract or purchase order quality requirements in accordance with this document. A QAP is a documented inspection criteria used to assess conformance to drawing requirements; part of the TDP; and contains reference documents, classification of characteristics, sampling criteria, inspection methods, certification requirements, test methods and procedures. Beneficial comments (recommendations, additions, deletions) and any pertinent data, which may be of use in improving this document, should be addressed to the design activity.

a. When SQAP/SQ/QS is specified in any document, it is synonymous with QAP. Wherever QAP-APPX-BL is specified, it is synonymous with this document.

b. This document replaces MIL-W-63150 wherever specified in the contract or purchase order.

c. APPENDIX A of this QAP refers to MIL-STD-1916, which is only applicable to a contract or purchase order when QAP(s) requirements are specified on a drawing.

d. APPENDIX B of this QAP refers to test methods, which are only applicable to a contract or purchase order when the requirements are specified on a drawing.

e. APPENDIX C of this QAP refers to special process procedure, which is only applicable when the requirement is specified on a QAP or in the contract or purchase order.

2. ORDER OF PRECEDENCE.

In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. This precedence shall only be used in case of conflict between inspection requirements. The supplier shall request clarification from the procuring activity of what is required when there are conflicts, missing data (including tolerances), or other drawing or quality requirement ambiguities.

3. IN-PROCESS CONTROL.

The inspection requirements shall be applied at the earliest practical point in manufacture at which it is feasible to inspect for acceptance without risk of change in the characteristic by subsequent operations. The supplier shall establish in-process inspection at strategically located points throughout the manufacturing processes to assure continuous control of unit quality. The supplier's inspection system shall provide for inspection and approval of the first piece at each operation, and/or the finished unit, before quantity production. The supplier shall provide and maintain work gages and other measuring and testing devices necessary to accomplish inspection and to control quality during the manufacturing processes.

4. MANUFACTURING PROCESSES.

The supplier is required to request authorization from the procuring activity before changing to any unspecified material, welding, heat treatment, plating and/or coating operations, nondestructive testing methods, or fabrication methods. The procuring activity will make a determination whether the change is significant enough to warrant reevaluation and testing/verification of production or initial production unit(s). A written clause or the Contract or Purchase Order Data Requirements List (CDRL) shall specify when a requirement for a special manufacturing process procedure (e.g., protective finish, soldering, surface hardening) must be submitted to the procuring activity. The supplier shall assure that acceptable manufacturing processes and treatments are being used to prevent the hazards of stress corrosion cracking, hydrogen embrittlement, or other deteriorating conditions.

5. QUALITY CONFORMANCE INSPECTION.

Whenever a QAP is specified in the contract or purchase order, the inspection provisions of the QAP are the minimum quality conformance requirements for those units to which the QAP pertains. An Acceptable Quality Level (AQL) is prohibited from used as an attribute sampling plan for inspection on DoD procurement actions and shall not be included in a QAP.

a. When a QAP is not specified in the contract or purchase order, the supplier's quality plan shall address the frequency and the type of process control used for inspection of the drawing characteristic. The plan shall be available for review, when requested, and is subject to approval of the procuring activity.

b. A variable sampling plan for quality conformance inspection of a characteristic listed in a QAP may be permitted. Before implementation of a variable sampling plan, the supplier shall secure the written concurrence of the procuring activity. All approved variable sampling plans shall be incorporated into the supplier's inspection system.

c. Reduced inspection may be allowed when the manufacturing equipment, methods, and tool control are in process control and controlled by highly repeatable manufacturing techniques. Examples of types of manufacturing that should be considered for this includes: die forgings, die stamping, extrusions, investment castings, and numerically-controlled machining processes. Tightened inspection (original sampling plan) shall be used for the re-inspection of a characteristic, when it is found to be nonconforming.

d. When the number of units manufactured is less than 50, the number of units sampled shall be equal to all of the units or the stated sample size on the QAP, whichever is less. For example, the contract or purchase order quantity is 8 units and all units are manufactured as one lot. The inspection requirement is 13 units per lot size of 50 units on the QAP. Therefore, the sample size will be 8 units (less than the stated sample size). When the number of units manufactured is greater than any multiple of 50, the number of units sampled from that remaining quantity shall be equal to all of that quantity or the stated sample size, whichever is less. For example, the contract or purchase order quantity is 112 units and all units are manufactured as one lot. The inspection requirement is 13 units per lot size of 50 units on the QAP. Therefore, the sample size will be 38 units (e.g.; 13 out of 50, plus 13 out of 50, plus 12).

6. CERTIFICATIONS.

The method of submittal, for certification requirements, is a Certified Test Report (CTR) or Certificate Of Conformance (COC). The procuring activity will specify the type of certification required per the Contract or Purchase Order Data Requirements List (CDRL) using DD Form 1423 or any other method as specified in the contract or purchase order.

a. A CTR and/or a COC may be submitted to the Government representative or to the procuring activity. A CTR and/or a COR must be specifically identifiable to and provided with each Material Inspection and Receiving Report (DD Form 250) and/or Record of Treatment and Test (DD Form 1155) submitted.

b. For contract or purchase orders consisting of multiple shipments, the supplier shall submit for the first production shipment, all CTR(s) and/or COC(s) required. After the initial submittal, the supplier is permitted to submit certification(s) that shall only have to specify the initial shipment contract or purchase order number; a certification that no manufacturing process has changed from the initial shipment; and the original paperwork. This type of certification does not apply to nondestructive testing requirements or inspection records. These requirements cannot be summarized.

c. A CTR or a COC shall not be used as the sole basis for Government acceptance of contract or purchase order unit(s) unless approved by the procuring activity. A CTR or a COC are in addition to, and not in lieu of, any rights of the Government under the contract or purchase order or law.

d. The procuring activity will determine if a CTR or a COC is required for Military Standard (MS) units, critical fasteners and commercial units.

e. A COC is to cite compliance to the specific data for which the COC is presented for acceptance (e.g., personnel qualification; procedure or process compliance to a specification and/or standard; material compliance to acceptance criteria, standard, composition, type, etc.). The supporting data (chemical analysis of the material or certification from the raw material producer or processor) shall be available for examination upon request by the Government representative even though it may not have to be submitted with a COC.

f. A CTR shall contain actual results of tests for the chemical analysis, heat treatment, and/or mechanical properties of the drawing and/or specification. Include in the report the number of specimens tested, grade and/or type of material (if applicable).

g. When the drawing specifies a generalized material note for steel, the steel selected must conform to one standard wrought AISI grade of the proper carbon content and series designation. The plain carbon steels are nonresulfurized with maximum manganese content of 1.00 percent. Steels of merchant quality, leaded, resulfurized, rephosphorized, or combinations thereof, are not acceptable. Unless otherwise specified, castings are also not acceptable. A CTR or a COC addressing material requirements should specifically state "**Unit was not made from castings, merchant quality, leaded, resulphurized or rephosphorized steels", unless otherwise specified on a drawing or in the contract or purchase order.**

h. A CTR identifiable with the material may, at the option of the Government, be accepted in lieu of tests. When the identity or quality of the material is in doubt and valid and acceptable data is absent, tests shall be conducted within the material as required by the Government representative to determine the identity and quality. If proven to be unacceptable, the material shall be rejected.

i. When the supplier certifies that the material delivered for source accepted material (e.g., castings and forgings) is in accordance with the applicable specification, the procuring activity may perform a physical/chemical analysis of the material to assure conformance to the specification requirement. Failure of the material to meet the physical/chemical requirements will be a cause for rejection as a latent material defect and will necessitate replacement of the material at the supplier's expense when so directed by the procuring activity.

j. As a minimum a CTR and/or a COC shall contain the following:

(1) Name of company and date; contract or purchase order number.
(2) Drawing number, serial number (if applicable), and the quantity in each lot or shipment.
(3) Complete nomenclature of the unit together with the lot number or other identification.
(4) A statement, with the signature and title of certifying official from the supplier. The statement certifying that the unit met all the requirements of the contract or purchase order may be in the format as stated below:

“The undersigned, individually, and as the authorized representative of the supplier, warrants and represents that all the information supplied above is true and accurate. The material covered by this certificate conforms to all contract or purchase order requirements (including but not limited to the drawings and specifications), the inspection test results and the analyses appearing herein are true and accurate; and this certificate is made for the purpose of inducing payment and with knowledge that the information and certification may be used as a basis for payment."

7. INSPECTION RECORDS.

The inspections records shall be accurate, complete, documented on a suitable format, and made readily availably to the procuring activity, upon request. The supplier shall maintain the records of qualifications of operators and equipment. This shall apply whether manufacturing processes are performed at the sub-supplier's facility or at the supplier's plant. After the life of the contract or purchase order, unless otherwise specified by the procuring activity, records for units that are serialized shall be maintained for a minimum of three years and nonserialized units shall be maintained for a minimum of one year.

a. When a commercial gage, functional gage, go/no-go type gage, visual, manual, and/or a certification is the inspection method, the use of OK, check marks, "X's" or ACC may be used to document acceptance. Use REJ to document nonacceptance. When inspection records are required to be delivered to the procuring activity, the supplier may summarize and report the range (minimum and maximum) values recorded for each characteristic inspected in the lot. Special Measuring Test Equipment (SMTE) that gives actual dimensional readings is the preferred method of reporting and/or recording inspection results. Inspection records will be documented and/or recorded in accordance with the specified unit of measure (e.g., metric, inch) as specified on a drawing or in a QAP.

b. The raw data produced by computer controlled electronic special inspection equipment (e.g., Gun Tube Inspection Station, Gymnasticators) shall be maintained in its original format as a part of inspection records. The data shall be recorded on Government acceptable media and be made available to the Government upon request for the duration of the contract or purchase order. At the completion of the contract or purchase order, the media shall be appropriately packaged, marked, and provided to the procuring activity.

c. The inspection record shall provide, as a minimum, the following:

(1) Contract or purchase order number; nomenclature of unit.
(2) Drawing number with revision and date, serial number (if applicable).
(3) Lot size and lot quantity; sample size (number of units inspected).
(4) The method of inspection, identification of the inspector, the date of the inspection.
(5) The results of the inspection; each characteristic inspected including any specified tolerance.
(6) Specify QAP characteristic number (if applicable).

8. WORKMANSHIP.

All finished surfaces shall be protected against foreign material and damage during manufacture and storage prior to delivery. Material shall not be treated or touched up in any manner to conceal defects and shall be free from defects which adversely affect the safety, function, performance, serviceability, interchangeability, appearance or longevity of the unit. Unless otherwise allowed per the drawing, finished units shall not have the following conditions: seams, laps, laminations, cracks, extraneous material, visible steps or irregularities, sharp edges and corners. Salvaging operations (e.g., hammering to shape, repair by welding, straightness, bending), welding or other means for the repair of defects in materials shall not be performed unless specifically authorized by the procuring activity. Evidence of poor workmanship include the following: scratches in excess of drawing and specification requirements, burrs, nicks, corrosion and non-specified oxidation (rust), tool scores, gouges, deformations, mission operations, improper assembly, missing units, stains, knife edges, fins, extraneous material, and missing or damaged protective finish.

9. PROTECTIVE FINISHES AND COATINGS.

Protective finish and/or coating shall be visually examined for completeness, uniformity in appearance and color, and for freedom from pits, corrosion, scratches, and worn or bare spots. Touch up may be used with the approval of the procuring activity, in lieu of refinishing with the original finish, for restoration of small areas of finish as long as form, fit, and function are not affected. Dimensional requirements and tolerances shall apply prior to the application of organic coatings (e.g., paint, varnish, lacquers), phosphate coatings, and solid film lubricant. Dimensional requirements apply after the application of non-organic coatings such as black oxide, metallic plating substances (e.g., chromium, cadmium) and anodic coatings.

10. INSPECTION EQUIPMENT AND METHODS.

An assembly shall be visually examined for completeness and conformance to specified requirements. When possible, the functioning of an assembly shall be inspected by manual operation. The assembly shall be checked manually for tightness, protrusion, operation or similar condition, as applicable. The following applies to inspection and test equipment.

a. The supplier is responsible for providing all SMTE required that will assure full form for the entire surface of the specified characteristic. The supplier may use any type of industry-developed, commercially available, multi-usage equipment.

b. Inspection equipment used shall be capable of repeatable measurements by various experienced inspection/test personnel, to an accuracy of 10% of the total tolerance of the characteristic being inspected. In the event the supplier desires relief from this requirement for electrical testing, a technically supported request for relief or waiver shall be submitted to the procuring activity.

c. When a Special Test Method (STM) is specified as the method of inspection, the methods and procedures shall be as specified in the applicable QAP.

d. Special Inspection Equipment (SIE) applies prior to the application of phosphate protective finish. SIE shall not be applied with any method that will damage the SIE. When SIE is specified and provided as Government Furnished Equipment (GFE) to the supplier as the inspection method, the supplier shall use the GFE. When SIE is not provided, not available, or unserviceable, the supplier shall document and describe in writing the inspection method to be used, in lieu of the SIE specified, and submit the written inspection method to the procuring activity prior to applying an alternate inspection method.

e. An alternate inspection method is a method, which equals or exceeds the specified accuracy and provides, as a minimum, the quality assurance requirements in the contract or purchase order documents. The procuring activity will determine if the alternate method is acceptable and provide written approval or disapproval. The supplier must receive approval prior to applying an alternate inspection method. The supplier may be authorize to use SMTE, another inspection method or be required to fabricate the SIE in accordance with the Government drawing.

f. If applicable, Government designed inspection and test equipment shall be as specified in the contract or purchase order. When a Government representative desires to use supplier or GFE for contract or purchase order related purposes, such use shall be permitted without charge. Design responsibility (other than GFE) for all other inspection equipment is assigned to the supplier. Such designs may include commercial equipment, which the supplier proposes to use. Supplier designs shall include appropriate operating instructions, calibration procedures, and maintenance procedures. Designs, which provide variable measurements instead of attributes data, are preferred in order to maximize the benefits of utilizing Statistical Process Control.

g. The method of restoration and returning GFE will be determined on an individual basis by the procuring activity. Restoration is meant to include the repair or replacement of GFE found to be unserviceable from supplier use.

h. An inspection standard shall be utilized for those characteristics requiring inspection decisions by visual (eyesight) means. Units selected as a visual comparison standard shall be mutually agreed to by the supplier and the Government, within drawing and specification requirements, and shall be used to assist in determining configuration and minimum acceptance criteria. Each comparison or inspection standard shall be kept under the control of the supplier's inspection element and shall be positively identified as to the characteristic or condition the standard represents, date established as the standard, number of the standard, and identity of the supplier and the Government inspection personnel establishing the standard.

APPENDIX A

CLASSIFICATION OF CHARACTERISTICS AND INSPECTION METHODS ON DRAWINGS

1. MIL-STD-1916 APPLIES.

2. CLASSIFICATION OF CHARACTERISTICS AND INSPECTION REQUIREMENTS. The following figure provides explanation of the standard QAP application when it appears on a drawing.

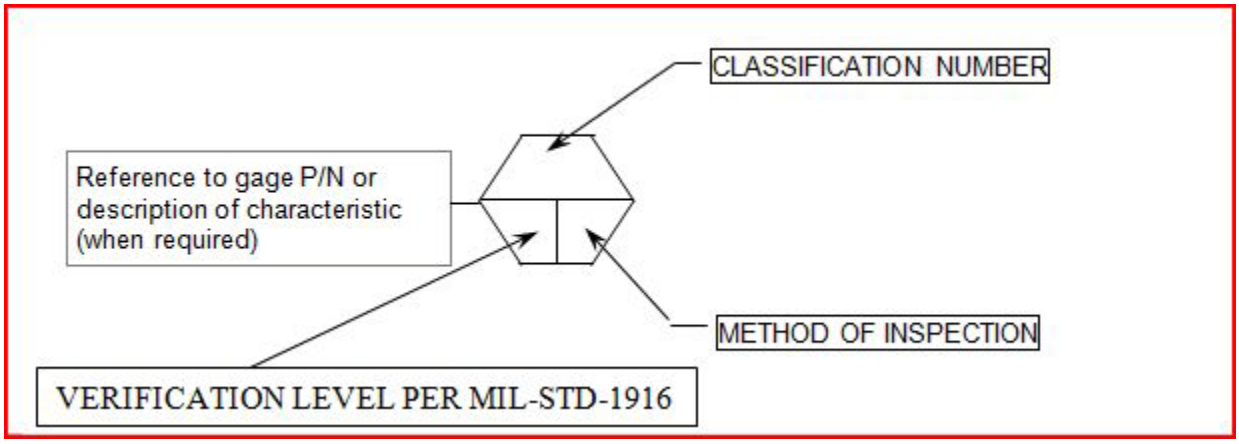
3. VERIFICATION LEVEL. When a verification level requirement in accordance with MIL-STD-1916 is applied on a drawing, the following are applicable. When the verification level is indicated as “0”, 100% inspection is required.

4. CLASSIFICATION OF CHARACTERISTICS. When specified on a drawing, the following characteristic numbers designate the classification of characteristics:

1	thru	99	CRITICAL
101	thru	199	MAJOR
201	thru	299	MINOR
301	thru	399	SPECIAL SAMPLING REQUIREMENTS
401	thru	499	CERTIFICATION REQUIREMENTS (e.g., material, mechanical properties, heat treatment, surface hardening, protective finish, welding and NDT)
501	thru	599	TEST METHODS AND PROCEDURES

5. METHODS OF INSPECTION. When specified on a drawing, the following symbols designate the method of inspection for the classification of characteristics:

C STANDARD MEASUREMENT AND TEST EQUIPMENT
S SPECIAL TEST EQUIPMENT
V VISUAL
W CERTIFICATE OF COMPLIANCE
Y CERTIFIED TEST REPORT
Z TEST METHOD AND PROCEDURES



APPENDIX B

TEST METHODS

1. APPLICABLE DOCUMENTS.

ANSI/SAE J423	Method of Measuring Case Depth, Recommended Practice
ASTM E10	Method of Tests for Brinell Hardness of Metallic Materials
ASTM E18	Method of Tests for Rockwell Superficial Hardness of Metallic Materials
ASTM E1077	Test Methods for Estimating the Depth of Decarburization of Steel Specimens
ASTM E1444	Standard Practice for Magnetic Particle Examination
ASTM E1742	Standard Practice for Radiographic Examination
NAS 410	Certification and Qualification Of Nondestructive Test Personnel

2. TORQUE.

The supplier shall furnish written notice to the Government representative of the time, date, and location of the torque operation testing, so that the Government representative may witness the testing on a sufficient number of units. The aforementioned requirement for witnessing application of torque does not relieve the supplier of actually conducting torque tests.

3. SOLDERING AND BRAZING.

All soldering and brazing related operations shall be performed in accordance with a process plan to be developed and maintained by the supplier as part of the documentation supporting the inspection system. The plan shall include the procedures to be used. As a minimum, each procedure shall include the process, tools, equipment, materials and acceptance criteria used for the operation. The process control plan shall be made available to the Government representative upon request.

4. NONDESTRUCTIVE TESTING (NDT).

NDT shall be conducted in accordance with the criteria specified in the contract or purchase order, drawing, specification and/or QAP. Written inspection procedures shall be made available to the Government representative upon request. Personnel performing NDT shall be qualified in accordance with NAS 410 or as specified in the contract or purchase order. For final acceptance, seventy-two (72) hours must pass before magnetic particle inspection shall be conducted on ferromagnetic materials, which are heat treated with a liquid quenching process. Magnetic particle indications shall be defined as lineal discontinuities. The standard practice for magnetic particle examination is outlined in ASTM E1444. The standard practice for radiographic examination is outlined in ASTM E1742. When radiography is specified and no sampling plan is provided, the radiographic sampling plan below shall apply to each heat of castings. Sample castings shall be randomly selected from each heat.

CASTINGS PER HEAT	SAMPLE SIZE
1-8	ALL
9-25	8
26-50	13
OVER 50	13 PLUS 20% OF THE CASTINGS OVER 50, ROUNDED TO THE NEXT HIGHER INTEGER.

The castings may be radiographed prior to heat treatment providing that liquid penetrant or magnetic particle inspection is performed after heat treatment. The castings of each heat and the radiographic sample from that heat shall be marked with a permanent identification (engraving, stamping or raised letters), which will relate the sample to the heat. The related radiographic film data shall be identifiable to the sample and heat. If any casting in the sample fails to meet the specified radiographic requirements, then all castings comprising the heat shall be subjected to 100% radiographic inspection in the area(s) where the rejection was located. Each casting that fails the radiographic inspection shall be rejected.

5. HARDNESS TEST.

Brinell hardness tests shall be performed in accordance with ASTM E10. Rockwell hardness tests shall be performed in accordance with ASTM E18. The following applies to forgings and/or castings. A minimum of two hardness tests shall be conducted. One test for the thinnest cross-section and one test for the thickest cross-section, if possible. Surface decarburization or any form of superficial hardening shall be removed, prior to hardness testing, by grinding or other suitable means. Material removal is .12 maximum for forgings and .03 maximum for castings. Preparation shall be carried out in such a way that any alteration of the surface hardness (e.g., heat or cold-working) is minimized. Care should be taken to avoid over-heating or cold-working the surface. The tested work piece surface must be representative of the material. ASTM E1077 may be used as a reference for decarburization. Dimensions do not apply in areas tested for hardness. All hardness readings shall conform to the requirements of the drawing and conversions to HRC values will include rounding up (xx.5 or higher) or down (xx.4 or lower), if applicable.

6. CARBURIZING, NITRIDING, SURFACE HARDENING-FLAME OR INDUCTION.

"Case depth" identified on a drawing is usually "total case depth." The recommended practice of measuring depth of case hardness is in accordance with ANSI/SAE J423. A test specimen of the same alloy, same hardness and similar configuration as the unit shall be processed with each heat treat lot to verify case depth, hardness requirements, and microstructure. When required by the procuring activity, an approved process must be on file at the procuring activity prior to processing any units. The supplier shall provide certification with each lot stating the approved procedure was used and a report showing actual case depth surface and core hardness values obtained. Changes to the procedure will require resubmission of the procedure and a specimen for the procuring activity approval.

7. FIRST ARTICLE REQUIREMENTS (FA).

The FA produced must be representative of the manufacturing processes to be used during production. Any change in location or ownership of a previously qualified manufacturer or source requires reevaluation of the FA. Previous production units will not be used to meet FA requirements. The Government representative may witness destructive testing, when required to be performed by the supplier. Unless otherwise specified by the procuring activity, the quantity and configuration of the FA shall be as specified in the contract or purchase order. The FA shall be inspected and tested by the supplier for all requirements of the drawing, specification and/or QAP specified except for inspection and test contained in a material specification and/or MS unit(s) provided that the required inspection and test have been performed previously and a certification of conformance is submitted with the FA test report.

APPENDIX C

SPECIAL PROCESS PROCEDURE

A Special Process (SP) is a process where the results of the process cannot be fully verified by subsequent inspection and where deficiencies may become apparent only after the unit is in use. To ensure that the specific requirements are met, a SP shall require continuous monitoring and control of the process variables or parameters. This will require a Special Process Procedure (SPP). The following applies to a SPP.

A SPP is a written documented set of instructions for a SP. The QAP shall identify the need for a SPP. The supplier is responsible for preparing the SPP.

The SPP may include requirements for personnel or equipment, as appropriate, is a deliverable item and is part of the first article when required by the specific QAP. The Government representative will perform onsite audits of an SPP in accordance with the Government′s established audit plans and/or procedures. The SPP shall be acceptable when the First Article is approved.

The supplier shall not deviate from the approved SPP. The supplier shall notify the Government, in writing, prior to implementing any changes to the approved SPP so that a determination can be made regarding the need for recertification of the manufacturing process (First Article inspection or onsite audit).

The SPP format shall include:

1. APPLICATION BLOCKS. At the top of the first page and at the bottom of each page. The application block at the top shall provide unit information. The bottom block shall provide information about the SPP (title and the date prepared).

2. SCOPE. State process involved.

3. APPLICABLE DOCUMENTS. List all applicable document numbers and document titles. (If none, so state)

4. REQUIREMENTS. (All requirements specified below are mandatory - if none, so state)

4.1. APPROVED EQUIPMENT AND EXPENDABLE SUPPLIES. List all approved equipment and expendable supplies required by the SPP and their minimum requirements.

4.2. MATERIAL. List all of the units/materials that are used in the procedure. (As defined in the technical data package)

4.3. PROCEDURE IN SEQUENCE. List, in sequence, all steps, operations, inspections, warnings and cautions for control of the process.

4.4. CONTROL OF NONCOMFORMING UNIT. State the procedure to be followed if units are nonconforming.

4.5. CORRECTIVE ACTION. State the procedure to be followed to eliminate causes of nonconformities.

4.6. CONTROL OF INSPECTION MEASURING, AND TEST EQUIPMENT. State the procedure that assures that measurement uncertainty is known.

4.7. CERTIFICATION. List all material certification and operator certification requirements required by the process.

4.8. QUALITY ASSURANCE PROVISIONS. (If none, so state). Provide any inspection and testing in accordance with the technical data requirements.

4.9 STATISTICAL PROCESS CONTROL. (If none, so state). State the procedure for identifying how statistical techniques are implemented for control of the process.

4.10 HANDLING, STORAGE, PACKAGING, PRESERVATION, AND DELIVERY. State the procedures used to assess and prevent a unit from damage/deterioration; control packing, packaging and marking; and assure preservation when a unit is in the supplier's control.

4.11 NOTES, ADDITIONAL INFORMATION, AND SIGNATURE PAGE. Provide any additional information pertinent to the procedure. The last page of the SPP shall include dates and signatures of the author and all approving officials.

DEFINITIONS

Accept on Zero Defects - On a QAP means if any characteristic (including any unlisted defects) of any sample unit for the lot size inspected is found to be defective, each unit in the lot will be inspected for the nonconforming characteristic.

Attribute Inspection - A method of inspection whereby the unit is classified simply as "defective" or "nondefective", or the number of nonconforming characteristics (defects) in the unit is counted with respect to a given requirements or set of requirements.

Defect - Any nonconformance of a characteristic with specified requirements.

First Article Inspection – Evaluation of a unit, representative of the production process, to validate that the supplier has adequate manufacturing and assembly processes in place to assure that the unit meets requirements. First Article testing means testing and evaluating the First Article for conformance with specified contract or purchase order requirements before, or in the initial state of, production.

Foreign Matter - Substances on a unit, which include but are not limited to dirt, corrosion, grease, and chips.

Frequency and Process Control - The time and quantity of sampling inspection and the equipment and/or method used.

Full Form - The term used to indicate that a characteristic feature shall be within specified geometric form, size, and orientation (if applicable) wherever the characteristic is defined. Geometric dimensioning and tolerancing control orientation.

Heat - All the castings produced from one batch of melted alloy (furnace charge), and poured under the same foundry practices within a brief and continuous production run.

Inspection – The term that encompasses all actions used to assess conformance of units to their requirements. Inspection includes visual examination, tactile examination, gauging, tests, and all other measures used to determine conformance or non-conformance. First article inspection encompasses first article test and first piece inspection.

Lot size - A homogeneous collection of units from which a representative sample is drawn.

Unlisted Defects - Not listed in the specified inspection characteristics.

Variable Inspection - A method of inspection whereby a measurement is made to determine and record the numerical magnitude of a characteristic under consideration. This involves reading a scale of some kind and recording the measurement on the units desired e.g., pounds, inches, seconds, ohms, degrees Fahrenheit, percent chemical content, etc.).