QUALITY ASSURANCE PROVISIONS (QAP) FOR THE CXU-3A/B SIGNAL CARTRIDGE

I. QUALITY SYSTEM REQUIREMENTS

A. The contractor shall implement and maintain a quality system meeting the requirements of ISO 9001-2000 (only design/development exclusions permitted)(or 9002-1994). The quality system shall also implement the following provisions:
   1. Subcontractors producing critical and/or major characteristics shall have a quality system compliant to ISO 9001-2000 (only design/development exclusions permitted)(or 9002-1994).
   2. When property is furnished by the Government, the contractor shall implement the following:
      (a) Examination upon receipt, consistent with practicality, to detect damage upon transit;
      (b) Inspection for completeness, quantity and proper type;
      (c) Periodic inspection and precautions to assure adequate storage conditions and to guard against damage from handling and deterioration during storage;
      (d) Identification and protection from improper use or disposition.
   3. Process and Production Control conditions shall include:
      (a) Documented manufacturing planning for the implementation and control of manufacturing operations. The planning shall include: a description of operations, facility, environmental equipment, and tooling requirements, associated controls, and a process flow chart to portray the process of fabrication and assembly in terms of key operations.
      (b) Accountability for all product.
      (c) Evidence that all manufacturing, test, and inspection operations have been completed in sequence, as planned, or as otherwise documented and authorized.
      (d) Preparation of documented process monitoring, accountability, and operator instructions for all processes that affect product quality. These instructions are to be accessible at the point where work is performed and shall, as a minimum, contain reference to the following: workmanship standards, manufacturing aids, step by step instructions for performing operations, equipment or tools required, special conditions to be maintained, identification of special handling devices, and methods for recording completion of operations.
   4. The contractor's calibration system shall be in accordance with ANSI/NCSL Z540-1-1994 or ISO 10012-1.
   5. Control of nonconforming material shall include:
      (a) Controls applied to suspect product as well as to nonconforming product.
      (b) The proposed use or repair of product which does not conform to specified requirements shall be submitted to the Government prior to use or repair. Rework and repair shall be in accordance with applicable contract clause. Repetitive nonconformances will not be approved.
      (c) The contractor shall promptly notify the Government when a nonconformance is found in the contractor's processes or products that may affect product already delivered.
   6. Corrective action shall be required of a subcontractor when it is determined that the root cause of a nonconformity is the responsibility of the subcontractor.
   7. Internal audits shall cover all quality management related processes, activities, and shifts, and shall be scheduled according to an annual plan.

B. The quality system shall be documented in a Quality System Plan (QSP) in accordance with the applicable CDRL and this QAP. The QSP shall document the details of the contractor's quality system, including management commitment to quality, system elements, policy and practices. This Plan provides the Government a basis for assessment of the quality system and evidence of the contractor's intent to comply with the contract quality requirements.
   1. The QSP shall include traceability from the specific quality requirement elements to the specific contractor processes which support those elements. The QSP shall include:
      (a) A summary of the contract quality requirements and
      (b) A relational matrix to indicate the general relationship between the contractor's quality system procedures/processes and the applicable quality system elements. The matrix, or an attachment thereto, shall also identify schedules or quality activities and tasks which must be coordinated and compatible with other schedules prepared for work under the contract, as well as include the name(s) of the person(s) responsible for accomplishments of activities and tasks.

2. The QSP shall identify the means by which the contractor will ensure quality system effectiveness and demonstrate comprehensive management and review of data, such that the results may be used to indicate trends and progress in quality of design, processes fabrication, assembly, test and acceptance as appropriate to the contract. The QSP shall describe what is measured, how often it is tracked, and who reviews and assures that appropriate action is initiated when trends are unfavorable.
3. A copy of the contractor's quality manual which describes the current quality system shall be attached.

C. The contractor shall prepare an Acceptance Inspection and Test Plan (ITP) in accordance with the applicable CDRL and the following format:
1. General format: The ITP shall, at minimum, contain the following:
   (a) Cover sheet identifying item, contract number, and revision letter of the plan.
   (b) All of the tests and inspections required for acceptance of the item, documented in accordance with the requirements herein.
   (c) A section for gage and measurement equipment maintenance, recertification, and recalibration documented in accordance with the requirements herein.
2. Format for documenting inspections: For each test or inspection, including those tests or inspections which are contained in specifications, specific instructions shall be prepared and shall contain the following:
   (a) Identification of the item to be tested or inspected, including part number, revision letter, and nomenclature.
   (b) Identification of measuring and test equipment using appropriate identification data which is visible on the equipment. Standard instruments such as a caliper or micrometer do not require a one to one identification description and can be identified simply as "caliper" or "micrometer".
   (c) The location of the characteristic, such as the drawing sheet and zone, or a brief description of the characteristic such that an inspector can identify it's location.
   (d) A written procedure for performing the test or measurement when the characteristic is other than a simple plus or minus tolerance dimension which is measured by the use of a standard instrument such as a caliper or micrometer. The procedure may be placed in an appendix of the plan and referenced if the procedure is lengthy or repeatedly used.
   (e) The manner in which the result of the inspection is to be recorded such as a particular data sheet.
   (f) Criteria for passing or failing the inspection (such as the high and low limit for a particular dimension, a particular minimum tensile strength, minimum voltage, etc.).
   (g) Details of the sampling plan to be used.

3. Format for gage maintenance, recertification, and recalibration schedule: For each acceptance gage, or other measurement device (including standard measuring instruments) used for final acceptance, the following information shall be documented in the ITP:
   (a) A description of the gage or measuring device, including identification data which is visible on the equipment.
   (b) A schedule for recertification of the gage or measurement device in terms of gage passes or time limit.
   (c) Inspection and test equipment used for acceptance of CRITICAL and MAJOR characteristics shall require design approval in accordance with applicable CDRL. A copy of the approval shall be included. Inspection and test equipment used for acceptance of other characteristics (i.e., MINOR) shall require approval in accordance with applicable CDRL. A copy of the approval shall be included.

   The above format shall be used for all required tests and inspections regardless of whether the tests or inspections are performed by a subcontractor. When tests or inspections are performed by a subcontractor, all of the above information shall be provided by the subcontractor or obtained by subsequent receipt test or inspection or final acceptance by the prime contractor. When tests or inspections are performed by a subcontractor, the prime contractor shall review the relevant specifications and create a receipt test or inspection review sheet to review the subcontractor's test and inspection data to ensure conformity to contractual requirements. In-process or statistical production tests or inspections, which are used for purposes of manufacturing material, which will later be verified by an acceptance test or inspection, need not be documented in the plan.

D. Approved test and inspection equipment shall be made available for use by the Government when required to determine conformance with contract requirements. If conditions warrant, contractor personnel shall be made available for operation of such devices and for verification of their accuracy and condition.

II. INSPECTION REQUIREMENTS

A. The contractor, in performing sampling inspection of the product(s) being manufactured/delivered under this contract, shall, as a minimum, comply with the inspection requirements set forth below without jeopardizing quality:
   1. Characteristics classified on the drawings or in separate documents as CRITICAL shall be inspected 100%.
   2. Characteristics classified on the drawings or in separate documents as MAJOR shall be inspected by characteristic using MIL-STD-1916, Verification Level (VL)-IV.
   3. Characteristics classified on the drawings or in separate documents as MINOR (listed or unlisted) shall be inspected by characteristic using MIL-STD-1916, Verification Level (VL)-II.

   Notes

   1. The above criteria will apply except where sampling plans and acceptance criteria appear in the product and/or affiliated specifications, or where authorization to deviate from these requirements has been obtained in accordance with contract requirements.
   2. MIL-STD-1916 will form the basis of the sampling inspection program. Those elements of MIL-STD-1916 related to sampling inspection will also apply (e.g., switching rules, non conformance disposition, etc.) Reduction of test and inspection requirements will be as defined elsewhere in the QAP and contract. Clearance or screening requirements apply to all characteristics within a class and not just to those defects which caused the rejection.
   3. MIL-STD-1916 is not intended for use with destructive testing. Should sampling with destructive testing be required, an accompanying sampling plan will be provided in the technical documentation.
   4. If the use of an alternate sampling plan (other than those specified above) is desired, it shall be documented in detail to show factors such as lot size, sample size, acceptance criteria, and operating characteristic curves, and submitted for approval in accordance with the contract requirements.
   5. Characteristics other than product attributes-processing requirements specified on drawings which are classified as CRITICAL, MAJOR, MINOR, or UNCLASSIFIED are exempt from the inspection requirements of the plans above. However, these processes shall be controlled in accordance with the inspection system and/or quality program requirements of the contract.

III. STATISTICAL PROCESS CONTROL PROGRAM

The contractor's implementation of the SPC program shall be documented in accordance with the applicable CDRL and contract clause (with scope of work).

IV. ACCEPTANCE REQUIREMENTS

A. First Article and Production Lot Acceptance Tests are required and shall be performed as follows:

Test/Inspection	Activity	No. of Units
First Article	Contractor	150 (See Note A)
Lot Acceptance	Contractor	11,200 + 100 (See Note B)

   1. First Article will consist of items which are considered acceptable by both the contractor and government. First Article Testing will be performed by contractor in accordance with CXU-3A/B Prime Item Product Fabrication Specification at contractor's facility and witnessed by government personnel. Waiver of First Article will be at the option of Naval Air Warfare Center Weapons Division (NAWC-WD), Point Mugu, CA 93042-5001. Approval, conditional approval, or rejection of the First Article sample will be given by the PCO. Production before approval is at the contractor's risk.

   2. The First Article shall be representative of items to be manufactured using the same processes and procedures as contract production.

   3. The approved First Article will not serve as a manufacturing standard.

4. Lot Acceptance will be conducted by contractor and/or DCMA and witnessed by DCMA.

5. At conclusion of First Article Testing and Lot Acceptance Testing, the contractor shall prepare test reports in accordance with CDRL requirements.

   Notes

   A. First Article sample and test/inspection requirements are defined in the Prime Item Product Fabrication Specification. A lot of first articles will be required before approval can be given to a contractor to proceed with production.

   B. Lot criteria and test/inspection requirements are defined in the Prime Item Product Fabrication Specification. Cartridges from not more than two (2) production lots may be palletized on any single pallet providing that all are being shipped to a single destination and the DD-250 outlines the quantities from each lot.

B. First Article And Lot Acceptance Reporting: At conclusion of first article and lot acceptance inspection and testing, the contractor shall prepare test reports in accordance with CDRL requirements.

C. Quality System Review: A quality system review concurrent with first article or first lot acceptance may be conducted to evaluate the contractor's quality system, processes and procedures inherent to the quality of items to be delivered under this contract. The review shall be conducted by Government representatives designated by the Contracting Officer.

V. TEST AND INSPECTION REDUCTION OR ELIMINATION

A. The Government will consider reduction or elimination of selected acceptance test or inspection based upon first article, preproduction, and lot acceptance test results when supported by evidence of both process stability and capability. Contractor written requests shall be made through the Administrative Contracting Officer to the Contracting Officer. Approval will be based upon the contractor's quality system plan, statistical process control plan, and implementation and validation of the of process control techniques and corresponding results.

B. Product quality is principally the result of process design and control. As such, the contractor shall develop process and product control methods that limit product variation and provide evidence of product conformance. Process control techniques include but are not limited to: calibrated and controlled tooling, computer numerical control machining, set-up verification, and statistical process control. Based on process control techniques, complexity of product characteristics, and length of steady state production, the contractor shall select product characteristics for potential reduction of reliance on acceptance test and inspection. Government representatives may assist the contractor during post award, first article, and other technical exchanges to identify product characteristics for potential test and inspection reduction or elimination.

C. The contractor may switch from normal to reduced sampling test and inspection in accordance with the contract provisions. Further reductions or elimination will be based on the Contracting Officer approval of contractor written requests. Prior to submitting a written request, the contractor's Quality System Plan, Acceptance Inspection and Test Plan, and SPC Program Plan shall have been approved by the Government. The Government will consider reduction or elimination of selected acceptance test or inspection based upon the process control evidence provided. As a minimum, documentation submitted for evaluation should address the following:
   1. Identification of the characteristic(s) for potential reduction, the inspection provision to be replaced, and an evaluation of the protection provided by the alternate methods as compared with the inspection requirement to be replaced.
   2. Evidence of process control and capability during production together with adequate criteria, measurement, and evaluation procedures to maintain control of the process.
   3. Assessment plan to periodically verify process stability and capability, and requirements for returning to normal acceptance .
   4. Corrective action plan to be implemented when evidence of loss of process control or significant process degradation arises. Evidence of loss of statistical control or degradation below a Cpk of 1.33 shall require immediate corrective action in accordance with the statistical process control program.

D. Once the Government approves alternate acceptance methods, reports containing internally generated process control metrics shall be made available upon request.

E. The Government will not consider requests for reduction or elimination of 100% acceptance inspection and testing of parameters or characteristics identified as CRITICAL.

F. The Government reserves the right to withdraw approval of alternate acceptance methods that the Government determines provide less assurance of quality than the inspection requirements originally specified or when the inability to maintain process stability and capability becomes apparent. Any break in production greater than 90 days shall require a return to normal acceptance inspection and testing.

VI. DOCUMENTATION REQUIREMENTS

A. Required documentation (e.g., QSP, ITP, SPC) shall be submitted in accordance with applicable CDRL. The contractor shall be responsible for any delays resulting from late submittals or delays resulting from submittal of inadequate documentation.

B. Documentation shall be maintained and updated as necessary. Updates (changes/revisions) shall consist of notes or changes, clearly identified as to where applicable (i.e., system element, page, paragraph number, etc.) Updates shall be submitted in accordance with CDRL requirements.

VII. ADDITIONAL REQUIREMENTS

A. ECPs, VECPs, Deviations, and NORs shall be prepared and submitted in accordance with applicable CDRL.

B. Class II Approval Authority: The Government procuring activity (NAWC WD, Pt. Mugu) shall have Class II approval authority. Class II requests should be approved or disapproved within thirty (30) calendar days of receipt by the Government procuring activity.

C. Production Progress and Delivery Report (DD Form 375) shall be prepared with instructions listed thereon.

D. Contractor shall prepare Ammunition Data Cards in accordance with CDRL and deliver with each deliverable lot.