

SUPPLEMENTAL QUALITY ASSURANCE REQUIREMENTS
FOR
QUALITY LEVELS 1 AND 2 PURCHASE ACTIONS

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**SUPPLEMENTAL QUALITY ASSURANCE REQUIREMENTS
FOR QUALITY LEVELS 1 AND 2 PURCHASE ACTIONS**

1. SCOPE

- 1.1 This document establishes supplemental quality assurance requirements for Bettis purchase actions which invoke quality assurance specifications MIL-Q-9858, QRC-82, MIL-I-45208, ISR-1, and ANSI/ISO/ASQ Q9001.
- 1.2 Section 3 contains quality assurance administrative requirements.
- 1.3 Section 4 contains quality assurance technical requirements.
- 1.4 Attachment A contains administrative requirements which are applicable only when Government Source Inspection is specified in the purchase order. The requirements of Attachment A must be re-delegated by the Seller when the Government Representative authorizes Government inspection at source on lower-tier supplier procurements.
- 1.5 Appendix A contains preparation instructions for DD Form 250.
- 1.6 The use of this document does not relieve the Seller of his responsibilities to assure that the requirements of the purchase order are complied with.
- 1.7 In the event of a conflict among documents applicable to the purchase order, the Seller shall immediately notify Bettis, who will, upon such notification, resolve the conflict and give the Seller a resolution via a Change Notice or Purchase Order Information Release (POIR) to the purchase order.

2. DEFINITIONS

- 2.1 Product - purchased raw materials, components, assemblies, equipment, supplies, systems, or services.
- 2.2 Item - one of the distinct parts of a product.
- 2.3 Serialization - identification of products by use of successive numbers.
- 2.4 Identification - a distinguishing mark applied to a product establishing the identity of that product.
- 2.5 Purchase Order - includes the basic purchase order and its several attachments (specifications, drawings, etc.), additional ordering data, Change Notices, and Purchase Order Information Releases.
- 2.6 Lower-tier Supplier - a material supplier or subcontractor who has a purchase order with the Seller or any of his lower-tier suppliers. Other subdivisions or activities within the Seller's parent facility not under the direct cognizance of the Seller's Quality Control Department, shall be considered lower-tier suppliers.

- 2.7 Gage - a fixed device or a pre-set and non-variable device used for determining whether a specified characteristic (dimension) is within limits.
- 2.8 Characteristic - any dimensional, visual, functional, mechanical, electrical, chemical, physical, or material feature or property and any manufacturing process control element which describes and establishes the design and manufacturing requirements of the product.
- 2.9 Special Process - Processes such as welding, brazing, plating, heat treating, and nondestructive testing that are considered to be complex in nature or of a nature requiring an increased level of quality control.

3. QUALITY ASSURANCE ADMINISTRATIVE REQUIREMENTS

3.1 Submittals Requesting Approval

All of the Seller requests for changes and approvals shall be submitted in accordance with Bettis Form 73844 or Form 74157 as applicable.

3.1.1 The Seller may submit required procedures to Bettis in accordance with the Coordinated Procedure Review System (CPRS) via Forms 73844 or 74157 requirements. The CPRS system includes provisions for preparing and obtaining approvals for generic procedures and lower-tier supplier information. If the Seller is interested in the CPRS system, contact Bettis, through the cognizant buyer, for a copy of the CPRS Instructions. Associated vendor actions and responsibilities to maintain the CPRS system are identified below in Section 3.2.4.

3.2 Responsibilities of Seller for Lower-tier Suppliers

3.2.1 The Seller is responsible for the performance of his lower-tier suppliers and shall establish and maintain a quality plan to provide for quality system surveillance and for product and process verification at the lower-tier supplier's facilities which ensures that applicable requirements are met.

3.2.2 The Seller shall ensure that inspection and manufacturing procedures, including changes to these procedures to be followed by lower-tier suppliers, are reviewed at a responsible level of management in at least two organizations, i.e., the organization doing the work and at least one higher-tier organization.

3.2.3 Examples of procedures, and changes thereto, requiring review and concurrence by at least two organizations include, but are not limited to welding, brazing, plating, heat treating, cleaning, pickling, blasting, soldering, chrome plating, tube rolling, painting, nondestructive testing, water chemistry control, and electrical tests. This requirement does not preclude the necessity for Bettis approval of documents as required by applicable specifications.

The Seller may use the CPRS program for submittal of initial procedures or prior approved CPRS procedures. Due to the associated efforts involved, the CPRS program applies to Seller and lower-tier submittals that are generally applicable to several components or purchase orders. Submittals which are unique to a

specific component, product, or purchase order are excluded.

3.2.4 Prior to the start of manufacture the Seller shall submit and have approved by Bettis specific plans for quality surveillance/evaluations of each of his lower-tier suppliers. These plans shall contain the following information:

1. Identification of the product to be obtained from a lower-tier supplier.
2. Identification of the quality level to be applied to the purchase order, e.g., MIL-I-45208, ISR-1, ANSI/ISO/ASQ Q9001, etc.
3. Indication as to whether an inspection point program will be imposed.
4. The type of Seller's quality surveillance to be exercised, i.e., full time or itinerant. If itinerant, state the frequency of visits and indicate the type of surveillance to be applied.

For example: First piece inspection, in-process inspection, in-process system audit, verification of inspection data in process, final inspection, etc.

5. Whether or not the manufacturing and quality procedures of lower-tier suppliers will be approved by the organization doing the work and at least one higher-tier organization.
6. Whether or not the Seller has performed a quality evaluation to verify that the lower-tier supplier can comply with the level of control indicated in Section 3.2.4.2. If yes, include the approximate date of this evaluation. If no, identify specific plans for determining prior to lower-tier order placement that the involved lower-tier supplier(s) can comply with the level of quality control required.

Submittal of the above information for approval applies to but is not limited to all sources for castings, special configuration forgings, special reactor materials, welding materials, machining, welding, special processes (plating, nondestructive testing, heat treating, etc.), subassembly fabrication, completed components, shock and vibrating testing, and engineering and production testing, notwithstanding the provisions of the article titled "Subcontracting" contained in "General Provisions for Fixed Price Orders (DOE)", The submittal shall include all of the lower-tier suppliers, including other divisions of the Seller's company, which will be employed to complete work under the scope of this purchase order except that suppliers of raw materials (except material references above), standard commercial supplies, and qualified product list items excluding weld materials need not be identified. If lower-tier suppliers will not be engaged, the Seller shall so advise Bettis.

Lower-tier supplier information may be submitted annually, using the CPRS program requirements, instead of an order-by-order submittal. The CPRS annual submittal must include all prospective lower-tier suppliers with whom the Seller expects to place business within a future 12-month period. The Seller shall identify the CPRS submittal as an "annual submittal" with the time period covered not to exceed 12 months. Additions to the annual submittal may be

made by either revising the previous annual submittal or by submitting an additions list of lower-tier suppliers. Succeeding year lower-tier supplier information shall be submitted at least eight weeks prior to expiration of the last annual approved listing.

3.2.5 So that Bettis may elect to participate in the Seller's quality evaluations, the Seller shall notify Bettis a minimum of ten working days prior to the date of the evaluation. Furthermore, a copy of all evaluation reports shall be submitted by the Seller to Bettis for information.

3.2.6 Any changes to the approved plan described in paragraph 3.2.4 require Bettis prior approval.

3.3 Unusual Incidents

3.3.1 The Seller shall, immediately upon discovery, notify Bettis and the resident Bettis Representative of any unusual incident occurring to products in the Seller's or a lower-tier supplier's facility or occurring in transit to or from the lower-tier supplier to the Seller.

3.3.2 An unusual incident is defined as an extraordinary occurrence, unplanned or unapproved, which either has the potential for causing damage to, or for affecting the structural integrity of the product, or results in a violation of a purchase order requirement. Examples include but are not limited to:

1. Inadvertent dropping of an item or product, or the inadvertent dropping of large and/or heavy objects onto an item or product.
2. Inadvertent exposure to excess heat such as fire or application of flame.
3. Inadvertent exposure to possible and/or potential prohibited materials. Inadvertent exposure may be caused by:
 - a. Ruptures or breaks in flasks, cylinders, vessels, and piping systems.
 - b. Natural elements such as snow caving in roofs, wind and rain (tornados, hurricanes) blowing off roofs or blowing out windows.
 - c. Transporting vehicle accident.
4. Unscheduled facility and/or equipment shutdowns caused by strikes, walkouts, bomb threats or power losses.
5. Inadvertent over-voltage applied to electrical or electronic components.

3.4 Records

3.4.1 Maintenance and Access to Files

The record files required by MIL-Q-9858, QRC-82, MIL-I-45208, ISR-1, ANSI/ISO/ASQ Q9001, and/or this document, as specified in the purchase order, shall be maintained in a manner which provides suitable protection of all records from deterioration or damage. Bettis and/or the Government Representative access to specific information contained therein shall be allowed, upon notification, at no additional cost (1) within a period of 24 hours if MIL-Q-9858 or QRC-82 applies to the purchase order; or (2) within a reasonable period of time in all other cases. The Seller shall maintain an official or master file of all quality and inspection records required to prove compliance with the purchase order requirements.

Any records required by Bettis at a location other than the Seller's facility and/or at a lower-tier supplier's facility shall be submitted to Bettis upon request; and shall be the responsibility of Bettis until such records are returned or replaced.

3.4.2 Duration of Record Maintenance

Notwithstanding the provisions of the article titled "Examination of Records" contained in General Provisions for Fixed Price Orders (DOE), record files shall be maintained for a minimum of seven years. At the end of seven years, or a longer period if agreed upon, the Seller shall request instructions from Bettis as to whether the records may be destroyed, may be forwarded to Bettis, or be retained by the Seller for a longer period (as agreed upon by the Seller and Bettis).

3.5 Mandatory Hold Points

3.5.1 Mandatory Hold Points (MHP) defining the specific operations in the Seller's manufacturing and/or inspection sequence that are to be witnessed and/or inspected by a Bettis Representative will be identified by Bettis in the Purchase Order. A Bettis MHP shall not be bypassed by the Seller unless written authorization has been obtained from Bettis. All operations up to an MHP, or purchase order completion if an MHP does not apply, shall have been accepted by the Seller as meeting contractual requirements prior to notification to Bettis for verification.

3.5.2 When an MHP is not issued with a purchase order or change notice requiring Bettis source inspection, inspection shall be performed by Bettis upon the Seller's completion of the purchase order requirements.

3.5.3 When an MHP is identified as "witness", the Bettis Representative will observe the test or inspection when it is initially performed by the Seller or his lower-tier supplier for acceptance of the product.

- 3.5.4 When an MHP is identified as "inspect", the Bettis Representative will physically perform the inspection work element specified independent of the Seller's inspection. However, if extensive set up or use of a complex machine or fixture is required to perform the inspection, or testing is permitted only once or a very limited number of times (e.g., destructive tests, load tests, electrical product insulation testing), the Bettis Representative shall perform his inspection concurrently with the Seller's inspection. In such cases, the Bettis Representative will make an independent assessment of the gage or instrument readings for such inspections.
- 3.5.5 If any portion of the purchase order involving an MHP is to be performed by a lower-tier supplier, the Seller shall notify Bettis prior to placing the purchase order with that supplier so that arrangements can be made to accomplish source inspection of the MHP.
- 3.5.6 The Seller shall furnish Bettis advance notice of inspections for Mandatory Hold Points or final inspection, whichever is applicable, as follows:

| Day of Inspection | Notification Required |
|------------------------|--------------------------------------|
| Monday | Preceding Thursday |
| Tuesday through Friday | Minimum of 48 clock hours in advance |

In those cases where a Bettis Representative is in residence at the Seller's facility, only reasonable notification is required unless otherwise specified in the purchase order. In the case of inspection to be performed at a lower-tier supplier's facility it is the responsibility of the Seller to notify Bettis.

3.6 Bettis Authorization to Ship Product

When Bettis source inspection is specified, an Inspection Release (Form 73701) will be issued by the Bettis Representative and attached to the accepted product. The product shall not be shipped without having an Inspection Release attached unless prior written authorization is received from Bettis.

3.7 Deficiency Notice

When deficiencies in the Seller's operations are revealed by a Bettis Representative, a Deficiency Notice or Supplier Corrective Action Request (SCAR) will be prepared and presented to the Seller who shall reply in writing to Bettis within the time period specified on the Deficiency Notice or SCAR. The Seller's reply shall state the real cause of the deficiency, the effect on other components or parts, the immediate corrective action taken or planned, and the action taken to prevent recurrence.

3.8 Inspection Point Program and Special Process Quality Plan

Work under this contract requires an Inspection Point Program (IPP) and a Special Process Quality Plan (SPQP) to be submitted for Bettis approval prior to the start of manufacturing, fabrication or testing.

3.8.1 An Inspection Point Program (which may be included as part of a process outline or manufacturing procedure) which the Seller and his lower-tier suppliers will follow to assure the purchase order requirements will be met, shall be submitted to Bettis via "Approval Request" form (reference Section 3.1), and approved prior to the start of manufacturing, fabrication or testing. The Inspection Point Program shall reference drawings and other documents (including applicable revisions) used to prepare the program and shall cover all operations from starting material through final preparation for shipment, including applicable lower-tier supplier's inspections. Partial Inspection Point Program submittals are authorized provided continuity of the total Inspection Point Program is preserved through explicit identification (tie-in) on subsequent submittals. Each inspection operation identified in the Inspection Point Program shall indicate the stage of manufacture where the inspection operation is to be performed. All inspections which are final acceptance inspections in preparation for shipment shall be indicated by a symbol or other appropriate method.

3.8.2 A quality plan shall be established by the Seller to define the specific actions that will be taken to meet the quality requirements related to special processes (e.g., welding, brazing, plating, cleanliness, detrimental material controls, heat treating, hard facing, nondestructive testing (NDT), electric discharge machining, electric chemical machining) contained in this order. The plan shall be submitted to the Laboratory for approval prior to the start of manufacturing, fabrication or testing and shall include, as a minimum: (1) identification of product or services to be obtained from a lower-tier supplier and the identification of the lower-tier supplier; (2) a description of the inspections and tests that will be performed to control and evaluate the involved special processes; and (3) a description of the personnel and procedure qualification program to assure compliance with applicable codes, specifications, and standards.

3.9 Use of Seller's Inspection Equipment

The Seller is responsible to account for his inspection tools used by Bettis and/or the Government QAR to assure that prior to the Seller performing additional work and/or shipping the product, or releasing to Bettis, all such inspection tools have been returned to the Seller in the same condition as loaned. Furthermore, the Seller shall make every effort to witness the inspection and immediately notify the Bettis and/or the Government QAR of any deleterious effects on the equipment of such inspection. However, if for some reason the Seller does not witness the inspection, the Seller shall report any deleterious effects of such inspection to Bettis within 48 hours of the inspection or assume responsibility for the deleterious effects.

4. QUALITY ASSURANCE TECHNICAL REQUIREMENTS

4.1 Nondestructive Testing (NDT)

The following Nondestructive Testing requirements apply when the specific Nondestructive Test is specified in the purchase order.

4.1.1 Radiographic Documentation

4.1.1.1 All radiographic films are subject to final review and approval by Bettis and/or the Government QAR and shall be accompanied by the Seller's completed radiographic review form. The record shall identify the specific procedure employed (including procedure number, date and/or revision number) and the specific Bettis approval document when applicable.

4.1.1.2 Bettis reserves the right to review the film on its premises or other such places as may be designated. In such cases, shipment of films shall be requested of the Seller in writing by Bettis. Submittal of film and radiographic review form shall be by registered mail. Bettis will assume responsibility for the films to the extent of liability for radiography, until they are returned to the Seller. When the purchase order requires the performance of a radiographic "technique shot", the technique shot radiographs and appropriate accompanying data shall be submitted to Bettis for approval. The technique shot radiographs and accompanying data shall be submitted by use of an "Approval Request" form (reference Section 3.1).

4.1.2 Ultrasonic Test Documentation

4.1.2.1 Ultrasonic test procedures shall be submitted to Bettis when procedure approval is required by the purchase order. Ultrasonic test procedures shall be detailed to the extent that Bettis is able to determine the adequacy and extent of the testing to be performed. When additional information such as position charts, sketches, etc., are pertinent, they shall be submitted with the procedures. Objective evidence of ultrasonic test performance (tapes, traces, charts, etc.) shall be retained by the Seller, and shall be made available for review by Bettis and/or the Government QAR upon request. The record shall identify the specific procedure employed (including procedure number, date and/or revision number) and the specific Bettis approval document when applicable. Bettis reserves the right to review the objective evidence of ultrasonic test performance on its premises or other places as may be designated. In such cases, shipment of records shall be requested in writing by Bettis and shall be transmitted from the Seller by registered mail. Bettis will assume responsibility for the test records, to the extent of liability for re-ultrasonic testing, until they are returned to the Seller.

4.1.3 Liquid Penetrant Test Documentation

4.1.3.1 The Seller shall record the results of all liquid penetrant inspections. The records shall clearly specify the applicable specification, standard, and acceptance criteria identified in the purchase order. Documentation of approvals and qualification shall be maintained in the Seller's records. As a minimum, the test report shall identify the Seller's penetrant test procedure employed (include procedure number, date, and/or revision number), the specific Bettis approval document, when applicable, personnel performing the inspection, and the results of the penetrant test including accept-reject disposition and description of indications by size and number, where applicable. All records shall be made available for review by Bettis and/or the Government QAR in accordance with the requirements of Section 4.2.1.

4.1.3.2 When liquid penetrant procedure and/or test personnel qualification is required by a Bettis specification applicable to a purchase order, prior approval of the liquid penetrant procedure and/or personnel to any other equivalent Bettis or military specification shall be considered acceptable when applied to the purchase order. Documentation of prior approvals shall be provided in accordance with Section 4.1.3.1. Where prior approvals do not exist, or procedure and/or personnel qualification is required by the purchase order, approval and qualification shall be obtained in accordance with the purchase order requirements.

4.1.4 Magnetic Particle Test Documentation

The Seller shall record the results of all magnetic particle inspections performed when the purchase order requires magnetic particle inspection. The records shall clearly specify the applicable specifications, acceptance standards, and test procedures. As a minimum, the test report shall identify the Seller's magnetic particle test procedure employed (include procedure number, date, and/or revision number), the specific Bettis approval document, when applicable, and personnel performing the inspection. Documentation of approvals and qualifications shall be maintained in the Seller's records. All records shall be made available for review by Bettis and/or the Government QAR in accordance with the requirements of Section 4.2.1.

4.2 Seller Certifications and Reports

4.2.1 General

4.2.1.1 Certifications and reports are required as specified herein. When the purchase order specifies Bettis and/or Government inspection at the Seller's facility, a copy of all required certifications and reports (including inspection data sheets compiled in a data package) shall be made available for review by Bettis and/or the Government QAR. When required by the purchase order, the Seller's data package shall be forwarded to Bettis and approved prior to release of the product. Upon release of the product for shipment, the Seller shall mail two additional sets of the required certifications and reports to Bettis. If the purchase order does not specify Bettis and/or Government inspection at the

Seller's facility, one set of the required certifications and reports shall accompany each shipment, and two additional sets are to be forwarded to Bettis.

4.2.1.2 When Government source inspection is required, the Seller shall forward two copies of the Government signed DD Form 250, to Bettis. In addition, a copy of the Government signed DD Form 250 shall accompany each shipment.

4.2.1.3 All exceptions to the method defined herein for transmitting certifications and reports to Bettis shall be specified in the purchase order.

4.2.2 Order Certification

4.2.2.1 The Seller shall certify conformance to all purchase order requirements via an order certification. This certification shall be based on a formal review by the Seller's management personnel, including a sampling of inspection and manufacturing records. Upon request by Bettis and/or the Government QAR, the Seller shall furnish objective evidence substantiating the Seller's order certification. An order certification shall include as a minimum:

1. A statement by the Seller certifying that the products conform with purchase order requirements; e.g., "(Seller's name) hereby certifies that the products described herein meet the requirements of the purchase order, with the exception of approved Request for Engineering Change or Request for Approval of Degradation of Specification Requirements listed below".
2. Bettis purchase order number, purchase order item numbers, and quantity of each purchase order item in the shipment. Include the serial number and/or the material heat number of the purchase order items, if applicable.
3. A list of all specification numbers, drawing numbers, and/or catalog numbers including applicable revisions.
4. Where applicable, the certifications shall list all Bettis approved "Request for Engineering Change" and "Request for Approval of Degradation of Specification Requirements".
5. Signature of an authorized representative of the Seller.

4.2.2.2 In those cases where the purchase order designates that shipment is to be made to a destination other than the Bettis Atomic Power Laboratory, an order certification is also to accompany the product along with a copy of each approved Degradation of Specification Requirements issued during the manufacturing and inspection sequence.

4.2.3 Certification of Material Usage

For each shipment on purchase orders where material is furnished by Bettis, the Seller shall prepare a certification stating that only those materials supplied by Bettis (using heat numbers where available) were used in the production of the purchase order items involved in the shipment and that the materials were applied as directed in the purchase order.

4.2.4 Chemical and Mechanical Reports

4.2.4.1 Test reports for the raw materials (except Bettis furnished materials) to be supplied on this purchase order shall be available for review by Bettis and/or the Government QAR. The test reports shall include actual test values/results as evidence that all chemical, mechanical, destructive and nondestructive tests, as required by the purchase order, meet applicable requirements. The test reports shall consist of the original or a reproduced copy of the test report as supplied by the testing facility or a statement that the results were taken from the original test report as furnished by (name of test facility). The information contained on original test reports shall not be altered by write-overs, tape-overs, or obliterations of any type. Errors requiring correction shall be lined out with a single ink line and the corrected information entered adjacent to the lined-out information. Each change or addition shall be signed and dated and supported by written back-up justification supplied by the originator of the test report.

4.2.4.2 The Seller shall forward the test reports defined in paragraph 4.2.4.1 to Bettis. On consecutive shipments of material from the same heat or ingot, the purchase order certification (see Section 4.2.2) may refer to the first shipment for chemical and mechanical test reports to minimize duplication of reports.

4.3 Re-identification of Material

4.3.1 It is required that materials incorporated into the product be in complete compliance with the purchase order technical documents. When the Seller determines that it is of benefit to Bettis (i.e., a decrease in cost or improved delivery) to re-identify a material produced to a specification which is not identified by the purchase order technical documents, the Seller may request approval from Bettis to re-identify the material. Approval will not be granted where materials listed in the purchase order technical documents are readily available.

"Re-identification of Material" is accomplished by performing such additional tests and presenting such technical justifications as to assure that material originally produced to a non-purchase order technical document may be considered to meet the requirements of a purchase order technical document. Re-identification of materials when required to comply with the purchase order technical requirements shall follow the practice established herein.

4.3.2 Approval for re-identification shall be obtained from Bettis in accordance with the practice established below:

- (a) When the need for re-identification is established at the time of response to invitation to bid, the Seller shall state in his response: (1) the original specification of the material proposed to be re-identified, (2) the manufacturer of the material and (3) in the case that the manufacturer is not the direct supplier, the source from which the material is intended to be procured, (4) a comparison of the requirements of the specification required by the purchase order technical documents and the specification proposed by the Seller, (5) tests proposed for re-identification, and (6) consequences which could result from the inability to procure material as specified in the purchase order.
- (b) When the need to apply material not fully identified in accordance with the purchase order technical requirement is established after placement of the purchase order, request for re-identification shall be submitted in a "Repair Approval Request (RAR)". This request shall contain the justification and the information specified in 4.3.2(a).

4.3.3 Material not certified by a certified test report from the manufacturer of the material cannot be re-identified. This test report should, as a minimum, positively identify the material and certify that the material meets the requirements of the specification to which the material was manufactured. The certification must identify material type and conditions where specific type and conditions are required by the purchase order.

4.3.4 Re-identified material shall be considered to meet the requirements of the purchase order, provided that each lot of material is shown to have chemical composition, mechanical and physical properties within the permissible range of the designated specification by an authentic test record and by marking the lot of material so as to identify it with that record. A lot shall be as defined by the purchase order material specification. When the purchase order requires other tests, including non-destructive testing, or more restrictive tests than those of the specification covered by the authentic test record, the material shall be subjected to the additional tests to provide the assurance that it complies with the purchase order technical requirements.

4.3.5 Where required additional tests cannot be performed, e.g., preproduction tests, extra sample material not available, etc., the Seller may request a waiver. In his request, the Seller shall identify the unfillable requirements and justify the use of the proposed material showing that the uncertified test properties will not affect the performance of the product.

4.4 Sampling Inspection

If the Seller proposes to use sampling inspection procedures in lieu of 100% inspection for acceptance, the Seller's proposed sampling procedures shall be submitted to and approved by Bettis prior to use. Contemplated sampling plans shall define the following type of sampling plan (e.g., MIL-STD-105, MIL-STD-414); single, double, or multiple sampling; normal, reduced, or tightened plans; lot sizes; inspection levels; and the Acceptable Quality Level (AQL).

4.5 Replicating Material Control

4.5.1 The Seller shall be responsible for controlling any manufacturing or inspection process to preclude the contamination of surfaces as a result of the use of replicating materials. The use of replicating materials and the procedure controlling their use shall be approved by Bettis. This approval shall be obtained prior to the use of any replicating material. As a minimum, the following information shall be submitted for approval:

1. The number of and the location of those areas requiring replication.
2. The brand name of the replicating material and a certified quantitative analysis of the product which identifies the major constituents, the minor constituents, and the trace elements.
3. The method of application of the replicating material.
4. A description of the cleaning procedure to be used which will assure removal of any replicating material residue in excess of that permitted by the applicable cleaning specification.

4.5.2 The Seller shall certify that the surfaces of the end product, when shipped, are free of replicating material residue in excess of that permitted by the approved cleaning procedure.

4.6 Product Identification

4.6.1 All products shall be serialized in accordance with the requirements of the purchase order; or if serializing information is not given in the purchase order, the Seller shall assign non-repetitive consecutive numbers to each item before the start of manufacture. Care should be exercised to avoid duplication for products ordered on concurrent or subsequent purchase orders. Small parts or materials may be lot serialized, providing each lot is homogeneous with respect to heat number, heat treat batch number (if any), and otherwise contains material characteristics known to be uniform.

4.6.2 Serial numbers shall be applied to products by means of a vibrating pencil with a carbide tip or by electrochemical etch unless otherwise specified in the purchase order. Serial numbers are to be located in areas that will not interfere with the functional or quality aspects of the products. For example, serial numbers are not to be applied to mating surfaces, threads, very thin sections, or areas with a specified surface finish smoother than 125 AA. The resulting impression on the metal surface shall be legible. The depth of the depression shall not result in a violation of purchase order requirements.

- 4.6.3 To coordinate recorded results of the Seller's inspection with individual parts, subassemblies and/or assemblies which cannot be marked in accordance with Section 4.6.2, such products shall be assigned temporary identification numbers or letters at the time of measuring and recording of inspection data, i.e., tape on parts, use of paper, plastic, or metal tags attached to parts or enclosed in polyethylene envelopes, or marked on paper bags or wrapping.

4.7 Seller Acceptance Inspection

- 4.7.1 The Seller shall perform an acceptance inspection of all products to ascertain meeting the total requirements of the purchase order prior to submittal of such products to Bettis and/or the Government for inspection (refer to Sections 3.5.3 and 3.5.4 for exceptions). The Seller's acceptance shall be based on 100% inspection, unless sampling inspection is performed in accordance with Section 4.4. As used herein, 100% inspection requires inspection of each characteristic of each piece included in the purchase order. The purchase order drawings, and not the manufacturer's drawings, shall be used for final inspection unless otherwise approved by Bettis.
- 4.7.2 Prior to the Seller's final acceptance and presentation to Bettis and/or the Government QAR, all deviations from or exceptions to, the requirements of the purchase order must be covered by approved "Request for Approval of Degradation of Specification Requirements", Form 73854, or approved "Request for Engineering Change", Form 73848 (reference Section 3.1).
- 4.7.3 All of the requirements of the detail and assembly drawings apply after all of the processes employed to produce the item are completed, unless otherwise noted. Where dimensional and/or other requirements are not specified for an assembly, the requirements specified for the component detail continue to apply after assembly. Re-verification of the characteristics of items after assembly normally required unless such a requirement appears on a drawing or in the purchase order.

4.8 Recording of Inspection Data

In accordance with the guidelines outlined below, the Seller's dimensional inspection results shall be recorded and reported on Bettis Data Sheet, Form 73216 (or on an equivalent Seller data sheet); other data shall be recorded and reported on an appropriate Seller supplied data sheet.

- 4.8.1 All dimensions designated by a delta (Δ) symbol must be measured and recorded as actual values.

- 4.8.2 All three or more place decimal dimensions shown on the face of the drawing, and/or identified in the text of the Purchase Order, Change Notices, or other approved purchase order-related document such as a Request for Engineering Change (REC), or Request for Approval of Degradation of Specification Requirements (DSR), shall be measured and recorded as actual values for each dimension and for each occurrence designated, except for thread dimensions checked with Go and No-Go thread gages. All geometric characteristics (concentricity, parallelism, perpendicularity, etc.) shown on the face of the drawing and/or in the purchase order with a feature control value less than or equal to 0.010", regardless of the feature modifier, shall be measured and recorded as actual values.
- 4.8.3 All surface finishes shown on the face of the drawing and/or in the purchase order, and whose tolerances are more restrictive than the standard drawing tolerance, shall be measured and recorded as actual values. Isolated scratches, dents, or other depressions and/or raised metal such as weld spatter shall not be included in the surface evaluation.
- 4.8.4 All angles with a tolerance of 30' or less shall be measured and recorded as actual values.
- 4.8.5 Gages may be used to determine acceptability of the product when specific recording requirements have not been specified. The use of such gages is subject to concurrence by Bettis. The gage types and serial numbers used shall be identified on the Seller's inspection data sheet. Threads may be checked with Go and No-Go thread gages and recorded as "O.K. to gage" (if part meets limit). The major diameter of external threads and minor diameter of internal threads shall be measured and recorded. When threads are measured using the wire method, measure and record the size of wire used, the major diameter, the pitch diameter, and the minor diameter. In addition, the flank angles and lead shall be measured and recorded when the wire method is used.
- 4.8.6 Any characteristic not included in Section 4.8.1 through 4.8.5 above shall be listed on the data sheet and shall be measured, and if within tolerance, be recorded as "O.K." or the actual value recorded. If not "O.K.", the actual value must be recorded.
- 4.8.7 Inspection data sheets and sketches shall include purchase order number, drawing number, revision inspected to, date of inspection, item serial number, heat number, date, and signature of the inspector who actually performed the inspection. Additionally, the data sheets and sketches shall be annotated to reflect and reference that specific recorded data values may be the result of changes to drawing requirements that may have been invoked by text in the Purchase Order, Change Notices, or other approved purchase order-related document such as a Request for Engineering Change (REC), or Request for Approval of Degradation of Specification Requirements (DSR), without issuance of a formal drawing revision.

- 4.8.8 Evidence of performance and acceptability of the results of all test requirements shall be recorded, including nondestructive testing and material qualification compliance. Where the involved test yields actual test values, they shall be so recorded.
- 4.8.9 Inspection results which are not in accordance with the purchase order requirements shall be indicated by a symbol (e.g., asterisk) adjacent to the recorded result. If the discrepant condition was accepted on a Degradation of Specification Requirement (DSR) Form, the DSR number shall be referenced on the data sheet.
- 4.8.10 The temperature at which the dimensional inspection was performed shall be entered on each data sheet.
- 4.8.11 All data and information entered on data sheets shall be entered in ink and shall be clear and legible with no write-overs, tape-overs, or obliterations of any type. Erasures are not permitted. Errors requiring correction shall be lined out with a single line and the corrected data entered adjacent to the lined out information. Each change or addition to data sheets shall be signed and dated and be made only by authorized personnel. The requirements of this paragraph shall not apply when QRC-82 is applicable to the contract.
- 4.9 Repair Procedures
- Prior approval of repair procedures is required if the extent of the repair is beyond the scope of drawings, specifications, or procedures approved by Bettis.
- 4.10 Material to Latest Issue of Specification
- 4.10.1 If the inquiry technical requirements specify a superseded issue, the Seller may, at the time of bidding, request a change to the latest issued.
- 4.10.2 If existing purchase order requirements specify material to a superseded specification, the Seller may request approval to supply material to the superseding issue.

**QUALITY ASSURANCE ADMINISTRATIVE REQUIREMENTS FOR
PURCHASE ACTIONS INVOLVING GOVERNMENT SOURCE INSPECTION**

1. GOVERNMENT NOTIFICATION POINTS

- 1.1 Notification points are steps in the Seller's manufacturing and/or inspection sequence wherein the Government QAR shall be notified; these steps are identified to the Seller by the Government QAR who may require the Seller to submit or confirm notifications in writing. Notifications shall not be bypassed by the Seller unless authorization has been obtained from the Government QAR.
- 1.2 If any portion of the purchase order involving a notification point is to be performed by a lower-tier supplier, the Seller shall notify the Government QAR, prior to placing the purchase order with that supplier, to arrange for probable source inspection at the lower-tier supplier's facility.
- 1.3 Unless otherwise agreed to in writing, the Seller shall notify the Government QAR two working days in advance of readiness of inspections and tests designated by the Government QAR as requiring witnessing or inspecting.

2. REQUIREMENTS OF GOVERNMENT SOURCE INSPECTION

2.1 Facilities to be Furnished to the Government QAR

When requested by the Government QAR because of the workload involved, the Seller shall provide such representative with adequate office supplies, including limited clerical assistance, office space, plain office furniture, and storage cabinets for drawings and papers, which meet applicable security requirements. The Seller shall present products for Government inspection in such a manner as to afford inspection conditions satisfactory to the Government QAR.

2.2 Access to Seller's Facilities

The Government QAR may be assigned as itinerant or resident at the Seller's facility. He shall have immediate and free access at all times to all parts of the Seller's facilities utilized in the performance of the purchase order, and shall be permitted to examine and inspect the products, witness the processes of manufacture, and perform quality program and inspection system audits. The Government QAR assigned to the Seller's facility is there in the performance of duty with reference to the purchase order and not present at the will or by other grace of the Seller. His duties are to protect the interest of the Government. He is under no obligation to waive compensation for any injury to persons or property which he may sustain in the performance of his duties and may refuse to sign a visitor's register or pass which includes such a waiver or he may delete the waiver clause before signature.

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2.3 Information Required by the Government QAR

All reasonable requests by the Government QAR for applicable documents, including the Seller submittals, shall be honored by the Seller.

2.4 Corrective Action Request

The Seller shall reply in writing, within the time period requested, to any corrective action requests resulting from Quality Deficiency Records (QDRs) issued by the Government QAR. The reply shall state the real cause of the deficiency, the effect on other components or parts, the immediate corrective action taken or planned and the action taken to prevent recurrence.

3. SHIPPING

3.1 Government Release for Shipment

At the time of each delivery of supplies or services under this purchase order, the Seller shall prepare and furnish to the Government a Material Inspection and Receiving Report (DD Form 250). Specific instructions related to the preparation of DD Form 250 are contained in Appendix A.

The Product(s) shall not be released until the Government QAR has signed the Material Inspection and Receiving Report (DD Form 250). Inspection report forms will be furnished to the Seller by the Government QAR, upon request. If any product is shipped without proper authority or is unaccompanied by the inspection report, the product may be returned to the Seller at his expense for inspection, or inspection may be conducted at destination by the Government and the cost of inspection may be charged to the Seller.

3.2 Shipment of Supplies at Government Expense

Whenever delivery of product FOB origin and transportation at Government expense is required, the Seller shall request Government Bills of Lading, when necessary, in accordance with instructions received from Bettis. If products are mailable, the Seller shall arrange for shipment in accordance with instructions provided by the purchase order. The Seller shall make the necessary arrangements with the carrier for shipment and shall distribute Government Bills of Lading as required by Bettis. Shipment of products at Government expense does not imply acceptance by the Government or that products comply with the requirements of the purchase order.

PREPARATION INSTRUCTIONS - DD FORM 250

DD Form 250 (Material Inspection and Receiving Report) shall be prepared in accordance with the following instructions (the numbers and titles refer to the like numbered and titled sections of the DD Form 250):

1. Procurement Instrument Identification (Contract) (Order) Number - Enter the Government prime contract number and the Bettis purchase order number, the latter to be shown in parentheses. Both may be found on the face sheet of the purchase order.
2. Shipment Number - Enter the three alphabetic characters which comprise the shipment number prefix assigned by the Buyer followed by the four numerical digit serial number. The final shipment shall be identified by a "Z" suffix, e.g., 0009Z.
3. Date Shipped - Enter the date the shipment is released to the carrier or the date of completion of services (e.g., 89 Dec. 20). When the date is estimated, enter an "E" after the date. Reissuance of the MIRR is not required to show the actual shipping date.
4. Bill of Lading/Transportation Control Number - Transportation Control Number (TCN) - For all shipments to be made via the Defense Transportation System, whether they be overseas or domestic shipments, enter the proper Transportation Control Number (TCN). The TCN is a 17-position alphanumeric code number assigned to each shipment unit entering the Defense Transportation System and serves as a shipment control from the origin to the destination. The TCN is to be constructed in accordance with DOD Regulation 4500.32-R, "Military Standard Transportation and Movement Procedures", and the following:

| Position | Description |
|----------|---|
| 1-6 | Enter N92487 (Activity Address Code which identifies Bettis). |
| 7 | Enter last digit of calendar year in which shipment is being made. |
| 8-10 | Enter Julian day of the shipment. |
| 11 | Enter "X" ("X" indicates miscellaneous shipment code). |
| 12-14 | Shipment serial number (numeric). Enter in three-digit form, the number of the specific shipment for that day (e.g., 003 would indicate the third shipment made on that day via the Defense Transportation System - the day indicated in positions 8-10). |

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| Position | Description |
|----------|--|
| 15 | <p>Under normal circumstances, enter "X". However, when a single TCN is assigned and the Seller must ship from two or more plant or warehouse locations, alphabetic characters will be used in the fifteenth position to isolate the TCN used by each shipping point e.g.:</p> <p>A - First location B - Second location C - Third location D-Z - Assigned as appropriate, except letter "X"</p> <p>NOTE: When a single TCN is assigned, but shipments are made from various locations, only the fifteenth position of the TCN changes even if the various locations ship on different dates. (In this way the single, original TCN identity is retained.)</p> |
| 16 | <p>Partial Shipment Code</p> <p>a) When the shipment unit can be released as a complete entity on a single conveyance, enter "X" signifying a complete shipment.</p> <p>b) When the shipment unit is being released in more than one increment (e.g., the shipment unit exceeds the capacity of a single conveyance or for some other reason must be shipped in two or more conveyances by the same or mixed modes), enter the following in position 16:</p> <ol style="list-style-type: none"> 1. For the first partial shipment enter "A". 2. For subsequent partial shipments enter subsequent letters (B, C, D, etc., except "X"). <p>NOTE: a) Regardless of the number of partial shipments required to complete the release of the shipment unit, the last increment will always be identified by entering "Z" in position 16.</p> <p>b) For partial shipments only the sixteenth position of the TCN changes even if the partial shipments are made on different dates. (In this way, the single, original TCN identity is retained.)</p> |

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| Position | Description |
|----------|---|
| 17 | Split Shipment Code - Always enter "X". Example The following is a sample TCN: N92487 2255X003XXX which is deciphered as follows: N92487 = Bettis 2 = 1972 255 = September 11 X = Miscellaneous shipment (constant) 003 = Third shipment via the Defense Transportation System for September 11, 1972 X = Shipment from one location X = Complete shipment X = Constant |

5. Discount Terms - Leave blank.
6. Invoice Number/Date - Enter the invoice number and date. When the date is estimated, enter an "E" after the date.
7. Page/of - Enter the consecutive number of each of the pages of the MIRR and the total number of pages in the MIRR.
8. Acceptance Point - Enter "D".
9. Prime Contractor - Enter "Bettis Atomic Power Laboratory, P. O. Box 79, West Mifflin, Pennsylvania 15122" and enter the number N92487.
10. Administered By - Enter "NSTR, P. O. Box 109, West Mifflin, Pennsylvania 15122" and enter the number N92487*.

*Unless requested by the Buyer, copies of the DD 250 shall be sent to NRTR-Pittsburgh or PNR.

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11. Shipped From/Code/FOB

- a) Enter the code (to be provided by Bettis) and address of the "Shipped From" location.
- b) For performance of service line items which do not require delivery of the items upon the completion of services, enter the code and address of the location at which the services were performed.
- c) Enter on the same line and to the right of "FOB" an "S" for Origin or "D" for Destination as specified in the order. Enter an alphabetic "O" if the F.O.B point cited in the order is other than the origin or the destination.

12. Payment Will Be Made By - Enter "Accounting Department, Bechtel Marine Propulsion Corp. (Bettis), Bettis Atomic Power Laboratory, P. O. Box 79, West Mifflin, Pennsylvania 15122".

13. Shipped To/Code - Enter the code and address as contained in the shipping instructions.

14. Marked For/Code - Enter the "Mark For" code and address contained in the order or shipping instructions.

15. Item Number - Enter the order line item, subline, exhibit line or exhibit subline identification as set forth in the order.

16. Stock/Part Number and Description - Enter the following information for each different item, maintaining the order in which the information is listed (Use DD Form 250C Continuation Sheet(s) if additional space is required but provide appropriate block cross reference(s)).

1. Federal Stock Number, if assigned.
2. Item description including Identification Code Number, the suffix design letter, serial number and the Seller's part number, if any.
3. Drawing number, revision number and piece number.
4. Under a heading "Field Changes Incorporated", list by component serial number (IC No.) the Field Changes (if any) that have been incorporated into the component. Give the field change number and appropriate suffix letter(s) (if applicable). Enter each item on the approved Bill of Materials.
5. Under a heading "Deviations As Follows (Authorized by Approved Degradation of Specification Requirements)", list by component serial number (IC No.) the applicable DSRs and asterisk only those affecting shipyard inspection and installation. (Define the asterisk as affecting shipyard inspection and installation.) Attach DSR(s) per paragraph 4.2.2.2 of Form 73850.

17. Quantity Shipped/Received

- a) Enter the quantity shipped, using the unit of measure indicated in the order for payment. When a second unit of measure is used for purposes other than payment, enter the appropriate quantity directly below in parentheses.
- b) On the final shipment of a line item of an order containing a clause permitting a variation of quantity and an underrun condition exists, the Seller shall enter a "Z" below the last digit of the quantity.
- c) If a replacement shipment is involved, enter, below the last digit of the quantity, the letter "A" to designate first replacement, "B" for second replacement, etc. The final shipment indicator "Z" on underrun deliveries shall not be used when a final line item shipment is replaced.

18. Unit - Enter the abbreviation of the unit measure as indicated in the order for payment. Where a second unit of measure is indicated, enter the second unit of measure directly below in parentheses. Authorized abbreviations are listed in MIL-STD-129 (Marking for Shipment and Storage).

19. Unit Price - Leave blank.

20. Amount - Leave blank.

21. Procurement Quality Assurance - Enter an "X" in the box for PQA at origin. Do not "X" the box for acceptance at origin.

22. Receiver's Use - Leave blank.

23. Contractor Use Only

- a) Enter a heading of "Shipping Release", and the following: "Shipping Instructions Change Notice No. _____" (fill in the number of the change notice that authorized shipment, if appropriate).
- b) So that Bettis may effect prompt payment to the Seller, the Seller is to ensure that the DD-250 bears the following statement in block 23:

"Consignee, upon receiving this equipment, must acknowledge receipt by signing and dating one copy of the DD-250. Forward this copy to Bettis Atomic Power Laboratory, P. O. Box 79, West Mifflin, Pennsylvania 15122

Attention: _____ Buyer"