


NO REVISION CONTROL WHEN PRINTED

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|  | Curtiss-Wright Engineered Pump Division 1185 Feather Way Bethlehem, PA 18015 | Procedure Number | |
| | | PGM-5 Rev. 46 | |
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PURCHASING QUALITY CODES

1.0 PURPOSE

1.1 This procedure defines pre-established clauses to be used in Curtiss-Wright EPD purchase orders as appropriate to communicate specific quality, documentation and procurement requirements.

2.0 SCOPE

2.1 These clauses and their identifying code numbers are for use in Government, and Standard Controlled Programs at Curtiss-Wright EPD.

3.0 PROCEDURE

3.1 The following pre-established clauses, maintained and accessible on Oracle in the Document Catalog, are selected as appropriate and appear on the Purchase Order.

3.2 Curtiss-Wright EPD standard Terms and Conditions (QCM-1417) applies to Purchase Orders.

4.0 DOCUMENTATION AND SPECIAL QUALITY REQUIREMENTS


Quality codes are designated by the two categories below:

B-Codes: Government Related (B-1 through B-13)

C-Codes: Curtiss-Wright EPD / Customer Related (C-0 through C-113)

| | |
|---|--|
| Procedure Owner: <u>QUALITY / ENGINEERING</u> | Written By: <u>Pamela Carsteth QA Manager 5/6/22</u> <small>Name Title Date</small> |
| Approvals | |
| <u>[Signature] QA Engr. 5/09/2022</u> <small>Name Title Date</small> | <u>[Signature] SQL 11-May-2022</u> <small>Name Title Date</small> |
| <u>[Signature] QA Engr 5/9/22</u> <small>Name Title Date</small> | <u>[Signature] QA Engr 5.11.2022</u> <small>Name Title Date</small> |
| <u>[Signature] QA Engr 5/9/22</u> <small>Name Title Date</small> | <u>[Signature] ENG SDBV 5/12/22</u> <small>Name Title Date</small> |
| <u>[Signature] Assoc. QA Engr. 5-9-22</u> <small>Name Title Date</small> | <u>[Signature] Manager, Engineering 5/13/2022</u> <small>Name Title Date</small> |
| <u>[Signature] SQL 5-11-22</u> <small>Name Title Date</small> | <u>[Signature] manager, Sourcing 5/13/2022</u> <small>Name Title Date</small> |

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Unless otherwise specified, completed copies of all objective quality evidence required per the purchase order shall be shipped with the hardware to Curtiss-Wright EPD at the following address:

Curtiss-Wright
Engineered Pump Division (EPD)
1185 Feather Way
Bethlehem, PA 18015

When shipment to a third-party vendor is specified on the purchase order, completed objective quality evidence and a copy of the bill of lading must first be sent to the Curtiss-Wright EPD Quality Department at the address above. Upon review and acceptance, the Quality Department will notify the supplier of its release to ship the hardware.

B-1 Rev. 2

Suppliers shall flow down all requirements of this purchase order to all sub-tier suppliers.

NOTE: This purchase order is issued as a part of a contract with the United States Government, or a contractor to the United States Government. Purchase order terms and conditions are incorporated and made a part of this transaction.

B-2 Rev. 4

GOVERNMENT INSPECTION AT SOURCE (ENDORSED) is required by the purchase order.

Promptly notify the Government representative who normally services your plant (or the nearest Defense Contract Management Agency (DCMA) Office) of your receipt and acceptance of this purchase order requiring government source inspection.

In the event the representative or office cannot be located, your CW-EPD Sourcing Agent should be notified immediately so that appropriate planning for Government Inspection can be accomplished. Requirement for "Full Government Inspection at Source" must be endorsed.


NOTE: SPECIAL ATTENTION SHOULD BE GIVEN TO PARAGRAPH B.

SPECIAL NOTE REGARDING MATERIAL/SERVICES PROVIDED BY SUB-SUPPLIER: When material or services as required on purchase order are to be performed at another supplier, it is **your responsibility** to notify your government representative. Supply the representative with a copy of the purchase order to the sub-supplier, in order that the required witness delegation will be passed on to the sub-supplier.

The requirements of MIL-I-45208 apply.

REQUIREMENTS for raw materials and machined components, such as: Forgings, castings, bar stock, piping, tubing and related material and components will include:

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A. Identification requirements:

1. Positive identification, which will be traceable to applicable processes, such as: Non-Destructive Tests, Heat Treat, Heat Number, etc., on each rough part or finish machined part.
2. Whenever (1) is impractical, supplier must identify serial or lot number on shipping container by means of a tag or label that can be reused for record and/or finish machined part.

B. Documented evidence of Defense Contract Management Agency (DCMA) endorsement of acceptance shall be included with shipment. If the DCMA representative waives the source inspection, documentation endorsed by DCMA showing that waiver must be included.

NOTE: TWO COPIES OF THIS DOCUMENT MUST BE FORWARDED WITH SHIPMENT.

REQUIREMENTS for drivers, turbines, valves, controls and any other related assembled material will include the following:

- C. Attach to the assembled unit a document with a Defense Contract Management Agency (DCMA) endorsement. If the DCMA representative waives the source inspection, documentation endorsed by DCMA showing that waiver must be included.
- D. All records of reports dealing with chemical and physicals of these items shall be retained by supplier (vendor) for a period of seven (7) years unless otherwise directed. These files will be subject to audit by authorized Government representative and/or contractor.


B-3 Rev. 0

"Government inspection at Curtiss-Wright EPD (Material Certification required)" is specified by the purchase order. Supplier documentation must be in full compliance to specification. Your Quality Control or Inspection system and manufacturing processes are subject to review, verification and analysis by authorized Government Representative. Government inspection or release of product prior to shipment is not required unless you are otherwise notified. You shall also provide an unpriced copy of this order to your Government representative upon their request. NOTE: This article supersedes and replaces Form 200.

Shipments must comply with the following requirements or shipment will not be accepted. For items of sufficient proportions, supplier must mark heat number on each rough finish machined part when traceability is required to Material Test Reports.

For small miscellaneous items such as gaskets, packing, o-rings, nuts, pins, screws, bolts, studs, bearings, finned tubing, etc., considered impractical to identify as above, supplier must identify heat number or other identification numbers on shipping

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container by means of tag or label that can be reused for record or inspection purposes.

B-4 Rev. 3

Do not ship without release from Sourcing/QA, Curtiss-Wright EPD. Fax copy of required certifications to Sourcing at Curtiss-Wright EPD at fax (610) 691-7058. When certs are approved by QA, Sourcing will fax a Curtiss-Wright EPD Certificate of Compliance back to you to accompany shipment to customer.

B-5 Rev. 1

Government Source Inspection (GSI) at Curtiss-Wright EPD Receiving Inspection is required.

B-7 Rev. 1

Consult the EPD Standard Terms and Conditions (QCM-1417) and any additional flowdowns provided with this order for Quality Clause B-7 Fraud or Falsification.

B-8 Rev. 0

Maintain traceability using original "MR" trace number as specified in quality code 0C-65B. If new replacement parts are supplied use new P.O. trace number with all new certifications.

B-9 Rev. 0

Curtiss-Wright EPD requires QCM-153 (Quality Control Form) to be completed and submitted with shipment to Q. C. Dept.

B-10 Rev. 4

Curtiss-Wright EPD Source Surveillance and/or inspection is required on this line item by the CW-EPD Quality Department.

Source Surveillance requires witnessing a particular operation of the manufacturing process and may be accomplished by any CW-EPD Employee.


Source Inspection is the act of physically using calibrated equipment to ensure conformance to applicable requirements and will be performed by QC Inspection personnel qualified in accordance with procedure ESQ-2.

The supplier must notify CW-EPD Sourcing five business days prior to hold points identified in the purchase order.

CW-EPD will notify supplier within two business days regarding the status of the source surveillance.

CW-EPD will provide the supplier a completed QCM-518 form containing a summary of, or justification for not performing, the surveillance. A copy of this document SHALL BE INCLUDED with the final software package shipped with the components of the purchase order.

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B-11 Rev. 0

Material verification to be done at receiving inspection for this line item.

B-12 Rev. 0

None of the quality codes listed on the item master are required for this order.

B-13 Rev. 0

Mercury testing is to be performed at Curtiss-Wright EPD Receiving Inspection.

C-0 Rev. 13

QUALITY CONTROL INSTRUCTIONS TO CURTISS-WRIGHT EPD SUPPLIERS

1.0 INTRODUCTION

1.1 These instruction codes when specified in the purchase order become an integral part of that purchase order and the quality requirements, as outlined herein, must be met by the supplier before materials, equipment, assemblies, parts or services can be accepted by Curtiss-Wright EPD.

2.0 ORGANIZATION OF INSTRUCTION

2.1 These instructions are divided into specific articles, sub-articles, paragraphs and subparagraphs. When reference is made to an article, the requirements shall include all information presented in that article including sub-articles, paragraphs and subparagraphs.

3.0 REQUIREMENTS

3.1 All items supplied to Curtiss-Wright EPD must conform to applicable drawings, specifications and purchase order requirements in all respects. The supplier must be prepared to follow whatever special procedures may be incorporated into the purchase order in supplying acceptable items. Supplier inspection system must comply with MIL-I-45208A Amd #1 as a minimum. Certification to ISO-9001-2000 or later is acceptable as demonstrating compliance to MIL-I-45208A.

3.2 In certain instances, Curtiss-Wright EPD, or its customer, may request permission to visit the supplier's plant and to survey its area, facilities, records and personnel involved in the manufacturing of the items being purchased.

3.3 When the Curtiss-Wright EPD Source Surveillance and/or Source Inspection is required, the supplier will supply all necessary tools and equipment and shall notify Curtiss-Wright EPD in accordance with code 0B-10.

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- 3.4 All tools, gages and equipment used in the manufacture of items being purchased shall be checked and calibrated periodically. Supplier's gage control system must comply with MIL-STD-45662A or ISO 10012. Curtiss-Wright EPD may audit supplier's gage control system to ensure compliance upon request.
- 3.5 No changes shall be made by the supplier in any item identified by a specification or controlled drawing without the prior written approval (via form QCM-993) of the Curtiss-Wright EPD Engineering Department.
- 3.5.1 If Curtiss-Wright EPD approves material substitution, such approval will apply only to the specific purchase order and quantity under consideration. Dispositioned QCM-993 must accompany shipped documentation.
- 3.6 Unless otherwise defined, current specifications (including revision) date shall be in effect at the time of order placement.
- 3.7 Acceptability of purchased material will be determined by the Curtiss-Wright EPD Quality Department based upon any of the following: (1) 100% Inspection, (2) tests, (3) sampling plans. Curtiss-Wright EPD reserves the right to return, at the supplier's expense, any or all of a lot in which defective parts have been found by this method.
- 3.8 The use of wood to seal/protect flanges and/or openings during shop processing and at shipment is prohibited to prevent potential material contamination caused by splinters and dirt. Aluminum, plastic, or rubber covers shall be used to protect flanges and/or openings prior to transport.
- 3.9 All carbon steel, alloy steel, and 400 series stainless steel fasteners shall be coated with a light oil to limit possibility of rust during shipment and storage.

4.0 NON-CONFORMING MATERIAL CONTROL & USE OF THE QCM-993 FORM

- 4.1 Any item of a purchase order which does not conform (and cannot be reworked to approved drawings) to all purchase order technical requirements will require approval from Curtiss-Wright EPD. These requests shall be submitted in writing (via form QCM-993) to the buyer.
- 4.1.1 Order technical requirements include the specifications and standards invoked by the order and all the following documents when approval is required by the order.
- 4.1.1.1 Welding Procedures
 - 4.1.1.2 Quality Control Procedures
 - 4.1.1.3 Drawings

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4.1.1.4 Process Procedures

4.1.2 All deviant items received by Curtiss-Wright EPD without prior approval will be cause for immediate rejection.

4.2 **The QCM-993 form should be used as a formal request for information or clarification.** Any communication regarding information or clarification that is not included on a QCM-993 or the Purchase Order itself does NOT constitute official contractual direction. The requirements of paragraph 4.1.1 apply as necessary.

4.2.1 Requests for information/clarification generated in response to a Defense Contract Management Agency (DCMA) inquiry shall clearly state in the "Deviation Request" section of the QCM-993 form that the request for clarification/information/deviation is in response to a DCMA inquiry.

4.2.2 The requirements of paragraph 4.2.1 apply when a QCM-993 is generated in response to an inquiry by any oversight authority including but not limited to:

- Electric Boat Corporation
- Huntington Ingalls Newport News
- Bechtel Plant Machinery Inc.

4.3 A QCM-993 response applies only to the Purchase Order for which it was submitted.

5.0 SUPPLIER PROCEDURE APPROVAL AND USE OF QCM-1449


5.1 The supplier shall not perform welding, material verification or nondestructive testing until its procedures, instructions, etc., have been submitted to and approved by Curtiss-Wright EPD and/or the Curtiss-Wright EPD customer. Submit all procedures to the buyer listed on the Curtiss-Wright EPD purchase order. Procedures must be submitted for every purchase order even if the procedures have been approved in the past.

5.2 All supplier procedures used on an order must be submitted for approval in writing (via form QCM-1449 or equivalent documented information) to the buyer for every purchase order received. Supplier shall identify purchase order line(s) in which the procedure applies.

6.0 DESIGN CONTROL

6.1 The supplier shall assure that all of its drawings and/or technical documents and manufacturing information clearly define (directly or by reference) adequate standards of quality, such as tolerances, finishes,

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weld procedures, class of welding, nondestructive test procedures and other standards of quality which may be applicable.


- 6.2 For castings, any changes needed to pattern equipment that effect part configuration or final weight must be approved by C-W EPD prior to implementation.

7.0 DOCUMENTATION/OFFICIAL RECORDS

- 7.1 Statements on all material certification documents must be positive and unqualified. Disclaimers such as “to the best of our knowledge” or “we believe the information contained herein to be true” are not acceptable.
- 7.2 When a certified Material Test Report is required by the Purchase order, then the Material certification data for chemical analysis, mechanical and physical Testing (including welding and NDE testing), must be recorded on the testing company’s letterhead and shall bear the name, title and signature of the authorized company representative. Certification data supplied to Curtiss-Wright EPD shall be either the original mill certification, original certification from the testing facility or exact photocopies of the original certifications. Transcription of any data from any material certification to the letterhead of another supplier or sub-contractor that did not actually perform the testing are allowed only if the copies of the original mill or original testing facility are included. The supplier’s report shall clearly denote that the data is transcribed data.
- 7.3 Certifications must include typewritten or printed name and title in addition to handwritten signature. Electronic signatures are permitted provided the supplier meets the criteria detailed in quality codes C-13A or C-13B.
- 7.4 Re-identification and re-certification of material is required when the material is subjected to a process that alters its properties.
- 7.4.1 For Level 1 and Critical Application Items: Where the mechanical properties of the material have been altered by heat treatment or metal working processes, the material shall be uniquely re-identified, and the mechanical properties re-determined. The mill certification shall be accompanied by a supplemental certification from the heat treatment or metal working facility. This supplemental certification shall contain quantitative data for the process performed.

Additionally, the original mill certification shall be over stamped and/or annotated to contain the following information:

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Traceability Number/Code _____ is fabricated from raw material
Heat No. /Heat-Treat No. _____
Date, Name and Signature of the Authorized Company Representative.

NOTE: When applying overstamp or annotation to the certification report, no pertinent data shall be obliterated or rendered illegible. Certifications or Test Reports for Level 1 and Critical Application materials where the mechanical properties have been altered, and are dated after September 1, 2014, will not be accepted without the appropriate over stamping.

THE ALLOWANCE TO ANNOTATE THE ABOVE INFORMATION ON A SEPARATE CERTIFICATION IN LIEU OF OVERSTAMPING IS NO LONGER ALLOWED.

8.0 APPROVED FORGING AND RAW MATERIAL SUPPLIERS

- 8.1 For purchase orders invoking any form of QCM-1495 (QCM-1495-1, QCM-1495-2, etc.), forgings shall be sourced by an Electric Boat approved forging supplier. The Electric Boat approved forging suppliers list may be found at, http://www.gdeb.com/suppliers/10_quality/Forging_Suppliers/
- 8.2 For purchase orders invoking any form of QCM-1496 (QCM-1496-1, QCM-1496-2, etc.), raw materials ordered to a specification listed in MIL-STD-2034 shall be sourced by a Bechtel Plant Machinery, Inc. (BPMI) approved raw material supplier. The BPMI raw material supplier list may be provided by EPD upon request.
- 8.3 For purchase orders invoking any form of QCM-1497 (QCM-1497-1, QCM-1497-2, etc.), forgings shall be sourced by a Newport News Shipbuilding (NNS) approved forging supplier. The NNS approved forging suppliers list may be found at, <https://supplier.huntingtoningalls.com/sourcing/supquality.html>


C-1 Rev. 0

Mercury Free Certification Required: Material furnished shall be free from mercury contamination. In order to assure compliance with the requirement, mercury bearing instruments and/or equipment which might cause contamination shall not be used in the manufacture, fabrication, assembly, or testing of any material furnished under this purchase order.

The supplier is required to submit one (1) copy of certification to Curtiss-Wright EPD containing the following information:

WE CERTIFY THAT THE ABOVE MATERIAL IS COMMERCIALY FREE FROM MERCURY CONTAMINATION.

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This information may be written as part of the Certificate of Conformance, or it may be a separate sheet specifying the above information, with reference to Curtiss-Wright EPD Purchase Order Number and Line Item Number, and signature by authorized supplier's personnel.

C-2 Rev. 4

One (1) copy of original mill test report and original mechanical testing facility report containing Chemical Analysis and Mechanical Properties is required. The certificate shall state Purchase Order and Line Item Number, Heat Number, Specification including revisions, amendments, etc., and MR# traceability.

NOTE: When a certified Material Test Report is required by the Purchase order, then the Material certification data for chemical analysis, mechanical and physical Testing (including welding and NDE testing), must be recorded on the testing company's letterhead and shall bear the name, title and signature of the authorized company representative. Certification data supplied to Curtiss-Wright EPD shall be either the original mill certification, original certification from the testing facility or exact photocopies of the original certifications. Transcription of any data from any material certification to the letterhead of another supplier or sub-contractor that did not actually perform the testing is allowed only if the report copies of the original mill or original testing facility are included. The supplier's report shall clearly denote that the data is transcribed data.

Components made from Titanium B348 GR. 2, 5, and 23 chemical analysis certificate must contain two samples from the Ingot taken from opposite extremes of the product to be analyzed.

The certificate must also contain two final product hydrogen chemistries (final product meaning the bar, plate, or forging created from the original ingot). Supplier can either supply the results of the two samples or state the following on the certified material test report provided by the original mill or testing lab: "Two final product hydrogen samples were recorded and only the higher value has been reported." Ingot hydrogen need not be reported.

C-2A Rev. 0


One (1) copy of original Certification of Chemical Analysis and Mechanical Properties is required for motor shaft only.

C-3 Rev. 2

One (1) copy of Certificate of Conformance. The certificate shall state Purchase Order and Line Item Number, Part Name and Number, Drawing and Specification, quantity and MR# as applicable followed by a handwritten signature. Electronic signatures can only be used if the requirements detailed in Quality Code C-0 are met. The certificate of conformance must be a separate document and not incorporated into a packing slip.

THE CERTIFICATE OF CONFORMANCE SHALL INCLUDE THE FOLLOWING STATEMENT (OR SIMILAR):

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“MATERIALS SUPPLIED ARE IN FULL COMPLIANCE WITH THE REQUIREMENTS OF THE PURCHASE ORDER, INCLUDING INVOKED SPECIFICATIONS AND DRAWINGS.”

C-4 Rev. 2

One (1) copy of Certificate of Conformance for Heat Treatment which includes procedure and/ or drawing is required. Records of heat treatment shall include as a minimum:

- Specific times and temperatures
- Quantity of items and item name
- Date of heat treatment
- Name of the activity performing heat treatment
- Material traceability

C-4A Rev. 3

One (1) copy of Certificate of Conformance for Heat Treatment which includes Procedure or Drawing. Records of heat treatment shall include as a minimum:

- Specific times and temperatures
- Quantity of items and item name
- Date of heat treatment
- Name of the activity performing heat treatment
- Material traceability
- Heat-treat records in compliance with MIL-STD-1684 Figure 2.
- Furnace charts

C-4W Rev. 3

One (1) copy of Certificate of Conformance for Post Weld Heat Treat which includes procedure with actual heat treatment times, dates and temperatures. The PWHT procedure shall be in accordance with either S9074-AR-GIB-010/278 or MIL-STD-278 as required by the PO. In both fabrication specifications Table VI, Footnote 2, states that “For quenched and tempered or normalized and tempered alloys, stress relief temperatures shall not exceed base metal tempering temperatures and, in general, should be approximately 50°F below tempering temperature.”


The vendor shall request prior approval via QCM-993 & provide technical justification to use heat treat temperatures that would exceed the 50°F margin temperature.

THE SUPPLIER SHALL NOT PERFORM CASTING UPGRADE ON CURTISS-WRIGHT EPD PROVIDED CASTINGS WITHOUT PROVIDING NOTIFICATION. SUBMIT QCM-993 TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER.

C-5 Rev. 4

One (1) copy of Material Verification required for Generic Alloy Identity testing. The certificate shall state P.O. Number, Part Name, Drawing, Quantity and Specification as applicable. Material shall be tested to verify compliance to specification and the

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method of testing shall be noted on the certificate. Material must be in final condition when tested, i.e. bar, forging, casting, studs, etc.

If unable to perform material verification, then state on certificate that material verification is unavailable and to be performed at Curtiss-Wright EPD.

Parts that are completely plated or coated shall be tested prior to plating or coating.

For items that have too small of a surface area and thus cannot be material verified with the equipment: Supplier shall provide material certifications with the final software package in lieu of performing material verification testing. In addition the inability to perform material verification of the small component shall be noted on the final certificate of conformance.

For Level 1 Items: THE SUPPLIER SHALL NOT PERFORM MATERIAL VERIFICATION UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC., HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

C-5A Rev. 0

Generic Alloy Identity testing of each part is required in accordance with the requirements of MIL-STD-2132. A detailed procedure shall be submitted for approval prior to material testing.

The following restrictions apply to testing:

1. Parts that are completely plated or coated shall be tested prior to plating or coating.
2. Except for parts described above, parts shall be tested at the time of assembly into an end item, or at the time the traceability markings are applied, or just prior to packaging of individual parts.
3. Parts with a unique configuration produced by automatic feeding of material into a machine (e.g. punchings), shall be verified by testing of the material at the time it is loaded into the feed mechanism.


C-6 Rev. 5

CRITICAL APPLICATION MATERIAL (C-A):

This is Critical Application (C-A) Material. All customer specifications and appendices are invoked. The following applies both to the supplier and Curtiss-Wright EPD Receiving Inspection.

1. 100% visual surface inspection of each part to print is required. Each part must be permanently marked (height and location) as required per the drawing and must be tagged or marked "C-A". The permanent marking must provide the following information, listed in order of precedence (NOTE: this marking order of precedence supersedes drawing requirements):

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- Material specification code
- Lot code
- Supplier's trademark
- Heat number
- Part number
- Drawing including the revision level
- MR number traceability detailed below
- Any other required marking.

If all markings cannot be applied due to size constraints, the parts should be marked at a minimum with the applicable Lot code. Small parts that cannot have markings physically applied are defined as having a marking surface area less than 3/8 of an inch square. Those parts whose size, type or condition precludes some or all permanent marking from being applied shall be packaged and the package labeled with all marking required. For those small parts where only a portion of the markings can be applied; material specification code, lot code and supplier's trademark must be applied. All items in the package must be in the same homogeneous lot. All marking on the labels shall be done with a substance that will not be obliterated by such things as water, oil, or grease. If material is packaged in see-through bags, the labels shall be placed inside the bags. When labels are placed on the outside of material or packages, they shall be of a type that will remain attached during normal handling. Marking shall be located as not to affect the form, fit or function of the items.

2. The only alternative permitted to the original mill, heat treatment or metal working facility certified test reports is a testing laboratory's quantitative test report. Transcription of data from the original mill, heat treatment or metal working facility certification or from a testing laboratory test report, to a contract or supplier form is prohibited.
3. Generic Testing (a simple screening and identification of materials by alloy family) to MIL-STD sampling plan is required.
4. For studs/ nuts – material supplied by sub-tier suppliers: A Tensile Test Report of the final product is required.
 - A. For studs – An axial Tensile Test of the finished fastener of one (1) stud from each lot is required.
 - B. For nuts – A Proof Load Test of one (1) piece from each lot is required.
 - C. One (1) extra stud/ nut must be furnished for each lot for testing by Curtiss-Wright EPD.
5. For MIL Bar – A Tensile Test of one (1) piece from each heat within each lot is required if additional processes change physicals or chemicals.
6. For forgings – Generic Testing (a simple screening and identification of materials by alloy family) only I.A.W. MIL-STD Sampling Plan.

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7. Casting and Fabrication Requirements:

- A. Chemical Verification Certifications of filler materials must be submitted along with the original manufacturer's certifications.
- B. All appendages/ safe ends added must be generically verified (a simple screening and identification of materials by alloy family) and documented as to material type and submitted with software.

8. Supplier complies with MIL-I-45208A Amd. #1.

9. Sampling will be conducted in accordance with ANSI/ ASQ-Z1.4 General Inspection Level II (See Table I for sample size selection code) and Table IIA (For sample size) with lot acceptance based on zero defects and lot rejection based on one defect. The minimum sample size shall be eight pieces (for lot sizes of fifty or less) or one hundred percent for lot sizes of eight or less.

10. Supplier shall have a C-A material control procedure.

11. All suppliers shall pass on to sub-tier suppliers all of the above if applicable.

12. Inspect dimensions as required and document.

13. Curtiss-Wright EPD quality code 0C-104 applies. See EPD procedure PGM-5.

C-7 Rev. 3

One (1) copy of test reports showing the results of Magnetic Particle testing is required. Supplier shall record:

- A. The NDT method(s) used.
- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.
- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Instrument manufacturer and model number or unique equipment identified (yokes excluded).
- J. Signature of the inspector.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

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C-7A Rev. 3

One (1) copy of test reports showing the results of Magnetic Particle testing is required. Each part shall be 100% Magnetic Particle inspected. Supplier shall record:

- A. The NDT method(s) used.
- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.
- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Instrument manufacturer and model number or unique equipment identified (yokes excluded).
- J. Signature of the inspector.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.


C-7W Rev. 3

One (1) copy of test reports showing the results of Magnetic Particle testing for weld areas is required. Supplier shall record:

- A. The NDT method(s) used.
- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.
- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Instrument manufacturer and model number or unique equipment identified (yokes excluded).
- J. Signature of the inspector.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

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C-8 Rev. 5

MIC Level One (LI):

The following applies to both the supplier and Curtiss-Wright EPD Receiving Inspection:


1. 100% visual surface inspection of each part to print is required. Each part must be permanently marked (height and location) as required per the drawing and must be tagged or marked "LEVEL 1". The permanent marking must provide the following information, listed in order of precedence (NOTE: this marking order of precedence supersedes drawing requirements):
 - Material specification code
 - Lot code
 - Supplier's trademark
 - Heat number
 - Part number
 - Drawing including the revision level
 - MR number traceability detailed below
 - Any other required marking.

Due to size constraints, the parts should be marked at a minimum with the applicable Lot code. Small parts that cannot have markings physically applied are defined as having a marking surface area less than 3/8 of an inch square. Those parts whose size, type or condition precludes some or all permanent marking from being applied shall be packaged and the package labeled with all marking required. For those small parts where only a portion of the markings can be applied; material specification code, lot code and supplier's trademark must be applied. All items in the package must be in the same homogeneous lot. All marking on the labels shall be done with a substance that will not be obliterated by such things as water, oil or grease. If material is packaged in see-through bags, the labels shall be placed inside the bags. When labels are placed on the outside of material or packages, they shall be of a type that will remain attached during normal handling. Marking shall be located as not to affect the form, fit or function of the items.

All Level 1 fasteners shall be marked with the kind of material, Supplier traceability code and Manufacturer's name, trademark or symbol. In those cases where the fastener specification does not provide a kind of material, or material type, the material shall be marked either with the grade, as specified in the ordering data, or specification, or with the applicable Material Designator.

2. The only alternative permitted to the original mill, heat treatment or metal working facility certified test reports is a testing laboratory's quantitative test report. Transcription of data from the original mill, heat treatment or metal

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working facility certification or from a testing laboratory test report, to a contract or supplier form is prohibited.

3. EPD Quality code 0C-104 applies. See EPD procedure PGM-5.
4. Material is not from a prohibited source (certain foreign countries) and the country of origin is readily identified, or has been annotated by the Supplier.
5. Generic testing to sample plan is required.
6. Supplier complies with MIL-I-45208A Amd. #1.
7. Inspect dimensions as required and document.
Material shall be inspected in accordance with the sampling plan in the applicable military specification or standard, federal specification or standard, or drawing for which the material was manufactured. In the absence of such sampling plans, sampling inspection shall be per ANSI/ASQ Z1.4, general inspection level II (for sample size selection code), table IIA (for sample size) with lot acceptance based on zero defects and lot rejection based on one defect. The minimum sample size shall be eight units (for lot sizes of fifty or less) or one hundred percent (for lot sizes of eight or less).
8. All suppliers shall pass on to sub-tier suppliers all of the above if applicable.

C-9 Rev. 3

One (1) copy of Liquid Penetrant inspection report showing the results of liquid penetrant testing is required. Supplier shall record:

- A. The NDT method(s) used.
- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.
- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Penetrant manufacturer (brand) and type identification.
- J. Signature of the inspector.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

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C-9A Rev. 2

One (1) copy of Liquid Penetrant inspection report showing the results of liquid penetrant testing is required. Each part shall be 100% Liquid Penetrant inspected. Supplier shall record:

- A. The NDT method(s) used.
- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.
- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Penetrant manufacturer (brand) and type identification.
- J. Signature of the inspector.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

C-9W Rev. 3

One (1) copy of Liquid Penetrant inspection report showing the results of liquid penetrant testing for weld areas is required. Supplier shall record:

- A. The NDT method(s) used.
- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.
- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Penetrant manufacturer (brand) and type identification.
- J. Signature of the inspector.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

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C-10 Rev. 1

Dimensional inspection is required for each targeted dimension referenced on the drawing. Each part must be serialized and dimensions recorded individually. The dimensions may be recorded on a Curtiss-Wright EPD QCM-100/QCM-15 Form, or a supplier's equivalent of the form. In addition to dimensions recorded, the type and SN of all gages used must be listed in the remarks or some other space on the form.

Refer to Curtiss-Wright EPD procedure ISX-1 for guidance on using the QCM-100/QCM-15 Form.

The dimensional inspection record shall be included in the software documentation package accompanying the shipment to Curtiss-Wright EPD. It is requested that the supplier include TWO COPIES of the dimensional inspection record.

Any forms (including equivalent supplier's forms) received not meeting these requirements will be rejected by Curtiss-Wright EPD Quality.

C-11 Rev. 0

One (1) copy of Hydrotest Certification, which includes Curtiss-Wright EPD's Purchase Order Number, Part S/N, Procedure No. (if applicable), Pressure and Time.

C-12 Rev. 6

One (1) copy of Motor PQC 44/1 form with each S/N motor supplied. Also, include the signed and dated motor performance test report (except noise) in accordance with MIL-M-17060 and indicate the specification/drawing revision to which the test was performed.

The vendor shall provide ball bearing records for all ball bearings installed in the motor. The following information shall be included in certification package provided with the motor:


- a. Bearing manufacturer, size, preload, and serial number (i.e. Type 73XXX, XXX lbs. preload)
- b. Nominal bearing ball size, pitch diameter, contact angle, and number of balls.
- c. Bearing lot or purchase order traceability (indicating month and year of manufacture)
- d. Any applicable specifications that the bearing was manufactured in accordance with including revision and amendments (i.e. MIL-B-17931 Rev. E Amendment).

Motor shafts designated as Level 1 material must be marked with the appropriate "Material Designator" as follows:

| <u>Material</u> | <u>Tradename</u> | <u>Designator</u> |
|-----------------|------------------|-------------------|
| Alloy 625 | Inconel | INE |
| Alloy C276 | Hastelloy | HSE |

Marking locations shall be in accordance with master plan and detail drawing requirements.

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The vendor shall provide a Certificate of Compliance for each motor, listing the welding and non-destructive testing procedures with revision levels used on that particular motor. These procedures shall have been previously submitted to and approved by Curtiss-Wright EPD and/or the Curtiss-Wright EPD customer. The records of approval for the applicable procedures, such as VPAR numbers, should also be listed on the Certificate of Compliance.

The vendor shall provide a record of dynamic balance included in form PQC 44/1, showing the final imbalance result for the motor shaft and rotor assembly. For overhauled motors, a permanently attached, externally visible means of positively identifying the scope of winding refurbishment must be included on the motor. The identification may be included on the nameplate and shall state "Rewound Yes" or "Rewound No" as appropriate.

C-13A Rev. 0

SIGNATURE REQUIREMENT:

Certificates and test reports shall bear the name, title, and signature of the authorized company representative. The signature of the company representative should be handwritten. In cases where handwritten is impractical, a mechanically reproduced signature (i.e. printed, stamped, typewritten, or generated by computer) is acceptable where there is present an intent to authenticate the document. Provision of test reports and certifications so signed shall be considered evidence of your intent to authenticate the documents. These test reports/ certifications are to be mailed with each shipment of material.

C-13B Rev. 1

ELECTRIC BOAT ELECTRONIC SIGNATURE REQUIREMENTS:

For all supplier and sub-tier supplier documentation intended for shipment to General Dynamics Electric Boat, the following electronic signature requirements apply. An electronic Signature is equivalent to a person's handwritten signature. It indicates approval of a certification of the information or actions(s) in the same manner as a pen-and-ink signature. The electronic identification is an electronic means of identifying a signer of an electronic record, document transaction, or instrument. It is unique and attributable to only one person. Examples of various electronic identifications include but are not limited to an identifying keystroke, a password, a personal identification number (PIN), or a token or magnetic key.

- a) The signer must take a distinct action to "sign" electronically.
- b) A means to delegate signature authority which allows the delegated individual to utilize their own electronic identification (i.e. integrity of each person's signature must be preserved).
- c) A means to identify the electronic signer by name on the electronic or paper version of the document and be maintained for the retention life of the electronic record.
- d) Preservation of unauthorized access to electronic identifications.
- e) An established password policy to change electronic identification and not share electronic identification.
- f) Reviews to ensure proper use of electronic signatures.

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- g) A means to identify an electronic signature on a record as an electronic signature.
- h) Electronic signature applications shall not allow unauthorized users to change electronically signed documents or records. All changes to electronically signed documents or records made by authorized users shall be revision controlled, identify the person making the change, and shall clearly reflect that the document or record has been revised.

It is the supplier's responsibility for implementation of electronic signatures at sub-tier suppliers and sub-contractors and to flow down these electronic signature requirements to their sub-tier suppliers and sub-contractors. The supplier is responsible to ensure that their suppliers or sub-contractors have a policy that addresses changes to electronically signed documents, ensures that changes are only performed by authorized personnel, and that all changes to electronically signed documents or records are properly documented.

C-29 Rev. 1

One (1) copy of original mill test report containing Chemical Analysis. The signed and dated certificate shall include Purchase Order and Line Item Number, Heat Number, Specification including revisions, amendments, etc. and MR# traceability.

C-30 Rev. 1

One (1) copy of original mechanical testing facility report containing Mechanical Properties which include results of tests as required by specification. The signed and dated certificate shall state Purchase Order and Line Item Number, Heat Number, Specification including revisions, amendments, etc. and MR# traceability.

C-33 Rev. 0

At each tier of procurement, the procurement documents shall provide for access to the supplier's plant facilities and records for inspection or audit by Curtiss-Wright EPD, its designated representatives, and/or other parties authorized by Curtiss-Wright EPD.

C-34 Rev. 0

Curtiss-Wright EPD Receiving Inspection to perform 100% piece part inspection with serialization. Curtiss-Wright EPD USE ONLY.

C-34A Rev. 1

Curtiss-Wright EPD Receiving Inspection to use sampling plan per ANSI/ASQ Z1.4. Curtiss-Wright EPD USE ONLY.

C-36 Rev. 4

One (1) copy of Ultrasonic Test report showing the results of ultrasonic testing is required. Supplier shall record:

- A. The NDT method(s) used.
- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.

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- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Instrument manufacturer, model number, and serial number of unit.
- J. Transducer size and type, search beam angle, and test frequency.
- K. Couplant used.
- L. Calibration standard number.
- M. Signature of the inspector.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

C-37 Rev. 2

One (1) copy of Welding and/or Cladding certificate. The original testing facility signed and dated certificate shall include MR# traceability, all weld sketches, filler weld certs, NDE certs., heat treat (C of C including procedures, times, temperatures), and Hardness Certs., as required. (If no welding was performed, a "NO WELD REPAIR" statement is to be included).

THE SUPPLIER SHALL NOT PERFORM WELDING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC., HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

C-39 Rev. 1


One (1) copy of Heat Treat Chart(s) / Furnace Chart(s). Furnace charts must be legible and include date of heat treat and MR# traceability.

C-40 Rev. 3

Provide Assembly Components Parts List showing traceability for all assembly components. This certificate shall include the MR Number assigned to the whole assembly and the following information for each assembly component:

- A. Part Number
- B. Part Description
- C. Quantity
- D. Unique serial number that provides traceability to component OQE [Objective Quality Evidence]. Also include MR number of component if there is one assigned.
- E. Material Specification
- F. Heat Number (if available)

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As a minimum, components should each be marked with their MR numbers (or unique serial numbers). Marking/ traceability of small parts shall be in accordance with Code C-65B.

Note: The MR Number of the whole assembly should be unique and NOT a duplicate of any of the individual components. See code C-65B.

The Assembly Components Parts List shall be included in the software documentation package accompanying the shipment to Curtiss-Wright EPD, two copies are requested.

C-42 Rev. 1

One (1) copy of Certification of Chemical Analysis and Mechanical Properties of filler weld materials. The original testing facility signed and dated certificate shall include MR# traceability, and Heat Number.

C-43 Rev. 2

One (1) set of Radiographic Film(s) must be submitted for review by Curtiss-Wright EPD. Final set of radiographs is processed for archival quality to assure the potential for preserving the radiographic latent image for forty (40) years.

Unless otherwise requested and approved on a QCM-993, parts with radiographic film shall not be shipped to Curtiss-Wright EPD prior to approval by Curtiss-Wright EPD and/or the Curtiss-Wright EPD customer.

C-44 Rev. 2

One (1) copy of radiographic reader sheets.


THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL HIS PROCEDURES, INSTRUCTIONS, ETC., HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

C-45 Rev. 2

One (1) copy of radiographic shooting sketches.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL HIS PROCEDURES, INSTRUCTIONS, ETC., HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

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C-48 Rev. 0

Material shall be marked by any method acceptable to the Purchaser which will not result in any harmful contamination or sharp discontinuities. Markings shall identify the material specification and grade, Heat Number(s), marking symbol or Heat Trace Code(s) traceable to a Material Test Report and/or Certificate of Conformance (as required).

C-50 Rev. 2

All records and documentation required by this purchase order shall be legible, complete and suitable for scanning. Documents which are not suitable for scanning with "blurry" text, insufficient margin or information "chopped off" will be returned for replacement on a no-charge basis. All entries on records and documentation shall be documented with an instrument that provides a permanent record (e.g. ink pen). Use of "ditto marks" and down arrows (↓) to indicate duplication is prohibited. Corrections to records shall be made by drawing a single line through the incorrect entry and must be initialed and dated in permanent ink. The original entry must remain legible. Use of "white-out" or correction tape is prohibited. When additional information is added to a record it shall be initialed and dated. When a document is retyped, in portion or completely, to correct or add information, it shall be identified as a corrected copy and all changes shall be identified (e.g. *). The document shall be resigned and dated.

C-52 Rev. 0

Supplier to furnish Certified Test results from the material supplier in accordance with QQ-N-286 indicating the material supplied is capable of meeting the minimum mechanical properties for the annealed, age hardened (A-AH) and direct age hardened (AH) condition.

The requirements of MS 18116 shall be met except that marking shall be specified on the Curtiss-Wright EPD Detail Drawing. (Applicable to studs and bolts.)

C-53 Rev. 0

Supplier to furnish Certified Test results in accordance with QQ-N-286 indicating the material supplied is capable of meeting the minimum mechanical properties for the annealed, age hardened (A-AH) and direct age hardened (AH) conditions. (Applicable to forgings and bars.)

C-55 Rev. 0

One (1) copy of the Heat Chart with the following information on the chart: Purchase Order Number, Curtiss-Wright EPD Sales Order Number, Serial Number (if applicable) MR Number, Work Order Number, Weld Certification Number (if applicable), and Heat Treat Procedure.

C-56 Rev. 1

One (1) copy of Visual Examination Report, certified to applicable specification and procedures.

For structural and/or completed welds, one (1) copy of test reports for Visual Inspection showing the results of visual inspection. The reports and/or other verification of conformance documents shall record:

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- B. Description or unique identification of the item inspected.
- C. Procedure identification.
- D. The performing activity, whether it be the supplier, a sub-tier supplier, or a test lab.
- E. Quantity inspected.
- F. Acceptance standard used.
- G. Quantity accepted/ rejected.
- H. Date of initial inspection and inspector identification.
- I. Signature of the inspector.

Records shall identify component, applicable drawings, weld identification of the fabrication complete (drawing, assembly, piece mark) and type of NDT inspection performed. Authorized signature shall represent certification of only that portion of the structure inspected at that time.

THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC. HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/ OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER, EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

C-56A Rev. 0

Supplier shall perform Visual Examination per ND-2582 and certify acceptability.

C-57 Rev. 2

Consult the EPD Standard Terms and Conditions (QCM-1417) and any additional flowdowns provided with this purchase order for domestic material requirements. (Reference DFAR 252.225-7009 and DFAR 252.225-7001).


IN CASES WHERE THE PRODUCER OR MELT SOURCE IS NOT A DOMESTIC SOURCE, THE COUNTRY OF ORIGIN SHALL BE INDICATED ON THE TEST REPORT, OR IF NOT IDENTIFIED, ANNOTATED ON THE TEST REPORT BY THE SUPPLIER. IF THE PRODUCER OR MELT SOURCE IS A DOMESTIC SOURCE, THE TEST REPORT SHALL BE CLEARLY INDICATED AS SUCH, OR ANNOTATED ON THE TEST REPORT BY THE SUPPLIER AS PRODUCED OR MELTED BY A DOMESTIC SOURCE (UNITED STATES OF AMERICA).

IF MATERIAL TO BE SUPPLIED IS QUESTIONABLE, A QCM-993 SHALL BE SUBMITTED PRIOR TO DELIVERY.

C-64 Rev. 1

Weld procedure specifications and supporting procedure qualification records shall be written and qualified in accordance with MIL-STD-278 (**see purchase order for invoked requirements and acceptance standards**). WPS's and PQR's shall be submitted to CURTISS-WRIGHT EPD for review and approval prior to the start of any welding. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER.

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PROCEDURES FOR NDE USED TO QUALIFY NEW WELD PROCEDURES SHALL BE SUBMITTED TO THE BUYER FOR APPROVAL PRIOR TO USE.

C-64A Rev. 1

Weld procedures and supporting qualification records shall be written and qualified in accordance with NAVSEA 250-1500-1 (**see purchase order for invoked requirements and acceptance standards**). WPS's shall be submitted to CURTISS-WRIGHT EPD for review and approval prior to start of any welding. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER.

PROCEDURES FOR NDE USED TO QUALIFY NEW WELD PROCEDURES SHALL BE SUBMITTED TO THE BUYER FOR APPROVAL PRIOR TO USE.

C-64C Rev. 1

Weld procedure specifications and supporting procedure qualification records shall be written in accordance with either MIL-STD-278 or S9074-AR-GIB-010/278 (**see purchase order for invoked requirements and acceptance standards**). Orders that have existing procedures approved to MIL-STD-278 for this application are acceptable. If new procedures are required for completion of this order, those procedures must be in accordance with S9074-AR-GIB-010/278. WPS's and PQR's shall be submitted to Curtiss-Wright EPD for approval prior to the start of any welding. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER.

PROCEDURES FOR NDE USED TO QUALIFY NEW WELD PROCEDURES SHALL BE SUBMITTED TO THE BUYER FOR APPROVAL PRIOR TO USE.

C-64D Rev. 1

Weld procedure specifications and supporting procedure qualification records shall be written in accordance with either MIL-STD-278 or S9074-AR-GIB-010/278 (**see purchase order for invoked requirements and acceptance standards**). WPS's and PQR's shall be submitted to Curtiss-Wright EPD for approval prior to the start of any welding. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER.


PROCEDURES FOR NDE USED TO QUALIFY NEW WELD PROCEDURES SHALL BE SUBMITTED TO THE BUYER FOR APPROVAL PRIOR TO USE.

C-64T Rev. 1

Weld procedure specifications and supporting procedure qualification records shall be written and qualified in accordance with S9074-AR-GIB-010/278 (**see purchase order for invoked requirements and acceptance standards**). WPS's and PQR's shall be submitted to CURTISS-WRIGHT EPD for review and approval prior to the start of any welding. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER.

PROCEDURES FOR NDE USED TO QUALIFY NEW WELD PROCEDURES SHALL BE SUBMITTED TO THE BUYER FOR APPROVAL PRIOR TO USE.

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C-65A Rev. 2

****SERIALIZATION REQUIRED****

Parts must be permanently marked with an "MR" Number in accordance with Code C-65B. All individual pieces also require serialization. Serialization shall be added to each piece's MR Number as follows:

A sequence number is to be added to the end of the MR Number. For example, to serialize fifteen (15) pieces that have MR number MR123456-1A, they would be marked MR123456-1A1 thru MR123456-1A15.

For a purchase order line that is for an ASSEMBLY, the serialized MR Number shall be assigned to the traceability of the assembly as a whole unit. **Do NOT use an assembly component's MR number to also represent the entire assembly.** Marking/serialization of individual components of assemblies shall be in accordance with codes 0C-40 and/ or 0C-88 as listed in the PO code requirements.

C-65B Rev. 7

****SPECIAL MARKING REQUIREMENTS****

IF MARKING CLARIFICATION IS REQUIRED, PLEASE SUBMIT A QCM-993 TO YOUR BUYER.

The parts shipped on this order must be permanently marked (height and location) as required per the drawing, material specification/N-code and order requirements.

In addition, the parts must be permanently marked with an "MR" Number.

An MR Number is to be generated as such: the letters "MR" followed by the Purchase Order Number, a dash (-), the P.O. Line Item Number, and a letter code for the Heat Number. The first heat used for material on a P.O. Line Item is considered "A" and each subsequent heat used on that Line Item shall be denoted following alphabetical order.

Note that when there are multiple lots of material used from the same heat, the letter designation of the MR number should align with lot number in place of heat number, for example, with fasteners.

For an example PO 123456 Line 1, the structure of an MR number is:

MR 123456 - 1 A, B, etc., where:

"MR" = Material Release


"123456" = EPD PO number

"1" = EPD PO line item

"A,B, etc" = Unique letter assigned alphabetically to correspond with unique heat number

Example 1: Purchase Order Number 123456, Line Item 1, QTY 2 pieces, both from same heat. The MR Number is "MR123456-1A" for both pieces.

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Example 2: Purchase Order Number 123456, Line Item 1, QTY 2 pieces, from different heats. The MR Number is "MR123456-1A" for one piece and "MR123456-1B" for the other piece.

Example 3: Purchase Order Number 123456, Line Item 1, QTY 1 and Line Item 2, QTY 1. The MR Number is "MR123456-1A" for the piece on Line Item 1 and "MR123456-2A" for piece on Line Item 2. In this case the heat number designation is "A" for both lines whether or not the parts come from the same heat, since each is the first and only heat for each separate line.

For a purchase order line that is for an ASSEMBLY, the MR Number shall be assigned to the traceability of the assembly as a whole unit. **Do NOT use an assembly component's MR number to also represent the entire assembly.**

Marking/serialization of individual components of assemblies shall be in accordance with codes 0C-40 and/ or 0C-88 as listed in the PO code requirements.

Small parts with a marking surface area less than 3/8 of an inch square may be packaged and labeled accordingly. All items in the package must be in the same homogeneous lot. All markings on the labels shall be done with a substance that will not be obliterated by such things as water, oil, or grease. If material is packaged in see-through bags, the labels shall be placed inside the bags. When labels are placed on the outside of material or packages, they shall be of a type that will remain attached during normal handling. Marking shall be located as not to affect the form, fit, or function of the items.

Washers shall not be marked on their faces unless otherwise required by the drawing (REF.11739-B-18). If there is insufficient thickness to apply markings to the washer edge, the pieces should be bagged and tagged.

All traceability numbers as indicated above must appear on all pages of the Certification Package submitted to Curtiss-Wright EPD.

NOTE FOR MATERIAL OBTAINED ON A PREVIOUS PURCHASE ORDER:


If the subject material was shipped from another supplier or purchased on a previous order, the "MR" Numbers described herein are to be maintained as received from that original Purchase Order Number. If the hardware as received does not have the required marking, contact that supplier or the Curtiss-Wright EPD Buyer to obtain the applicable "MR" Numbers to be applied. Also, this "MR" Number must appear on any certifications that the subsequent supplier is required to supply.

Please note that a lack of maintained traceability by the original purchase order may constitute a non-conforming condition, and shall be treated as such when applicable.

C-65C Rev. 3

Markings shall maintain traceability through records to material certification, lot heat treatment and all applicable inspection, test and processing records (if applicable certifications are required). Markings shall be in accordance with MIL-STD-792.

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Markings shall be maintained during process operations. Unless otherwise specified on the drawing, or elsewhere in the purchase order, markings shall be done in any location not detrimental to the function of the part (for example, do NOT mark in a hydraulic passage).

When marking on a part or piece of material will be removed by processing, it shall be moved to another location on the material before processing. If the marking cannot be moved to another location, the marking shall be restored prior to the material being moved to the next operation during all process operations.

Unless otherwise specified on the applicable component drawing, or elsewhere in the purchase order, parts are to be vibro-etched, electro-chemical etched, or bag and tag per PO requirements. Do not attach adhesive tags directly to or use fluid markers on any parts.

C-69 Rev. 1

One (1) copy of Certification of Hardness Inspection Report with results for each piece ordered. The original testing facility signed and dated certificate shall include MR# traceability and results of 100% hardness check.

C-70 Rev. 1

One (1) copy of Certification of Hardness Inspection results for one (1) piece from each lot of material and each heat treat batch. The original testing facility signed and dated certificate shall include MR# traceability and hardness results.

C-71 Rev. 3

Rubber components must be properly identified by Part Number, Cure Date and Shelf Life. Rubber component documentation must be certified to the material specification required in the P.O. and rubber component certification must include all required testing per material specification ordered, date of manufacture, Cure Date, Shelf Life, Batch Number, Duro Hardness, Compound and any special storage requirements. The Shelf life shall be that specified in the latest revision of MIL-HDBK-695. Shelf life shall be traceable to Batch Number marked on part or package.


Certification data supplied to Curtiss-Wright EPD shall be either the original certification from the testing facility or exact photocopies of the original certifications. Transcription of any data from any material certification to the letterhead of another supplier or sub-contractor that did not actually perform the testing are allowed, only if the copies of the original testing facility are included. The supplier's report shall clearly denote that the data is transcribed data.

NOTE: Not more than 15% of the Shelf Life shall be expired at the time of delivery to Curtiss-Wright EPD.

C-73 Rev. 0

Statement of storage requirements or statement of non-applicability required.

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C-74 Rev. 3

MIL-STD-278 is invoked unless otherwise indicated in the body of the Purchase Order **(see purchase order for invoked requirements and acceptance standards)**.

If DCMA oversight is required and the supplier DCMA QAR has not received delegation authority, the Supplier shall promptly notify the EPD buyer.

MIL-STD-278, Para. 13.2.5(C) states: "Special repairs require advance approval of the authorized representative." For this purpose, the Buyer or cognizant Engineer must be advised in writing via a QCM-993 form that repair welding is required. Special notification via a QCM-993 form should include documentation (showing location, size and proposed weld repair procedures) for formal customer disposition, as required by contract.

NOTE: If DCMA oversight is required and the repair is planned at a sub-tier supplier, the primary supplier must have its local DCMA representative delegate authority to the sub-tier DCMA representative. Special weld approval shall accompany the other weld records and be handled in accordance with the contract requirements. The certificate that accompanies the hardware shall state the number of special welds performed. If no special welds have been performed, the supplier shall so certify in a document submitted with the hardware. This requirement must be transmitted to all sub-tier suppliers.

Stress relief of repair welded castings shall be in accordance with Table VI and Section 8 of MIL-STD-278. In this regard where the term "weldment" is used in Section 8, it shall be construed to mean repair welded castings.

C-74A Rev. 3

NAVSEA 250-1500-1 welding requirements apply **(see purchase order for invoked requirements and acceptance standards)**.

If DCMA oversight is required and the DCMA QAR has not received delegation authority the supplier shall promptly notify the EPD buyer.


The buyer or cognizant engineer must be advised in writing via a QCM-993 form when repair welding is required with documentation (showing location, size and proposed weld repair procedures) for formal customer disposition as required by contract.

NOTE: If DCMA oversight is required and the repair is planned at a sub-tier supplier, the primary supplier must have its local DCMA representative delegate authority to the sub-tier DCMA representative. Weld approval shall accompany the other weld records and be handled in accordance with the contract requirements.

C-74C Rev. 2

MIL-STD-278 or S9074-AR-GIB-010/278 is invoked unless otherwise indicated in the body of the Purchase Order **(see purchase order for invoked requirements and acceptance standards)**. Orders that have existing procedures approved to MIL-STD-

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278 for this application are acceptable. If new procedures are required for completion of this order, those procedures must be in accordance with S9074-AR-GIB-010/278. If DCMA oversight is required and the supplier DCMA QAR has not received delegation authority, the Supplier shall promptly notify the EPD buyer.

MIL-STD-278 or S9074-AR-GIB-010/278, Para. 13.2.5(C), as applicable states: "Special repairs require advance approval of the authorized representative." For this purpose, the Buyer or cognizant Engineer must be advised in writing via a QCM-993 form that repair welding is required. Special notification via a QCM-993 form should include documentation (showing location, size and proposed weld repair procedures) for formal customer disposition, as required by contract.

NOTE: If DCMA oversight is required and the repair is planned at a sub-tier supplier, the primary supplier must have its local DCMA representative delegate authority to the sub-tier DCMA representative. Special weld approval shall accompany the other weld records and be handled in accordance with the contract requirements. The certificate that accompanies the hardware shall state the number of special welds performed. If no special welds have been performed, the supplier shall so certify in a document submitted with the hardware. This requirement must be transmitted to all sub-tier suppliers.

Stress relief of repair welded castings shall be in accordance with Table VI and Section 8 of MIL-STD-278 or S9074-AR-GIB-010/278, as applicable. In this regard where the term "weldment" is used in Section 8, it shall be construed to mean repair welded castings.

C-74D Rev. 1


This quality code provides the supplier with options in the use of procedures for fabrication welding and weld repair.

Welding shall be in accordance with NAVSEA Technical Publication S9074-AR-GIB-010/278 as modified by any applicable appendices, but the supplier may use MIL-STD-278 as modified by any applicable appendices, subject to Curtiss-Wright EPD approval (**see purchase order for invoked requirements and acceptance standards**).

S9074-AR-GIB-010/278 and MIL-STD-278 state: "Special repairs require advance approval of the authorized representative." For this purpose, the Buyer or cognizant Engineer must be advised in writing that repair welding is required. Notification should include documentation (showing location, size and proposed weld repair procedures) for formal customer disposition, as required by contract. If DCMA has not received delegation authority, the Supplier shall promptly notify the Buyer.

NOTE: If the repair is planned at a sub-tier supplier, the primary supplier must have its local DCMA representative delegate authority to the sub-tier DCMA representative. This approval shall accompany the other weld records and be handled in accordance with the contract requirements. The certificate that accompanies the hardware shall state the number of special welds performed. If no special welds have been performed, the supplier shall so certify in a

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document submitted with the hardware. This requirement must be transmitted to all subtier suppliers.

C-74T Rev. 3

S9074-AR-GIB-010/278 is invoked unless otherwise indicated in the body of the Purchase Order (**see purchase order for invoked requirements and acceptance standards**).

If DCMA oversight is required and the supplier DCMA QAR has not received delegation authority, the Supplier shall promptly notify the EPD buyer.

S9074-AR-GIB-010/278, Para. 13.2.5(C) states: "Special repairs require advance approval of the authorized representative." For this purpose, the Buyer or cognizant Engineer must be advised in writing via a QCM-993 form that repair welding is required. Special notification via a QCM-993 form should include documentation (showing location, size and proposed weld repair procedures) for formal customer disposition, as required by contract.

NOTE: If the repair is planned at a sub-tier supplier, the primary supplier must have its local DCMA representative delegate authority to the sub-tier DCMA representative. Special weld approval shall accompany the other weld records and be handled in accordance with the contract requirements. The certificate that accompanies the hardware shall state the number of special welds performed. If no special welds have been performed, the supplier shall so certify in a document submitted with the hardware. This requirement must be transmitted to all sub-tier suppliers.

Stress relief of repair welded castings shall be in accordance with Table VI and Section 8 of S9074-AR-GIB-010/278. In this regard where the term "weldment" is used in Section 8, it shall be construed to mean repair welded castings.

C-75 Rev. 2

MIL-STD-271 is invoked unless otherwise indicated in the body of the Purchase Order (**see purchase order for invoked requirements and acceptance standards**). MIL-STD-271, Para. 1.7.3 states in part: "The Government Inspector may request demonstration of the procedure during initial review of the procedure..." If Curtiss-Wright EPD Purchase Orders require Government Source Inspection at sub-tier supplier, the supplier must contact its local Government Representative for review and witness of the NDE procedures as required. Curtiss-Wright EPD must also have its local Government Representative delegate authority to the subtier Government Representative. All approved copies of NDE records and certs must always state "MIL-STD-271" when being supplied with hardware. If Government Representative has not received delegation authority the supplier shall promptly notify Buyer.

C-75A Rev. 1

MIL-STD-2132 is invoked unless otherwise indicated in the body of the purchase Order (**see purchase order for invoked requirements and acceptance standards**). If the purchase orders require Government source inspection at sub-tier supplier, the supplier must contact its local Government representative for review and witness of the

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NDE Procedures as required. Curtiss-Wright EPD must have its local Government representative delegate authority to the sub-tier Government representative. All approved copies of NDE records and certs must always state "MIL-STD-2132" when being supplied with hardware. If Government representative has not received delegation authority, the supplier shall promptly notify the buyer. Procedure and acceptance standards shall be submitted for review and approval prior to manufacturing. Submit for information only, the inspector's personnel qualification records (NSTR report of approval) or provide same documentation for sub-tier suppliers as applicable.

C-75C Rev. 2

MIL-STD-271 or T9074-AS-GIB-010/271 is invoked unless otherwise indicated in the body of the Purchase Order (**see purchase order for invoked requirements and acceptance standards**). Orders that have existing procedures approved to MIL-STD-271 for this application are acceptable. If new procedures are required for completion of this order, those procedures must be in accordance with T9074-AS-GIB-010/271. MIL-STD-271 or T9074-AS-GIB-010/271, Para. 1.7.3, as applicable states in part: "The Government Inspector may request demonstration of the procedure during initial review of the procedure..." If Curtiss-Wright EPD Purchase Orders require Government Source Inspection at sub-tier supplier, the supplier must contact its local Government Representative for review and witness of the NDE procedures as required. Curtiss-Wright EPD must also have its local Government Representative delegate authority to the sub-tier Government Representative. All approved copies of NDE records and certs must always state "MIL-STD-271" or "T9074-AS-GIB-010/271," as applicable when being supplied with hardware. If Government Representative has not received delegation authority the supplier shall promptly notify Buyer.

C-75D Rev. 1

This quality code provides the supplier with options in the use of procedures for non-destructive examination.

NDE shall be in accordance with NAVSEA Technical Publications S9074-AR-GIB-010/278 and T9074-AS-GIB-010/271, as modified by the Purchase Order or any applicable appendices (**see purchase order for invoked requirements and acceptance standards**). However, the supplier may use MIL-STD-271, as modified by any applicable appendices, subject to Curtiss-Wright EPD approval.

T9074-AS-GIB-010/271 and MIL-STD-271 state in part: "The Government Inspector may request demonstration of the procedure during the initial review of the procedure..."

If Curtiss-Wright EPD purchase orders require Government Source Inspection at the sub-tier supplier, the supplier must contact its local Government Representative for review and witness of NDE procedures as required. Curtiss-Wright EPD must also have its local Government Representative delegate authority to the sub-tier Government Representative. All approved copies of NDE records and certs must always state "T9074-AS-GIB-010/271 or MIL-STD-271" when being supplied with hardware. If Government Representative has not received delegation authority the supplier shall promptly notify Buyer.

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C-75T Rev. 1

T9074-AS-GIB-010/271 is invoked unless otherwise indicated in the body of the Purchase Order (**see purchase order for invoked requirements and acceptance standards**). T9074-AS-GIB-010/271, Paragraph 1.7.3, states, in part: "The Government Inspector may request demonstration of the procedure during initial review of the procedure..." If Curtiss-Wright EPD purchase orders require Government Source Inspection at the sub-tier supplier, the supplier must contact its local Government Representative for review and witness of the NDE procedures as required. Curtiss-Wright EPD must also have its local Government Representative delegate authority to the sub-tier Government Representative. All approved copies of NDE records and certs must always state "T9074-AS-GIB-010/271" when being supplied with hardware. If Government Representative has not received delegation authority the supplier shall promptly notify Buyer.

C-76 Rev. 3

Fasteners shall be supplied in accordance with MIL-S-1222H, Int. Am. 3 and a Certificate of Compliance is required stating "Inspection performed in accordance with MIL-S-1222H and found acceptable." Dimensional records are also required. Unless otherwise specified, Lot A definition is per Para. 4.2(a). (NOTE: When NDE is performed, quantity tested shall be in accordance with drawing and/or N-Code, which takes precedence over MIL-S-1222H.)

When Option B is selected for mechanical testing, paragraph 4.4.4.6 shall be followed and a statement is required.

PARTS ARE TO BE MARKED IN ACCORDANCE WITH THE DRAWING

C-76A Rev. 4

Fasteners shall be supplied in accordance with MIL-DTL-1222J, and a Certificate of Compliance is required stating, "Inspection performed in accordance with MIL-DTL-1222J and found acceptable." Dimensional records are also required. Unless otherwise specified, Lot A definition is per Para. 4.2. (NOTE: When NDE is performed, quantity tested shall be in accordance with drawing and/or N-Code, which takes precedence over MIL-DTL-1222J.)

When alternative mechanical testing is selected, paragraph 4.5.2.7 shall be followed and a statement is required.

PARTS ARE TO BE MARKED IN ACCORDANCE WITH THE DRAWING


C-77 Rev. 0

Material furnished on this Purchase Order must be processed in a "temperature surveyed" furnace. Supplier Certificate of Compliance must state the furnace identification number and date of last survey.

C-78 Rev. 1

One (1) copy of Safety Data Sheets (SDS) required for this Purchase Order.

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C-79 Rev. 4

If any Ni-Cu-Al (K-Monel) material is utilized in this order, it must be in accordance with the requirements of the specified N-code and one of the following modifications:

Material Test Reports are required showing actual results of all chemical analyses and Mechanical properties required by the specification for each heat and lot of material furnished.

- A) QQ-N-286 Revision F, dated 29 November 1990, and have been produced only by Special Metals Corporation (formerly Inco Alloys International/ Huntington Alloys Inc.) with a production (pour) date later than December 21, 1976.

First article testing per paragraph 3.1 of QQ-N-286 Revision F is required for all heats produced after February 19, 2001. Special Metals Corporation was exempt from first article testing for all heats produced prior to February 19, 2001.

- B) Revision G, with the following modifications:

Revise paragraph 4.2.2.2 of QQ-N-286G as follows:


4.2.2.2 Slow strain rate tensile tests. Three specimens shall be prepared and tested per lot. Specimens shall be taken after the final heat treatment. When material is shipped in the annealed condition, specimens may be taken after the final anneal and shall be heat treated in accordance with 4.3.6.1

4.2.2.2.1 Bar, Rod and Forgings. Slow strain rate tensile test specimens shall be taken from one end of a bar, rod, or forging at the quarter diameter (half radius) and in the longitudinal direction. Bars, rods or forgings too small to have a slow strain rate test specimen taken from the quarter diameter that are taken from a lot (see 4.2.1.3) that does not have any longer sizes shall have the specimens taken from the center and in the longitudinal direction. Bars, rods or forgings too small to have a slow strain rate test specimen taken from the center that are taken from a lot (see 4.2.1.3) that does not have any larger sizes shall be taken from the heat at the latest intermediate rolling or forging step that a slow strain rate test specimen can be taken from the mid-radius and heat treated using the same heat treatment procedures used on the production heat.

4.2.2.2.2 Wire. Slow strain rate tensile test specimens shall be taken from the heat at the latest intermediate rolling or forging step that a slow strain rate test specimen can be taken from the mid radius and heat treated using the same heat treatment in accordance with 4.3.6.1.

4.2.2.2.3 Sheet and Plate. Slow strain rate tensile test specimens shall be taken from one end of a plate at the quarter thickness and in the longitudinal direction. Plate too small to have a slow strain rate test specimen taken from the quarter thickness may have the specimens taken from the center and in the

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longitudinal direction. Sheet and plate too small to have a slow strain rate test specimen taken from the center may have the specimens taken at the latest intermediate rolling step that a slow strain rate test specimen can be taken from the quarter thickness.

Revise paragraph 4.3.6.4.4 of QQ-N-286G as follows:

4.3.6.4.4 Testing Laboratory. Slow strain rate tensile testing shall be performed by a NAVSEA approved test laboratory. The following is a listing of the currently approved test laboratories, any one of which may be used at the vendor's discretion.

Huntington Alloys, A Special Metals Company
Attn: Frank Veltry
3200 Riverside Drive
Huntington, WV 25705

Metallurgical Consultants, Inc.
Attn: W.M. Buehler
4820 Caroline
P.O. Box 88046
Houston, TX 77288-0046


Naval Surface Warfare Center, Carderock Div.
Attn: Eric Focht
Code 614
9500 MacArthur Blvd.
West Bethesda, MD 20817-5700

Teledyne Allvac
Attn: Dr. W.D. Cao
2020 Ashcraft Ave.
Monroe, NC 28110

Mannesmann Rohrenwerke
Mannesmann Forschungsinstitut (MFI)
Attn: Dr. Weiss
Postfach 251160
47251 Duisburg
Germany

Westmoreland Mechanical Testing & Research, Inc.
Attn: Andrew Wisniewski
P.O. Box 388
Youngstown, PA 15696-0388

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Revise paragraph 6.2 as follows:

- S) The laboratory conducting the slow strain rate testing shall be one approved by NAVSEA (see 4.3.6.4.4).

NOTE: First article testing invoked elsewhere in this procedure order does not apply to material produced in accordance with Revision G of QQ-N-286.

C-80 Rev. 3

Dimensional inspection is required. The dimensions may be recorded on a Curtiss-Wright EPD QCM-801 Form, or a supplier's equivalent of the form. In addition to dimensions recorded, the type and SN of all gages used must be listed in the remarks or some other space on the form.

Refer to Curtiss-Wright EPD procedure ISX-1 for guidance on using the QCM-801 Form.

The dimensional inspection record shall be included in the software documentation package accompanying the shipment to Curtiss-Wright EPD. It is requested that the supplier include TWO COPIES of the dimensional inspection record.

Any forms (including equivalent supplier's forms) received not meeting these requirements will be rejected by Curtiss-Wright EPD Quality.

C-81 Rev. 1

One (1) copy of Certificate of Conformance for hardness. The original testing facility dated and signed certification shall include the actual hardness reading and MR# traceability.

C-82 Rev. 0

One (1) copy of Certified Magnetic Permeability Test is required for this Purchase Order IAW MIL-STD-2142A using Test Method 501.

C-83 Rev. 1


One (1) copy of Certificate of Weldability test results stating that they meet requirements of the material spec (see purchase order for invoked requirements).

C-84 Rev. 1

One (1) copy of Dynamic Balance Certification required. Balance to be in accordance with MIL-STD-167-1, Paragraph 5.2.2.2 or Curtiss-Wright EPD Procedure MSM-15 (available on request). Balance speed to be requested as needed. The original testing facility certificate must provide the following information as a minimum:

- Curtiss-Wright EPD P.O.#
- Date
- Balance Procedure/Specification
- MR#
- Part#
- Initial degree of unbalance (including phase angle)

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- Final degree of unbalance (including phase angle)
- Company Name and authorized signature

C-85 Rev. 0

One (1) copy of Certificate of Conformance for non-metallic components, (QCM-976).

C-86 Rev. 0

The material supplied requires two (2) Inter-granular Corrosion Tests per lot.

C-87 Rev. 2

Supplier packing and shipment shall be such that material is not damaged during shipping and handling. Tags on each item shall remain intact, in place and legible for short term storage and handling after receipt. Packing shall ensure maintenance of the degree of cleanliness required for the component or part until delivered and accepted at the shipping destination. Each package shall be substantially marked with the part and purchase order numbers. Packaging and packing shall comply with MIL-PRF-23199 and the Certificate of Conformance shall state that the supplier complied with this requirement. Packing material directly in contact with the shipped part shall be approved by Curtiss-Wright EPD prior to use or be in strict compliance with MIL-STD-767. Plastic sheeting or bags used to enclose parts shall be tinted.

C-88 Rev. 1

Suppliers shall have a system to confirm that the material test reports received from sub-tier suppliers are accurate. The system shall be in compliance with the requirements of MCS-6 (MCS-6 will be provided upon request). In the absence of a BPMI-approved procedure, confirmation testing is required for each heat lot or heat treat lot of material. The testing shall consist of chemical and mechanical testing performed in accordance with the material specification. Generic alloy samples may be utilized, tested at the prescribed frequency and the records retained by the supplier or sub-tier supplier as stated in the established procedure. Otherwise, results of the confirmation testing shall be included with the documentation package for the component ordered, except where Curtiss-Wright EPD has requested material or test bars and/or specifies the testing to be performed by other sub-tier suppliers within the purchase order.

Traceability of components shall be in accordance with the requirements of MCS-6.

C-89 Rev. 2

Supplier inspection system complies with MIL-I-45208A, AMD. #1 with supplemental requirements defined in ISR-1, which is available upon request.

C-90 Rev. 1

The cleaning and cleanliness requirements of MIL-STD-767 apply. Detrimental materials shall not come in contact with finished surfaces. The Certificate of Conformance shall state that the supplier complied with this requirement.

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C-91 Rev. 2

Certification and test results (Thickness, adhesion and pre-production as applicable) shall be provided for the chrome plating of threads in accordance with SAE AMS-QQ-C-320 or MIL-DTL-23422 and the P.O. requirements.

C-92 Rev. 2

Certification and test results (Thickness, adhesion and pre-production as applicable) shall be provided for the chrome plating of all finished surfaces in accordance with SAE AMS-QQ-C-320 or MIL-DTL-23422 and the P.O. requirements.

C-93 Rev. 0

Certification shall be provided that a phosphate coating has been applied to the finished part in accordance with the MIL-DTL-16232 and the P.O. requirements.

C-94 Rev. 0

Certification shall be provided that an electroless nickel coating has been applied to the finished part in accordance with MIL-DTL-32119 and the P.O.

C-95 Rev. 2

The measured cobalt content shall not exceed 0.10% absolute. Any deviation, however small, beyond this limiting value signifies nonconformance with the maximum limit. This requirement applies to the base material and any weld filler metals used for repair or joining. The certified Mill Test Report(s) (CMTR) shall record the cobalt level.

C-96 Rev. 1

NO MATERIAL SUBSTITUTION IS PERMITTED. See Code C-0 paragraphs 3.5 and 3.5.1. To request consideration of a material substitution, submit a QCM-993 form for CW-EPD Engineering adjudication.

C-97 Rev. 0

Supplier shall certify that the ladle analysis has been adjusted and any weld filler metals selected such that the ferrite content is 8% minimum.

C-98 Rev. 0

Supplier shall certify remelt material only, obtained by either the electroslag remelt (ESR) or consumable electrode vacuum remelt (VAR) process.


C-99 Rev. 2

MIL-STD-1308 and all of its sub-paragraphs (1-9) apply to all stages of manufacturing.

When procedures are required by any of the parts of this standard, the supplier shall prepare a written procedure which shall be made available for review upon request. If required by the parts of this standard, the procedure shall be submitted for approval.

The supplier shall submit a list of procedures used on the contract for operations performed in accordance with this standard. This list and any procedures requiring approval must be submitted to EPD prior to use.

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MIL-STD-1308-1:

EDM and ECM are restricted manufacturing process and require EPD approval for their use.

Suppliers which have not previously performed EDM or ECM to this standard must meet the requirements of MIL-STD-1308-1 section 5.1.1.

For parts which have had EDM / ECM approved, the supplier must submit a list of parts having EDM /ECM. This list must meet the requirements of MIL-STD-1308-1 section 5.2.5 except it must be submitted for information prior to the start of fabrication.

The hex socket features on the following parts may be final machined by sinker EDM using only straight (non-infiltrated) graphite or tungsten carbide electrode materials:

- Item 6-3, drawing 138668
- Item 13-5, drawing L101133
- Item 13-6, drawing 138803
- Item 19-1, drawing 651094
- Item 21, drawing 16742N18
- Items 21-1 & 40, drawing 16746N18
- Item 43-1, drawing 651084
- Item 43-2, drawing L103059
- Item 43-3, drawing L103058
- Item 43-4, drawing DWG000860
- Item 35, drawing 224701, See Note 1 on drawing for restrictions

MIL-STD-1308-02:

Plastic deformation exceeding the allowances of MIL-STD-1308-02 is restricted and requires EPD approval.

MIL-STD-1308-05:

Local and global temperatures exceeding 800F is restricted for austenitic stainless steel and requires EPD approval. Changes in steel temperature due to heat generated by welding are excluded.

MIL-STD-1308-08:

Hollow pressure boundary parts machined from a solid bar, rod, or forging is restricted and requires EPD approval.


MIL-STD-1308-09:

Weld repairs requiring approval as identified in Paragraphs 5.3 and 5.4.2.1 must be approved by EPD prior to performance of the repair.

C-100 Rev. 1

Certificate of Quality Conformance that appears in the applicable military specification shall be provided by the supplier or his sub-tier; in a form with the same content as the Governing specification.

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C-101 Rev. 1

Supplier shall determine and record on the Certificate of Compliance the finished weights of parts or assemblies that are in excess of 20 pounds.

NOTE: Any value exceeding the weight specified on the applicable drawing shall be reported to EPD in accordance with the requirements of Code 0C-0 paragraph 4.0.

C-102 Rev. 2

The following specifications are invoked, by the Supplementary Data List (SDL). Where the applicable quality requirements appear in the purchase order, a later revision or change notice or paragraphs and sections may be used, if approved by Curtiss-Wright EPD. Material-on-hand, manufactured to revision/change data earlier than that listed, must be approved by Curtiss-Wright EPD prior to its use. Revisions in parentheses are not currently specified and any revision/change level is acceptable.

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| SPECIFICATION | REVISION | DATE | TITLE |
|-----------------|--------------------------------|----------------------|--|
| ISR-1 | D | 06/22/87 | Inspection System Requirements |
| | E | 03/15/94 | |
| LSC-1 | F | 04/17/02 | Requirements for Control of Lower-Tier Suppliers |
| MCS-6 | F | 08/09/96 | Standard for Control of Material for Plant Components |
| | G | 08/30/08 | |
| MIL-I-45208 | A AM.1 | 12/16/63 07/24/81 | Inspection System Requirements |
| MIL-PRF-23199 | E | 02/28/97 | Packaging and Packing Requirements for Special Purpose Components and Repair Parts |
| MIL-STD-105 | D | 04/29/63 | Sampling Procedures and Tables for Inspecting by Attributes. |
| | Notice - 1 | 11/01/63 | |
| | Notice - 2 | 03/20/64 | |
| | IC-1 | 06/22/87 | |
| MIL-STD-129 | P On-Hand: M (or later) | 09/19/07 | Marking for Shipment and Storage |
| MIL-STD-767 | F | 11/10/00 | Control of Hardware Cleanliness |
| MIL-STD-792 | F | 05/19/06 | Identification Marking Requirements for Special Purpose Components |
| MIL-STD-1308 | F | 07/31/97 | Material Application and Processing Requirements |
| MIL-STD-1308-1 | G | 01/31/02 | Electrical Discharge Machining and Electrochemical Machining |
| MIL-STD-1684 | D | 03/14/97 | Control of Heat Treatment |
| MIL-STD-2041 | C | 04/04/95 | Control of Detrimental Materials |
| | D | 08/05/99 | |
| | Notice 2 | 10/18/02 | |
| MIL-STD-2132 | C | 02/01/96 | Nondestructive Testing Requirements for Special Applications. |
| | Notice - 1 | 04/25/97 | |
| | D | 02/11/03 | |
| | Notice 1 | 03/10/08 | |
| MIL-S-23193 | D | 04/10/87 | Steel, Corrosion Resistant: Castings |
| | IC1 On-Hand: C or later | 03/10/88 | |
| MIL-DTL-23195 | F | 06/13/97 | Steel Bars and Forgings, Corrosion Resistant |
| | On-Hand: D or later | | |
| MIL-DTL-23226 | G | 02/05/08 | Tube and Pipe, Corrosion Resistant Steel, Seamless |
| | On-Hand: E or later | | |
| MIL-DTL-23422 | F | 06/18/97 | Chromium Plating, Electrodeposited |
| MIL-DTL-24130 | B | 04/29/80 | Metallic Seal Rings, Non-Integral, General Specification for |
| | Am-2 | 10/30/86 | |
| | IC1 | 09/01/93 | |
| MIL-DTL-24130/2 | D On-Hand: C or later | 11/10/06 | Metallic Seal Rings, Non-Integral, Steel, Corrosion Resistant |
| MIL-L-24131 | C | 11/02/95 | Lubricant, Colloidal Graphite in Isopropanol |
| | Am-1 | 01/23/01 | |
| MIL-DTL-24287 | D | 05/30/97 | Studs; Bolt-Studs; Bolts; Nuts; Alloy Steel |
| | On-Hand: C w/ Am-1 or later | | |
| MIL-DTL-24528 | D On-Hand: A or later | 09/27/96 | Steel Bars and Forgings, Chromium-Nickel-Molybdenum |

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| MIL-DTL-24558/18 | (A w/ Am. 1) | (02/17/06) | Terminal Boxes, Connection, Submersible, (15 foot),...Symbols 400.1 and 400.4...Symbols 400.2 and 400.3 |
| MIL-I-24768/2 | (Am. 1) | (12/08/92) | Insulation, Plastic Laminated, Thermosetting, Glass-Cloth, Epoxy-Resin (GEE) |
| MIL-DTL-32119 | Original | 02/26/03 | Coatings, Electroless Nickel, Special Applications |
| FED-STD-H28 | A Notice - 1 | 1994 2001 | Screw Thread Standards for Federal Services |
| NAVSEA 250-1500-1 | 17 ACN 6 | 09/01/07 07/01/09 | Welding Standard |
| QQ-N-281 | D Am. 2 IC 1 | 08/26/74 10/23/85 10/30/87 | Nickel Copper Alloy Bar, Rod, Plate, Sheet, Strip, Wire, Forgings and Structural and Special Shaped Sections |
| SAE-AMS-QQ-C-320 | - | 07/00 | Chromium Plating (Electrodeposited) |

C-103 Rev. 2

When a spec effectivity year is specified on the purchase order, the revision of the invoked specification in effect on that effectivity date shall be used. Later revisions may be used in accordance with the requirements of this code.


If the vendor intends to use a later revision, they must issue a QCM-993 prior to material acquisition to notify which revision of the specification is being used.

NOTE: When the Purchase Order cites a specific specification revision, that revision must be used.

The Supplier may elect to use material procured to later revisions than the specified revision, provided that the material form, mechanical properties and chemical composition for the material will not be altered, and that neither the number nor the scope of any required destructive or non-destructive or other inspections will be reduced, or the acceptance criteria degraded.

Material specifications are defined as those specifications that identify the requirements for mechanical properties, chemical composition, testing, and inspection for the materials of construction for the component. This includes only specifications for metal in all forms, non-metallics such as gaskets and O-rings, and fasteners. In the event that the Supplier elects to use material procured to a later revision of a specification, the applicable material certification packages must be supplemented by the appropriate documentation. This documentation must clearly identify the substitution that was made, identify the affected individual piece part number(s), and provide the following certification: "The seller hereby certifies that the material provided is in the same form and meets the same mechanical property and chemical composition requirements as would have been the case had the material been procured to the effective revision of the specification with any invoked additional ordering requirement. Furthermore, neither the number nor the scope of any required destructive or non-destructive tests or other inspection was reduced, nor the acceptance criteria degraded, by this substitution."

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C-104 Rev. 2

Re-identification and re-certification of material is required when the material is subjected to a process that alters its properties.

For Level 1 and Critical Application Items: Where the mechanical properties of the material have been altered by heat treatment or metal working processes, the material shall be uniquely re-identified, and the mechanical properties re-determined. The mill certification shall be accompanied by a supplemental certification from the heat treatment or metal working facility. This supplemental certification shall contain quantitative data for the process performed.

Additionally, the original mill certification shall be overstamped and/or annotated to contain the following information:

Traceability Number/Code _____ is fabricated from raw material
Heat No./Heat-Treat No. _____
Date, Name and Signature of the Authorized Company Representative.

NOTE: When applying overstamp or annotation to the certification report, no pertinent data shall be obliterated or rendered illegible. Certifications or Test Reports for Level 1 and Critical Application materials where the mechanical properties have been altered, and are dated after September 1, 2014, will not be accepted without the appropriate overstamping.

THE ALLOWANCE TO ANNOTATE THE ABOVE INFORMATION ON A SEPARATE CERTIFICATION IN LIEU OF OVERSTAMPING IS NO LONGER ALLOWED.

C-105 Rev. 0


The vendor shall provide ball bearing records for all ball bearings provided. The following information shall be included in certification package provided with the bearing:

- a. Bearing manufacturer, size, preload, and serial number (i.e. Type 73XXX, XXX lbs. preload).
- b. Nominal bearing ball size, pitch diameter, contact angle, and number of balls.
- c. Bearing lot or purchase order traceability (indicating month and year of manufacture).
- d. Any applicable specifications that the bearing was manufactured in accordance with including revision and amendments (i.e. MIL-B-17931 Rev. E Amendment).

C-106 Rev. 0

In accordance with the Electric Boat Spec. 4132, proposed weld repairs of Forged Titanium parts must be submitted to the Curtiss-Wright EPD Buyer for approval via QCM-993 form prior to welding.

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C-107 Rev. 0

The following Steam Plant Cleanliness requirements are applicable to this component/assembly.

- CLEANLINESS ACCEPTANCE CRITERIA:** All hardware internal surfaces and parts shall be dry and visually clean (E.G., free of dirt, loose corrosion particles, grease, preservative, oil, flux, scale, machining particles, and other foreign material). Superficial soft rusting, as caused by short time exposure to the atmosphere, is acceptable on carbon or alloy steel. A small amount of light, superficial, adherent rust with no visible thickness is acceptable on the surface of corrosion resistant materials provided the rust does not impair the hardware's proper function. Thin, tightly adherent temper or oxidation film, as caused by welding heat or heat treatments, is acceptable on stainless steel and nickel copper alloys; light tarnish film is acceptable on copper and copper alloys. Hard rust, that which can be broken off in pieces, but cannot be removed by rubbing with a cloth, and heavy rust, as caused by lengthy exposure to a humid atmosphere and/or water, is not acceptable. No temporary markings (E.G., paint stick, magic marker, blue dykem, ink, grease pencil, chalk, etc.) are allowed. Lubricants, sealants, and compounds permitted to be applied to sealing and operating surfaces must not be present on final product. Lubricants, sealants, and other materials approved for use during assembly shall have been used sparingly, and all visible residues shall have been removed following completion of work. Piece parts used on an assembly must be inspected and thoroughly cleaned prior to being used on an assembly. During subsequent assembly all internal parts must be protected from entry of dirt or foreign material.
- BUILD CLEAN PHILOSOPHY:** Internal surfaces and parts which cannot be cleaned after assembly shall be cleaned and inspected prior to the assembly operation that precludes further cleaning. During subsequent assembly operations, such parts shall be protected from entry of dirt, grit, cutting oils and other foreign material. See Paragraph 1 for cleanliness acceptance criteria for piece parts. Assembling non-clean piece parts with the intent of flushing later is not acceptable.
- PRESERVATIVE AND DESICCANT PROHIBITION:** Preservatives and desiccants shall not be applied unless they are specifically required by other purchase order documents or approved by CW-EPD.
- FINAL INSPECTION:** When the component is ready for shipment, a visual inspection through all hardware openings shall be performed to the maximum extent practical per the cleanliness acceptance criteria listed in paragraph 1 above. If foreign material is found, the component must be re-cleaned as necessary.
- CLEANLINESS PROTECTION:** Final cleaned hardware shall be individually sealed in bags or all hardware openings shall be sealed with temporary caps, covers, or plugs. Typically, smaller items are bagged and larger items are capped/covered/plugged. Bags and covers should be taped shut with 3M performance plus 8979N duct tape.

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C-108 Rev. 0

When a component under review is deemed unrepairable, and the supplier recommends the part to be scrapped, the part shall be spray painted orange and tagged to designate the condition. The paint does not need to cover the entire part, but should be noticeable from all angles.

C-109 Rev. 1

(A) INTENDED USE: The purpose of this document is to establish requirements and guidance for procurement of titanium fasteners to MIL-S-1222H with Interim Amendment 3 (IA3). This code ONLY applies when the titanium material specification is not covered by MIL-S-1222HIA3 Table I.

(B) ORDERING DATA: In addition to this code, the supplier must follow the requirements of the purchase order and any drawing associated with the order. If there are any discrepancies within the ordering data, the supplier shall submit a QCM-993 form to CW-EPD for clarification.

(C) CHEMICAL COMPOSITION AND MECHANICAL PROPERTY REQUIREMENTS:

1. All Material shall be traceable to the Original Material Manufacturer's Material Test Report, which must be included in the certification package.
2. The material chemical composition shall be as listed on the drawing. When chemical composition is not listed on the drawing, it shall be in accordance with the material specification cited on the drawing or as specified elsewhere within the purchase order.
 - (a) When ASTM-B348 material is specified, it should be noted that in addition to all other specification requirements, Table 1 requires two final product hydrogen test samples. The supplier can either supply the results of the two samples, or state the following on the certified material test report provided by the original mill or testing lab: "Two final product hydrogen samples were recorded and only the higher value has been reported."
3. The mechanical properties shall be as listed on the drawing. When mechanical properties are not listed on the drawing, they shall be in accordance with the material specification cited on the drawing or as specified elsewhere within the purchase order. If mechanical properties are not listed on the drawing or in the material specification (e.g. proof stress and/or hardness), the properties cited for the corresponding material in ASTM specification F467 or F468 for nonferrous fasteners may be used for evaluation of test results.

(D) MARKING: Each piece shall be marked in accordance with the drawing. If required marking is not specified on the drawing, then marking shall be as dictated by the purchase order. If required marking is not specified by the purchase order, then marking shall be in accordance with MIL-S-1222H IA3.

NOTE: When ASTM B348 material is specified, the material symbol shall be "TIA" for Grade 2 and "TIF" for Grade 5.

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(E) INSPECTIONS:

1. The Supplier shall conduct inspections as required by MIL-S-1222H IA3, Tables XI and XII. Sample size to be inspected shall be determined by MIL-S-1222H IA3, Table XI.
2. Thread gauging practices shall be in accordance with FED-STD-H28, System 22, unless otherwise specified on the drawing or in the purchase order. Certification documentation shall specify the inspection system used.
3. 100% inspection may be required by purchase order.

(F) MECHANICAL TEST REQUIREMENTS:

1. Mechanical Property Test Requirements shall be in accordance with MIL-S-1222H IA3 Table XIII. Sample size shall be determined by MIL-S-1222H IA3 Table XI.
 - (a) In accordance with MIL-S-1222H IA3 Table XIII, the supplier may choose testing option A or B (when applicable). Certification shall state the testing option selected.
 - (b) If Option B is selected, the requirements of MIL-S-1222HIA3 Paragraphs 4.4.4.6 and 4.4.4.6.1 apply. Additionally, the fastener shall be machined from bar stock with no further cold working or heat treating. If more than one heat is used to make the fasteners, test samples shall be taken from each heat/lot of material. This testing shall be conducted on test samples machined from the same parent bar of the fasteners. At a minimum, testing shall determine Ultimate Tensile Strength, Yield Strength, Reduction of Area (%), Elongation (%). Certification shall state Lot definition A applies.
2. If not specified on the drawing or in the purchase order, the wedge tensile test on full size titanium bolts and hex cap screws shall be tested in accordance with ASTM F468 Paragraph 6.5. A statement of wedge angle is required on the mechanical test report.
3. When a full size fastener Proof/Yield Strength Test is required by MIL-S-1222H IA3 Table III, the proof/yield load shall be calculated in accordance with MIL-S-1222H IA3, Paragraph 3.5.1. Unless specified elsewhere in the purchase order/drawing, use mechanical properties listed in ASTM F468 and ASTM F467 for the minimum yield strength/minimum proof stress values for the specified material. For nuts other than hex nuts, Proof stress shall be multiplied by the pertinent factor from MIL-S-1222H IA3 Table IV footnote 2.

Example: Full size fastener Yield Load Calculation for 3/4-10UNC ASTM B348 Grade 5 Bolt

(Yield Load) = (Yield Strength) x (Stress Area)

Min Yield Strength from Table 2 ASTM F468 for full-size Grade 5 fastener = 125,000psi

Stress Area Table V MIL-S-1222HIA3, 3/4-10UNC = .334in²

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$$(\text{Yield Load}) = (125,000\text{psi})(.334\text{in}^2) = 41,750\text{lb (minimum)}$$

Example: Full size fastener Proof Load Calculation for 3/4-10UNC ASTM B348 Grade 2 Heavy Hex Nut

$$(\text{Proof Load}) = (\text{Regular Nut Proof Stress})(\text{Nut Factor}) (\text{Stress Area})$$

Min Proof Stress from Table 2 ASTM F467 for Grade 2 regular hex nut = 55,000psi

Nut Factor Table IV MIL-S-1222HIA3 footnote 2 = 1.08 (heavy hex nut)

Stress Area Table V MIL-S-1222HIA3, 3/4-10UNC = .334in²

$$(\text{Proof Load}) = (55,000\text{psi})(1.08)(.334\text{in}^2) = 19,839.6\text{lbs (minimum)}$$

4. When full size axial tensile testing is required by MIL-S-1222H IA3, Table III, the minimum and maximum acceptable tensile test results shall be calculated in accordance with MIL-S-1222H IA3, Section 3.5.1. Use mechanical properties listed in ASTM F468 for the minimum and maximum tensile strength values for the specified material.

Example: Full size fastener tensile strength calculation for 3/4-10UNC ASTM B348 Grade 5 Bolt

$$(\text{Min. Acceptable Load}) = (\text{Min. Tensile Strength}) \times (\text{Stress Area})$$

$$(\text{Max. Acceptable Load}) = (\text{Max. Tensile Strength}) \times (\text{Stress Area})$$

Min Tensile Strength from Table 2 ASTM F468 for full-size Grade 5 fastener = 130,000psi

Max Tensile Strength from Table 2 ASTM F468 for full-size Grade 5 fastener = 165,000psi

Stress Area Table V MIL-S-1222HIA3, 3/4-10UNC = .334in²


$$(\text{Min. Acceptable Load}) = (130,000\text{psi})(.334\text{in}^2) = 43,420\text{lbs}$$

$$(\text{Max. Acceptable Load}) = (165,000\text{psi})(.334\text{in}^2) = 55,110\text{lbs}$$

5. Per ASTM F467 and F4678, Hardness testing performed on titanium alloys is for information only. Results shall be reported in the certification package, including the statement: "Hardness values reported are for information only."
6. Fasteners used for mechanical testing shall NOT be submitted to CW-EPD as usable fasteners.
7. Results of testing shall be documented and CERTIFIED stating pass/fail and criteria used to determine the pass/fail condition shall be stated on the certificate. The exception is the hardness test, which is for information only and thus has no pass/fail criteria.

The Certificate of Compliance should include the statement: "Fasteners provided have been tested in accordance with the requirements of MIL-S-1222H IA3, with acceptance to the mechanical properties listed in ASTM F467

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or ASTM F468 (as applicable) for the specified grade of Titanium. Material chemistry is in accordance with the applicable material specification."

(G) NON-DESTRUCTIVE TEST REQUIREMENTS:

1. Liquid Penetrant (PT) inspection is required per MIL-S-1222H IA3 Paragraph 4.4.5. Sampling shall be per MIL-S-1222H IA3 Table XI.
2. PT inspection must be conducted prior to application of protective coatings.
3. PT inspection must be conducted prior to inserting nylon locking element as required.
4. PT inspection procedures shall be submitted to CW-EPD for each order regardless of past acceptance of procedure.
 - (a) Technique: Purchase order shall specify MIL-STD-271 OR T9074-AS-GIB-010/271
 - (b) Coverage: 100% of each sample
 - (c) Acceptance Standards: MIL-S-1222H IA3 and SAE J122 or J123 as applicable.
5. Results shall be CERTIFIED. Certification shall include technique used, acceptance criteria, and the approved supplier PT procedure used.

(H) REQUIRED DOCUMENTATION:

1. All pages in the document package must be traceable to the MR#, which shall be listed on the Certificate of Compliance (C of C).
2. Certificate of Compliance – In addition to information required on the C of C listed elsewhere in the purchase order, the following, pertaining to this code, shall be included:
 - (a) Statement of system used for thread inspection
 - (c) Statement of use of option A or B for mechanical testing if applicable
 - (d) Statement of compliance to Lot Definition A, MIL-S-1222H IA3 3 Paragraph 4.2 as required
3. Original mill cert chemical analysis
4. Mechanical Properties Testing to MIL-S-1222H IA3, Table XIII using material properties listed in ASTM F467 and ASTM F468 (as needed)
 - (a) Bolts and Screws
 - Option A: Yield Strength test on full size fastener
 - Option B: Mechanical Tests on machined specimen from fastener or parent bar stock
 - Wedge Tensile Test specifying wedge angle, Exceptions: countersunk or button head cap
 - Hardness Test (for information only)

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(b) Studs

- Option A: Yield Strength and Axial Tensile Tests on full size fastener
- Option B: Mechanical Tests on machined specimen from fastener or parent bar stock
- Hardness Test (for information only)

(c) Nuts

- Proof Load Test
- Hardness Test (for information only)

5. Dimensional Inspection: (Sample Basis) MIL-S-1222H IA3, Table XII unless purchase order requires 100% inspection.
6. Liquid penetrant certification stating governing specification, acceptance criteria, and procedure used

C-110 Rev. 0

NON-CONFORMING CONDITIONS: Any variations to drawing and/or order requirements shall be accompanied by a detailed cost and time delay analysis (replacement vs. Acceptance vs. Rework). In addition, technical justification must be provided addressing any degradation of the interchangeability, durability, and/or function of the component. This document shall be provided as an attachment to the standard QCM-993 inquiry.

C-111 Rev. 0

QUALITY DOCUMENTATION: Quality documentation as described by the drawing notes is required to be supplied with the part or assembly. This includes, but is not limited to, material chemistry, material physical properties, hardness, dynamic balance, original mill certifications, etc.

C-112 Rev. 0

NON-DESTRUCTIVE EVALUATION: All non-destructive evaluation procedures must be submitted for approval. Standards shall be in accordance with the drawing notes. Certifications shall be provided for any non-destructive evaluation performed.


THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC., HAVE BEEN SUBMITTED TO AND APPROVED BY CURTISS-WRIGHT EPD AND/OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

C-113 Rev. 0

WELDING/BRAZING: All welding and brazing procedures must be submitted for approval. Standards shall be in accordance with the drawing notes. Certifications shall be provided for any welding or brazing performed.


THE SUPPLIER SHALL NOT PERFORM NONDESTRUCTIVE TESTING UNTIL ITS PROCEDURES, INSTRUCTIONS, ETC., HAVE BEEN SUBMITTED TO AND

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APPROVED BY CURTISS-WRIGHT EPD AND/OR THE CURTISS-WRIGHT EPD CUSTOMER. SUBMIT ALL PROCEDURES TO THE BUYER LISTED ON THE CURTISS-WRIGHT EPD PURCHASE ORDER. PROCEDURES MUST BE SUBMITTED FOR EVERY PURCHASE ORDER EVEN IF THE PROCEDURES HAVE BEEN APPROVED IN THE PAST.

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RECORD OF REVISION

| REV | DESCRIPTION | WRITTEN BY | APPROVED BY | DATE |
|-----|---|------------|-------------|-------------|
| 25 | Revise 8.0 quality code OC-8 to exclude transcription of mill cert data and clarify 100% visual inspection requirement Revise 8.0 quality code OC-6 to clarify 100% visual inspection requirement Revise 3.2 to remove reference to OC-65B, which now prints directly on POs. Revise 8.0 quality code OC-57 to incorporate FAR clauses Revise 8.0 quality codes OC-74 & OC-74T to remove "has commenced" ref. Revise 8.0 quality code OC-87 to clarify CP packing requirements. Revise 8.0 quality code OC-88 to expand MCS-6 requirements. | | | 12 MAY 2005 |
| 26 | Revise 5.0 & 8.0 quality code OC-5 to require C-W approved MV procedure. Revise 8.0 quality code OC-8 to clarify sampling plan instructions for Level 1 parts. Revise 8.0 quality code OC-50 to clarify copy quality requirements. Revise 8.0 quality code OC-71 & 71A to include MIL-HDBK-695. Revise 8.0 quality code OC-74 & OC-74A to add QCM-993 and clarify CP requirements. Add 8.0 quality code OC-103 & 104. Update mailing address in quality codes DSHIPV and DSHIPC. | | | 01 MAY 2006 |
| 27 | Editorial changes 8.0 quality code 0B-2 & max C-codes of 104. Revise 5.1 & 8.0 quality codes OC-5, 7, 7A, 7W, 9, 9A, 9W, 36, 38, 64, 64A & 64T to add submit NDE & weld proc approvals to Buyer. Revise 8.0 quality codes OC-64A, 74A, 87, 88 & 99 to clarify BPMI requirements. Revise 8.0 quality code OC-57 to clarify USA/DFAR clause material. Revise 8.0 quality codes OC-37, 7W and 9W to include all welding. Revise 7.1 & 8.0 quality codes OC-29 & OC-30 to include original mill. Revise 8.0 quality code OC-0 to exclude "to the best of our knowledge" Revise 8.0 quality code OC-8 to change sampling inspection specification to ANSI/ASQ Z1.4 in absence of sampling plans. Update mailing address in quality codes DSHIPV and DSHIPC, Sec. 4.0, B-13 to include an email address. Revise 8.0, C-71 Note to change shelf life expiration from 20% to 15 | | | 07 NOV 2006 |
| 28 | Revise 8.0 quality code OC-3 to add electronic signature instruction Revise DSHIPV to send PWHT certs Add 8.0 quality code OC-4W to detail PWHT requirements per MIL-STD-278F Revise 8.0 quality code OC-12 to include performance test and MIL-M-17060. Revise 8.0 quality code OC-6 to clarify finished fastener testing. Revise 3.0 to include all codes printing on PO and change EPIC screen. Revise 8.0 quality code OC-39 to include furnace chart requirements. Revise 8.0 quality code OC-89 to remove reference to Rev. D for ISR-1 Revise 8.0 quality codes OC-2, 29, 30, 7, 9, 7A, 7W, 9A, 9W, 36, 37, 38, 42, 69, 70, & 81 to include original test facility & MR#. Revise 8.0 quality code OC-44 to include proc approval prior to testing Revise 8.0 quality code OC-84 to remove use of EPD form for balancing & add balance speed request Revise 8.0 quality codes 4 & 4A to include heat treat date Revisions levels added to all quality codes Delete 8.0 quality code OC-71a. Revise 8.0 quality code OC-87 & 100 to accommodate BPMI wording. Revise 8.0 quality code OC-102 to incorporate new revisions. Revise 4.0 quality code 0B-1 to delete reference to electronic signatures Editorial changes 5.0 quality code OC-0 section 3.1. Complete rewrite 5.0 quality codes OC-0 section 7.0 to clarify data transcription and define electronic signatures. Revise 8.0 quality code OC-65B to clarify marking requirements due to size constraints. | | | 12 APR 2007 |

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| 29 | <p>Revise quality code 0B-10 (Rev. 1) to include surveillance restrictions</p> <p>Revise quality code 0C-50 (Rev. 2) to include restriction for ditto marks and down arrows and change microfilming to scanning.</p> <p>Restructure quality code introduction.</p> <p>Revise quality code 0C-0, 3.1 (Rev. 2) to require compliance with inspection system MIL-I-45208A Am. 1.</p> <p>Revise quality code 0C-43 (Rev. 1) to include RT film review.</p> | K. Wisneski | G. Welsh G. Moyer F. Magasich | 18 JUN 2007 |
| 30 | <p>Revise quality code 0C-102 (Rev. 1) to add where applicable and correct typos.</p> <p>Revise quality code 0C-36 (Rev. 2) add records requirements per MIL-STD-271.</p> <p>Revise quality code 0C-6 (Rev. 2), 0C-8 (Rev. 1) & 0C-65B (Rev. 2) to clarify small part marking, etc.</p> <p>Revise quality code 0C-71 (Rev. 1) add prohibit transcribed data and include certification copies.</p> <p>Revise quality code 0C-65C (Rev. 1) add when certs are required.</p> <p>Revise quality code 0C-34A (Rev. 1) to use sampling plan per ANSI/ASQ Z1.4.</p> <p>Revise quality code 0C-89 (Rev. 2) remove EPD insp per ILQ-51</p> <p>Revise quality code 0C-76 (Rev. 1) & 76A (Rev. 1) to state that fasteners shall be IAW MIL-S-1222.</p> <p>Revise quality code 0C-0 (Rev. 3)</p> <ul style="list-style-type: none"> • section 3.4 for compliance to MIL-STD-45662 or ISO and audit upon request • Add section 3.8 prohibit use of wood for sealing openings • Add section 7.4 re-id if properties altered. <p>Revise quality code 0C-74 (Rev. 1), 0C-74A (Rev. 1) and 0C-74T (Rev. 1) exchange DCMC for DCMA.</p> | K. Wisneski | G. Welsh G. Moyer F. Magasich | 11 APR 2008 |
| 31 | <p>Revised Code B-2 to clarify wording</p> <p>Revised Code OC-0 to expand usage and requirements for QCM-993 usage</p> <p>Revised Code OC-12 to add bearing requirements</p> <p>Revised e-mail address in paragraph 4.0</p> <p>Add Code C-105 bearing requirements</p> | F. Magasich | G. Welsh G. Moyer F. Magasich | 06 MAR 2009 |
| 32 | <p>Revise Quality Code OC-74, -74A, -74T to include requ. of stress relief of weld repair welded castings and clarify DCMA wording.</p> | K. Wisneski | G. Welsh G. Moyer F. Magasich | 11AUG 2009 |
| 33 | <p>Revise Code C-4 & C-4A to add records of heat treatment requirements</p> <p>Revise Code C-8, add foreign material and country of origin</p> <p>Revise Code C-71, o-ring documentation</p> <p>Add Code C-74C, Special Repair Approval</p> <p>Add Code C-75C, Government Inspection NDE Procedure Review</p> <p>Add Code C-106, Titanium weld repairs submitted for approval via QCM-993.</p> | K. Wisneski | G. Moyer F. Magasich | 25 JAN 2010 |
| 34 | <p>Revise Code C-40 to refer to unique serial number</p> <p>Revise Codes C-65A & C-65B to add note clarifying marking requirements for assemblies</p> <p>Revise Code C-88 to add traceability IAW MCS-6 paragraph 4.4</p> | K. Wisneski | G. Welsh G. Moyer F. Magasich | 16 APR 2010 |
| 35 | <p>Revise code C-12 to include marking "material designator" of Level I motor shafts</p> <p>Add "MIL-DTL-23422" to C-91 and C-92</p> | F. Magasich | G. Welsh G. Moyer K. Wisneski F. Magasich | 21 MAR 2011 |
| 36 | <p>Revise 0C-12 to include C of C and dynamic balance for motors</p> <p>Add "Nondestructive submittal" statement to 0C-45</p> <p>Rewrite 0C-57 to include QCM-1417, EPD Standard Terms and Conditions</p> <p>Add new code 0C-64D</p> <p>Add new code 0C-74D</p> <p>Add new code 0C-75D</p> <p>Revise 0C-76A to remove IC-1 references</p> <p>Complete rewrite of 0C-79 to be identical to EB "Mods to QQ-N-286"</p> | G. Moyer K. Wisneski F. Magasich | G. Moyer K. Wisneski F. Magasich | 21 DEC 2011 |

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| 37 | <p>Revise 4.0 to reflect new fax number Revise Code B-4 to reflect new fax number Revise 7.2 to clarify that requirements only applicable when invoked by PO Revised Code C-65B to address marking washers Revise Code C-71 for "rubber components" and not just "o-rings" Revise Code C-80 to include reference to ISX-1 para. 8.2 for sampling Revise Codes C-91 and C-92 to delete "flash" from "flash chrome" Revise Code C-95 to give "0.10%" the proper significant digits Revise Code C-99 para. (B) to include any exceptions listed in approved procedures and/or P.O. requirements Revise Code C-102 to include "Supplementary Data List (SDL)" and explanation for revisions listed in parentheses Revise Code C-102 chart with the following: Add Revision G and date to MSC-6 Revise revision and date and add On-Hand revision for MIL-STD-129 Revise revision and date of MIL-STD-792 Remove Revision G of MIL-STD-1308 Add MIL-STD-1308-1 Add MIL-STD-2041 Add "Notice 1" to MIL-STD-2132 Add MIL-S-23193 Add MIL-DTL-23195 Add MIL-DTL-23226 Add MIL-DTL-23422 Add MIL-DTL-24130 Add MIL-DTL-24130/2 Add MIL-L-24131 Add MIL-DTL-24287 Add MIL-DTL-24528 Add MIL-DTL-24558/18 Add MIL-I-24768/2 Add MIL-DTL-32119 Revise revision and date and add "ACN 6" and date to NAVSEA 250-1500-1 Add QQ-N-281 Add SAE-AMS-QQ-C-320 Revised Code C-103 to clarify procedure when spec effectivity year or specific specification year is given</p> | <p>K. Wisneski G. Moyer E. Pizzino G. Martin</p> | <p>G. Moyer E. Pizzino L. Roberts K. Wisneski M. Rath F. Magasich</p> | 23 JAN 2013 |
| 38 | <p>Revise Code C-0 by including reference to codes C-13A & C-13B for signature requirements; delete paragraphs 7.3.1 thru 7.3.6 Add new code C-13A for signature requirements Add new code C-13B for EB electronic signature requirements Revise Code C-95 for reporting measured cobalt and any deviations</p> | <p>K. Wisneski E. Pizzino F. Magasich</p> | <p>K. Wisneski L. Roberts G. Moyer M. Rath E. Pizzino F. Magasich</p> | 10 SEP 2013 |
| 39 | <p>3.1 – Revised "EPIC..." to "Oracle..." 4.0 – Rewrite Code B-1 – Added "Suppliers shall flow down..." Code B-2 – Added "or signature" in para. B. Revised "five" to "seven" in para. D. Code B-4 - Revised to reflect new fax number Revised "Purchasing" to "Sourcing" Code B-5 – Added "Government Source Inspection" Code C-0 – Added 3.9 4.2.2 – Revised "Northrop Grumman" to "Huntington Ingalls" 5.1 – Added "PROCEDURES MUST BE SUBMITTED..." 6.2 – Added new 7.4 – Revised to same verbiage as 0C-104. 7.4.1 – Added new Code C-2 – Added 2nd paragraph Code C-5 - Added "PROCEDURES MUST BE SUBMITTED..." Code C-6 – #1 - Added "(NOTE:..." and "For those small parts..." Code C-7 - Added "PROCEDURES MUST BE SUBMITTED..."</p> | <p>F. Magasich</p> | <p>M. Rath E. Pizzino M. Smith H. Fox F. Magasich</p> | 14 JAN 2016 |

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| | <p>Code C-7A – Added “PROCEDURES MUST BE SUBMITTED...” Code C-7W – Added “PROCEDURES MUST BE SUBMITTED...” Code C-8 - #1 - Added “(NOTE:...” and “For those small parts...” Code C-9 – Added “PROCEDURES MUST BE SUBMITTED...” Code C-9W – Added “PROCEDURES MUST BE SUBMITTED...” Code C-12 – Added last paragraph Code C-36 – Added “PROCEDURES MUST BE SUBMITTED...” Code C-37 – Added “PROCEDURES MUST BE SUBMITTED...” Code C-38 – Added “PROCEDURES MUST BE SUBMITTED...” Code C-44 – Added “PROCEDURES MUST BE SUBMITTED...” Code C-45 – Added “PROCEDURES MUST BE SUBMITTED...” Code C-65B – Added “If the part is an assembly containing...” Code C-75 – Added 2nd and 3rd paragraphs Code C-79 – Revised “Huntington Alloys” to “Huntington” Code C-80 – Deleted “paragraph 8.2” Code C-101 – Added “NOTE: Any value...” Code C-103 – Added 2nd paragraph Code C-104 – Deleted all but 1st sentence. Added remaining new verbiage Code C-107 – Added new Code C-108 – Added new Code C-109 – Added new Updated logo, address and format</p> | | | |
| 40 | <p>Code B-2 – “B.” – Revised “acceptance stamp or signature” to “endorsement of signature” “C.” – Revised “stamp to “endorsement” and deleted last sentence Code C-0 – 7.4.1 – Added “For Level 1 and Critical Application” and added last sentence in “NOTE:” Code C-4A – Revised “Heat-treat charts” to “Heat-treat records” and added “Figure 2” to bullet point Added new bullet point “Furnace charts” Code C-5 – Deleted “to an approved procedure” Added “For Level 1 and MCS-6 Items:” Code C-6 – Added paragraph “All Level 1 fasteners shall be marked...” Code C-13B – Rewrite Code C-64C – Added “Orders that have existing procedures ... If new procedures are required...” Code C-74C – Added “Orders that have existing procedures ... If new procedures are required...” Code C-75C – Added “Orders that have existing procedures ... If new procedures are required...” Code C-76 – Revised “System 21 or 22” to “System 22 inspection” Code C-76A – Deleted “with, System 21 or 22” Code C-87 – Added “and the Certificate of Conformance shall state...” Code C-90 – Added “The Certificate of Conformance shall state...” Code C-104 – Added “For Level 1 and Critical Application Items:” Added last sentence in “NOTE:” Code C-109 – “(a)” – Added “two samples for chemical analysis from the ingot and” Code C-110 – Added new Code C-111 – Added new Code C-112 – Added new Code C-113 – Added new</p> | F. Magasich | E. Pizzino M. Smith H. Fox M. Rath A. Ciotti | 14 SEP 2016 |
| 41 | <p>Code C-7 – Rewrite Code C-7A – Rewrite Code C-7W – Rewrite Code C-9 – Rewrite Code C-9A – Rewrite Code C-9W – Rewrite Code C-36 – Rewrite Code C-38 – Deleted Code C-40 – Revised “One (1) copy” to “Two (2) copies” Code C-56W – Added new</p> | E. Pizzino | R. Shaffer F. Magasich M. Laney M. Rath M. Smith N. O'Brien A. Ciotti | 11 DEC 2017 |

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| 42 | <p>4.0 – Added “(EPD)”</p> <p>Code B-7 – Rewrite</p> <p>Code B-10 – Revised “Quality Control” to “Quality Department”</p> <p>Code C-0 – Revised “Engineered Pump Division” to “Curtiss-Wright EPD”</p> <p style="padding-left: 20px;">3.1 – Revised “MIL-I-45208” to “MIL-I-45208A”</p> <p style="padding-left: 20px;">3.3 – Deleted “Control”</p> <p style="padding-left: 20px;">3.7 – Deleted “Assurance”</p> <p style="padding-left: 20px;">4.1 – Deleted “Control”</p> <p>Code C-3 – Added “The Certificate of Conformance shall include...”</p> <p>Code C-4W – Deleted 2nd para., Revised “278F” to “278”</p> <p>Code C-5 – para. 1 - Added “for Generic Alloy Identity testing.”</p> <p style="padding-left: 20px;">Added “Parts that are completely plated...”</p> <p>Code C-12 – Updated Materials</p> <p>Code C-43 – Added 2nd para. “Unless otherwise requested...”</p> <p>Code C-56 – Rewrite</p> <p>Code C-56W – Deleted</p> <p>Code C-57 - Rewrite</p> <p>Code C-64 – Added “(see purchase order for invoked requirements and acceptance standards)” and “Procedures for NDE...”</p> <p>Code C-64A – Added “(see purchase order for invoked requirements and acceptance standards)” and “Procedures for NDE...”</p> <p>Code C-64C – Added “(see purchase order for invoked requirements and acceptance standards)” and “Procedures for NDE...” Revised “278F” to “278”</p> <p>Code C-64D – Added “(see purchase order for invoked requirements and acceptance standards)” and “Procedures for NDE...”</p> <p>Code C-64T – Added “(see purchase order for invoked requirements and acceptance standards)” and “Procedures for NDE...”</p> <p>Code C-66 – Deleted</p> <p>Code C-67 – Deleted</p> <p>Code C-68 – Deleted</p> <p>Code C-74 – Added “(see purchase order for invoked requirements and acceptance standards). Revised “278F” to “278”</p> <p>Code C-74A – Added “(see purchase order for invoked requirements and acceptance standards).</p> <p>Code C-74C – Added “(see purchase order for invoked requirements and acceptance standards). Revised “278F” to “278”</p> <p>Code C-74D – Added “(see purchase order for invoked requirements and acceptance standards). Revised “278F” to “278”</p> <p>Code C-74T – Added “(see purchase order for invoked requirements and acceptance standards).</p> <p>Code C-75 – Added “(see purchase order for invoked requirements and acceptance standards). Revised “271F” to “271”</p> <p>Code C-75A – Added “(see purchase order for invoked requirements and acceptance standards).</p> <p>Code C-75C – Added “(see purchase order for invoked requirements and acceptance standards). Revised “271F” to “271”</p> <p>Code C-75D – Added “(see purchase order for invoked requirements and acceptance standards). Revised “271F” to “271”</p> <p>Code C-75T – Added “(see purchase order for invoked requirements and acceptance standards).</p> <p>Code C-76 – Added “When Option B is selected...”</p> <p style="padding-left: 20px;">Deleted “(IC 2 optional)”</p> <p style="padding-left: 20px;">Deleted “System 22 inspection”</p> <p style="padding-left: 20px;">Revised “Parts are to be marked in accordance with both...” to “Parts are to be marked in accordance with the drawing.”</p> <p>Code C-76A – Added “When alternative mechanical testing is selected...”</p> <p style="padding-left: 20px;">Revised “Parts are to be marked in accordance with both...” to “Parts are to be marked in accordance with the drawing.”</p> <p>Code C-78 – Revised “Material Safety Data Sheets” to “Safety Data Sheets”</p> <p>Code C-109 - Rewrite</p> | Quality/ Engineering Departments | W. Hornbake P. Carabetta E. Pizzino M. Laney M. Smith N. O'Brien A. Ciotti | 02 OCT 2018 |
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| 43 | <p>Code C-0 – 4.1 – Revised “must” to “shall” Section 8.0 – Added new Code C-4W – Rewrite Code C-65C – 3rd para. - Rewrite Code C-79 – Added “Material Test Reports are required...” and deleted “Test reports are required...” from Section A) Code C-83 – Rewrite Code C-99 - Rewrite</p> | Quality/ Engineering | <p>R. Shaffer P. Carabetta D. Walker M. Laney M. Smith N. O'Brien A. Ciotti</p> | 21 JUN 2019 |
| 44 | <p>Code C-0 – 3.8 – Rewrite 5.0 – Revised title from “Special Processes” to “Supplier Procedure Approval and use of QCM-1449” 5.2 – Rewrite Code C-6 – 4.A. – Deleted “heat within each” 4.C. – Deleted “heat within each”</p> | Quality/ Engineering | <p>W. Hornbake P. Carabetta D. Walker M. Laney M. Smith N. O'Brien A. Ciotti</p> | 27 DEC 2019 |
| 45 | <p>Code B-10 – Added “or Surveillance” Revised “EPD” to “CW-EPD” Code C-0 – 5.2 – Added “or equivalent documented information” and “Supplier shall identify...” Code C-2 – Added para. “NOTE...” Code C-65B – Revised NOTE:, 2nd sentence – “When marking assemblies...”</p> | Quality | <p>W. Hornbake P. Carabetta D. Walker M. Laney M. Rath M. Smith N. O'Brien B. Niklewicz</p> | 23 SEP 2020 |
| 46 | <p>Updated to modern procedure format Code B-2 to Rev 4 -Re-write Code B-10 to Rev 4 -Re-write Code C-0 to Rev 13 -Para 3.3 re-write -Para 4.1 1st sentence re-write -Para 4.2 “should” was “may”; added 2nd sentence -Added Para 4.3 Code C5 to Rev 4 - Added 4th paragraph -Removed MCS-6 applicability Code C-10 to Rev 1 -Re-write Code C40 to Rev 3 -Re-write Code C65A to Rev 2 -Re-write Code C65B to Rev 7 -Re-write Code C65C to Rev 3 -Re-write Code C79 to Rev 4 -Para 4.3.6.4.4 updated SSRT lab contacts Code C80 to Rev 3 -Re-write Code C96 to Rev 1 -Re-write second sentence</p> | P. Carabetta | <p>N. O'Brien M. Smith D. Walker M. Rath D. Koch C. Cuadrado J. Kriner S. Fisher A. Heald W. Hornbake</p> | 19 MAY 2022 |