GENERAL DYNAMICS
Electric Boat
84-00-1071 REV 07/04

SPECIFICATION COVER SHEET

COMPONENT NO.

FILE NO.

CLASSIFICATION NO'S.

SPECIFICATION NO.
EB2678K

DESIGN NO.	SPECIFICATION TITLE	EFFECTIVE DATE
	QUALITY CONTROL REQUIREMENTS FOR PROCURED MATERIALS	APR 0 6 2010
SHIP OR PROJECT NO.		PAGE NO. 1 OF PAGES

ELECTRIC BOAT CORPORATION APPROVALS

ORIGINATING DEPT.
SUPPLIER QUALITY D323/421

WRITTEN BY	DATE
J. S. Bentley	3/26/10

APPROVED BY	DATE
R. R. Smelings	3/26/10
C. Graillat	3/26/2010
N. E. Beckwith	3/29/10

OTHER APPROVALS

APPROVED BY	DATE

REVISIONS

REV.	ELECTRIC BOAT CORPORATION APPROVAL	DATE	OTHER APPROVALS	DATE
K		3/29/10		

GENERAL DYNAMICS
Electric Boat
84-00-1071 REV 07/04

SPECIFICATION COVER SHEET

COMPONENT NO.

FILE NO.

CLASSIFICATION NO'S.

SPECIFICATION NO.
EB2678J

DESIGN NO.	SPECIFICATION TITLE	EFFECTIVE DATE
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ELECTRIC BOAT CORPORATION APPROVALS

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SUPPLIER QUALITY D323/D421

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GENERAL DYNAMICS
Electric Boat

84-06-1071, REV 12/03

SPECIFICATION COVER SHEET

COMPONENT NO.

FILE NO.

CLASSIFICATION NO'S

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EB2678H

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QUALITY CONTROL REQUIREMENTS FOR PROCURED MATERIALS

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GENERAL DYNAMICS
Electric Boat Division

EB 1071 REV. 2/69

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SPECIFICATION

EB 2678 G

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E.B. DIVISION APPROVALS

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B		6/2/76
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C		4/10/77
C		4/22/77
D		9/13/77
D		9/15/77
E		11/10/80
E	S. Li Mann	11/10/80
F		6/16/81

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F	S. Li Mann	6/16/81
G	S. Li Mann	3-1-89
G		3/1/89

RECORD OF REVISIONS

Revision	Description
B	Page 5, Para. II.B.2 – Reworded to clarify intent Page 7, Para. II.E.2 – Reworded to clarify intent Page 9, Para. II.I.1 – Reworded to clarify intent
C	Page 5, Para. II.B.2 – Reworded to clarify intent Page 7, Para. II.G.1 – Reworded to clarify intent Page 8, Para. II.H.3 – Revised VPAR submittal requirements
D	Page 7 added Para. II.E.4
E	Page 5 added new Para. II.A.3 – Renumbered existing Para. II.A.4 to II.A.5 Page 7, added new Para. (d) – Renumbered existing Para. (d) to (e)
F	Page 7 added NOTE to Para. II.E.4
G	Complete rewrite, specific changes not noted.
H	Complete rewrite to reduce redundant requirements with quality specifications and standard clauses and added Malpractice awareness section. Specific changes are not noted.
I	Not issued.
J	Page 7 “Appendix B” - Changed “requirements” to “suggested attributes” Page 8 Para. 1.1.(a) – Corrected VPAR Form number Page 12 Para. 3.1 – Revised wording for clarity; Para. 4.1 – Added changes that affect provisioning parts to definition of Design Changes Page 15 - Added Para. 6.4 (d) Page 20 Appendix A Para. 3.2 – Added new last sentence; Added new Para. 3.4.b.).(3) - Identification of Country of Origin – Renumbered existing paragraphs Page 25 Appendix A Para. 8.3 Note – Corrected wording of the paragraph; Added new Para 8.2.e.) – Identification of Country of Origin – Renumbered existing paragraphs

Page 26 Appendix A Para. 8.3 e.) - Added parenthetical statement
Page 27 Appendix B Para. 1.1 changed “requirements” to “guidelines”

K Page 7 - Added new last sentence
Page 9 – Added Para. 2.2 (g)
Page 13 - Added Para. 4.2 and 4.4, Para. 4.2 to 4.3, Para. 5.2 added new last sentence
Page 14 – Added Para. 5.3 (e), added last sentence to Note
Page 16 – Added Para. 7.4
Page 18 – Fixed EB zip code, Para. 10.1 note added
Page 26 – Appendix A, Para. 9.0, added in its entirety
Page 28 – Appendix B, Para. 2.5 grammatical correction
Page 32 – Appendix C, Added Purchaser definition
Page 34-35 – Appendix E added in its entirety

Note: Lines “▌“ in the right margin indicate changes made by this revision.

EB/NGSB Use:

Materials previously supplied in accordance with the Quality Control requirements of EB Spec 2678 Revision J are fully interchangeable with materials supplied to Revision K. All future procurements shall be to Revision K. ▌

TABLE OF CONTENTS

PAGE

OVERVIEW

Requirements contained in this specification are non-deviational unless otherwise specified in the purchase order.

This specification provides Quality Control requirements in addition to the basic quality requirements cited elsewhere in the purchase order. In all cases, the purchase order is the controlling document and takes precedence over all other documents, either written, implied or specified. It is the responsibility of the supplier to transmit those portions of the purchase order that are applicable, including the substance of this specification to any and all sub-tier supplier's via a purchase order or some other contractual means. Verbal direction is not contractual and should be avoided.

Supplier's performing work or services in accordance with this specification shall establish and maintain a Quality System, which will assure the quality and adequacy of the item or service provided. A quality system refers to the activities carried out within an organization to satisfy the quality expectations of its customers. To ensure that a quality system is in place, the Purchaser and its customer may insist that the organization demonstrate that the quality system conforms to one of the following:

- ISO 9000 Quality System Models as modified by Supplemental Technical Requirements (STRs), (See Standard Clauses 60-5, 60-19 & 60-58)
- MIL-I-45208 Inspection System Requirements
- MIL-Q-9858 Quality Program Requirements

Appendix A - outlines additional quality assurance requirements for Level 1 material. Level 1 material is identified as Level 1 on the drawing or in the purchase order.

Appendix B – discusses suggested attributes of a Fraud & Falsification and Malpractice Prevention Program. Suppliers are required by the terms and conditions of the purchaser's contract to comply with local laws and regulations during performance of work (Reference General Terms and Conditions clauses 9, 42 and 43). To assure compliance with the laws governing fraud, falsification and the like (such as US Code Title 18, Part I, CH 47, Sec. 1001) it is recommended that all Suppliers, including their sub-tier Suppliers implement a fraud & falsification and malpractice prevention program.

1.0 REQUIREMENTS

1.1 Forms

a.) Vendor Information Requests (VIR) - EB Form 84-01-2205, NGNN Form 3409

Requests for interpretation or clarification of any purchase order requirements, changes to drawings or specifications, and/or requests for acceptance of a non-conforming conditions and repair welding authorizations (when required) shall be submitted on a VIR.

Copies of each VIR submitted against the item being offered for delivery shall be included in the certification data package, which accompanies the item.

For items accepted at source inspection, the copies shall be provided to the source inspector for review when the items are presented for source inspection.

b.) Vendor Procedure Approval Request (VPAR) - EB Form 84-01-2974 or NGNN equivalent.

All NDT (LP,MP,UT,VT,RT), Alloy Identity, Welding and Brazing (production and repair) and special processes (e.g. forging, 1st article) must be performed in accordance with approved written procedures. These procedures shall be submitted to the Purchaser for approval on a VPAR. This VPAR shall be submitted and approved prior to performance of the applicable task. Failure to comply will be cause for rejection.

c.) Supplier Corrective Action Report (SCAR) - EB Form 84-00-4496 or NGNN equivalent.

Nonconformances considered by the Purchaser to be significant or systemic are recorded on a Supplier Corrective Action Form (SCAR). SCARs are written to obtain root cause(s), corrective action(s) and preventive action(s) from the Supplier. SCARs must be answered within the time frame specified within the SCAR. Extensions to the specified due date may be requested.

2.0 DOCUMENTATION / OFFICIAL RECORDS

2.1 Official records

Official records are records that substantiate conformance to contractual requirements, including data entered into automated systems. All entries on official records shall be legible and documented with an instrument that provides a permanent record (e.g. ink pen). Authorized personnel

signing official records shall be designated in writing by the Supplier. This authority may be granted by title or name. (e.g., QC Manager, Chief Metallurgist, Mr. John Doe, etc.)

2.2 Documentation

a.) Signatures / Initials / Badge Numbers / Inspection Stamp on official records are verification that the action identified has been performed in accordance with requirements and the results are as recorded.

b.) Certifications shall be based on personal observations, other certified records, or direct reports from assigned personnel. Original raw inspection data sheets shall be retained when data are transcribed or summed on other forms.

c.) When a person, other than the one who performs the inspection or test activity, signs a quality document, they must indicate for whom they are signing (e.g. J. W. Brown (signature) for D.W. Smith (printed)).

d.) Material certification data (chemical analysis, mechanical and physical 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 the Purchaser shall be either the original mill certification, original certification from the testing facility or exact photocopies of the original certifications.

e.) The Suppliers may provide a test report under their letterhead listing the results of all tests performed provided copies of the original testing results on testing activity letterhead are also included. In such cases, the Supplier's report shall clearly denote that the data is transcribed data.

f.) Statements on certification documents must be positive and unqualified. Words such as “To the best of our knowledge” or “We believe the information contained herein is true” are not acceptable.

g.) The supplier is required, unless permission is granted in writing via a VIR or supplement to the purchase order, to use the same unit of measurement as specified in the technical data package when reporting inspection and acceptance data.

2.3 Corrections to Documents

Note:

Quantitative or semi-quantitative data cannot be altered on another organization's quality document.

a.) Corrections to official records shall be made by drawing a single line through the incorrect entry. Corrections to official records should be made by the person who made the original entry, a supervisor or a person assigned by the supervisor and must be initialed and dated in permanent ink. The original entry must remain legible. Erasure or other obliteration of information on official records is prohibited.

b.) When additional information is added it shall be initialed and dated.

c.) 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.

2.4 Record Retention

a.) All test and inspection records including radiographs, furnace charts of heat treatment (unless otherwise noted in the purchase order), radiographic records, and reports of nonconformances, applicable to material supplied to the purchaser shall be retained by the supplier. These records shall include verification that all required inspections and tests have been accomplished with satisfactory results by a qualified individual.

b.) Test records shall be retained for a period of seven years after completion of the last item of the contract.

c.) Where work is performed under continuing contracts or on other than a contractual basis, these records shall be retained for seven years from the date the work was performed.

d.) Records shall be made available to the purchaser within 36 hours upon request. When requested, the Supplier shall provide objective quality evidence that the item, material, or service used in the performance of this order is in full compliance with the appropriate specifications and indicated revisions.

2.5 Destruction of Records

At the end of the seven year period, the Supplier shall request in writing instructions from the Purchaser as to whether the records shall be destroyed; forwarded to the Purchaser; or retained by the Supplier for a longer period (as agreed upon by the Supplier and the Purchaser).

2.6 Electronic Data Retention

Record retention periods also apply to electronic records. Records generated and maintained in the Supplier's information systems or equipment (including mainframe, mini, and micro computer/storage systems) are to be periodically reviewed by appropriate information owners and/or custodians to ensure that record management requirements (i.e. controlled access, password protection and backup protection) are being met.

2.7 Electronic Signatures

Defined as the electronic representation that is equivalent to a person's handwritten signature (but not a graphical display). It indicates approval or certification of the information or action(s) in the same manner as a pen and ink signature. Electronic certification signatures are permitted in accordance with the Naval / Nuclear Propulsion Program Electronic Signature Policy. This policy allows limited use of electronic signatures by supplier's subject to exclusions and controls that include:

a.) Electronic signature applications shall not allow users to change electronically signed documents unless changes are clearly identified and signed by an authorized individual.

b.) The signer must take distinct action to "sign" electronically.

c.) A means to delegate signature authority which allows the delegated individual to utilize their own electronic identification (i.e. integrity of each person's electronic signature must be preserved).

d.) A means to identify the electronic signer by name on the electronic or paper version of the document must be maintained for retention life of the electronic record.

e.) For printed or displayed documents, the electronic signature should not be a graphic display of the individual's signature but should be the printed name together with an accompanying designation ("ES") added to show that the individual electronically signed the document.

f.) Passwords should be utilized for electronic signature authentication. The use of other electronic authenticators such as card or tokens is permitted

if established by agreements in the contractual administration documentation or in a NAVSEA 08 approved specification or procedure.

g.) Implementation of an Electronic Signature application requires purchaser approval prior to use. Supplier's shall request approval via a VIR.

3.0 DRAWING AND DOCUMENT CONTROL

3.1 The Purchaser does not, in all cases, procure to the latest revision of the specification or approved drawing. The required revision is that revision specified in the purchase order. If the Supplier intends to deviate from the invoked revision, permission must be obtained from the Purchaser on a VIR.

3.2 Supplier drawings or sub-tier Supplier forging sketches may be required to be submitted to the purchaser for review and approval. When working to approved drawings, all proposed changes to these drawings must be submitted to the purchaser for approval on a VIR prior to use. The Supplier assumes all responsibility when work is performed to unapproved drawings.

4.0 DESIGN CHANGES

4.1 Any changes to the design of an item or to a service being procured by the purchase order must be submitted on a VIR for Purchaser review and approval. Design change is defined to mean changes to any of the following:

- Drawings approved by the Purchaser or Government
- Specifications listed on documents issued or approved by the Purchaser or Government
- Inspection systems
- Reliability
- Safety
- Weight
- Materials or special requirements
- Unusual inspection or test procedures or equipment
- Any special revision or model identification whether specified in the Purchase Order, or referenced document.
- Any change that could affect interchangeability (Fit, Form, Function)
- Change to approved manufacturing processes or procedures (1st Article tests, forging sketches, test specimen locations, etc.)
- Any change that affects provisioning parts procured as onboard repair parts, shore based spares, or any part procured as a construction spare part.

4.2 The purchaser shall be notified via a VIR of any work on dies/patterns/process tooling which will affect the dimensions of the product. The supplier shall submit a thorough product inspection report

of those and all related dimensions and the reason for the change to the attention of the purchaser.

4.3 Where commercial brand names or names of specific manufacturers are specified in the purchase order together with terms such as "similar to" and "or equal", such identification is intended to be descriptive, but not restrictive, and is to indicate the quality and characteristics of products that will be satisfactory. Supplier's requests when submitted with justification on a VIR offering equal products will be considered for approval.

4.4 If the product or procedures specified have been approved by the Purchaser or the Government to qualify the product and to permit the supplier to become a qualified source for the product, the supplier may not change the process, material, material sources or procedure without prior approval by the Purchaser via a VIR or VPAR.

5.0 MATERIAL CONTROL

5.1 Material identified as Level 1 shall be controlled in accordance with the requirements herein and in Appendix A.

5.2 The Supplier shall perform or have performed all necessary inspections and tests to ensure that the material procured from lower-tier suppliers conform to all requirements. Inspections, tests, and/or certifications from activities, other than the Suppliers, does not relieve Suppliers of their responsibility to furnish material/services in full compliance with all purchase order requirements. Inspection data with inspection results supporting the certificate of conformance shall be maintained.

5.3 The degree of control of sub-tier suppliers shall be dependent on the complexity of the item being purchased and the subtiers quality performance record. Control shall be maintained by one or more of the following:

a. Conducting quality audits and source inspections at the subtier facility.

b. Performing chemical and mechanical testing, on a sample basis, to confirm reported results on test reports.

5.3 continued

c. Performing generic alloy identity tests, on a sample basis, to assure the proper alloy is being supplied.

d. Utilizing supplier receipt inspection history.

e. The seller shall ensure that their sub-tier suppliers are capable of attaining and maintaining a quality system acceptable to the purchaser for the suppliers and services covered by the purchase order. Records of sub-tier supplier's performance shall be maintained and available for review by the purchaser as necessary. The product quality program of the seller shall contain necessary provisions for surveillance of the sub-tier supplier product quality activities to assure satisfactory performance.

Note (For Level 1 Material):

Suppliers who procure material used in Level 1 applications from sub-tier suppliers shall assure their sub-tier suppliers for such materials are compliant with the material control and traceability requirements of the Purchaser's purchase order. Suppliers are required to perform on-site audits of their sub-tier suppliers for Level 1 material, unless the sub-tier supplier is an approved Level I supplier by the Purchaser (see Appendix A, Section 9.0).

5.4 Items or material requiring traceability to Objective Quality Evidence (OQE) shall be stored and processed such that positive identity is maintained. Each piece of material shall be individually and permanently identified. During in process manufacturing when individual marking is not practical totes, bags, or boxes identified properly and accompanied by a properly identified process traveler, are a suitable alternative to permanent marking provided the identity is maintained at all times.

5.5 Unless the purchase order specifically identifies the area where permanent marking on an item should be applied, it shall be marked in an area that is readily accessible and unlikely to be obliterated during installation.

5.6 When material is worked or heat treated, resulting in changes to its mechanical properties, the mechanical properties shall be re-determined and the material shall be uniquely re-identified to provide traceability to the final heat treatment and mechanical properties certified for that material.

5.7 Unless specifically authorized in the purchase order, only seamless pipe and tubing shall be used in items/components supplied. The Supplier's material control system must assure that seamed pipe and tubing is controlled such that it cannot be mixed with seamless pipe and tubing.
This material control requirement must be passed on to the Supplier's mill or distribution sources and sub-tier Suppliers.

5.8 Permanent marking methods shall be in accordance with MIL-STD-792.

5.9 Refer to the applicable FAR clauses in the terms and conditions of the Purchase Order for restrictions on the use of foreign material.

6.0 NON-CONFORMING MATERIAL CONTROL

6.1 If, in the Suppliers opinion, nonconforming material cannot be reworked to conform to purchase order requirements, but is thought to be usable, the Supplier may submit a VIR for Purchaser approval. The VIR shall include a complete description of the nonconformance, quantity affected, proposed repair (as applicable), technical justification for acceptance, and the over-riding benefit to the Purchaser for acceptance of the nonconformance. The cause and corrective action shall also be addressed, including action taken to prevent recurrence.

6.2 The acceptance of nonconforming materials by the Purchaser for a specific order or prior orders does not relieve Suppliers of their obligation to furnish all remaining items or material on the order, in strict conformance to all requirements. Any acceptance of a nonconformance will not serve as a waiver of requirements or establish a precedence for performance, regarding subsequent deliveries under current or future orders.

6.3 The Supplier shall inform the Purchaser during source inspection and prior to shipment of material of any and all nonconforming conditions and provide evidence of Purchaser acceptance (VIR) of such conditions prior to offering material for delivery.

6.4 Where the Supplier has design authority for the item with the nonconformance, and the nonconformance is a departure from a Supplier's shop or detail drawing, and this drawing is not subject to Purchaser approval, the Supplier may conduct internal material review action to determine product adequacy, provided all of the conditions below are met. In these instances, Purchaser approval of the material review decision is not required.

a.) The internal material review process is conducted by duly appointed representatives of the Supplier's Quality and Engineering organizations and other Supplier personnel necessary to determine product adequacy.

b.) The nonconformance does not constitute a design change as defined in Section 4.0 of this specification.

c.) Records of the nonconformance and the corrective action(s) assigned are retained.

d.) The nonconformance does not impact provisioning parts procured as onboard repair parts, shore based spare parts, or parts procured as a construction spare part.

7.0 MANUFACTURING AND SPECIAL PROCESSES

7.1 Repair welding, bonding, or impregnation in excess of that permitted by the basic material specification will not be allowed without prior approval by the Purchaser on a VIR.

7.2 When a procedure is required:

- by the purchase order
- for special processes (e.g. NDT, forging sketches, 1st Article tests, etc.)
- for welding (production or repair)

the procedure shall be submitted to the Purchaser on a VPAR for approval. This VPAR shall be submitted and approved prior to performance of the applicable task. Failure to comply will be cause for rejection.

7.3 When radiography is required, the Supplier shall review (or have reviewed by a qualified individual) and approve all RT films whether RT was performed by Supplier or a sub-tier Supplier. The Purchaser's approval of the film must be obtained prior to shipment of the item unless authorization to the contrary has been previously granted in writing. Film submitted for approval, including film for all weld repair cycles shall be forwarded to the Purchaser, unless reviewed by the Purchaser's Representative on site. When noted in the purchase order, the film will become the property of the Purchaser. Once approved, this film will be maintained on file at the Purchaser's facility.

7.4 Forging Suppliers may qualify to be listed on the Approved Forging Supplier List to manufacture products for ultimate delivery to the Purchaser, after demonstrating compliance with supplemental requirements as verified by desktop and on-site evaluations of procedures and operations for the manufacture of forged products. See Appendix E for supplemental requirements for approved forging suppliers.

8.0 INSPECTION

8.1 Inspection at Supplier's Plant

a.) The Purchaser or Government reserves the right to verify the conformance of the item(s) and services to the purchase order at any location or at any stage of development or manufacture.

b.) The Supplier shall provide assistance to the Purchaser's or Government's representative during source inspection, audits, or other activities as may be specified by contract. This will include, but not be limited, to the following:

(1) Cooperation in establishing dates and times of visits to the plant facilities.

(2) Providing requested information, documents, and escorts during audits, surveys, and shop inspections or tours.

(3) Providing calibrated M&TE to the Purchaser and/or Government representatives to check product compliance.

9.0 CORRECTIVE ACTION SYSTEM

9.1 The Supplier must establish and maintain a Corrective Action Reporting System in accordance with the invoked quality requirements. In addition to non-conformances that have an assignable cause, a Corrective Action Report must be issued to internal activities or external Suppliers when the following non-conformances are found:

- Loss of material traceability or incorrect material.
- Loss of test records or failure to perform tests.
- Any nonconformance that becomes repetitive and demonstrates a trend.

9.2 The Corrective Action Reporting System must describe the nonconformance, establish the root cause, describe the immediate corrective action and the permanent preventive actions taken to preclude recurrence in the future, and assign individual responsibility to correct the root cause. Pertinent documentation shall be maintained by the Supplier and made available for review by the Purchaser upon request.

9.3 In the event non-conformities or latent defects are discovered after delivery and acceptance by the purchaser, the supplier shall provide to the Purchaser (Electric Boat Corporation (EBC) personnel are listed below) immediate verbal notice and subsequent written documentation of the deficient condition in sufficient detail to enable timely action to preclude adverse impact on ship or personnel safety or equipment performance.

EBC MATERIALS MANAGEMENT:

DIRECTOR OF MATERIALS MANAGEMENT
DEPARTMENT 330
75 EASTERN POINT RD
GROTON, CT 06340

EBC SUPPLIER QUALITY:

MANAGER OF SUPPLIER QUALITY
DEPARTMENTS 323/421
75 EASTERN POINT RD
GROTON CT 06340

10.0 AUDITS

10.1 The Supplier shall establish and maintain an internal quality audit program (See Appendix A, Section 9.0 for additional sub-tier audit requirements for Level 1 material suppliers.) It is recommended that the Supplier also establish and maintain an external (sub-tier) review and quality audit program. These programs shall be designed and implemented to determine compliance to purchase order requirements.

10.2 Both internal and external audits will be preplanned using a checklist of audit elements that are capable of determining if contract requirements can or are being satisfied. An audit report will document the level of compliance found during the audit. Nonconformances will be clearly documented on a Corrective Action Report with required follow-up actions sufficient to determine satisfactory resolution. Records of audits and corrective and preventive actions shall be maintained by the Supplier and made available for review by the Purchaser upon request.

APPENDIX A

LEVEL 1 - MATERIAL QUALITY ASSURANCE REQUIREMENTS

1.0 GENERAL

1.1 The requirements listed below shall be used for Level 1 material in conjunction with the requirements in the body of this specification, MIL-I-45208, MIL-Q-9858, or one of the ISO Quality System Modules, as specified by the applicable contract or purchase order. When more stringent material Quality Assurance requirements are provided in the Purchaser's purchase order or component specification, they shall take precedence.

1.2 Suppliers shall have an effective quality program and a material control/ identification system which complies with this specification and the requirements of the applicable procurement specifications or drawings and which will permit the collection and issuance of Objective Quality Evidence required to allow purchaser acceptance of materials and components.

1.3 Objective Quality Evidence (OQE) will be required for the material (separately furnished or within assemblies) identified as "Level 1" in the list of materials in the basic design document or purchase order.

1.4 The manner in which required OQE is developed by the Supplier shall be controlled by a written procedure or procedures. These instructions shall be clear and concise. The OQE for the actual item being shipped shall be representative of the individual heat, batch, or lot as defined in the applicable specification and shall be in compliance with the invoked acceptance criteria. However, for continuous melt or continuous pour processes, the OQE shall be representative of the time period (as determined by the invoked specifications) during which the material was poured.

2.0 QUALITY SYSTEM FLOWDOWN REQUIREMENTS

Suppliers of Level 1 material shall have an effective quality system that complies with this specification and the requirements of the purchase order. Quality system requirements shall be established and maintained to assure that sub-tier Suppliers also have effective systems for controlling Level 1 material including traceability to OQE. The system must assure that OQE is established and controlled in accordance with the requirements of this document. Special quality provisions, along with the applicable specifications and/or drawing requirements, shall be included in the purchase order to the sub-tier Supplier.

3.0 MATERIAL CONTROL AND IDENTIFICATION

3.1 Procurement Control

The Supplier shall pass on the applicable requirements of this specification to his subtiers if the invoked drawings/specifications do not reflect the requirements contained herein.

3.2 Purchase Order Review

The Supplier's quality representative shall review Level 1 material purchase orders to sub-tier suppliers prior to placement to insure that the applicable purchaser's requirements are included. The preparer of a purchase order shall not review his/her own work. The purchase documents which include Level I material shall contain readily recognizable Level I identification.

3.3 Receiving Inspection

The Supplier shall inspect Level 1 material at time of receipt from their sub-tier Suppliers, Processors, or Inspection Organizations to assure conformance to purchase order requirements and shall document the results.

3.4 Certifications from Sub-tier Suppliers

a.) The Supplier shall obtain from sub-tier Suppliers a certification of quality conformance for all Level 1 material in addition to the required test reports. Unless otherwise specified, the certification as a minimum shall state that the material meets specification requirements.

b.) Each test report and/or inspection report provided by the sub-tier Supplier shall be reviewed by the Supplier’s Quality personnel prior to releasing the material to inventory. The following minimum requirements shall be verified during the review:

(1) Test reports are legible.
(2) Material is not from a prohibited source (certain foreign countries).
(3) The country of origin is readily identified, or has been annotated by the Supplier.
(4) Test results are compared with and comply with the specification and purchase order requirements.
(5) The type of tests and number of tests meet specification and purchase order requirements.

(6) Reports are identified with a unique traceability code that agrees with the material marking.
(7) Test Reports provide the location of the test specimens, when applicable.
(8) Reports are duly authorized/signed by the testing facility Representative and that the data is recorded on an official copy with the Supplier's letterhead (See paragraph 8.2).
(9) Reports are reviewed to ensure no unauthorized changes, obliterations, corrections, and evidence of falsification.
(10) The quantity given on the reports is consistent with the quantity of material actually received.
(11) Material that has been heat treated is uniquely re-identified.
(12) Dates of reports and signatures thereon agree with the sequence of processing by subtier supplier(s).

4.0 MATERIAL STORAGE

4.1 Level 1 materials of different types (alloys), grades or conditions shall be segregated through physical separation unless readily differentiated by attributes such as size, physical identification, or physical appearance. The method of segregation shall assure that similar appearing material of different alloys and/or material conditions are not mixed.

4.2 Material requiring traceability shall be segregated from non-traceable material.

4.3 Nonconforming material shall be identified and segregated from acceptable material.

5.0 MATERIAL TRACEABILITY

5.1 The Supplier shall establish a Level 1 material traceability system that provides positive identity of the item throughout the manufacturing process including heat treatment, storage, and assembly operations. Each piece shall be physically marked or identified (i.e bag and/or tagged) with the traceability code. The method of marking used shall be at the discretion of the Supplier, provided it does not violate the requirements of MIL-STD-792. The marking shall be legible throughout the manufacturing process, including out sourced operations.

5.2 When material is worked or heat-treated, resulting in changes to its mechanical properties, the mechanical properties shall be re-determined and the material shall be uniquely re-identified to provide traceability to the final heat treatment and mechanical properties of material in its final condition.

5.3 Material Traceability Marking

a.) The traceability marking may consist of raw material heat number and a heat treat lot number (if applicable) or a unique trace code number that provides, through documentation, traceability back to the raw material heat number and heat treat lot number (when applicable). In all cases, the traceability marking utilized shall be unique in that given only the traceability marking, the Supplier shall be able to provide all Objective Quality Evidence associated with the processing of that item, including heat treat.

b.) When the marking on a part or piece of material will be removed by the manufacturing process, the marking shall be transferred to another location on the piece. If marking cannot be transferred to another location, it shall be restored after the completion of the operation. Items too small to mark or items that continually have their marking removed by the various manufacturing operations making it impractical to maintain, can be controlled by the use of totes, bags, and/or boxes identified with the proper traceability information provided the identity is maintained at all times.

c.) In all cases, the accompanying paperwork (route sheet, traveler, etc.) shall indicate the proper traceability code and shall provide accountability throughout the manufacturing process (i.e., number of pieces cut, rejected, scrapped, tested, etc.).

NOTE:
The above requirements for traceability of Level 1 material are also applicable to sub-tier suppliers.

5.4 Loss of Traceability Marking

a.) Items where the traceability marking is lost shall be considered nonconforming material until appropriate tests have been performed that can absolutely identify the heat from which the item was produced. This requirement is not applicable to items that are uniquely identifiable by their size, configuration and uniqueness of material.

b.) The method of re-establishing traceability shall be approved by the Purchaser for each incident where traceability is lost. This information shall be submitted on a VIR.

6.0 RECORDS

6.1 Permanent records shall be maintained that provide a clear and concise documentation trail from the finished product to the starting material and all intermediate process operations.

6.2 Each record shall identify the traceability code for the specific item to which it applies. The records shall include, or refer to other permanent records, which contain the actual processing parameters the product received during manufacturing or inspection. The records shall also show the results of all material testing, the identity of all material samples selected for testing (including retest samples when required), and the parent material from which the selection was made.

6.3 Component assembly records shall include the material traceability code of each part for which traceability is required.

7.0 HEAT TREATMENT

Furnace charts shall identify the heat treater, the time of heat treatment, the heat treatment lot number, furnace identification, operation, date, quantity, heat numbers, and item description. In addition, the autographic recorder rate (i.e., inches/hour) shall be annotated. The material shall be uniquely re-identified to provide traceability to the final heat treatment and mechanical properties certified for the heat treated material.

8.0 FINISHED PRODUCT REQUIREMENTS

8.1 Generic Alloy Identity Testing

a.) When generic alloy identity testing is specifically required by the purchase order or invoked specifications, the selected sample of parts shall be verified by a suitable nondestructive test to assure that material being provided or installed is of the specified metallurgical group. This test shall be performed by the first-tier Supplier or the Supplier who assembles the finished product in accordance with a procedure that is approved by the Purchaser.

b.) Parts shall be verified at time of final inspection, prior to shipment. However, Level I parts that are inaccessible after assembly shall be verified just prior to installation.

c.) The procedure utilized shall be capable of verifying all generic metallurgical groups of materials used in the Supplier's facility. Generic metallurgical groups are identified as follows:

(1) Steel
(2) 300 Series Stainless Steel
(3) 400 Series or 17-7PH or 17-4PH Stainless Steel
(4) Monel (NiCu)
(5) K-Monel (NiCuAl)

(6) Copper Nickel (CuNi)
(7) Inconel (NiCrFe), (NiCrMoCb)
(8) Nickel Aluminum Bronze

(9) Bronze
(10) Brass
(11) Copper
(12) Bi-Metallic Weld
(13) Cobalt Base Alloy
(14) Silver Brazing Alloy
(15) Titanium

d.) A record of the test and results shall be provided with the certification package.

8.2 Test Records and Certifications provided to the Purchaser

a.) Suppliers shall provide total and complete traceability for all Level 1 material supplied, including Level 1 parts of assemblies and Level 1 parts of components. This traceability requires certified material test reports from the producer of the raw material (mill) which contains quantitative mechanical and chemical data (OQE).

b.) 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. The above information may be annotated on a separate certification in lieu of overstamping provided notation is added to the original test report that provides traceability to the new test reports.

c.) All chemical and mechanical test reports shall be supplied with a certification statement that indicates that the test reports represent the actual attributes of the items furnished for the Purchaser's purchase order, and that the test results are in full compliance with all applicable specification and order requirements.

d.) In cases of foreign certifications, conversion of foreign language units of measure into U.S. units of measure shall be annotated on the furnished foreign certifications if space permits, or placed on an addendum in the same format as the foreign certification data. Such translation/conversion shall be identified as to origin with name, title, and signature of the authorized representative of the company making the translation/conversion.

e.) In cases where the material was not produced by a domestic mill, or melt source, the country of origin shall be identified on the test report, or annotated 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 or it's outlying areas).

f.) In addition to the above requirements, other test reports required by the contract shall also comply in all respects with the ordering data and the invoked specification.

8.3 Marking Requirements (Finished Product)

a.) Permanent marking by the Supplier is required on all Level 1 material, separately furnished or in assemblies. The permanent marking must provide the following information, listed in the order of precedence. Additional marking to that required below is permitted where required by the purchase order or specifications therein.

(1) The Kind of Material: The specific material designator in accordance with the purchase order.

(2) Supplier Traceability Code - A code that provides positive traceability to the unique OQE of the piece of material including homogeneous heat, melt, or batch and inspection information. For continuous process material, the specific traceability provisions of applicable procurement specifications apply. Where specific traceability provisions are not contained in applicable procurement specifications for continuous process material, traceability to OQE representative of material supplied is required.

(3) The Supplier's Name, Trademark or Symbol

NOTE:

If all the marking cannot be applied due to space limitations, the Supplier shall request permission of the Purchaser via a VIR of the marking that will be applied using the order of precedence above, and state the reason why all the markings cannot be applied.

b.) Those items that cannot have markings physically applied shall be packaged and the package labeled with all marking required. All items in the package must be in the same homogeneous lot. When removing any material from the package, all material must be labeled or tagged with all the markings on the package, unless being removed from the package for immediate installation.

c.) Permanent marking is not required for small items included as part of the pressure boundary of a completed assembly (Level 1 fasteners excluded). However, certification statements relating these small items to objective quality evidence shall be provided.

d.) All markings shall be legible. Marking shall be located as not to affect form, fit, or function of the item.

e.) Marking shall be accessible to permit identification without disassembly, except for justifiable situations when alternative methods (e.g., tagging, assembly records, etc.) of identification shall be used to identify these materials.

f.) Marking of fasteners manufactured from hardened material by vibro-etching or integral marking is permitted provided the marking is in an unstressed area.

g.) All Level 1 fasteners shall be marked with the kind of material, Supplier traceability code and Manufacturer's name, trademark or symbol.

9.0 EXTERNAL AUDITS

9.1 Suppliers of Level 1 Material

a.) If a sub-tier supplier is an approved Level I supplier by the Purchaser, an on-site audit is not required for that sub-tier supplier.

b.) The Level 1 supplier shall establish and maintain an external quality audit program for sub-tier suppliers. This program shall be designed and implemented to determine compliance to purchase order requirements.

c.) All external audits will be pre-planned using a checklist of audit elements that are capable of determining if contract requirements can or are being satisfied. An audit report will document the level of compliance found during the audit. Non-conformances will be clearly documented with a supplier corrective action report and required follow-up actions sufficient to determine satisfactory resolution. Records of audits and corrective and preventive actions shall be maintained by the supplier and made available for review by the Purchaser upon request.

APPENDIX B

Contract Compliance and

Awareness of Malpractice Prevention

1.0 SCOPE

1.1 The purpose of this specification is to clarify business ethics and standards of conduct. These guidelines apply to all aspects of work performed by direct Suppliers and their “sub-tier” Suppliers, including manufacturing, inspection, and services.

1.2 All Suppliers providing product or services to Electric Boat Corporation (EBC) are provided the General Dynamics “Blue Book”, titled Standards of Business Ethics and Conduct at time of initial purchase order placement. Within this booklet are various topics pertinent to ethics and standards of conduct while doing business with Electric Boat Corporation. Acceptance of purchase orders and, by extension, acceptance of the business ethics and conduct contained within the Blue Book, signifies Supplier’s commitment to comply with purchase order (contractual) requirements.

2.0 GENERAL

2.1 Suppliers (management and employees) are contractually obligated and expected to meet all purchase order requirements. Suppliers are required to inform sub-tier Supplier's hired by the Supplier that they are likewise contractually obligated and expected to meet all purchase order requirements.

2.2 Suppliers and sub-tier Suppliers shall be aware and vigilant for Malpractice and Fraud and Falsification (F&F), as it affects contract compliance. All parties associated with product and services destined for ultimate delivery to the Purchaser must be aware that Malpractice and F&F are grave and serious matters. The act of Malpractice or F&F has the potential for severe and costly damages.

2.3 It is the responsibility of all parties to avoid the slightest possibility or appearance of impropriety or malpractice and to report known or suspected occurrences to the proper authorities (See 2.6). All personnel working within the program must be aware of malpractice and fraud & falsification, pitfalls that could lead to malpractice and fraud & falsification, methods to eliminate potential situations, and Purchaser expectations of supplier's, their employees, and subcontractors.

2.4 Consequences of malpractice and fraud & falsification could involve functional failure of product in operation on land or at sea, causing loss of equipment and life. Consequences also include severe dollar loss to the Purchaser, the Government, and the Supplier due to lengthy investigations, possible disqualification from future contracts, production shutdown, and loss of employment. Acts of malpractice or fraud & falsification will result in purchase order contractual action and will also be subject to federal criminal prosecution for violations of law under Title 18 of the U.S. Code, Chapter 47, Section 1001.

2.5 Suppliers must ensure that employees and sub-tier suppliers are provided documentation and information necessary to perform assigned and contracted work correctly. Employees and sub-tier suppliers must follow established work procedures and contract documents to perform best possible effort within the program.

2.6 Any party aware of, or having reason to suspect, malpractice or fraud & falsification is obligated to report this violation anonymously or in person to:

a.) Local Supervision or Management,

b.) Purchaser Supervision or Management,

c.) Purchaser Quality Representative,

d.) Purchaser Buyer, or

e.) Department of Defense Hotline

- telephone (800) 424-9098 or
- website http://www.dodig.osd.mil/hotline/hotline7.htm
- email hotline@dodig.osd.mil or
- mail to

  Department of Defense Hotline

  The Pentagon

  Washington, DC 20301-1900

Should such a notification be necessary, information including location, date(s), time, names of people involved, and violation suspected would be most helpful to promote an investigation.

2.7 False allegations of malpractice and fraud & falsification are likewise serious matters and subject to federal investigation and prosecution. It is imperative that persons making allegations be knowledgeable and truthful with the facts and not be with vindictive or spiteful intent.

3.0 CONTRACT COMPLIANCE

3.1 To demonstrate contract compliance with this specification, the Supplier is required to perform, and maintain records for, the following:

a.) Alert all employees to this (Contract Compliance and Awareness of Malpractice Prevention) Appendix during new hire indoctrination.

b.) Annually provide refresher training to this (Contract Compliance and Awareness of Malpractice Prevention) Appendix for all employees.

c.) Appendix D is provided as a visible reminder notice, and provides contact information should malpractice or fraud & falsification be observed or suspected. Suppliers are to post this reminder notice in conspicuous and prominent locations throughout the facility, especially work areas, at a minimum rate of one (1) copy for every fifty (50) employees.

d.) Include verification during internal quality audits that malpractice and F&F training is performed and reminder notices are posted.

e.) Include an awareness in audit requirements that auditors be alert for malpractice and F&F during internal and external quality audits.

f.) Perform periodic and independent overchecks of final inspections and testing.

g.) Alert all sub-tier Supplier's of malpractice and F&F by passdown of this specification in supplier purchase orders.

h.) While performing on-site quality audits at sub-tier Supplier's facilities, confirm and verify sub-tier awareness of malpractice prevention.

4.0 EXAMPLES OF MALPRACTICE AND FRAUD & FALSIFICATION (F&F)

- Issuing a procedure or instructions known to contain unauthorized deviation(s) to contractual requirements.
- Knowingly waiving or eliminating a contractual requirement without authority to do so.
- Deliberately accepting unsatisfactory work.
- Intentionally performing unacceptable work.
- Failing to report problems or unsatisfactory conditions in one’s own workmanship.
- Verifying by signature that an action was taken, knowing in fact the action was not taken, or not performing the required checks or verifications to assure the action was taken.

- Verifying performance of action based on hearsay, not personal observation.
- Tampering with calibrated instruments to avoid rejection of work.
- Falsifying dates on records to comply with frequency or deadline requirements.
- Falsifying data to cover-up a procedure or drawing deviation.
- Falsifying data to have work accepted, thereby avoiding further work or rework.
- Concealing or not reporting information on malpractice, fraud, or falsification known to have been committed by others.

APPENDIX C

GLOSSARY

Contract compliance - is meant to be “verbatim compliance”, i.e., word for word compliance whether the requirement is in the written word or drawing form. Interpretations, assumptions, intentions, taking for granted, editorial or artistic license, exaggeration, partial or suppressed explanation or truth, the way it was done before, etc. do not satisfy verbatim contract compliance. Should corrections or modifications to the contract, drawings, specifications, ordering data, etc. be necessary, appropriate change documentation as described in the contract (purchase order) must be submitted and approvals obtained.

Customer Representative – Purchaser, Customer and/or Prime Contractor.

Error, when pertaining to compliance, is an unintentional deviation or mistake from accuracy or compliance. Key is the fact that an error is not intentional.

Fraud and/or Falsification (F&F) deal with intentional deceit, lie, misrepresentation, falsehood, negligence, dereliction, etc. to perform contract compliance. Key is the fact that fraud and falsification is intentional.

Generic Alloy Identification - A broad identification of materials by simple, direct, or rapid analysis methods or a combination of methods (e.g., Color, Magnetic Properties Test, Acid Spot Tests, and Metal Comparator Tests). These tests are designed for simple screening and identification of materials by alloy family (as opposed to classification of specific alloys within a family).

Government Representative - In cases where MIL-I-45208 or MIL-Q-9858 specifies the “Government Representative” the supplier shall interpret that to include the issuer of the purchase order (i.e. the purchaser).

Heat Number - The numeric or alpha/numeric designator assigned to material, produced in a common batch or under a continuous pour process, by the activity that produces the material.

Homogeneous Lot - A group of like items that are produced in a common heat or batch, or are produced under a continuous cast or pour process with the same vendor traceability numbers, are of the same nominal size, and are received in a single shipment. For batch or continuos cast/pour processes, samples for chemical and mechanical properties shall be taken no less than once in every eight hours of operation. If additional production processes are utilized that alter the mechanical properties of the material (e.g., heat treat, cold or hot forge, extrusion), then all items of the same "heat number" and additionally processed under the same conditions at the same time shall be considered as a homogeneous lot.

Identification - The ability to show the required characteristics of a material.

Lot Number / Trace Code - The numeric or alpha/numeric designator assigned to material when a process (i.e., heat treatment, hot forged, extrusion, etc.) alters the original mill source mechanical properties of the material.

Malpractice is a dereliction of professional duty or a failure of professional skill that results in less than contract compliance.

Material Lots - Material lots are comprised of a number of associated items grouped collectively and sharing a common reference. For material requiring traceability, lots are referenced to one of the following:

Production Lot - Items that are grouped together by production process.

Shipping Lot - Items that are grouped together for transporting.

Inspection Lot - Items that are grouped together for inspection.

Mechanical Properties - The properties of a material that influence its elastic or inelastic behavior when force is applied, thereby indicating its suitability for mechanical applications (e.g., tensile strength, yield strength, elongation, hardness, etc.).

Objective Quality Evidence (OQE) - Quantitative and qualitative data of all mechanical, chemical, and performance tests performed (as required by the applicable specification, drawing, or purchase document) to prove that material supplied conforms to the specified requirements.

Purchaser – General Dynamics Electric Boat or Northrop Grumman Ship Building – Newport News

Procurement Document (Purchase Order) - A written agreement for the procurement of supplies or services that describes what is to be supplied and what requirements are to be met. This document takes precedence over all other documents either written, implied, or specified.

Quantitative Chemical Analysis - The determination of the exact concentration of the constituent elements present, in accordance with material specification requirements.

Segregated Material - Material collected together and separated from other material.

Small Items - Items that have a marking surface area less than 3/8 of an inch square.

Sub-tier Supplier - Any organization that furnishes material or services in accordance with an issued purchase order to the Supplier.

Supplier - Any organization that furnishes material or service in accordance with an issued purchase order.

Traceability - A positive means of identifying material to its OQE.

NOTICE

Any party aware of, or having reason to suspect, MALPRACTICE OR FRAUD & FALSIFICATION is obligated to report this violation anonymously or in person to:

a.) Company Supervision or Management,

b.) Purchaser Supervision or Management,

c.) Purchaser Quality Representative,

d.) Purchaser Buyer, or

e.) Department of Defense Hotline

- telephone (800) 424-9098 or
- website http://www.dodig.osd.mil/hotline/hotline7.htm
- email hotline@dodig.osd.mil or
- mail to

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Should such a notification be necessary, information including location, date(s), time, names of people involved, and violation suspected would be most helpful to promote an investigation.

NOTICE

APPENDIX E

Supplemental Requirements for Forging Operations

1.0 GENERAL

1.1 The Purchaser will make available the current approved list of forging suppliers.

1.2 When providing forgings or forgings in an assembly, suppliers shall utilize only the forging suppliers listed on the Purchaser's Approved Forging Supplier List.

1.3 A supplier utilizing a forging supplier other than one currently approved must submit a VIR to the Purchaser requesting approval of the selected forging supplier. An evaluation will be performed, the VIR answered, and, if satisfactory, the forging supplier will be added to the Approved Forging Supplier List.

2.0 FORGING SUPPLIER REQUIREMENTS

2.1 In addition to, or in conjunction with, testing required elsewhere in the purchase order, Suppliers shall invoke the following requirements on orders for forgings from an approved forging supplier:

a) Subsequent to forging (and heat treat if performed), material must be physically re-identified with a unique traceability identification to distinguish the revised properties from the original heat number traceability.
b) Obtain and test mechanical test samples as required in the purchase order, applicable material specification, modification for the material specification, and/or approved forging drawing. Test samples to be physically identified with the forging traceability number.
c) The forging supplier shall maintain the mechanical test specimens, and their respective test results, as objective quality evidence, subject to audit and further analysis by the Purchaser.
d) Retention of records and specimens shall be in accordance with paragraph 2.4 of EB2678.
e) The material test report for the original heat number must be annotated to reflect the assigned heat/lot number or unique traceability identity number (IAW paragraph 2.2 of EB2678).
f) Chemical and mechanical test report submittal to the Purchaser shall be in accordance with the requirements contained elsewhere in the Purchase Order.

APPENDIX E

Supplemental Requirements for Forging Operations

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