



Certification and Qualification
Information for Specifications
with
MIL-STD-790

DSCC-VQP
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PREFACE

This document is applicable to the MIL-STD-790 program administered by the Defense Supply Center, Columbus (DSCC) in its capacity as the qualifying activity. This publication has been developed to outline and discuss the elements needed for a successful qualification and qualified products list (QPL) system.

The details discussed in this publication apply only to qualification programs administered by the Defense Supply Center, Columbus, Sourcing and Qualifications Unit (DSCC-VQ) in its capacity as qualifying activity for specifications requiring MIL-STD-790.

The manufacturer, by application and subsequent listing on a Qualified Products List (QPL), agrees to comply with all provisions specified in the applicable specification and herein.

This publication outlines the elements necessary for the QPL program to be acceptable. This publication will list the key elements needed, but leave the format and implementation of these elements to the manufacturer.

The QPL program is designed to assure a requisite level of performance, quality and reliability necessary for the Department of Defense (DoD).

A handwritten signature in black ink, appearing to read "L. Darrell Hill". The signature is written in a cursive style with a long horizontal line extending to the left.

L. DARRELL HILL
Chief
Sourcing and Qualifications Unit

CONTACT POINTS

Comments or recommendations which may be of use in improving this document should be addressed to: Defense Supply Center, Columbus, ATTN: DSCC-VQP, P.O. Box 3990, Columbus, Ohio 43216-5000. Requests for copies of this document should also be forwarded to DSCC-VQP.

Requests for an assessment or for further information about the MIL-STD-790 program should be directed to one of the VQP contacts listed in Section I.

DSCC: Defense Supply Center, Columbus
DSCC-V: Logistics Office (James A. Gambert, Director)
DSCC-VQ Sourcing and Qualifications Unit (L. Darrell Hill, Chief)
DSCC-VQP: Passive Devices Team (Robert P. Evans, Chief)

Request for copies of DoD 4120.3-M (Defense Standardization Program (DSP) Policies and Procedures, SD-6 (Provisions Governing Qualification Qualified Products List)) MIL-STD-790, MIL-STD-202, and any other military document should be addressed to DoD Single Stock Point Special Assistance Desk, Bldg 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, (215) 697-2667 or (215) 697-2179, M-F 7:30a.m. to 4:30p.m. (EST). See web site www.dodssp.daps.mil.

NOTE: All forms referenced herein are available from the DSCC-VQP point of contact, the DSCC-VQP Forms booklet, or by visiting our web site (reference page 2 of this booklet).

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SECTION I
Points of Contact

DSCC-VQP
Defense Supply Center Columbus
Sourcing and Qualifications Unit
Passive Devices Team

Fax numbers: (614) 693-1660, (614) 692-6942 or (614) 692-6943

<u>Name</u>	<u>Phone Number</u>	<u>DSN</u>	<u>E-mail address</u>
Robert Evans (Team Chief)	(614) 692-0677	850-0677	robert_evans@dsc.dla.mil
Gail Groseclose (Secretary)	(614) 692-0581	850-0581	gail_groseclose@dsc.dla.mil

Group I: 5905 Resistors/5910 Capacitors/5915 Filters/5950 Transformers/5965 Headsets, Loudspeakers, and Microphones/5999 Miscellaneous/1650, 2530, 4720, 4730, 4930 Construction

Gene Ott	(614) 692-0665	850-0665	gene_ott@dsc.dla.mil
Dwight Oglesby	(614) 692-0609	850-0609	dwight_oglesby@dsc.dla.mil
Mark Parshall	(614) 692-0666	850-0666	mark_parshall@dsc.dla.mil
Carl Radeloff	(614) 692-0664	850-0664	carl_radeloff@dsc.dla.mil
Nancy Wells	(614) 692-0598	850-0598	nancy_wells@dsc.dla.mil
Jeff Zern	(614) 692-0597	850-0597	jeffrey_zern@dsc.dla.mil

Group II: 5935 Connectors/6145 Wire and Cable/GP60 Fiber Optics

Brian Burns	(614) 692-7105	850-7105	brian_burns@dsc.dla.mil
Angela Eschmeyer	(614) 692-7106	850-7106	angela_eschmeyer@dsc.dla.mil
Mike Peppas	(614) 692-7108	850-7108	michael_peppas@dsc.dla.mil

Group III: 5920 Fuses/5925 Circuit Breakers/5930 Switches/5945 Relays/5955 Crystals and Oscillators/5999 Miscellaneous

Joel Hemmila	(614) 692-7107	850-7107	joel_hemmila@dsc.dla.mil
Todd Lewis	(614) 692-0503	850-0503	todd_lewis@dsc.dla.mil
John Schwarz	(614) 692-0504	850-0504	john_schwarz@dsc.dla.mil
Art Woolum	(614) 692-0505	850-0505	william_woolum@dsc.dla.mil

NOTE: This information is correct as of the date of publication. For up to date information, check the VQP web page.

DSCC-VQ: SOURCING AND QUALIFICATION UNIT

Defense Supply Center Columbus, 3990 East Broad Street, Columbus, OH 43216

http://www.dscc.dla.mil/offices/sourcing_and_qualification/

The Sourcing and Qualification web pages were originally developed mid 1995 to provide a user-friendly approach to downloading the Unit's Query Tool programs. The web pages have since been expanded to disseminate much of the public information that was formerly distributed on paper. Our Unit continues to support those customers who rely on paper documents, but we are developing cost effective real-time alternatives to the traditional paper documents, and providing them on the World Wide Web.

General features of the VQ web pages:

- Most pages and graphics are very small for fast transfer to the user's computer
- Pages have been written to utilize the latest features of the Hypertext Markup Language (HTML) language Version 3.2. Pages are best viewed with Netscape Navigator 3.01, or Microsoft's Internet Explorer 3.02. Pages that do not use HTML Tables are backward compatible to the most basic of web browsers.

Items currently available on the VQ web pages:

- General information from the Unit office including the mission, organizational chart, directions to DSCC, and information for visitors.
- General information for each of the Unit's four Teams (**Custom Devices, Hybrid Devices, Passive Devices, and Electronic Devices**). Information includes program information, contacts, available downloads, audit schedules, and QML/QPL status.
- Information about the Unit's **ISO 9000 value-added audit program** including background information, audit information, and the DSCC-VQ ISO 9000 Registration list.
- Reports and information including progress reports, program initiatives, newsletters, and program updates.
- Information about the Unit's Commercial Laboratory Suitability Program (Includes List of Commercial Laboratories Suitable for Testing Military Devices).
- An **on-line part search** capability that encompasses QML-38534, QML-38535, and QPL-19500. Downloading is not required.
- Discussion forums for answering manufacturer's questions about the program and encouraging information exchange between customers.
- A Guest Book for user's general comments about the web site.
- **Qualified Manufacturers List (QML)** and **Qualified Products List (QPL)** documents available in the Adobe Portable Document Format.
- A web page where customers can add contact information so that they may be notified of significant web site changes.
- Automated Notification System for updated QMLs/QPLs available in Adobe Acrobat format (send e-mail to Ned Raybould at Edward_Raybould@dscc.dla.mil, with your e-mail address, telephone number, name, and list of QPLs and QMLs you wish to be notified of when changes are made).
- **Downloadable Query Tool applications** that provide searching and filtering functionality for QML-38534, QML-38535, and QPL-19500. These are computerized alternatives to the hard copy documents.

Future initiatives for the VQ web pages:

- More QPLs available through the on-line part search engine
- Other features created at a user's request

For further information about the Sourcing and Qualification Unit web pages, contact:

VQWebTeam@dscc.dla.mil

Ned Raybould, 614-692-0582, Edward_Raybould@dscc.dla.mil

Rick Barker, 614-692-0596, Richard_Barker@dscc.dla.mil

SECTION II
Provisions Governing Certification and Qualification

1.0 Certification and Qualification within the U.S.

1.1 The manufacturer shall contact DSCC-VQP by letter and/or e-mail requesting that the facility/line be certified. This letter shall include the location of the facility, specifications involved, listing of products to be qualified, and a proposed date of when the facility/line is anticipated to be ready for an assessment.

1.2 The DSCC-VQP point of contact (POC) will respond by letter and/or e-mail informing the manufacturer of the necessary steps to be followed and of the pre-assessment documents to be submitted. Once the pre-assessment documents have been successfully reviewed, DSCC-VQP will schedule the facility for an initial assessment. Prior to the initial assessment, DSCC-VQP will review the documentation and discuss all concerns with the manufacturer in an effort to resolve all open issues.

1.3 The pre-assessment documentation will consist of the following as a minimum:

- a. Quality manual.
- b. Calibration procedure.
- c. DSCC Form 36 or equivalent (List of equipment used for qualification and quality conformance inspection).
- d. Organizational chart - Top level management down to quality assurance as a minimum.
- e. Self assessment procedure, findings from last audit, and corrective actions (including any facilities used for sub-assemblies).
- f. Copies of actual flowchart(s) and traveler(s) (route sheet).

Additional items may be requested depending on the type of facility, type of qualification, product specification(s) involved, etc.

1.4 The initial assessment will take place as soon as scheduling allows. This type of assessment normally requires two DSCC-VQP auditors and lasts approximately two to four days. During the assessment, the manufacturer shall have the personnel involved in the actual manufacture, assembly, and test operations of the product to be qualified, available, and ready to demonstrate and explain their role in the process.

1.5 Upon completion of the assessment, all discrepancies found will be given to the manufacturer in writing and explained, as necessary, at the final debriefing. The manufacturer will be given some time for completion of corrective actions (normally 30 to 60 days). Upon receipt of corrective actions, they will be reviewed and approved as quickly as possible. Some additional discussion on the proposed corrective actions is normal, but the process is usually completed within two weeks.

1.6 At the time of approval of the manufacturer's corrective actions, DSCC-VQP will issue certification of the manufacturer's facility/line. A certificate will be issued to the manufacturer and will be valid until withdrawn by the qualifying activity. This certification will be reissued following each successful reaudit for as long as the manufacturer remains involved in the QPL Program. This certification may be withdrawn by DSCC-VQP at any time, either for cause or for a manufacturer's voluntary discontinuation in the program.

1.7 The manufacturer shall begin qualification testing at any time within 12 months following certification. To begin this process, the manufacturer completes and submits to DSCC-VQP an Application/Authorization to Test (DSCC Form 19P).

a. The DSCC Form 19P is, for the most part, self explanatory. The manufacturer will complete Section I, submit the form to the Sourcing and Qualifications Unit, Passive Devices Team (DSCC-VQP). Upon receipt of the form, DSCC-VQP will complete Section II and return the signed original with any additional comments to the manufacturer. The manufacturer will be able to start the qualification testing immediately upon submission of the DSCC Form 19P, therefore, eliminating the need to wait for an official response from DSCC-VQP before beginning testing. It should be noted, however, that any testing performed prior to receiving the signed form is done at the manufacturer's risk.

b. One copy of a DSCC Form 19P listing the product(s) to be tested is to be submitted to DSCC-VQP. Both the military part or type number and the manufacturer's part number shall be listed on the form.

c. Normally, a DSCC Form 19P should be submitted approximately one month before test samples will be ready for qualification testing. If any facility or test equipment must be audited for suitability status, then the form is to be submitted as soon as possible to permit DSCC-VQP to schedule the assessment.

d. If testing is to be done at more than one location, either approved company in plant laboratories or approved commercial test laboratories, the applicant must show clearly which tests each test laboratory will perform. Please refer to the VQP POC for procedures and requirements for use of Non-Government Laboratories.

e. If the specification has a family sampling plan, where testing a few types will qualify additional types, the manufacturer shall identify those types to be tested. All types of the family for which qualification is desired shall be listed on the DSCC form 19P.

f. Line item number 3 of DSCC Form 19P is a reminder that all test facilities must have been issued laboratory suitability by DSCC-VQP before being used in qualification testing. Failure to have laboratory suitability prior to testing is a common cause of rejection, or delay in, acceptance of a test report by DSCC-VQP.

g. The DSCC Form 19P must be signed by a company official who has the authority to commit the manufacturer of the product to the conditions stated on the form, in DoD 4120.3M, SD-6, and this document.

1.8 The following general provisions apply to qualification testing or design and construction changes requiring re-testing. Failure to comply with them may result in rejection of the test report.

a. Test samples must have been manufactured at the plant which is listed on the DSCC Form 19P. For design and construction changes, the manufacturer develops the proposed test plan and sample size on DSCC Form 19P.

b. Qualification testing shall not be started prior to submittal of the DSCC Form 19P.

c. All tests must be performed at the laboratories listed for those tests on the DSCC Form 19P, using the flows, travelers, procedures, etc., which were approved during the DSCC audit. If it is necessary to change the laboratory selected for any test, the manufacturer shall inform DSCC prior to testing. DSCC-VQP will then revise or amend the DSCC Form 19P.

d. Samples must be subjected to all tests required by the DSCC authorization in the sequence required by the specification. Test procedures must be in accordance with the applicable specification test paragraph or MIL-STD Test Method, and approved by DSCC-VQP. If there are any questions on a test procedure, please contact DSCC-VQP before performing that test. If there are disqualifying failures or problems, such as samples damaged in handling or improper testing, test equipment failure, marginal failures or unusual failure modes, DSCC-VQP must be notified before testing further.

e. All testing must be performed using test equipment found suitable by DSCC-VQP prior to testing.

1.9 Recording of Data - Test Data Sheets Data should be presented in sufficient detail to substantiate the test procedures used and the results obtained in the testing. Data shall be recorded in nonerasable ink. Failure to submit data in sufficient detail may be cause for rejection of the test report.

- a. Standard DSCC data sheets are available for some specifications and may be used to record qualification test data. All blocks on the top of the data sheets shall be completed on all copies. When standard DSCC data sheets are not utilized, company forms may be used. It is recommended they be reviewed by DSCC-VQP prior to use in qualification testing. The DSCC-VQP review is to assure that the company data sheet will contain all required information, and that the format to be used is understandable so as not to delay the data review.
- b. DATE and TIME each test was started and completed shall be recorded on the data sheet so that the sequence of testing can be established.
- c. All actual environment, mechanical, and electrical test conditions existing at the time of the test shall be recorded by the test equipment operator. It is important that this data be recorded by the operator at the time of the test and not copied from the specification before testing or when the test report is being assembled.
- d. All data in a qualification test report, such as test conditions and test results, must be the actual reading on each item in test. VARIABLES data is required for every measurement taken, where applicable.
- e. Dimensional measurements must include all dimensions on the applicable specification figure having a numerical value with a tolerance (including weight measurements). Dimensions identified as nominal or reference will not be measured. In many drawings, only one value (usually identified as “typical”) is shown for such things as multiple mounting holes, several leads, or several pins. However, all holes, leads, or pins must be measured and their measurements recorded. When a specification does not specify the number of units for dimensional measurement, a random sample shall be selected as follows:

<u>No. of Units in Test Lot</u>	<u>No. of Units to be Measured</u>
1 - 10	All
11 - 110	10
111 - 180	15
181 & Above	20

f. Test data for environmental and mechanical test must include all test conditions. For example, vibration test data must include: vibration amplitude (inches or “g’s”), frequency range, sweep time, duration, and planes of vibration that were tested, as well as, any electrical values applied and recorded during test. Results of electrical testing before and after vibration should be recorded. For tests involving time as a test condition (e.g., thermal shock test), the data should show the clock time that the test started and ended, and the clock time and temperature for each step of each cycle. This data can be recorded on an operating log sheet and is acceptable as test conditions data in a test report.

g. For electrical tests, the data must include all applicable test conditions, i. e., voltage, current, frequency, etc., and the specified test characteristic. If the characteristic value is calculated, the data must include all readings, the characteristics measured, the formulas used for calculation, a sample calculation, and the calculated values. For example, when voltage and current readings are taken for wattage calculation, the values of the voltage and current measured must be recorded on the data sheets along with the calculated wattage. A copy of any chart, table, or nomograph used instead of calculations must be included with the data.

h. Corrections on data sheets will be made by “lining out” the incorrect entries with a single line (maintaining legibility of original data) and inserting the correct entry immediately adjacent to the “lined out” entry. The operator making the change shall initial by the “lined out” entry. Erasures, mark are not permitted on any test data sheets, whatsoever.

NOTE: Qualification testing at all laboratories may be subject to monitoring by a Government Quality Assurance Representative (QAR). The QAR may select the tests they wish to witness in addition to those specified by DSCC-VQP, however if the QAR cannot make the agreed upon schedule, testing should not be delayed. The company must schedule those test at a time agreeable to the QAR. The Government QAR’s signature verifies the test report, but it does not constitute government approval of the test report (paragraph 306 of SD-6).

1.10 Upon completion of qualification testing a test report shall be prepared and submitted to VQP for review and approval. The details and format of the report are as follows:

a. The test laboratory will prepare a separate test report for each test report number assigned by DSCC-VQP on the DSCC Form 19P. The test laboratory will then submit to DSCC one original test report. If more than one test laboratory performs tests, the manufacturer will combine the data from each laboratory into one report. Page 3 of the DSCC Form 36F should show all tests in order of the specification test table. The laboratory performing the test can be shown in the remarks column. A separate page 4 of the DSCC Form 36F should be used for each laboratory.

b. All reports will be properly collated and bound, and pages numbered. The test report will consist of the following items:

(1) A completed DSCC Form 36F. Do not omit any of the required information. Page 4 of DSCC Form 36F should list only the equipment used for this qualification test. DSCC Form 36 is not an acceptable substitute for this page. The date of calibration listed on this page should be the last date of calibration prior to this test.

(2) A certification of materials, if required by the specification or requested by DSCC.

(3) Design and construction information, if required by the specification or requested by DSCC.

(4) Photographs, when required by the specification or requested by DSCC.

(5) Data sheets in the same order as the listing in the qualification test table(s) of the applicable specification.

(6) Other data or information (e.g., VSWR charts, X-rays, formulae, moisture resistance charts, etc.,) if required by the specification or requested by DSCC.

c. One copy of the test report should be identified on the front cover as the DSCC-VQP original test data copy. This copy differs from the other copies as follows:

(1) The DSCC-VQP original data copy contains the original sheets in addition to the typed and recopied sheets.

(2) The VQP original test data copy also contains:

(a) Original moisture charts. If the cold subcycle (e.g., step 7a of Method 106, MIL-STD-202) is performed in a different chamber, this will be so stated on the chart. The chart will also include the following information:

1. Test laboratory name and location.
2. Date the chart was recorded.
3. Military designation of the product(s) under test.
4. Test report number: (If several tests are performed simultaneously, all test report numbers will be included).

(b) Image reproductions of the moisture resistance charts will be accepted by DSCC-VQP if it is impractical to submit the original charts. (For example, tests may be performed for several reports simultaneously and it would be impossible to submit the original charts with each test report.) The reproduction will be of the same scale as the original charts. (When the laboratory uses this option, the reason will be stated in the remarks section of the DSCC Form 36F and the reproduced charts annotated to show the report number under which original charts were submitted.)

(c) A photograph or other depiction of the shock wave when required by the DSCC Form 19P.

1. The axes of the illustration are to be properly labeled showing the unit of measure and scale.
2. The print should be fastened to a page containing the following information:
 - A. Name and address of the laboratory conducting the shock test.
 - B. Date of the test.
 - C. Test report number.
 - D. Identification of the test sample, type, number, etc.
 - E. Overlays and computations which demonstrates compliance.

(d) Other photos, diagrams, etc., required by the applicable specification or required by DSCC-VQP.

d. When qualification testing is initiated and then discontinued for any reason, DSCC-VQP is to be notified within 10 working days. If testing is not resumed, a test report covering all testing performed prior to discontinuance must be submitted. If a report covering product failure is submitted and the manufacturer wants to retest, he must submit a new DSCC Form 19P and the proposed corrective action. DSCC-VQP will evaluate the proposed corrective action, and if acceptable, will issue new authorization and test report numbers.

e. All Qualification and Retention testing data and samples shall be retained by the manufacturer for a minimum of 5 years, or unless otherwise specified by the Qualifying Activity.

2.0 Certification and Qualification in a Country Outside the U.S.

2.1 In countries outside the U.S. in which there is no International Standardization Agreement (ISA), the provisions are the same as in Section 1 above with the following exceptions:

a. The manufacturer requesting certification is responsible for reimbursing DSCC for all expenses associated with the assessment(s) necessary to receive and retain certification. These costs will be actual expenses based on the Federal Joint Travel Regulation. The manufacturer must agree to pay these costs before the assessment can take place. Failure to reach such an agreement will be cause for exclusion from participation in the qualification program.

b. The length of time required to schedule and complete the assessment(s) will be somewhat longer due to the time required for DSCC auditors to request and obtain proper clearances to visit and work in another country. This paperwork takes approximately 90-120 days to complete.

All other provisions are the same as for certification/qualification within the U.S. All letters, forms, paperwork, correspondence, etc., will take place directly between the manufacturer and the VQP point of contact.

2.2 In countries outside the U.S. in which there is an ISA, the provisions stated in this section shall apply. Currently, the countries that have an ISA are: Canada, Australia, Ireland, Israel and all NATO countries. Countries involved in ISAs may be added or deleted over time so it is important to discuss this issue with the appropriate VQP point of contact.

- a. The manufacturer requesting certification is responsible for reimbursing DSCC for all expenses associated with the assessment(s) necessary to receive and retain certification. These costs will be actual expenses based on the Federal Joint Travel Regulation. The manufacturer must agree to pay these costs before the assessment can take place. Failure to reach such an agreement will be cause for exclusion from participation in the qualification program.
- b. For each of the countries for which an ISA is in place, DSCC-VQ has established a Memorandum of Understanding (MOU) which details the working relationship between the government organizations in each country, and explains the role of each. The exact details vary for each MOU so it is important to discuss this issue with the VQP point of contact prior to beginning the certification/qualification process. In general, the process is as described in paragraph b. below.
- c. Under the ISAs, the government of the foreign country has agreed to participate in the certification/qualification process. Their role will vary, but will usually be very similar to that of DSCC-VQ. Initially, VQP will conduct the audits, process the forms, and evaluate the test reports. As the working relationship between the two government organizations becomes better established, the foreign government takes a larger role while VQP's role diminishes until, eventually, VQP will only monitor the process to assure consistency of application between U.S. and foreign manufacturers. VQP will do all initial audits and periodic follow-up audits as needed, but not all audits will be conducted by VQP personnel. Those that are, however, are done at the manufacturer's expense as detailed in 2.1 above.

3.0 QPL Listing Once a manufacturer has successfully completed qualification testing, the products will be listed on the appropriate QPL. This listing will remain in effect for as long as the product continues to demonstrate compliance with the specification requirements. Compliance includes: successful demonstration of the product's ability to meet the latest specification performance requirements, successful completion of revalidations, proper submittal of all required documentation, continued effectiveness of the quality system, etc. In the event that compliance cannot be effectively demonstrated, the manufacturer will be suspended from shipping QPL product until the non-compliance is corrected. The listing may be discontinued (removed from the QPL) if the manufacturer fails to meet the provisions for qualification listed in DoD 4120.3-M, or if the product fails to meet the performance requirements of the specification.

Products can only be produced in the qualified plant or facility using the approved procedures, equipment, flowcharts, etc. Any changes to the plant location and approved procedures, equipment, flowcharts constitutes a major change which requires immediate notification of the qualifying activity and some type of requalification depending on the extent of the move and/or program change.

Any product processed with deviations to MIL-STD-790, or any applicable specification and/or standard, shall not be marked, advertised, or claimed as compliant product in any manner.

In order to provide QPL product the manufacturer shall be on the QPL before the date specified for award on the contract.

3.1 Revalidation of QPL Listing The manufacturer will be required to demonstrate that his system continues to meet the requirements of MIL-STD 790 and the product specification on a periodic basis. This may include a site visit and retesting of product. This normally will occur at a two year interval, but the qualifying activity may increase or decrease this cycle as needed.

3.2 Testing Laboratories All testing performed for qualification, requalification, or product evaluation purposes must be performed using the DSCC approved procedures that conform fully to the applicable specification test paragraph and/or MIL-STD-test method. Only a laboratory with a DSCC suitability may be used. This laboratory may be part of the manufacturer's facility or a commercial test laboratory. A list of commercial laboratories is maintained by the qualifying activity and available upon request or see our web site (reference page 2) for the available link. Other laboratories can be added to the list by request.

3.3 Subcontractors The use of subcontractors is permitted, but all subcontractors must be approved and controlled as part of the applicable manufacturer's quality system. All subcontractors operations must be documented (flow chart, traveler, etc.), certified and approved by the qualifying activity prior to their use. Depending on the nature of the product and the type of activity performed by the subcontractors, all or parts of MIL-STD-790 and the product specification may be applicable to the subcontractor, including (re) validations. Manufacturers using subcontractors are responsible for the operations performed by the subcontractor, as well as for the compliance of the end product. Approval for the use of subcontractors may be withdrawn by the qualifying activity for cause.

3.4 Change Control An effective change control program shall be developed and implemented to assure compliance with the specified requirements. The change control program shall assure as a minimum the following:

- a. The form, fit, and function of the product is not altered from the originally qualified product.
- b. That the qualifying activity (DSCC-VQ) is properly notified of any changes as specified in the applicable specification and standards. Requalification plans shall be determined by the qualifying activity.
- c. That the latest specification and standards are fully implemented by the required implementation date.

4.0 Distributors The use of distributors is authorized for manufacturers validated to MIL-STD-790. There are three categories of distributors. The identification of category, authorized functions to perform, and responsibility for conformance relies on the manufacture. However, in all cases the qualifying activity reserves the right to perform a validation.

4.1 Category A This category is authorized to store, pack, handle and distribute qualified products.

4.2 Category B This category includes category A responsibilities and is authorized to perform additional operations, test, and inspections. Special markings shall be added in addition to the manufacturer's marking.

4.3 Category C This category includes category B responsibilities and is authorized to perform assembly operations. Category C distributors shall include the QPL system elements of MIL-STD-790 (see Section III of this booklet).

SECTION III

QPL Program Elements

This section will describe the 17 elements detailed in MIL-STD-790 (some of which have been slightly paraphrased for clarity) and explain what is necessary for compliance. Examples are training, traceability, self-audit, calibration, etc. This section has a short introduction to explain the elements required for qualification and subsequent listing on the applicable QPL. Each manufacturer is required to demonstrate, in their own way, how the elements will be met.

Program Plan The manufacturer shall document a product assurance plan in a manner adequate to demonstrate compliance with section 5 of MIL-STD-790. One program plan shall be required by a single manufacturing facility. The program plan shall include the manufacturer's interpretation of how each requirement of section 5 of MIL-STD-790 will be implemented. Where distributors are authorized by the manufacturer, a supplemental plan shall be prepared which describes the function performed by the distributor and how the distributor's compliance is assured.

The following is a typical list of items that would be verified during the normal course of an assessment of the manufacturer's facility. This list will verify the compliance of the manufacturer's program plan in accordance with section 5 of MIL-STD-790.

1. Training

- a. Training program is documented and covers all areas of section 5 of MIL-STD-790.
- b. All personnel involved in the design, production, and testing of military qualified products are properly trained.
- c. Training records are established and maintained and include types of training, dates of training, test results, and certifications issued.
- d. Training program should include re-evaluation periods for all personnel requiring training and corrective action taken when personnel are found to be less than adequate in performing their current duties.
- e. Training shall address how personnel are retrained for amendments/revisions of applicable specifications and/or MIL-STD test methods.

2. Calibration

- a. Maintain a calibration system in accordance with ANSI/NCSL Z540-1, ISO 10012-1, or equivalent (e.g., latest revision of MIL-STD-45662).

- b. Calibration record should include description of item, calibration interval, accuracy, date of calibration, due date for next calibration, calibration status, calibration procedure (in-house), certification number (outside calibration lab), calibration in-house or outside calibration lab.
- c. Calibration label is consistent with calibration record.
- d. All equipment used for acceptance testing is calibrated.
- e. Calibration label on equipment is complete.
- f. All calibration records are traceable to NIST standards or known physical constants.
- g. Records indicate equipment is consistently calibrated within due dates.
- h. If calibrated interval is extended, data is available to support this action.
- i. Calibration system includes procedures for corrective actions for equipment that exceeds due date or is out of calibration.
- j. Equipment not requiring calibration should be labeled as such.
- k. Measurement standards are stored properly when not in use.

3. Proprietary Processes and Procedures

No additional information needed (see 5.2.3 of MIL-STD-790).

4. Failure and Defect Analysis System and Corrective Action

- a. Verify that the manufacturer documents all customer returns.
- b. All returned material should have adequate information outlining reason for return.
- c. Manufacturer has a documented procedure for failure analysis.
- d. Personnel are experienced in performing the required analysis.
- e. Manufacturer documents all QPL field failures and notifies the qualifying activity immediately of such failures.

f. Manufacturer documents all QPL testing failures which exceed the allowable acceptance number (C number) and notifies the qualifying activity immediately of such failures.

g. Corrective actions are verified for effectiveness.

5. Clean Rooms

a. Map of clean room identifying locations where particle counts are taken.

b. Frequency of particle count measurements.

c. Number of readings per location.

d. Actions to be taken if particle counts are outside of control/absolute limits.

e. General clean room procedures are followed by all personnel entering the clean room.

6. Description of Production Processes and Controls

a. Operators follow operations listed on the travelers in the order shown and sign-off after each operation is completed.

b. Operators follow written production and test procedures.

c. Operators are trained and working to the most current written production and test procedures.

d. Travelers list all operations to be performed.

e. Any test equipment used for acceptance testing is calibrated.

f. Travelers indicate production lot codes and quantities.

g. QCI tests are performed in accordance with the most recent revision of the applicable specification.

h. All adhesives, chemicals, gases, etc., used in production and testing are handled properly.

i. Operators follow clean room and ESD control procedures.

7. Acquisition and Production Control System

Verify that manufacturer understands what is needed and effectively communicates that need to supplier.

8. Statistical Process Control (SPC)

- a. All critical operations are identified.
- b. Operators involved in the SPC program are properly trained.
- c. Appropriate charts are utilized.
- d. Data is recorded properly.
- e. Capability studies have been performed.
- f. Appropriate personnel are evaluating recorded data.
- g. SPC program is documented and includes periodic reviews with all appropriate personnel.
- h. Verify procedures for traceability, recovery and disposition of products manufactured since last successful test.

9. Acceptance Criteria for Incoming Materials and Work in-Process

Verify manufacturers ability to verify that correct material/product is received from supplier.

10. Handling and Packaging Procedures

- a. Material awaiting incoming inspection is stored in a controlled area.
- b. All ESD procedures are followed when applicable.
- c. Partially assembled parts are protected during in-process inspection.
- d. Operators/inspectors are exercising care during quality assurance inspections.
- e. Parts are protected from damage in storage areas.
- f. Parts are properly packed for shipping to customers.

11. Materials

No additional information needed (see 5.2.12 of MIL-STD-790).

12. Product Traceability

No additional information needed (see 5.2.13 of MIL-STD-790).

13. Controlled Storage Area

No additional information needed (see 5.2.14 of MIL-STD-790).

14. Quality Assurance Operations

- a. Verify all quality assurance operations are documented (e.g., quality manual).
- b. Verify quality assurance personnel inspect all quality assurance operations as determined by the manufacturer's documentation and the applicable military specifications and standards and proper records are kept for these inspections.

15. Manufacturer's Self Assessment System

- a. Self assessment program is documented.
- b. Self assessment reports are reviewed to ensure all areas called out by MIL-STD-790 are included in the assessment.
- c. All self assessments are conducted in accordance with the manufacturer's written procedures and all applicable military specifications.
- d. All applicable areas are assessed annually as a minimum.
- e. All assessors are trained.
- f. Self assessment reports should include date of assessment, area assessed, deficiencies found, due date for corrective actions, responsibility for deficiency, corrective action response, and verification of corrective action.
- g. Corrective actions are reviewed to ensure they correct all deficiencies found during the assessment.
- h. Records of self assessments and the associated corrective actions shall be retained by the manufacturer for a minimum of 5 years.

SECTION IV
Retention of Qualification

1. Retention of Qualification summary reports shall state, as a minimum, the number of lots which have passed and the number of failures that have occurred. Lots which have failed shall be identified and reasons given for these failures. Disposition of these lots shall be addressed in the summary report.
2. Retention of Qualification periodic test reports shall comply with the requirements of the qualification report except:
 - a. DSCC Form 19P is not required.
 - b. DSCC Form 36F is not required.
 - c. DD Form 1718 is required.

In general, all test reports shall meet the same conditions in Section II of this document, unless otherwise specified by the qualifying activity. This may include submitting original humidity charts (or equivalent), shock photographs, recording of data, etc.

3. Retention of Qualification reports are to be received by this center no later than 30 days from the end of the reporting period, unless otherwise specified by the military specification or as specified by the qualifying activity.

SECTION V

Technical Review Board (TRB)

1. Overview A TRB is a structured body organization that has responsibility for implementation and maintenance of the QA system. This includes maintenance of all certified processes/products, process change control, reliability data analysis, failure analysis, corrective actions, and product recall procedures. The degree of authority of the TRB in these matters will be phased in as the TRB demonstrates its capability in each area.

2. TRB Duties The TRB will keep the qualifying activity informed of the status of the certified processes and products. The TRB will maintain records that are available for qualifying activity review. These records shall address all activities of the TRB with respect to the qualified military process/product.

3. Establishment of TRB The establishment and use of a TRB is not mandatory. If the manufacturer chooses to use the TRB option, the provisions of Appendix B of MIL-STD-790 apply.

a. The manufacturer must request approval of the qualifying activity prior to instituting a TRB. The request shall state the degree of oversight that the TRB is to have, and the program elements over which the TRB will exercise control.

b. There is no format for the structure of a TRB. However, care must be taken to assure that all necessary organizations within the manufacturers system are represented or aware of TRB responsibility and decisions.

c. The manufacturer shall demonstrate how the TRB functions and ensure the qualifying activity that the TRB system will function as proposed. Initially, the qualifying activity may choose to limit the scope of authority of the TRB until satisfied that the TRB operates as planned. Approval of the TRB may be withdrawn by the qualifying activity at any time.

SECTION VI
List of Acronyms

DoD - Department of Defense

DSCC - Defense Supply Center, Columbus

DSCC-VQP - Passive Devices Team

* DD Form 1718 - Certification of Qualified Products

* DSCC Form 19P - Application/Authorization to Conduct Qualification Test

* DSCC Form 36 - List of Qualification Test Facilities or List of Quality Conformance Test Facilities

* DSCC Form 36F - Qualification Test Report at a Non-Government Test Laboratory

HTML - Hypertext Mark-up Language

ISA - International Standardization Agreement

MOU - Memorandum of Understanding

NATO - North Atlantic Treaty Organization

POC - Point of Contact

QA - Quality Assurance

QPL - Qualified Products List

SPC - Statistical Process Control

TRB - Technical Review Board

* These forms can be obtained from a separate booklet, or by visiting the VQ web site (see Section I, page 2)