



DEFENSE LOGISTICS AGENCY

DLA Land and Maritime
POST OFFICE BOX 3990
COLUMBUS, OH 43218-3990

27 February 2024

MEMORANDUM FOR MILITARY/INDUSTRY DISTRIBUTION

SUBJECT: Engineering Practice Study Concerning; Defining Requirements of Qualification and Maintenance by Similarity with product mapping.
Project number: 5945-2024-030.

Objective

This engineering practice study is being conducted to determine the feasibility of defining the requirements of qualification and maintenance by similarity, along with identifying product mapping. Currently, the specification does not provide parameters on qualification and maintenance by similarity to include reduction or elimination of inspection requirements. In addition, there is no similarity mapping which is critical to pre-identify which products are considered comparable and more complex. Since QPLs omit identification on if a product is listed by standard qualification and/or maintenance versus product listed by similarity qualification and/or maintenance, it is imperative for the document to state similarity guidelines and product complexity mapping to ensure a standard practice is upheld.

Background

Initially, the document did not support a similarity allowance. Then in 1967, the document was updated to support a liked grouping for the purposes of Group C Inspection reduction, specifically stating the vibration inspection must be conducted. Ultimately, the reduction led to the complete elimination of qualification and maintenance inspection data under product similarity. Then, the document was reinstated to include a Qualification and Maintenance by similarity. In 1975, the requirements were strengthened to provide a summary chart coupling relays eligible for supersession. Two years later in 1977, the document was updated to increase the similarity grouping to cover inspection of Qualification. Four years later in 1981, the document removed the Qualification by similarity allowance and re-instituted the similarity by reduction of Group C inspection. Nineteen years later in 2000, the document requirements provided authorization for similarity to apply to qualification and maintenance without guidance on reduction and/or elimination of inspections, and a high-level summary (paragraph 3.2.1) to define relays which can be grouped as similar.

MIL-R-6106F, dated 25 August 1967 paragraph 4.5.3.1 allowed for a grouping of similar families to allow a reduction of Group C inspection, except for vibration.

MIL-R-6106G, dated 17 October 1975 paragraph 4.6.3.2.1 allowed for a grouping of similar families to allow a reduction of Group C inspection, except for vibration. Table XXVIII. Compatible couples. Which identified compatible groupings.

MIL-R-6106H dated 15 December 1977 and MIL-R-6106J, dated 02 November 1981, paragraph 3.2.2 included a description of "Qualification by similarity." allowing relays to be grouped into a generic family allowing all relays within the generic family to be classified as one part number for the entire family.

MIL-PRF-6106J, dated 1981 provided similarity guidance to reduce Group C inspection with exception to Vibration.

MIL-PRF-6106K, dated 01 December 1997 eliminated the ability to qualify by similarity.

MIL-PRF-6106L, dated 10 November 2000 - MIL-PRF-6106R, dated 05 May 2023, paragraph 3.2.1 reinstated "Qualification and maintenance by similarity" which provided general guidelines for product groupings to include the following categories: Contact Assembly, Coil Assembly, External Material.

While there is a need to present QPL 6106 as a viable product offering for manufacturers to seek and maintain qualification, the current wording does not provide product mapping or guidelines to ensure all manufacturers are fulfilling the same requirements. Moreover, the current wording does not offer stakeholders visibility of the approved allowances.

Suggested Product Mapping:

(most complex – least complex)

MIL-PRF-6106/39 – MIL-PRF-6106/38

MS24178 – MS24166

MS24183 – MS24182

MS24193 – MS24192

MS25032 – MS25031

MS25271 – MS25267

MS25272 – MS25268

MS25327 – MS25325

MS25457 – MS25455

MS25468 – MS25467

MS27715 – MS27714

Current Wording:

Qualification and maintenance by similarity. Relays furnished under this specification may be qualified and maintained by similarity with other relays in the generic family. Manufacturer's which desire to qualify and maintain products in this same manner shall request this method from the qualifying activity. The manufacturer shall submit their test plans for the qualifying activity to evaluate. The following are example of items to be included in the request, but are not inclusive.

- a. Difference between relays.
- b. Tests for each relay.
- c. Characteristics of each relay such as:

Contact assembly

Contact material

Contact size

Contact configuration

Coil assembly

Coil wire size

Coil bobbin

Ampere turns

External material

Case material

Plating

Welding process

- d. Any other items that may be affected by the differences in design.

Modified Wording:

Qualification by similarity. The guide shown illustrates the relative complexity of individual specification sheets for use in determining qualification inspection for reduced testing. Both products shall be manufactured using the same assembly line. Arrow direction indicates flow towards less complex designs. Asterisk indicates most complex design. 1/

Maintenance by similarity. Relays furnished under this specification may be maintained by similarity with other specification sheets. Both products shall be manufactured using the same assembly line. Arrow direction indicates flow towards less complex designs. The data accumulated for the grouping shall be combined for group B and group C inspections, except for Group C vibration. Testing samples must be representative of the entire production to identify both product offerings. 1/

1/ Change of the design, material, construction, or processing or quality problems or failures, or at their discretion the qualifying activity may require resumption of the original testing requirement the qualifying activity may require resumption of the original testing requirement. Regardless of reduction of tests, the manufacturer shall supply product capable of passing the prescribed tests.

Product Mapping:

As listed Above.

Questions needing answers are:

1. Does product mapping ensure all listed QPL manufacturers are using the same parameters to qualify product by similarity?
2. Would providing guidelines for test reduction allow not only manufacturers, but all stakeholders, awareness of what test may be omitted should a qualification or maintenance by similarity path be approved?
3. Would identifying the similarity parameters allow other manufacturers to identify the opportunity to submit request to qualify?
4. What is the likelihood defining requirements would lead to a manufacturer requesting to be removed from QPL6106?

Request for Comments

Please comment on the above questions.

Concurrence or comments are required at the Center no later than March 27, 2024. Comments from military department must be identified as either "Essential" or "Suggested." Essential comments must be justified with supporting data. Military review activities should forward comments to their custodians or this office, as applicable, in sufficient time to allow for considering the department replay.

Please forward your comments or concurrence electronically to the project engineer listed below. This can be done in the form of a return e-mail, with or without an attached text file. If an electronic response is not possible, we will accept comments via letter, facsimile, or phone call but only after you have contacted the project officer. Any further coordination concerning these documents will be circulated only to firms and organizations that furnish comments or reply that they have an interest.

The point of contact for this document is Ms. Erika Baker, DSCC, VAT. The preferred method of contact is e-mail: erika.baker@dla.mil. Ms. Baker can also be reached by phone at 614-692-4481/DSN 692-4481, or by facsimile 614-693-1644.

MICHAEL A. RADECKI
Chief
Electronic Components Branch