

**BOEING - ST. LOUIS REQUIREMENTS FOR
SUPPLIER MATERIAL REVIEW AUTHORITY (MRA)**

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**BOEING-ST. LOUIS SUPPLIER REQUIREMENTS
FOR
MATERIAL REVIEW AUTHORITY (MRA)**

1.0 INTRODUCTION

1.1 SCOPE

This Boeing - St. Louis report specifies supplier Material Review Authority (MRA) system requirements for the control and disposition of Nonconforming Material at supplier facilities. The requirements specified herein are the minimum requirements in order to be approved for supplier MRA for Boeing - St. Louis programs. The applicable Boeing purchase contract may include program requirements that may modify or add to the requirements included herein. This report applies only to purchase contracts issued by Boeing - St. Louis. When the term "Boeing" is used in this report, it refers to Boeing - St. Louis.

1.2 APPLICABILITY

This Boeing Report is applicable in situations when:

- a) the supplier's management with executive responsibility has defined, documented, and approved its procedures and processes for the control and disposition of Nonconforming Material (which meet the requirements of the supplier and this report), and
- b) the Boeing supplier has an MRA system which has been approved by Boeing by means of a letter from a member of the Boeing Supplier Quality Management (SQM) team or their designee (MRA coordinator or cognizant SQM Representative), and
- c) Special Purchase Order Condition (SPOC) 2021 is called out on the applicable Boeing purchase contract. The supplier may verify the latest revision of this report by contacting the SQM representative that services their facility.

2.0 DEFINITIONS

The following definitions apply to this report and take precedence in case of inconsistencies with referenced or other industry/supplier standards.

- 2.1 Material Review – In a broad sense, a function for the identification, segregation, and disposition of nonconforming items. In a narrow sense, (and for the purposes of this document), actions taken by the supplier's Material Review Board (with Boeing Material Review Authority) following Preliminary Review.
- 2.2 Material Review Authority - Permission granted by Boeing to process nonconforming conditions in accordance with the requirements of this report.
- 2.3 Material Review Board (MRB) – A board consisting of technically qualified and authorized representatives of a Boeing supplier who determine the proper disposition of Nonconforming Material referred to them.
- 2.4 Nonconformance – A departure from the requirements specified in the contract, specification, build-to media, or other approved product description.

- 2.5 Nonconformance, Critical – A Nonconformance that adversely affects safety.
- 2.6 Nonconformance, Major – A Nonconformance which adversely affects any of the following as determined by the Supplier, Boeing SQM, or Boeing Engineering personnel:
- a) health;
 - b) performance (affecting contract line item or spare requirements);
 - c) contract specified system requirements affecting interchangeability, reliability, or maintainability;
 - d) effective use or operation;
 - e) weight, or appearance (when a factor);
 - f) Nonconformances pertinent to parts/assemblies classified as safety of flight, critical, fracture and/or maintenance critical, fracture critical traceable, durability critical parts or assemblies.
- 2.7 Nonconformance, Minor – A Nonconformance that does not adversely affect any of those factors listed for a Critical or Major Nonconformance (may exist after an approved Repair is effected which has reduced a Major Nonconformance to a Minor Nonconformance).
- 2.8 Nonconforming Material – Any item, part, or product with one or more characteristics that depart from the requirements in the contract, specification, build-to media, or other approved product description.
- 2.9 Post-Review of MRB Actions - A process whereby the supplier is authorized by the Government to proceed unilaterally with the disposition and Repair associated with a Nonconformance documented on the supplier's Material Review Document (MRD).
- 2.10 Preliminary Review (PR) – The action taken by supplier appointed personnel when Nonconforming Material is initially discovered, and prior to referral to the supplier's Boeing approved MRB.
- 2.11 Regrade - A disposition of a Nonconformity that determines that the product is not acceptable for its intended design and directs the product to be redesignated or modified for an alternate use.
- 2.12 Repair – The subjection of Nonconforming Material to an approved procedure designed to reduce but not completely eliminate the Nonconformance. The purpose of Repair is to bring Nonconforming Material into an acceptable condition. Repair is distinguished from Rework in that the item after Repair still does not completely conform to the applicable build-to media, specifications, or contract requirements.
- 2.13 Rework – The reprocessing of Nonconforming Material to make it conform completely to the build-to media, specifications, and contract requirements.
- 2.14 Scrap – Nonconforming Material that is not useable for its intended purpose or cannot be economically Reworked or Repaired.
- 2.15 Standard Repair Procedure (SRP) – A documented technique, for Repair of a specific type of Nonconformance, which has been developed for specific applications, and is approved by the supplier's Boeing approved Material Review Board. Unless otherwise specified by the Boeing contract, the supplier shall be solely responsible for the final approval of the technical content and appropriateness of the SRP. See Appendix A for specific requirements applicable to Boeing Designed Build to Print Items and SRPs.

- 2.16 Use-As-Is Dispositions – A disposition of material with Minor Nonconformances when the material is determined to be satisfactory for its intended purpose in its present state without further processing.

3.0 General Information

- 3.1 Applicability of this Report – Material Review Authority is intended for Boeing supplier contracts wherein the products being procured are supplier designed and not off-the-shelf (i.e., non-catalogued items).
- 3.2 Build-to-Print Considerations – Notwithstanding Paragraph 3.1 above, Boeing programs or Boeing components (i.e. the design authority under a build-to-print effort) may elect to authorize Material Review for certain suppliers with Boeing designed, Build-To-Print contracts. The supplier may request to be considered for Boeing Material Review Authority on build-to-print items by submitting a request to the manager of Boeing SQM, the cognizant Boeing Supplier Manager/Procurement Agent, or the cognizant Boeing Program Quality Manager. **See Appendix A for requirements that apply to suppliers with Material Review Authority on Boeing Designed Build to Print items. Where there is a conflict between the text of this report and Appendix A, Appendix A shall take precedence with regard to Build-To-Print efforts.**
- 3.3 Boeing SQM Reviews – After the initial review/approval, the supplier will allow its Material Review system to be reviewed by Boeing at least once per year (see Para. 4.1.2 for requirements).
- 3.3.1 Updating Approvals – The Boeing SQM Representative will issue a letter to the supplier recognizing the continuing approval of the Supplier’s MRA, if review indicates an acceptable supplier Material Review system.
- 3.3.2 Disapproval of Supplier’s Boeing Material Review Authority – The Boeing SQM Representative may disapprove, in writing to the supplier’s management, the supplier’s Material Review Authority. The Boeing SQM letter disapproving the Boeing approved Material Review Authority will include the scope of the disapproval and provide reasons for disapproval. The supplier should coordinate with the SQM Representative to correct deficiencies.
- 3.3.3 Challenging Disapproval – The supplier may elect to challenge such disapprovals by contacting the manager of Boeing SQM, the cognizant Boeing Supplier Manager/Procurement Agent, or the cognizant Boeing Program Quality Manager. The supplier may also use the process identified in the disputes clauses contained in the contract.

4.0 REQUIREMENTS, PRELIMINARY/MATERIAL REVIEW

4.1 Procedures - General

- 4.1.1 Control of Nonconforming Material – The supplier’s management shall establish and maintain a documented system for identifying, segregating (or controlling if segregation is not practical) and properly dispositioning of Nonconforming Material, including disposal of Scrap.
- 4.1.2 Boeing Review of MRB Procedures – As part of the initial and subsequent reviews, the supplier shall make its MRB procedures, records, and process available upon request by a representative of Boeing SQM. If the supplier is not serviced by a Boeing SQM Representative, the supplier should contact the cognizant Boeing procurement agent for direction. The supplier will need to provide sufficient support to the Boeing SQM Representative to allow an effective and efficient review of the supplier’s MRB process (this requirement also applies to MRB delegations with the supplier’s sub-tiers as described in Paragraph 4.6.2). Boeing’s SQM representative may review the

procedures on-site or forward them to Boeing in order to determine if the supplier's Material Review system is acceptable.

- 4.1.2.1 Submittal of Changes to MRB Procedures – If any changes are made to the supplier's MRB procedures, which are applicable to the Boeing contract, the supplier shall notify the Boeing SQM Representative of the change, and make the procedures available upon request. The Boeing SQM Representative will review the change and notify the supplier of any issues that adversely affect the previously granted Boeing Material Review Authority.
- 4.1.3 Deviations – proposed changes to contract requirements and configuration change proposals cannot be processed under this document.
- 4.1.4 Critical/Major Nonconformance-Critical/Safety of Flight Hardware – The supplier's procedures shall ensure that Nonconformances pertinent to the following are documented on a Nonconformance Document and submitted to the Boeing MRB in accordance with contract requirements:
- a.) Supplier Nonconformances that affect the interface (e.g. mating surfaces, attach points, adjacent structure, etc.) between the supplier's part/assembly and the Boeing part/assembly.
 - b.) Supplier Nonconformances that affect Safety, Health, Performance, Contract specified requirements affecting interchangeability, reliability, or maintainability, effective use or operation, weight, or appearance (when a factor). See Paragraphs 2.5 and 2.6 a) through e).
 - c.) Supplier Nonconformances that affect parts/assemblies that are classified as Safety of Flight, Critical, Fracture Critical Traceable, Fracture Critical, Maintenance Critical, or Durability Critical. See Paragraph 2.6 f).
- 4.1.5 Identification and Segregation of Nonconforming Material – The supplier's procedures shall ensure that:
- a.) Nonconforming Material shall be conspicuously marked or tagged or otherwise controlled to preclude its unauthorized use in production or shipment;
 - b.) If it is necessary to continue to work on Nonconforming Material, this work shall not alter the status of the reported Nonconformance until Preliminary Review or Material Review personnel have dispositioned the Nonconformance;
 - c.) Nonconforming Material to be submitted to the MRB should be moved to a controlled area designated for storage of Nonconforming Material unless procedures allow material to be processed as noted in 4.1.5 b) above and/or it is not practical to do so for reasons of size, configuration, or environmental requirements;
 - d.) Designated areas are sufficiently protected to preclude unauthorized removal of the Nonconforming Material.
- 4.2 Preliminary Review (PR) Process**
- 4.2.1 Preliminary Review – When material is found to be nonconforming, the supplier's MRB procedures may have provisions for the material to be documented and examined by supplier appointed "Preliminary Review" personnel who may be separate from MRB personnel to determine if the nonconformances:

- a.) can be eliminated by Rework;
- b.) require Scrapping of the material because it is obviously unfit for use and cannot be economically Reworked or Repaired;
- c.) can be Repaired by approved Standard Repair Procedure(s);

NOTE: When required by Boeing and/or by the Government, SRPs shall be submitted for review and approval prior to use.

- d.) requires return of the material to a supplier;
- e.) meets none of the above criteria and must be referred to the supplier's MRB.

4.3 Material Review Process

4.3.1 Supplier's MRB Procedures – The supplier shall establish and maintain procedures with respect to MRB, which are appropriate for the systems or products being procured by Boeing. The supplier's procedures shall ensure that the MRB:

- a) determines the proper or recommended disposition of Nonconforming Material referred to the MRB;
- b) approves all Standard Repair Procedures and establishes thresholds for re-evaluation by the MRB;
- c) investigates in a timely manner (e.g., failure and/or engineering analysis), all Nonconforming Material (except material previously dispositioned in the Preliminary Review) in sufficient depth to determine proper disposition and extent to which other products are affected;
- d) dispositions Nonconforming Material using those dispositions allowed by the supplier's procedures.

4.3.2 Procedures Addressing Disposition of Nonconforming Material – The supplier's MRB procedures shall include disposition categories (e.g., Scrap, Rework, Repair, Repair via SRP, Use-As-Is, Regrade, contract waiver from the cognizant Boeing program) as appropriate. For Use-As-Is and Regrade dispositions, the supplier must be able to demonstrate Rationale for accepting the nonconformance or Regrading the part/assembly.

The supplier's MRB procedures shall ensure that Repair, Use-As-Is, and Regrade dispositions are performed only by those who meet the Engineering MRB personnel qualifications (see Paragraph 4.4.2 and Build-to-Print exception).

4.3.2.1 The supplier's MRB procedures shall include instructions for reprocessing material after Repair (including standard or non-standard Repairs) and shall provide for including necessary supplier inspections/validations.

4.3.3 Nonconforming Material Documentation/Records – The supplier shall maintain records of Nonconforming Material and dispositions. The supplier's procedures shall assure that these records are identified, indexed, filed, etc. to ensure timely and effective retrieval and to provide sufficient detail for performing investigations, Boeing supplier MRB reviews, and trend analysis when requested.

- 4.3.4 Material Review Forms – The supplier’s Material Review procedures shall identify the standard form(s) for documenting and dispositioning of Nonconforming Material (applies to paper or electronic system). The procedures shall address the minimum requirements or data fields to be on the form (including required signatures/approvals). When necessary for clarity, the supplier shall establish and maintain detailed instructions for documenting Nonconforming Material, dispositions, approvals, etc., in accordance with the supplier’s defined system.
- 4.3.5 Government/Customer Actions – The supplier’s procedures shall include requirements for obtaining reviews and/or approvals for Repair, Use-As-Is, and Regrade dispositions that affect Boeing hardware when such review and/or approval is required by Boeing or the Government.
- 4.3.5.1 Any actions taken by the government (including cessation, Corrective Action Requests, etc.) or other supplier customers which affect the supplier’s Material Review procedures or operations shall be brought to the attention (in writing) of the Boeing Supplier Quality Management representative who services the supplier’s facility.

4.4 Material Review Board

- 4.4.1 MRB Membership – The supplier’s facility Material Review Board shall consist of representatives from Quality Engineering and Project/Liaison Engineering as a minimum (it is recognized that individual membership may differ depending on program requirements/organization; Boeing SQM will consider these situations during the Material Review system reviews/approvals).

- 4.4.1.1 The supplier’s procedures shall require approval of each MRB member by the supplier’s Quality Assurance and/or engineering management. The supplier shall maintain objective evidence of this approval (management signatures) including the resume (or other documented experience/MRB training) in the MRB records management system (i.e., supplier’s retrievable records). The supplier’s procedures shall ensure that approval of members shall be specific to the Boeing program(s) and the supplier shall include a current list by Boeing program in its MRB/Supplier records.

Suppliers shall select MRB members on the basis of their technical competence and aerospace/supplier experience. MRB members may call upon other supplier personnel for technical advice.

- 4.4.2 Engineering (or equivalent function) MRB Qualifications - The supplier’s procedures shall ensure that the following criteria are used for selecting, reviewing, and approving MRB personnel:

- a) Education: BS Engineering Degree and two (2) years related experience. The Engineering degree program must be Accreditation Board for Engineering and Technology (ABET) approved, or be substantially equivalent per ABET.
- Non-degreed Engineering and Non ABET degreed personnel approved by the supplier’s MRB prior to the issue date of Revision B of this report may retain their MRB approval. Non-degreed Engineering and non ABET degreed personnel shall not be considered as candidates for the supplier’s MRB after the issue date of Revision B of this report.
- Boeing will consider approval of supplier’s requests for approval of Non-degreed and Non-ABET degreed Engineering candidates on a case-by-case basis.
- b) Employment: Minimum one (1) year employment with supplier.

- c) Training: Evidence of classroom or on-the-job training in MRB procedures and Repair philosophy.

See Appendix A for Boeing Designed Build to Print Items and Engineering Personnel Qualification Requirements

- 4.4.3 Quality (or equivalent function) MRB Qualifications - Personnel shall have experience and training to perform applicable MRB duties. The training shall be defined by the supplier and shall be consistent with the duties performed by this function.

4.5 Post-Review (Government's Option)

- 4.5.1 Petitioning for Post Review – The supplier may elect to enter into discussions with the Local Government Representative office to petition for Post-Review of Material Review by process, product, location, etc.

4.6 Supplier Sub-tier Nonconforming Material

- 4.6.1 Supplier Sub-tier Items – The supplier will notify sub-tier suppliers of material nonconformances in sub-tiers' products discovered by the supplier (exceptions should be included in supplier's procedures either specifically or by types/families of parts). The supplier's procedures shall address sub-tier supplier nonconformances found by the supplier, and these Nonconformances should be included as data or information in the supplier rating system. Suppliers may disposition nonconforming conditions associated with their suppliers' (i.e., Boeing sub-tier suppliers) parts and assemblies within the requirements and limitations of this report.

4.6.1.1 The supplier may delegate material review authority to sub-tier suppliers by coordinating such requests with Boeing SQM (contacting the SQM representative is preferred). If Boeing and the supplier elect to delegate such authority, the requirements of this report shall be flowed down to the sub-tier either in full, or as appropriately tailored.

4.6.1.2 A supplier may, at its discretion, delegate MRA to its sub-tier supplier(s), or to its company component(s) provided: (1) that SPOC 2021 is on the supplier's Boeing purchase contracts, and (2) that the sub-tier supplier(s) or company component(s) have been granted MRA by Boeing (i.e., SPOC 2021 is on direct Boeing purchase contracts with these sub-tier supplier(s) or company component(s)).

- 4.6.2 Supplier Reviews – The supplier's procedures shall require that the sub-tier supplier's MRB process (if MRA is delegated) be reviewed and results documented once per year (minimum). The supplier shall include provisions in the delegation/contract with the sub-tier supplier allowing Boeing to review the sub-tier's MRB process upon request by Boeing. Boeing has the right to revoke sub-tier suppliers MRB delegations (as applicable to contracts).

- 4.6.3 Sub-tier MRB Delegation Disapproval – If Boeing disapproves a sub-tier's MRB delegation, the supplier shall ensure that the sub-tier shall be required to notify all Boeing suppliers from whom the sub-tier has received MRB delegation.

APPENDIX A

REQUIREMENTS FOR BUILD TO PRINT ITEMS

Paragraph 2.14 Addition:

Note: Build-to-print Suppliers must have all supplier generated SRPs approved by Boeing Program Engineering.

Paragraph 4.2.1 c) Addition:

For Boeing Build to Print items, Standard Repair Procedures developed by Build to Print suppliers require Boeing approval. The SRPs may be submitted to the SQM representative who services the supplier and this representative will also notify the supplier of the approval status of the SRPs.

Paragraph 4.4.2 Engineering MRB Qualifications for Supplier Personnel Performing Dispositions on Boeing Designed Build to Print Items

Personnel performing Engineering dispositions on Boeing Designed Build to Print items shall meet the requirements detailed below:

MRB Engineering Authority, Mechanical:

To obtain mechanical MRB Engineering authority to disposition primary structure, the Engineer must meet the following criteria:

1. **Education:**

- Minimum B.S. in Engineering relevant to structures, e.g., Mechanical, Aerospace, Aeronautical, Civil. The Engineering degree program must be accredited by the Accreditation Board for Engineering and Technology (ABET) or be substantially equivalent per ABET. A MRB Resume detailing the candidate's education shall be available for verification of this requirement. Copies shall be provided if requested.

Boeing will consider approval of supplier's requests for approval of Non-degree and Non-ABET degree Engineering candidates on a case-by-case basis.

2. **Experience:**

- Minimum of two (2) years of airframe engineering experience (e.g., Liaison, Design, Strength, Materials & Processes). A MRB Resume shall be available for verification of this requirement; or,
- Option - On-The-Job assignment with a qualified supplier Liaison MRB Engineer as mentor for a minimum of three (3) Months. A random sample (as specified by the SQM auditor) of tags dispositioned by the candidate during this mentor period shall be available for verification of this requirement.

Copies of the resumes and the random samples of tags shall be provided upon request.

3. **Examinations:**

- Open Book Examination shall cover Boeing - St. Louis Report 96X0005 requirements and limitations. The examination questions shall be available for verification of this requirement.

- Closed Book Examination shall cover Boeing Engineering Repair philosophy, structural problems (shear - moment diagrams, beam loading, truss loading, etc.), static strength, fatigue considerations, stress concentration, bearing and shear capability, equivalent strength, tear out, and examples of relevant nonconforming conditions to be dispositioned. Candidates must have a score of 80% or better on this exam to qualify. The Boeing Engineering Repair philosophy may be requested from the SQM representative who services the supplier.

The open/closed book examination questions and examination results of MRB candidates shall be available for verification of this requirement. Copies shall be provided if requested.

MRB Engineering Authority, Electrical/Avionics:

To obtain electrical MRB Engineering Authority to disposition nonconforming electrical wiring and associated equipment, the Engineer must meet the following criteria:

1. Education:

- Minimum B.S. Engineering relevant to Electrical/Avionics products. The Engineering degree program must be accredited by the Accreditation Board for Engineering and Technology (ABET) or be substantially equivalent per ABET. A MRB Resume detailing the candidate's education shall be available for verification of this requirement. Copies shall be provided if requested.

Boeing will consider approval of supplier's requests for approval of Non-degree and Non-ABET degree Engineering candidates on a case-by-case basis.

2. Experience:

- Minimum of two (2) years of previous electrical/avionics experience (e.g., Liaison, Design, M&P, Avionics). A MRB Resume shall be available for verification of this requirement, or
- Option - On-The-Job assignment with a qualified supplier Liaison MRB Engineer as mentor for a minimum of three (3) Months. A random sample (as specified by the SQM auditor) of tags dispositioned by the candidate during this mentor period shall be available for verification of this requirement.

Copies of resumes and random samples of tags shall be provided upon request.

3. Examinations:

- Open Book Examination shall cover Boeing - St. Louis Report 96X0005 requirements and limitations. The examination questions shall be available for verification of this requirement.
- Closed Book Examination shall cover Boeing Engineering Repair philosophy and procedures related to limited MRB dispositions, Repair philosophy applicable to the area for which MRB authority is requested, Electro Static Discharge (ESD) awareness, and DC Circuit Theory Problems. Candidates must have a score of 80% or better on this exam to qualify. The Boeing Engineering Repair philosophy may be requested from the SQM representative who services the supplier.

The open/closed book examination questions and examination results of MRB candidates shall be available for verification of this requirement. Copies shall be provided if requested.