***BOEING - ST. LOUIS REQUIREMENTS FOR***

# SUPPLIER MATERIAL REVIEW AUTHORITY (MRA)

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# PART I: ALL SUPPLIERS

## 1.0 Introduction

During the course of product manufacturing, nonconformances between the approved design and the actual product configuration may occur. Boeing St. Louis/St. Charles (BSTL) is responsible for ensuring all contractual requirements are met when Material Review Authority (MRA) activities are performed on its products. This requires that BSTL maintain the appropriate level of definition, approval, and oversight of delegated Supplier MRA activities. To mitigate risks associated with delegation of MRA, specific prerequisites, qualifications, and controls associated with Supplier MRA activities have been developed by MRB Engineering, Quality Assurance, and Supplier Quality. BSTL recognizes that a Supplier's procedural organization for the processing of nonconforming material and the performance of product corrective actions may be different than described herein, it is the documentation for the successful completion of the activities and the accountability contained herein that shall be met.

## 2.0 Scope

2.1 This BSTL report specifies Supplier MRA requirements for the control, documentation and disposition of nonconforming material at Supplier facilities. The requirements, as defined herein, are the minimum requirements which shall be met by the Supplier to obtain and maintain MRA. The actions required to meet and verify MRA compliance are defined to ensure full communication and understanding of these expectations and requirements. The applicable BSTL purchase contract and MRA letter may include program requirements which modify or add to the requirements included herein.

2.2 This report defines the required actions which shall be taken by BSTL, should a Supplier fail to comply with or perform to all the requirements as defined in this report.

2.3 BSTL reserves the right to define and interpret all requirements associated with this report and the delegated Supplier MRA letter.

2.4 The terms used in this report may be found in Appendix A. BSTL recognizes a Supplier may use alternate terms or alternate definitions for like terms. It is the activities, process and resources of the terms defined herein that shall be met.

## 3.0 Applicability

3.1 The Supplier shall have a documented Quality Assurance and/or Material Review Board (MRB) procedure that meets the MRA requirements defined herein, any exceptions defined by BSTL in the MRA letter, and any product defined material review requirements, such as traceability requirements. For new MRA Suppliers, the MRB procedure shall be submitted to BSTL for preliminary approval by the authorizing groups of this report, prior to exercising the Supplier MRA Candidate Phase, See Part IV.

3.2 Part I of this report applies to all Suppliers contracted to produce products as specified by BSTL contract (not off-the-shelf, i.e., non-catalogued items). The extent of a Supplier's MRA is defined by the MRA Letter and as defined herein. Processes, definitions and restrictions defined in this report and the MRA letter take precedence over those defined in the Supplier's MRB procedures.

3.3 Part II of this report is applicable only to those Suppliers with design authority delegation. Part II details delegated MRA requirements for Design Suppliers in addition to the requirements defined in Part I.

3.4 Part III of this report is applicable only to those Suppliers with delegated Build-to-Print material review authority. Part III details delegated MRA requirements for Build-to-Print (BTP) Suppliers in addition to the requirements defined in Part I.

3.5 Part IV of this report details the qualification and process requirements for a Supplier to obtain MRA delegation.

3.6 This BSTL Report is applicable when:

a) The Supplier's management with executive responsibility has defined, documented, and approved its MRB procedures and processes for the control and disposition of nonconforming material, and

b) The Supplier has a MRB procedure which complies with the requirements as defined herein and has been approved by BSTL by means of an MRA letter, and

c) Special Purchase Order Condition (SPOC) 2021 or Q219S is called out on the applicable BSTL product purchase contract. The Supplier shall verify they have the latest revision of this report by contacting the Boeing Supplier Quality Representative (SQR) that services their facility or by going to the Boeing Supplier Portal, ***http://www.boeing.com/companyoffices/doingbiz/.***

3.7 Delegation of MRA shall only be granted when it is supported by a clear business case and the delegated authority is shown to be mutually beneficial to the Supplier, BSTL and Customer as determined by the BSTL Integrated Product Team for the applicable program.

## General Requirements

### 4.0 Material Review Board

4.1 The Supplier shall have a Principal Material Review Board (PMRB) or equivalent comprised of a designated MRB Engineering Manager and Quality Manager responsible for MRB activities. The Supplier PMRB shall ensure the MRA requirements are met. The PMRB shall be responsible for responding to BSTL and/or Customer identified corrective action requests associated with the BSTL MRA delegation.

4.2 Membership Requirements & Responsibilities - The Supplier PMRB shall ensure all MRB personnel are trained and understand the BSTL product and MRA requirements. The Supplier MRB procedure shall address the means of developing the technical competency of Quality Assurance (QA) and MRB Engineering personnel. A formal MRB training procedure shall be in place. As a minimum, a description of the content and duration of the Supplier training methods and requirements shall be included within the Supplier's MRB procedure. The Supplier shall establish a method of ensuring and maintaining the proficiency of all personnel inspecting, identifying, documenting and dispositioning nonconforming conditions on BSTL products.

4.3 Quality Assurance MRB members shall have, as a minimum, a high school diploma or equivalent.

4.4 MRB Engineering members shall have a Bachelor of Science (B.S. or higher) Engineering degree. Examples of degrees include: Mechanical/Structures: Civil, Mechanical, Aerospace; Electrical/Systems: Electrical, Electronics, and Computer Science. Note: Engineers with B.S. Engineering Technology (non-theory) or Engineering Science degrees shall submit a resume and college transcript to BSTL Liaison Engineering (liasup@boeing.com) for evaluation and approval by the BSTL PMRB on a case by case basis. Non-Engineering, Sciences and Engineering Technology degrees and non-ABET degreed personnel approved by the Supplier's MRB prior to the issue date of Revision B (22 August 2002) of this report may retain their MRB approval.

4.5 The Supplier's MRB procedure may define specific education and experience requirements above and beyond those identified in paragraphs 4.3 and 4.4, which are applicable to the product, for the approved MRB members.

4.6 Suppliers shall select MRB members on the basis of their technical competence and product related experience. MRB members may call upon other BSTL or Supplier personnel for technical advice.

4.7 The Supplier's MRB procedures shall require approval of each MRB member by the Supplier's PMRB. The Supplier shall maintain objective evidence of this approval 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 records.

4.8 The Supplier shall maintain a current list of approved MRB members and any limitations of their MRB authority for BSTL products. Supplier MRB members not performing BSTL MRB activity for a period of 18 months shall be removed from the BSTL MRB authorization lists.

## 5.0 **BSTL PMRB Approval of Supplier MRB Personnel**

5.1 The Supplier shall provide a list of the authorized MRB members to the Boeing SQR for approval by the BSTL PMRB or designee. For new MRB member candidate(s), the Supplier shall submit the qualification package identified in paragraph 4.4 to the SQR for BSTL PMRB approval prior to allowing said candidate(s) to approve MRB dispositions on BSTL products. The Supplier MRB procedure shall provide for mentoring and perform quarterly audits of the new MRB members for a minimum of one year. All revised attachments shall be posted with the Supplier's MRA letter.

5.2 BSTL PMRB reserves the right to revoke the authority for Supplier MRB individual(s) for BSTL products, when warranted and at the sole discretion of BSTL.

## 6.0 **MRA Quality Management System Requirements**

6.1 The Supplier shall have a Quality Management System (QMS) that is approved and maintained per AS/EN/JISQ 9100:2001B. The Supplier QMS shall:

1. Provide for the control of nonconforming material including specific procedures for identifying, documenting, investigating, analyzing, dispositioning, and correcting nonconformances/failures.

2. Apply to products furnished by Supplier's sub-tier suppliers.

3. Provide for segregation and identification of nonconforming material to prevent its use.

4. Support identification of root cause and corrective action which shall implement the goal of preventing recurrence.

6.2 The Supplier shall have an active BSTL purchase contract in place. If a secondary Supplier site other than the contracted Supplier site has a need to perform MRB activity on BSTL product, Boeing may grant that site MRA. The Supplier shall request BSTL delegation for the other site through the Boeing Procurement Agent.

6.3 The Supplier shall have the appropriate Engineering and Quality Assurance organizations in place to implement and support the MRB procedure.

6.4 The Supplier's MRB staff shall be sufficiently staffed by Engineering and Quality Assurance personnel to support the MRB activities.

## 7.0 **MRB System Requirements**

7.1 The Supplier shall have a nonconforming material documentation system that ensures data integrity. The system characteristics shall, as a minimum, include:

a) Secure controlled access based on MRA

b) Audit trail of changes made to nonconformance record to include: name of person changing document, date, changes made (removal, correction, clarification, etc.)

c) Attachments to the nonconformance document shall be linked, identified with the ND number, number of pages (x of y) for the attachment, entry number, name of person providing information, date, and have the same change control requirements as defined for the nonconformance document.

d) Change control of closed nonconformance records

e) Archived data accessibility for product requirements

f) Retention of canceled records and required reason for canceling

g) Sequencing of record numbers, no gaps in system generated numbers

h) Control of Signature/Approval dispositions

i) Cross reference to BSTL nonconformance record (when applicable)

j) The nonconformance, as documented, is clear, appropriately written, and as a minimum, includes:
   1. Nonconformance Record number
   2. Part/Assembly number
   3. Manufacturer's identification (as available)
   4. Part traceability and/or serial number (as applicable)
   5. Description of the nonconformance
   6. Identification of affected specification, drawing, or other product definition requirements
   7. Program
   8. Quantity rejected
   9. Initiator
   10. Where detected
   11. Date of initiation
   12. Preliminary responsibility (if readily available)
   13. Defect codes or equivalent
   14. Defect quantity
   15. Disposition code (e.g, UAI, Repair, SRP, Rework, Scrap, etc.)
   16. Disposition of nonconforming part/item
   17. Identification of dispositioning personnel

7.2 The Supplier nonconformance record system shall be capable, as a minimum, of providing the ability to readily retrieve documents based on items 1, 2, 5, 6, 7, 11, 13, 15 and 17 listed in paragraph 7.1.

## 8.0 **Corrective Action / Preventive Action**

Corrective action and preventive action is the responsibility of the Supplier for any nonconforming product being produced for BSTL or any audit finding(s) or failure(s) identified by BSTL.

8.1 The Supplier Quality Management System (QMS) shall define the Supplier's internal corrective action process. The Supplier shall perform and implement corrective action and preventive actions as defined by their QMS and respond to any formal corrective action request(s) from BSTL following the procedures as defined by the corrective action system interface in use between the Supplier and BSTL. The Supplier's corrective action process is subject to BSTL assessment and auditing to ensure the system in place meets the AS/EN/JISQ 9100 standard.

8.2 The Supplier QMS shall include, as a minimum, the following items related to MRB actions:

a) Repetitive nonconforming condition(s)
b) Collective or trend analysis plan to identify adverse indicators
c) Corrective/Preventive Action Board, or equivalent group
d) Audit requirements for MRA application
e) Perform investigation for escape nonconformance (containment)

8.3 BSTL or Customer may request formal corrective action for any of the following, but not limited to:

a) Repetitive nonconforming condition(s)
b) Isolated nonconforming condition(s) found serious in nature by BSTL or the Customer
c) Major nonconformance(s)
d) Audit finding(s) or failure(s)

If the corrective action is not developed, implemented or an extension is not granted by Boeing SQR within the specified time defined in the corrective action request/plan, a letter of probation, abatement or revocation of MRA will be issued to the Supplier. BSTL SQ will issue a revised MRA letter to the Supplier stating the scope of and reasons for the abatement, probation or revocation of MRA and actions required to reinstate the former MRA delegation.

8.4 Any actions taken by the Customer (including MRB cessation, Corrective Action requests, coordination requirement changes, 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 SQR who services the Supplier's facility.

## 9.0 **Government Customer Representative**

The Supplier's MRB procedures shall include requirements for obtaining Customer reviews and/or approvals for dispositions that affect Boeing hardware, when such review and/or approval is required by Boeing or the Customer.

The Supplier shall provide the Customer access to the Supplier's nonconformance system to meet the MRA Customer review and/or approval requirements applicable to the product,

when required. When Customer access cannot be provided to meet the requirements, the nonconformance shall be processed per BSTL IR 0451.

The Supplier shall provide a copy, when applicable, of the BSTL issued MRA letter to the Local Customer Representative servicing their facility, for which MRA is granted.

The Customer review and/or approval requirements and any subsequent revisions shall be defined by BSTL as an attachment to the Supplier's MRA letter.

When Local Customer review and/or approval requirements are revised by the Local Customer in accordance with the MRA letter, the Supplier shall notify the BSTL SQR in writing of the revisions.

## 10.0 **Deviations**

Deviations shall not be processed as nonconforming product. Deviations are beyond the scope of MRA and shall be submitted to BSTL per contract requirements.

## 11.0 **Sub-tier MRA**

The Supplier shall not delegate MRA to sub-tier suppliers without specific authorization from BSTL through the MRA letter. If authorized, the Supplier shall ensure the sub-tier supplier meets all of the requirements, as defined herein, along with the required BSTL approvals defined herein.

## 12.0 **Boeing SQR Regional On-site MRA Process Audit**

The Supplier shall allow its Material Review system to be reviewed by Boeing SQR Regional at least once per year. If the annual audit finds deficiencies requiring corrective action, the Supplier shall initiate root cause corrective action to address audit findings as required per paragraph 8.0.

## 13.0 **Maintenance of MRA**

As a minimum, Supplier MRB procedure shall be reviewed annually by the Supplier to reflect any and all changes to the BSTL approved system, procedures, and personnel. Revisions to the Supplier MRB procedure affecting the Supplier MRA shall be submitted to the Boeing SQR for review and concurrence prior to implementation. The Supplier MRB procedure shall provide a summary record of changes made to the document or indication of annual review.

## 14.0 **MRA Renewal**

The Boeing SQR shall annually issue a letter to the Supplier continuing approval of the Supplier's MRA, when supported by the Boeing SQR and MRB Engineering reviews.

## 15.0 **Probation**

When BSTL determines the Supplier MRA compliance is such that it is not meeting the requirements as defined herein, BSTL shall notify the Supplier, in writing, that their MRA delegation has been placed on probation, and shall define the required actions/ changes to address/correct issues/problems with the Supplier MRA, and the exit criteria requirements. Probation actions shall minimally include, but not limited to, increased BSTL oversight of the MRB procedure to ensure contractual compliance. Corrective action shall be required as defined in paragraph 8.0.

## 16.0 **Material Review Authority Abatement**

When BSTL determines the Supplier MRA compliance is such that it is not in the best interest of BSTL and its Customer(s) to allow further processing of nonconformances per the MRA as defined, BSTL shall reduce the scope of the Supplier's MRA by issuing a revised MRA letter. BSTL can reduce a Supplier's MRA with or without implementing MRA probation.

## 17.0 **Revocation of MRA**

When BSTL determines the Supplier MRA compliance issues are such that it is not in the best interest of BSTL and its Customer(s) to allow further processing of nonconformance per the MRA, BSTL shall revoke Supplier MRA. BSTL can revoke a Supplier's MRA with or without first implementing MRA abatement or probation.

## 18.0 **Additional MRA Requirements**

See the applicable Part for additional requirements:

a) Refer to Part II for Design Suppliers

b) Refer to Part III for Build-to-Print Suppliers

c) Refer to Part IV for MRA Candidate Applicants

# PART II: DESIGN SUPPLIERS

## Design Supplier MRA Requirements

### 1.0 Material Review Process and Procedure Requirements

1.1 The processes and procedures used for performing material review of nonconforming product shall be part of the Supplier's overall Quality Management System (QMS). The procedure shall include self audits to ensure compliance with all MRA requirements.

1.2 Material review of BSTL products that fall within International Traffic in Arms Regulations, ITAR, requirements is a defense service which must meet the export control requirements of U.S. Export Administration Regulations (EAR) and ITAR laws. A valid TAA or MLA for a Foreign Supplier or Foreign Persons shall be in place which allows defense services to be performed in support of the material review process.

1.3 Nonconformance records shall contain sufficient detail to ensure a stand alone document. The document shall include, as a minimum, a complete and clearly defined description of the nonconformance (examples shown in IR 0451 documentation requirements), the disposition, documented verification of the disposition execution and all other documentation, as required herein. These records shall clearly indicate approval by authorized Supplier MRB personnel and when required the Customer representative. Nonconformance records shall be retained and retrievable in accordance with contract requirements. *The resulting nonconformance document is a record of the delivered product configuration.* For this reason, it is important that nonconformances are clearly and accurately written.

All manually written information on the nonconformance document and supporting attachments shall be clearly legible, written using upper case letters; signatures of persons on documents or attachments shall include a printed name below the signature. The nonconformance document shall include elements required per IR 0451. Reference Appendix A of IR 0451 for additional details required in the defect description based on each defect type.

1.4 Nonconformance records shall be retained and retrievable in accordance with contract requirements.

### 2.0 Dispositioning Authority

2.1 Supplier MRB dispositions are limited to minor nonconformances. All major or critical nonconformances that cannot be reduced to a minor nonconformance shall be submitted to BSTL MRB, per the requirements of IR 0451 or as otherwise directed by the purchase contract, for disposition and approval.

2.2 The Supplier's MRB procedure shall ensure that nonconformances affecting the following are documented on a nonconformance document and submitted to the BSTL MRB in accordance with IR 0451 and contract requirements:

a) Supplier nonconformances which affect the interface (e.g. mating surfaces, attach points, adjacent structure, etc.) between the Supplier's part/assembly and the BSTL part/assembly.

b) Supplier nonconformances which affect Safety, Health, Performance, Contract specified requirements affecting interchangeability, reliability, or maintainability, effective use or operation, weight, or appearance (when a factor).

c) Supplier nonconformances or repairs which affect parts/assemblies that are classified as Safety of Flight, Critical, Fracture Critical Traceable, Fracture Critical, Maintenance Critical, Durability Critical, Critical Application Item or Critical Safety Item. Where applicable, the documentation shall meet the product control plan requirements, such as serialization, critical classification marking on the nonconformance document. Refer to the product definition notes for additional requirements.

d) Dispositions for foreign objects (FO), when these objects cannot be removed from areas other than defined containment areas and within product definition limits.

e) Dispositions for functional equipment (i.e., electrical, avionics, mechanical system components) affecting the Acceptance Test Plan (ATP), warranty, or operation of the system or when required by process specification.

2.3 Disposition and/or approval authorities for nonconformances allowed per the delegated MRA shall be defined in the Supplier MRB procedure.

## 3.0 **Disposition of Nonconforming Product**

3.1 Dispositions shall clearly communicate the requirements and actions to be taken to remedy the nonconforming product. The usage of line spaces between logical actions shall be used to make the disposition text easier to read and follow.

3.2 Rework to product specification requirements disposition restores a product fully to the product contract requirements utilizing product defined process specifications. The need to disposition the use of processes outside the product definition to restore a product to configuration requirements shall be classified as a Repair.

3.3 Standard Repair Procedure Disposition - BSTL may authorize the Supplier to use applicable BSTL developed Standard Repair Procedures (SRP) for material review dispositions. These SRPs, when applied as defined, shall not require approval by the Customer.

a) BSTL SRPs may be used as a guideline in the development of Supplier SRPs. SRPs shall include conditions with defined limitations of application, clearly defined repair associated with each condition, and documentation of authority to use the SRP. All Supplier developed SRPs require approval by the Supplier IPT Engineering, PMRB and when required shall be submitted to the Supplier Customer representative for review and approval prior to use. Supplier developed SRPs shall only be applied to parts/assemblies associated with the programs noted in MRA delegation. Copies of all Suppliers developed SRPs shall be available to the Boeing SQR upon request.

3.4 Use As Is (UAI) Disposition – All UAI dispositions shall include a rationale statement and cite the name of the Supplier IPT Engineer or a valid precedence, as required per product MRA requirements.

3.5 Repair Disposition - Repair parts shall be fully defined with dimensions, tolerance (default tolerance will be to product definition tolerances), material, finishes, inspection criteria, etc. as relates to the product. The use of sketches, models or drawings are encouraged to fully articulate repairs. All Repair dispositions shall cite the name of the approving Supplier IPT Engineer or a valid precedence, as required per product MRA requirements.

3.6 Scrap Disposition – Scrapped parts or assemblies shall be controlled in such a manner to preclude its usage or delivery to BSTL.

3.7 Regrade Disposition - Regraded parts or assemblies shall be controlled in such a manner to preclude their usage or delivery to BSTL.

## 4.0 **Disposition Coordination**

4.1 Supplier Engineering Coordination – Repair, SRP (when required) and “Use As Is” (UAI) dispositions for the first occurrence of all defects and all material processing noncompliance issues requires review by the appropriate Supplier IPT. Coordination between the Supplier IPT Engineer and MRB Engineers shall be per the Supplier procedures. Objective evidence of technical evaluation of nonconforming conditions shall be maintained by the Supplier MRB Engineers. All revisions to a defect description shall be re-coordinated with Supplier IPT Engineer for an updated evaluation.

4.2 The Supplier MRB Engineer’s disposition for UAI, Repair, and SRP (when required) shall cite the name of the Supplier IPT Engineer from whom an evaluation was received or a valid precedence nonconformance document number, even if both functions are filled by the same engineer. When Customer approval is required, a valid precedence shall cite name of the approving Customer. The use of precedence files does not reduce the requirement to identify, investigate and execute corrective action to eliminate repetitive defects.

## 5.0 **MRB Precedence Application**

The Supplier may utilize previously coordinated nonconformance documents as the basis for current nonconformance issues. The requirements for the use of precedence are as follows.

5.1 To determine valid precedence application, the nonconformance must be identical or a less severe condition, in the same location, for the same dash number detail part (applicable to R/H and L/H, if symmetric parts) as a previously Supplier IPT Engineering approved disposition.

5.2 The usage of multiple previous nonconformance dispositions at the same location or a combination of multiple defects in near proximity requires Supplier IPT Engineering coordination for evaluation of the combined effects and shall be processed as a first time occurrence.

5.3 Precedence files shall be coordinated with Supplier IPT Engineering on a periodic basis, as defined by the Suppliers MRB procedures, to ensure requirements are retained. Revalidation may be coordinated and documented via e-mail or other written communication. The revalidation shall be cited in the disposition along with the name of the revalidating Supplier IPT Engineer. The revalidated document shall become the new precedent document to cite.

5.4 Valid precedence shall include Customer approval, when allowed per Customer Review requirements. The Customer shall note in writing within a nonconformance document when acceptance of the specific condition shall not be used for precedence. Nonconformances with this notation shall not be used for precedence reference.

5.5 The use of precedence files does not reduce the requirement to identify, investigate and execute corrective action to eliminate the defect.

5.6 The use of precedent coordination shall be cited following the engineers disposition. The citation shall denote the precedent document number and the name(s) of the IPT engineer and Customer name, when required, with whom the document was coordinated. In some cases the precedent document cited for IPT may be different than the precedent document cited for Customer approval. When this occurs, both documents shall be denoted.

## 6.0 **Continued Fabrication Processing During MRB Process**

Work may continue on a part/assembly which contains a nonconforming condition while required coordination with Supplier IPT is underway. However, the part/assembly shall be clearly identified and segregated as defined herein and the defect condition shall not be altered or become inaccessible by the continued work so as to prevent the required repair action(s). All continued work after nonconforming condition is identified shall be at Supplier's risk. Supplier shall ensure further processing does not result in unauthorized

work. Nonconforming raw materials, detail parts or sub-assemblies shall not be incorporated into an assembly without an approved partial and /or final disposition.

## 7.0 **Supplier Sub-tier Nonconforming Material**

The Supplier shall exercise the delegated BSTL MRA on nonconformance documents submitted from the Supplier's sub-tier suppliers. The Supplier shall ensure the sub-tier suppliers meet the requirements to control, process, and verify the completion of the disposition of nonconforming product, as defined herein. This information shall be available for review by BSTL or the applicable Customer upon request.

## 8.0 **MRA Verification/Audit**

Verification of the Supplier's MRA shall be three-fold: Supplier's internal audits of MRB procedure, product and documentation compliance, Boeing SQR assessments (Part I paragraph 12) and BSTL LE technical audits.

### 8.1 **Supplier Verification**

The MRB procedure shall include an internal audit process for conducting process audits and technical audits of closed nonconformance documents initiated at the Supplier facilities. Process and technical audits shall be conducted annually, as a minimum, to verify compliance to requirements and assure material review system and document integrity. Audit results shall be available to the Boeing SQR during the annual material review assessment or upon request.

Suppliers authorized to delegate MRA to a sub-tier supplier shall flow the audit requirements to the sub-tier supplier and conduct audits of the sub-tier suppliers MRA.

8.1.1 The assessment plan shall, as a minimum, meet the following requirements:

a) Sampling plans shall be in accordance with ANSI/ASQ Z1.4 *Sampling Procedures and Tables for Inspection by Attributes* with single sampling plan, general inspection level II and no greater risk than an Acceptance Quality Level (AQL) of 2.5. Use of a sampling plan based on this requirement shall constitute an approved sampling plan. Deviations from this requirement shall be submitted to the Boeing SQR for approval.

b) The sample pool to verify the execution of the MRA process shall include:

1. SRP, Repair and UAI disposition types.

2. Appropriate provisions for sub-batches (disposition types, programs…) selected in proportion to their size and identified by some rational criteria to ensure a representative sampling.

3. A separate sample pool of Rework to blue print (b/p) disposition types shall be determined same as a) based on the number of Rework to b/p disposition population for the assessment period.

c) Audit of Documents, Audit Frequency, and Reporting of Results:

1. Audit report results shall be made available to the Boeing SQ Representative upon request. The results shall include the following information:

a) Audit dates, organization audited and name of auditor(s)
b) Date of the last audit
c) Audit sample population size
d) Number of nonconformance documents audited
e) Number of issues found during the audit
f) Trend analysis of the issues found during the audit
g) Comparison to previous audit(s)
h) Corrective action plan to eliminate future issues
i) List of the nonconformance documents audited with identified issues
j) Copy of requested audited nonconformance documents
k) Adjustment level to self audit frequency

2. Frequency of the audits shall be adjusted based on the results of prior audits or other identified MRA issues suggesting the need for greater assessment. Audits shall be performed at least once per year.

d) Future document review levels shall be based on audit results and shall be in accordance with the switching rules as defined in ANSI/ASQ Z1.4.

## 8.2 **BSTL MRB Engineering Audit**

8.2.1 In addition to the audit defined in Part I, paragraph 12, BSTL reserves the right to conduct a technical audit of the Supplier's MRB documents. The Boeing SQR shall request a list of nonconformance documents for a defined time period in which the Supplier had exercised their delegated MRA. BSTL will select a sample from the list and/or of the Supplier audited documents for the purpose of a BSTL annual technical audit review and/or at a frequency as determined by BSTL MRB Engineering based on annual review results. When requested, the Supplier shall provide to the Boeing SQR a complete copy of the selected sample documents and provide the supporting product definition documentation in a format that is acceptable to BSTL within 10 working days of the request date.

8.2.2 BSTL MRB Engineering, upon completing the technical audit, will prepare a report documenting any finding(s) and required action(s) to be taken by the Supplier. The technical audit summary is shown in Appendix B. BSTL MRB Engineering shall formally communicate the report results to the Supplier PMRB. Compliance findings

shall require corrective action and shall be formally requested by BSTL SQ. The corrective action shall be verified by Boeing SQR and MRB Engineering.

8.2.3 BSTL technical audit rating criteria shall be as follows:

| | Green | Yellow | | Red |
|---|---|---|---|---|
| **% Audited Tags with Findings** | ≤ 15% | > 15% | ≤ 25% | > 25% |
| | **and** | **or** | **and** | **or** |
| **% of Findings of Primary Class** | < 3% | ≥ 3% | < 7% | ≥ 7% |

Note: BSTL reserves the right to adjust the noted percentages based on statistical significance of audit population and sample size.

Green – successful audit, corrective action may be required for individual findings.

Yellow – unsuccessful audit, Supplier corrective action required. More than two successive audits may result in MRA probation, abatement, or revocation as determined by Boeing.

Red – audit failure, Supplier corrective action required and may result in immediate MRA probation, abatement, or revocation as determined by Boeing.

8.2.4 BSTL may request additional data submittals and/or increase the level of surveillance until the corrective action plan is implemented and deemed effective. BSTL shall define in writing the required data submittals, frequency of submittals and submittal method. The Supplier shall continue sending the data until notified by BSTL in writing that submittals are no longer required.

8.3 As determined by BSTL, failed audit(s) may result in probation, abatement or revocation of MRA as defined in Part I paragraphs 15 through 17.

8.4 Corrective action shall be required as defined in Part I paragraph 8.

8.5 Failed audit(s) may result in probation or revocation of MRA, as determined by BSTL.

# PART III: BUILD-TO-PRINT SUPPLIERS

## Build-to-Print Supplier MRA Requirements

### 1.0 Material Review Process and Procedure Requirements

1.1 The processes and procedures used for performing material review of nonconforming product shall be part of the Supplier's overall Quality Management System (QMS). The procedure shall include self audits to ensure compliance with all MRA requirements.

1.2 Material review of BSTL products that fall within International Traffic in Arms Regulations, ITAR, requirements is a defense service which must meet the export control requirements of U.S. Export Administration Regulations (EAR) and ITAR laws. A valid TAA or MLA for a Foreign Supplier or Foreign Persons shall be in place which allows defense services to be performed in support of the material review process.

1.3 Nonconformance records shall contain sufficient detail to ensure a stand alone document. The document shall include, as a minimum, a complete and clearly defined description of the nonconformance (examples shown in IR 0451 documentation requirements), the disposition, documented verification of the disposition execution and all other documentation, as required herein. These records shall clearly indicate approval by authorized Supplier MRB personnel and when required the Customer representative. Nonconformance records shall be retained and retrievable in accordance with contract requirements. *The resulting nonconformance document is a record of the delivered product configuration.* For this reason, it is important that nonconformances are clearly and accurately written.

All manually written information on the nonconformance document and supporting attachments shall be clearly legible, written using upper case letters; signatures of persons on documents or attachments shall include a printed name below the signature. The nonconformance document shall include elements required per IR 0451. Reference Appendix A of IR 0451 for additional details required in the defect description based on each defect type.

1.4 Nonconformance records shall be retained and retrievable in accordance with contract requirements.

### 2.0 Dispositioning Authority

2.1 Supplier MRB dispositions are limited to minor nonconformances. All major or critical nonconformances that cannot be reduced to a minor nonconformance shall be submitted to BSTL MRB, per the requirements of IR 0451 or as otherwise directed by the purchase contract, for disposition and approval.

2.2 The Supplier's MRB procedure shall ensure that nonconformances affecting the following are documented on a nonconformance document and submitted to the BSTL MRB in accordance with IR 0451 and contract requirements:

a) Supplier nonconformances which affect the interface (e.g. mating surfaces, attach points, adjacent structure, etc.) between the Supplier's part/assembly and the BSTL part/assembly.

b) Supplier nonconformances which affect Safety, Health, Performance, Contract specified requirements affecting interchangeability, reliability, or maintainability, effective use or operation, weight, or appearance (when a factor).

c) Supplier nonconformances or repairs which affect parts/assemblies that are classified as Safety of Flight, Critical, Fracture Critical Traceable, Fracture Critical, Maintenance Critical, Durability Critical, Critical Application Item or Critical Safety Item. Where applicable, the documentation shall meet the product control plan requirements, such as serialization, critical classification marking on the nonconformance document. Refer to the product definition notes for additional requirements.

d) Dispositions for foreign objects (FO), when these objects cannot be removed from areas other than defined containment areas and within product definition limits.

e) Dispositions for functional equipment (i.e., electrical, avionics, mechanical system components) affecting the Acceptance Test Plan (ATP), warranty, or operation of the system or when required by process specification.

2.3 Disposition and/or approval authorities for nonconformances allowed per the delegated MRA shall be defined in the Supplier MRB procedure.

## 3.0 **Disposition of Nonconforming Product**

Dispositions shall clearly communicate the requirements and actions to be taken to remedy the nonconforming product. The usage of line spaces between logical actions shall be used to make the disposition text easier to read and follow.

3.1 Rework to product specification requirements disposition restores a product fully to the product contract requirements utilizing product defined process specifications. The need to disposition the use of processes outside the product definition to restore a product to configuration requirements shall be classified as a Repair.

3.2 Standard Repair Procedure Disposition - BSTL may authorize the Supplier to use applicable BSTL developed Standard Repair Procedures (SRP) for material review dispositions. These SRPs, when applied as defined, shall not require approval by the Customer.

a) BSTL SRPs may also be used as a guideline in the development of Supplier SRPs. Copies of all Suppliers developed SRPs shall be submitted for coordination. All Supplier developed SRPs require approval by BSTL Program Engineering, PMRB and when required shall be submitted to the BSTL Customer representative for review and approval prior to use. Supplier SRPs shall be submitted to liasup@boeing.com for review and approval. These SRPs shall only be applied to parts/assemblies associated with the programs noted in MRA delegation.

b) Standard repair procedures (SRP) shall be applied within the prescribed limits of the SRP for both the defect parameters and the repair procedures. The usage of an SRP beyond these limits constitutes a Repair disposition that has the coordination and approval requirements of a Repair disposition.

3.3 Use As Is (UAI) Disposition – All UAI dispositions shall include a rationale statement and cite the name of the BSTL IPT Engineer or a valid precedence, as required per product MRA requirements. When possible, rubber ink stamp each part per P.S. 16001 with the Supplier ND number, serial number (if any), and acceptance stamp. When practical, place the stamp in the area of the nonconformance.

3.4 Repair Disposition – Repairs and repair parts shall be fully defined with dimensions, tolerance (default tolerance will be to product definition tolerances), material, finishes and inspection criteria. The use of sketches, models or drawings are encouraged to fully articulate repairs. Repair parts, any parts not defined in the product definition, shall be identified with the nonconformance document number followed by a unique dash number. The repair part numbers shall be referenced in the disposition text and on attachments. Rubber ink stamp repair parts per P.S. 16001, small parts shall be controlled as per P.S. 16001 bagging process. All Repair dispositions shall cite the name of the approving BSTL IPT Engineer or a valid precedence, as required per product MRA requirements.

3.5 Scrap Disposition – Scrap dispositions shall include an explanation as to why the part(s) or assembly is unusable. The explanation shall provide clear information for precedent purposes. Scrapped product shall be strictly controlled by the Supplier MRB procedures.

a) The salvaging of details from a scrapped assembly shall be coordinated with BSTL IPT and dispositioned at the time the assembly is scrapped. The disposition shall clearly state what details (part number and dash number), the removal and reinspection procedures to be followed and what to do with the removed part(s).

b) High-cost scrapped items such as windshields, canopy transparencies, bulkheads, spars, skins, etc., require the Supplier MRB to contact the responsible program management to determine if requirements for regrade usage exist before disposal of scrapped items. Scrapped part(s) or assembly to be used for alternative purposes must be dispositioned to define the alternate use, the part(s) shall be marked “Not for Production” and shall be rendered obviously unusable for its original purpose, e.g., notching a flange, removing an interface connection.

c) Nonconformance documents shall be closed at the time the material has been physically rendered unusable for its intended purpose.

d) BSTL supplied materials requiring scrap disposition shall be submitted to BSTL MRB per IR 0451 requirements.

3.6 Regrade Disposition - Regrade is beyond the scope of MRA. Scrap material designated for Regrade shall be submitted to BSTL MRB per IR 0451 requirements.

## 4.0 **Disposition Coordination**

4.1 BSTL IPT Coordination – Repair, SRP (when required) or "Use As Is" (UAI) dispositions for the first occurrence of all defects and all material processing noncompliance issues requires approval by the appropriate BSTL technical group, such as Structures IPT Strength Engineering or Material and Process Engineering. The package submitted to BSTL IPT by the Supplier MRB Engineer shall include:

a) Complete defect description with supporting graphics (when required),

b) Analysis performed, precedence file(s) or engineering rationale to support the proposed Repair or UAI disposition

c) Proposed Repair disposition shall include sufficient details to perform the repair, such as, dimensioned sketches, notation of Process Specifications (P.S.), etc.

4.2 BSTL IPT engineering shall provide a record of salvage action (ROSA) to the Supplier MRB Engineer stating the nonconformance document number, entry number(s), repeating the Supplier description of defect evaluated, the action(s) required to salvage the part, if salvageable, any limitations on future use of ROSA, and if the ROSA can be used for precedence. All updates or changes to a defect description shall be coordinated with BSTL engineering as soon as possible for re-evaluation and receipt of an updated ROSA.

4.3 The MRB engineer's disposition for UAI, Repair and SRP (when required) shall cite the name of the BSTL IPT Engineer from whom a ROSA was received or a valid precedence nonconformance document number. When Customer approval is required, a valid precedence shall cite name of the approving Customer. The use of precedence files does not reduce the requirement to identify, investigate and execute corrective action to eliminate repetitive defects.

## 5.0 **MRB Precedence Application**

The Supplier may utilize previously coordinated nonconformance documents as the basis for current nonconformance issues. The requirements for the use of precedence are as follows.

5.1 To determine valid precedence application, the nonconformance must be identical or a less severe condition, in the same location, for the same dash number detail part (applicable to

R/H and L/H, if symmetric parts) as a previously BSTL Structures IPT approved disposition.

5.2 The usage of multiple previous nonconformance dispositions at the same location or a combination of multiple defects in near proximity requires BSTL Strength Engineering coordination for evaluation of the combined effects and shall be processed as a first time occurrence.

5.3 Precedence files shall be coordinated with BSTL Strength Engineering on a periodic basis, a maximum of 18 months, to revalidate precedence. Revalidation may be coordinated and documented via e-mail or other written communication. The revalidation shall be cited in the disposition along with the name of the revalidating BSTL Strength Engineer. The revalidated document shall become the new precedent document to cite.

5.4 Valid precedence shall include Customer approval, when allowed per Customer Review requirements. The Customer shall note in writing within a nonconformance document when acceptance of the specific condition shall not be used for precedence. Nonconformances with this notation shall not be used for precedence reference.

5.5 The use of precedence files does not reduce the requirement to identify, investigate and execute corrective action to eliminate the defect.

5.6 The use of precedent coordination shall be cited following the engineers disposition. The citation shall denote the precedent document number and the name(s) of the BSTL IPT engineer and Customer, when required, with whom the nonconformance was coordinated. In some cases the precedent document cited for IPT may be different than the precedent document cited for Customer approval. When this occurs, both documents shall be denoted.

## 6.0 **Continued Fabrication Processing During MRB Process**

Work may continue on a part/assembly which contains a nonconforming condition while required coordination with BSTL IPT is underway. However, the part/assembly shall be clearly identified and segregated as defined herein and the defect condition shall not be altered or become inaccessible by the continued work so as to prevent the required repair action(s). All continued work after nonconforming condition is identified shall be at Supplier's risk. Supplier shall ensure further processing does not result in unauthorized work. Nonconforming raw materials shall not be incorporated into the fabrication of details. Nonconforming detail parts shall not be incorporated into assembly without a disposition and Customer approval when required.

## 7.0 **Supplier Sub-tier Nonconforming Material**

The Supplier shall exercise the delegated BSTL MRA on nonconformance documents submitted from the Supplier's sub-tier suppliers. The Supplier shall ensure the sub-tier suppliers meet the requirements to control, process, and verify the completion of the

disposition of nonconforming product, as defined herein. This information shall be available for review by BSTL or the applicable Customer upon request.

## 8.0 MRA Verification/Audit

Verification of the Supplier's MRA shall be three-fold: Supplier's internal audits of MRB procedure, product and documentation compliance, Boeing SQR audit (Part I paragraph 12) and BSTL LE technical audits.

### 8.1 Supplier Verification

The MRB procedure shall include an internal audit process for conducting process audits and technical audits of closed nonconformance documents initiated at the Supplier facilities. Process audits shall be conducted annually and technical audits shall be conducted semi-annually, as a minimum, to verify compliance to requirements and assure material review system and document integrity. Audit results shall be available to the Boeing SQR during the annual material review audit or upon request.

#### 8.1.1 Supplier Technical Audit Requirements

The Supplier MRB procedure shall include an audit process for conducting technical audits of closed nonconformance documents initiated at the Supplier facilities. Audits shall be conducted semi-annually, as a minimum, to verify compliance to requirements and assure material review system, product integrity and document integrity. Findings impacting the integrity of the product shall be immediately reported to the Boeing SQR per the disclosure process.

8.1.2 The audit plan shall, as a minimum, meet the following requirements:

a) Sampling plans shall be in accordance with ANSI/ASQ Z1.4 *Sampling Procedures and Tables for Inspection by Attributes* with single sampling plan, general inspection level II and no greater risk than an Acceptance Quality Level (AQL) of 2.5. Use of a sampling plan based on this requirement shall constitute an approved sampling plan. Deviations from this requirement shall be submitted to Boeing SQR for approval.

b) The sample pool to verify the MRA process shall include:

1. SRP, Repair and UAI disposition types.

2. Appropriate provisions for sub-batches (disposition types, programs…) selected in proportion to their size and identified by some rational criteria to ensure a representative sampling.

3. A separate sample pool of Rework to blue print (b/p) disposition types shall be determined same as a) based on the number of Rework to b/p disposition population for the assessment period.

c) Audit of Documents, Audit Frequency, and Reporting of Results:

1. The audit and documentation of the results shall be performed in accordance with Appendix B or equivalent as approved by BSTL LE.

2. Audit results shall be provided to the Boeing SQR during the annual audit or upon request. The results shall include the following information:

   a) Audit dates, organization audited and name of auditor(s)
   b) Date of the last audit
   c) Audit sample population size
   d) Number of nonconformance documents audited
   e) Number of issues found during the audit
   f) Trend analysis of the issues found during the audit
   g) Comparison to previous audit(s)
   h) Corrective action plan to eliminate future issues
   i) List of the nonconformance documents audited with identified issues
   j) Adjustment level to self audit frequency

3. Future document review levels shall be based on audit results and shall be in accordance with the switching rules as defined in ANSI/ASQ Z1.4.

## 8.2 **BSTL MRB Engineering Audits**

8.2.1 The Supplier shall submit a list of all closed nonconformance tags dispositioned under their MRA authority to mailto:liasup@boeing.com on a monthly basis, within one week following the last day of the month. BSTL LE will select a sample of those tags or Supplier audited documents for the purpose of a BSTL quarterly technical audit review and/or at a frequency as determined by BSTL MRB Engineering based on annual review results. The Supplier shall provide a complete copy of the selected sample documents in a format that is acceptable to BSTL within 10 working days of the request date. The Supplier will be briefed on the results of the quarterly audits. If significant issues with the Supplier's MRB procedure are identified, corrective action will be formally requested by SQ.

8.2.2 BSTL MRB Engineering, upon completing the technical audit, will prepare a report documenting any finding(s) and required action(s) to be taken by the Supplier. The technical audit summary is shown in Appendix B. Boeing SQR shall formally communicate the report results to the Supplier PMRB. Compliance findings shall require corrective action and shall be formally requested by BSTL SQ. The corrective action shall be verified by Boeing SQR and MRB Engineering.

8.2.3 BSTL may request additional data submittals and/or increase the level of surveillance until the corrective action plan is implemented and deemed effective. BSTL shall define in writing the required data submittals, frequency of submittals and submittal method. The Supplier shall continue sending the data until notified by BSTL in writing that submittals are no longer required.

8.2.4 BSTL technical audit rating criteria shall be as follows:

| | Green | Yellow | | Red |
|---|---|---|---|---|
| **% Audited Tags with Findings** | ≤ 15% | > 15% | ≤ 25% | > 25% |
| | **and** | **or** | **and** | **or** |
| **% of Findings of Primary Class** | < 3% | ≥ 3% | < 7% | ≥ 7% |

Note: BSTL reserves the right to adjust the noted percentages based on statistical significance of audit population and sample size.

Green – successful audit, corrective action may be required for individual findings.

Yellow – unsuccessful audit, Supplier corrective action required. More than two successive audits may result in MRA probation, abatement, or revocation as determined by Boeing.

Red – audit failure, Supplier corrective action required and may result in immediate MRA probation, abatement, or revocation as determined by Boeing.

8.3 As determined by BSTL, failed audit(s) may result in probation, abatement or revocation of MRA as defined in Part I paragraphs 15 through 17.

8.4 Corrective action shall be required as defined in Part I paragraph 8.

8.5 Failed audit(s) may result in probation or revocation of MRA, as determined by BSTL.

## PART IV: QUALIFICATION AND REQUIREMENTS FOR MATERIAL REVIEW AUTHORITY DELEGATION

### 1.0 **MRA Candidate Pre-Assessment**

1.1 Before delegating MRA, an initial MRA self-assessment, utilizing the Boeing SQR check list, shall be conducted by the Supplier to verify that they meet the requirements established in this report. The results of the MRA self-assessment shall be submitted to the Boeing SQR for evaluation and determination to proceed with the MRA delegation process.

1.2 The Supplier shall make its MRB procedures, records, and processes available upon request by a Boeing SQR. The Supplier shall provide sufficient support to the SQ Regional Representative to allow an effective and efficient initial on-site review of the Supplier's MRB procedure by Boeing SQ. This requirement also applies to MRA delegations with the Supplier's sub-tiers.

1.3 Supplier not meeting the requirements of Part I paragraphs 4 through 7 shall be notified in writing by Boeing SQR of all deficiencies needing correction before MRA may be reconsidered.

1.4 The Supplier shall demonstrate compliance to BSTL MRB procedures through:

1.4.1 ND submittals to BSTL meet requirements of IR 0451, BSTL MRB engineering assessment.

1.4.2 No outstanding corrective action issues for noncompliance to BSTL MRB procedures

1.4.3 The Supplier shall not have any major outstanding corrective action issues for noncompliance to their QMS (e.g., Supplier Evaluation Report, etc.)

### 2.0 **Supplier MRA Candidate Phase**

After a Supplier has successfully completed the Candidate pre-assessment, the Supplier becomes an MRA Candidate. During the candidate phase, the Supplier shall demonstrate their ability to perform to the requirements of this document in preparation for MRA delegation. BSTL shall identify areas requiring change, if required, prior to the delegation of MRA. All "Use As Is", SRP and Repair dispositions for nonconformance documents during the candidate phase shall continue to be processed as BSTL documents per IR 0451.

2.1 The Boeing SQR shall provide the MRA Candidate with a BSTL IPT and MRB Engineering contact list applicable to the BSTL products for which the MRA will apply and the applicable Standard Repair Procedures (SRP). BSTL MRB Engineering shall provide and maintain the contact list.

2.2 The Supplier MRB Engineers shall coordinate all proposed Repair and UAI dispositions with the Supplier IPT and MRB Engineering team; see applicable Part II or III paragraph 4.0, Disposition Coordination.

2.3 All nonconformance submittals to BSTL MRB shall include the name and phone number of the Supplier MRB Engineer, and a proposed disposition.

2.4 The BSTL MRB Engineers shall coach the Supplier MRB Engineers as issues are seen while reviewing the nonconformance document during the BSTL MRB procedure.

2.5 All Repair and UAI dispositions shall include the ROSA as an attachment (when required); the name of the BSTL or Supplier IPT Engineer shall be cited in the text following the coordinated disposition. Proposed Standard Repair Procedures (SRP) dispositions do not require coordination with BSTL or Supplier IPT Engineering unless required per the SRP notes; see applicable Part I or II paragraph 4.0, Disposition Coordination.

2.6 Proposed dispositions for defects with valid precedence (see applicable Parts II or III paragraph 5.0) shall include the disposition and cite the precedent nonconformance document number.

2.7 After a minimum of three (3) months, the Supplier nonconformance documents shall be reviewed to the technical audit defined in applicable Part II or III paragraph 8.0. Based on the results of the technical audit, input from BSTL IPT, MRB Engineering and SQ, and a review of the BSTL MRB for any Supply escapes, a decision shall be made by BSTL to a) continue with the MRA Candidate phase with defined corrective actions, b) delegate MRA, or c) discontinue MRA process.

## 3.0 **MRA Delegation**

3.1 Boeing SQR shall issue an MRA letter approved by the BSTL PMRB, SQ and applicable program(s) management to the Supplier defining the parameters of the MRA delegated. The MRA letter shall define the program(s) and product(s) for which the MRA is delegated.

3.2 Exceptions to this document shall be explicitly defined in the MRA letter by replacing the referenced 96X0005 paragraph(s) with the excepted paragraph(s). The Supplier shall provide a copy of the issued MRA letter to the appropriate Customer representative, when applicable.

3.3 The application of the delegated MRA shall be indicated by the presence of MRA Quality Clause (SPOC 2021 or Q219S) on the purchase contract. BSTL reserves the right to exclude MRA on a purchase contract to purchase contract basis.

## 4.0 **MRA Execution**

Prior to exercising the BSTL MRA delegation, the following activities shall take place:

4.1 The Supplier shall ensure the MRB procedure meets the delegated MRA requirements defined herein, any exceptions defined in the MRA delegation letter and any product defined material review requirements, such as traceability requirements. The MRB procedure shall be submitted to BSTL for approval by the authorizing groups of this report, prior to exercising the MRA on BSTL products.

4.2 Following BSTL approval of the MRB procedure, the Supplier MRB personnel delegated authority for BSTL products shall attend a briefing by BSTL (in person or teleconference) on the MRB procedure flowing the scope and application of the BSTL MRA. The Customer representatives at the Supplier facility are encouraged to attend the briefing. Following the briefing, the Supplier may implement the MRA as delegated.

# APPENDIX A

## DEFINITIONS

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

ABET: ABET, Inc. accreditation is assurance that a college or university program meets the quality standards established by the profession for which it prepares its students. www.abet.org International equivalent to ABET is the Washington Accord.

Corrective Action (CA): Action to eliminate or mitigate the cause(s) of a detected nonconformity or other undesirable situation.

Critical Parts – Those parts designated by program as Fracture Critical Traceable (FCT), Durability Critical Traceable (DCT), Safety of Flight (SOF), Critical Safety Item (CSI), Fracture Critical (FC), Durability Critical (DC), Durability and Damage Tolerant (D&DT), Maintenance Critical (MC), Significant Structural Item (SSI) or Traceable Critical Assembly (TCA). Compliance to program requirements for critical parts is mandatory.

Customer – The agency, organization, or Government entity with authority to sign and execute a contract with The Boeing Company. The Customer may be a foreign or domestic entity. The contract types with Boeing may be termed as government contracts or commercial contracts. The Customer representative is the individual or organization delegated approval authority for material review by the contracting entity.

Defense Service – The furnishing of assistance (including training) to Foreign Persons, whether in the U.S. or abroad, in the design, development, engineering, manufacture, production, assembly, testing, repair, maintenance, modification, operation, demilitarization, destruction, processing, or use of Defense Articles; or the furnishing to Foreign Persons of any Technical Data, controlled under the U.S. International Traffic in Arms Regulations (ITAR), whether in the U.S. or abroad; or military training of foreign units and forces, regular and irregular, including formal or informal instruction of Foreign Persons in the U.S. or abroad or by correspondence courses, technical, educational, or information publications and media of all kinds (including Public Domain), training aid, orientation, training exercise, and military advice.

Deviation – A specific written authorization, granted prior to the manufacture of an item, to depart from a particular requirement(s) of an item's current approved configuration documentation for a specific number of units or a specified period of time.

Disclosure – Written notification of noncompliance affecting previously delivered product.

Disposition – The documented action(s) required to resolve a nonconformance.

Foreign Object (FO) – A substance, debris or article alien to a vehicle or system which would potentially cause damage.

Foreign Person - A foreign person is someone who does not fall into one of the following categories: A citizen or national of the United States, An alien lawfully admitted for permanent residence (i.e., a "green card" holder), an alien admitted to the United States as a refugee, or an alien granted asylum in the United States. Someone granted the status of an alien lawfully admitted for temporary residence as a (i) Special Agricultural Worker or (ii) Amnesty Applicant (a special program for persons who entered the United States before January 1, 1982 and have continuously resided in the United States in an unlawful status since that time, and meet certain filing requirements). In addition, for export control purposes, the definition of a foreign person also includes any foreign corporation, business association, partnership, trust, society or any other entity or group that is not incorporated or organized to do business in the United States, as well as international organizations, foreign governments and any agency or subdivision of foreign governments.

Interchangeable/Replaceable (I&R) – Interchangeable items shall be capable of being readily installed, removed, or replaced without alteration, misalignment, or damage to items being installed or to adjoining items or structure.

Integrated Product Team (IPT) – The engineering group(s) performing the technical analyses of the product. Examples include the strength (stress), materials and processes, design, aerodynamics, loads, weights, avionics, systems, etc. The use of the term IPT in this document generically represents the technical engineering group responsible for evaluating the issue addressed in the item of discussion. For a BTP Supplier, the IPT is BSTL program engineering teams. For a Design Supplier, the IPT is typically the Supplier technical engineering teams.

International Traffic in Arms Regulations (ITAR) - The International Traffic in Arms Regulations, ITAR, is administered by the State Department to control the export of U.S. defense articles and services. The provisions implemented in the ITAR are governed by the Arms Export Control Act. Direct commercial sales of U.S.-origin defense products, components, technologies, and services are controlled under the ITAR by the State's Office of Defense Trade Controls.

Manufacturing License Agreement (MLA) - An agreement whereby a U.S. person grants a foreign person an authorization to manufacture defense articles abroad and which involves or contemplates: Export of technical data or defense articles or the performance of a defense service, and use by the foreign person of technical data or defense articles previously exported by the U.S. person.

Material Review Authority (MRA) - Permission granted by BSTL to process minor waivers in accordance with the requirements of this report.

Material Review Board (MRB) – A board consisting of technically qualified and authorized representatives who determine the proper disposition of nonconforming material referred to them.

MRB Engineer– Material review engineering responsible for the engineering and technical aspects of the material review process. May also be referred to as Liaison Engineer (LE), Product Review Engineer, etc.

MRB Quality Assurance – Material review quality assurance person responsible for the quality aspects of the material review process.

Material Substitution – Any intentional deviation from product definition requirements, such as material product form, process deviation, chemical composition, temper, etc.

MRA Internal Control Plan (MICP) – A documented process developed by the Supplier to flow down the requirements as defined within the MRA letter and this report to their personnel.

Nonconformance – A departure from the requirements specified in the contract, specification, build-to media, or other approved product definition.

Nonconformance Document (ND) – A formal record (electronic or paper), for the purpose of configuration control, documenting a defect or departure from the product requirements, the disposition of the nonconforming material and verification of actions taken to resolve the nonconformance.

Nonconformance, Major / Critical – A Nonconformance which adversely affects any of the following as determined by the Supplier, BSTL SQM, BSTL Engineering personnel, or the Customer:

1. Health;
2. Performance (affecting contract line item or spare requirements);
3. Contract specified system requirements affecting interchangeability, reliability, or maintainability of its repair parts;
4. Effective use or operation;
5. Weight, or appearance (when a factor);
6. Nonconformances pertinent to parts/assemblies classified as safety of flight, critical, fracture and/or maintenance critical, fracture critical traceable, durability critical parts or assemblies.

Nonconformance, Minor – A nonconformance that does not adversely affect any of those factors listed for a major/critical nonconformance.

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 definition.

Nonconformance Review – The activities required to document, evaluate and disposition a nonconforming condition.

Non-metallic inclusions (NMI) – Piece(s) of laminate or adhesive backing materials, consumable non-flyaway lay-up room materials, or other type materials inadvertently left in the laminate or bonded assembly during lay-up/fabrication.

Partial Disposition - A disposition that allows the release of nonconforming product to accomplish and document preliminary actions, such as, disassembly, machining, testing, partial repair procedure, etc., to reach a final disposition. (Temporary, Reconvene, Interim or similarly meaning terminology)

Precedence – The use of a previously approved nonconformance disposition as the basis for the disposition of a current nonconformance.

Principal Material Review Board (PMRB) – The authorizing Material Review Board body comprised of the highest level MRB Engineering Manager and Quality Manager.

Proceed at Risk – The action taken by the Supplier, at the Supplier's risk, to continue the machining or processing of nonconforming material after a nonconformance is discovered, documented and is awaiting disposition approval.

Product Definition – The contract/blueprint/drawing/model which defines the product.

Record Retention – The collection, maintenance, storage and access of nonconformance and related records.

Record of Salvage Action (ROSA) – Documentation of the salvage requirement(s) from IPT Engineering to MRB Engineer for disposition of a nonconformance. ROSA will indicate Salvage Type I, II, III or IV.

Regrade - A disposition of a nonconformance 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.

Repair – The subjection of nonconforming material to an approved disposition, designed to reduce, but not completely eliminate the nonconformance.

Responsibility, Accountability, and Authority (RAA) – The person(s) responsible for performing a defined task or activity identified in this report.

Rework – The action(s) taken to make nonconforming material conform completely to the build-to media, specifications, or purchase contract requirements product definition within the limitations (process specifications, b/p, model, notes, etc.) of the product definition.

Scrap – Nonconforming material that is not useable for its intended purpose or cannot be economically Reworked or Repaired.

Standard Repair Procedure (SRP) – A documented technique, for the repair of a specified type of nonconformance, which has been developed for specific applications, and has been reviewed and approved by the appropriate PMRB, program IPT Engineering and Customer Engineering representative.

Sub-Tier Supplier – A supplier contracted by the BSTL Supplier to provide a product or service related to the BSTL contract.

Supplier - Any entity with whom BSTL contracts to provide product or service.

Supplier Quality Representative - Supplier Quality Representative (SQR) - Individual assigned to Boeing Suppliers/Processors to perform SQR roles and responsibilities associated with SQ procedures and processes. Note: SQR may be of various Boeing job classifications; e.g. SQ Quality Engineers, SQ Specialists. SQ indicates a BSTL Supplier Quality activity that may or may not be supported by the SQR assigned to the Supplier.

Technical Audit – The audit review of nonconformance documents by MRB engineering to ensure the effective implementation of the MRB procedure, MRA requirements, product requirements and nonconformance documentation to ensure the integrity of the final product.

Technical Assistance Agreement (TAA) - An agreement for the performance of a defense service or the disclosure of technical data, as opposed to an agreement granting a right or license to manufacture defense articles. Assembly of defense articles is included under this section, provided production rights or manufacturing know-how are not conveyed. Should such rights be transferred, a Manufacturing License Agreement is applicable.

Technical Data - Information which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of commodities. This includes information in the form of blueprints, diagrams, models, formulae, tables, engineering designs and specifications, manuals, instructions, drawings, photographs, plans, documentation and software.

Unauthorized Work – Activities performed on nonconforming product, which alters the defect or ability to perform a repair of a defect, prior to the execution of an authorized MRB document.

Use-As-Is Disposition (UAI) – A disposition to accept minor nonconformance(s), in the present state without repair, when determined that product functional and performance requirements are maintained.

Waiver, Minor – A written authorization to accept an item, which during manufacture, or after having been submitted for Customer inspection or acceptance, is found to depart from specified requirements, but nevertheless is considered suitable for UAI or as repaired by an approved method.

Waiver, Major – A written authorization from the Purchasing Contracting Office (PCO) for the disposition of a major nonconformance that cannot be reduced to a minor nonconformance.

# APPENDIX B
# Example MRA Audit Worksheets

## Audit Summary Worksheet

The MRA audit summary shall include a breakdown of documents included in the audit.

Sample Pool
Source:
Audit Period:
Program(s):
Work Center(s):

Total NDs

Audit Sample
Program(s):
Work Center(s):

Total NDs

Total NDs

| | Current Audit | Previous Audit(s) |
|---|---|---|
| NDs Reviewed | | |
| NDs w/Findings | | |
| NDs w/o Findings | | |
| Number of Findings | | |
| Average # findings/NCR | | |

Concerns

**Auditor Worksheet**

As a minimum, the following details are noted for each document reviewed in the audit.

| **Supplier:** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Auditor:** | **Findings** | | **Details** | | | | |
| **ND #** | **Yes** | **No** | **Entry** | **Defect Code** | **QA** | **MRB Engineer** | **Issue (1 per line)** |
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Contact Boeing Liaison Engineering for latest technical audit checklist, mailto:liasup@boeing.com

## Material Review Technical Audit

**Audit Item Classification - The technical review items are broadly classified into 4 groups based on the significance of the item on the long term integrity of the document or product. The finding classification may be used to prioritize corrective action.**

**Individual nonconformance findings requiring investigation or correction to the specific document will be flagged by the auditor for action.**

Primary (P) a. Item has potential to impact product form, fit, or function and/or life of product, b. Issue results in unexpected work at Boeing or another Supplier or c. May result in a disclosure for aircraft in service.

Secondary (S) Item may impact the integrity of document or configuration control, but is not a primary finding.

Tertiary (T) Item violates MRA process, but is not secondary or primary classification

Observation (O) While not a violation of the process, the quality of the document hinders quick communication of the problem and resolution

Color/Code Legend:

Manufacturing Action (MX)

Engineering Action (EX)

Quality Action (QX)

| Technical review considerations: | Example findings | Code | Finding Class | Finding Count |
|---|---|---|---|---|
| Does the disposition define a process specification to execute repair procedures or provide detail instructions for shop and quality to perform and evaluate the results of the repair? | Alteration of product shall be specifically defined in the disposition - including limits and procedures for performing alteration. Otherwise - the disposition shall use process specifications to provide direction, limits & quality acceptance criteria | E1 | S | |
| Was the SRP used properly? | When SRP processed as a SRP; defect exceeds the criteria of the defect descriptions or repair limits, use on unauthorized program. When exceptions to the SRP are dispositioned, this should be processed as a Repair per the MRA letter repair dispo requirements. | E2 | P | |
| Are repair parts uniquely identified referencing Tag# -XXXX and unique dash number? | Repair parts not given repair part dash number -XXXX in the engineering disposition | E3 | T | |
| Was disposition affecting Boeing or subsequent supplier's assembly coordinated with the appropriate BSTL team? | Problems in the coordination with BSTL for actions to be performed at Boeing. Ex. No documentation that Boeing follow on work was discussed and approved by program assembly area. | E4 | P | |
| Did disposition follow BSTL Strength Engineering ROSA requirements? | Examples: Parts not salvaged from defective assembly via correct documentation. Parts not destroyed per scrap procedures | E5 | P | |
| Was the correct repair method used? | Repair procedures defined in process specifications not followed within limits defined in the process specification | E6 | P | |
| Does the disposition include acceptance or rejection requirements? | Disposition is open ended, not providing guidance for Shop or acceptance or rejection criteria to Quality | E7 | S | |

| | | | | |
|---|---|---|---|---|
| Is the repair definition complete and unconditional? | Repair disposition does not provide sufficient information to provide, as an example, any of the following: Investigate full impact of defect. Provide clear description of part alterations. Provide details to fabricate and assembly repair parts - graphics<br><br>Disposition does not provide a clear direction for defect resolution. The tag would not provide a history of what was finally done to the part or assembly. Conditional situations should be done on partial dispositions requiring documentation of the unknown information for the next engineering decision to be made. Example: If/then... | E8 | P | |
| Does engineering graphics include engineer's signature or electronic signature? | No authorized engineering signature evident on tag | E9 | T | |
| When coordination is required per MRA letter/ ROSA list, did disposition cite a valid precedent tag or denote IPT coordination? | No coordination with appropriate IPT noted and no precedence tag denoted. Parts on ROSA list for program request for IPT review. | E10 | S | |
| Was disposition entered by an authorized MRB engineer? | Disposition is entered by an unauthorized engineer. OR Disposition by an authorized engineer exceeds the scope of the MRA | E11 | S | |
| Was disposition rationale statement appropriate for defect? | Use as Is dispositions missing a rationale statement. OR Rationale statement is lacking detail or does not make sense for defect in question | E12 | S | |
| Does disposition provide clear unambiguous instructions? | Disposition statement provides a mixed message. Example: Accept as is, blend to smooth edges | E13 | S | |
| Did MRB engineer use the IPT ROSA as their disposition without providing a complete disposition, such as required procedures?[It is not IPT Engineering's task to provide a disposition on the ROSA, they are to approve or define the salvage requirements to allow the nonconforming product to be used] | Strength Record of Salvage (ROSA) used without engineer providing required disposition details (P.S., repair dash #, limits, inspection criteria, etc.) IPT ROSA's generally do not provide the details that are required for a disposition | E14 | S | |
| Was proposed disposition coordinated with IPT when required per SRP or nature of defect? (See E17 for ROSA list) | Coordination with IPT when not required per MRA (within the ability of Supplier MRB Engineer) OR Not coordinated with BSTL before submittal of tag to MRB Crib when submittal to Boeing system not required per MRA | E15 | S | |
| Was appropriate investigation probing into cause/consequences, or substantiation of defect pursued? | Tests to eval/clarify defect, No disposition to perform more investigation when defect warrants. Ex. Impact damage, test failures | E16 | P | |
| Is level (partial, final, PRD, MRD) of disposition activity marked on document? | Partial disposition header missing. No header - assume Final disposition | E17 | T | |
| Is the defect a rejectable issue? | Not a rejectable issue, but tag processed | E18 | T | |

| | | | | |
|---|---|---|---|---|
| Was disposition that was coordinated with BSTL changed without re-coordination or not completely followed? | Supplier disposition coordinated with BSTL strength or processed as a BSTL tag has been changed without re-coordinating the change with those previously coordinated. | E19 | P | |
| Was tag coordinated with government customer as required? | MRA requirements to elevate the tag for government customer approval<br>OR nature of defect warrants customer notification | E20 | P | |
| Did engineer provide a workable repair? | Disposition could not be worked due to something that could have been researched in advance - something avoidable | E21 | T | |
| Did engineer follow documentation procedures? | Example findings could include, missing or incorrect disposition banner (partial banner for a final dispo or visa versa), coding a repair as a SRP or rework to spec | E22 | T | |
| Other Engineering Findings not listed E1 - E22 | see Audit Worksheet for details | O1E | | 0 |
| | | | **Sub-Total** | |
| Other Quality Findings not listed Q1 - Q17 | see Audit Worksheet for details | O1Q | | |
| Is defect description clear and unambiguous? | Defect description missing sufficient information to provide an unambiguous description of the nonconforming situation, magnitude of the defect missing or not clearly described | Q1 | P | |
| Are sufficient locating dimensions for defect provided in the defect description or sketch? | No information to specifically identify where the defect is located. Example, some b/p dimensions are used throughout a part, so use of b/p zone where dim. Is defined is insufficient. Example: X" from fwd edge, y" from outboard edge of part on upper surface | Q2 | P | |
| Is B/P or product definition zone or location documented on the tag should be/requirement description? | No b/p location of dimension callout and location of defect area - define clearly on tag | Q3 | S | |
| Do sketches clearly communicate location, orientation, details, signature or id of provider? | Cannot orient information provided on sketch or photo relevant to part or assembly; Missing graphic details (tag #, entry #, provider of information, date) | Q4 | S | |
| Are b/p requirement (should be) definition provided in the defect description? | No should be definition provided OR Error in the information provided | Q5 | T | |
| Are Critical Part Marking requirements met on the part and documentation? | Program critical part markings missing - reference ROSA list | Q6 | P | |
| Is information organized and easily navigated in the document? | Information referenced in the document text from one section to another or to attached graphics is missing or not located as referenced | Q7 | O | |
| Are cause statements provided in defect description? | Defect causal information missing - driver for determination of complete disposition | Q8 | T | |
| Was key information describing the defect or cause documented by engineering instead of quality? | Missing quality information documented by engineering. [engineers are not trained on the use of quality inspection tools] | Q9 | T | |

| | | | | |
|---|---|---|---|---|
| Was information added to the tag with no documented request or explanation? | Information added to tag with no connection to the initial defect description or engineering disposition. Often a result of e-mail and verbal communication between Supplier and BSTL engineering personnel | Q10 | T | |
| Was disposition entered by an unauthorized Quality or Shop person? | Quality personnel entered a disposition beyond the scope of quality dispositioning authority | Q11 | S | |
| Was the quality of the printed graphics unreadable? | Quality of graphics do not provide understandable information | Q12 | S | |
| Was partial disposition request for results or additional information documented in the tag? | Information requested by engineering in disposition not documented in the tag by quality | Q13 | S | |
| Was material review document processed per contractual requirements? | MRA requirements to elevate the tag for government customer approval | Q14 | P | |
| Was part inspected per contractual requirements? | Inspection exceeded force alignment diagram allowed lateral loads | Q15 | P | |
| Is Project Code/Part # documented on the tag correctly? | Program code number entered on the tag is in error or Part number or dash number recorded on the document is in error | Q16 | P | |
| Is all information required to support the defect description or disposition included in the document? | Test data, material certification, lab data, measurements required to support the defect description or disposition - in other words, the tags stands alone with the product definition media to fully communicate the problem and resolution | Q17 | P | **0** |
| | | | **Sub-Total** | |
| Was repair work completed using an authorized disposition? (Unauthorized Work) | Defect altered prior to authorized disposition being received | M1 | P | |
| Was the disposition executed as documented? | Work performed by shop does not conform to disposition | M2 | P | |
| Are document and attachments clear and legible? | Information in the document form or on attached graphics cannot be clearly read | M3 | S | |
| Other Operations Findings not listed in M1 - M3 | | OM1 | | **0** |
| | | | **Sub-Total** | **0** |
| | | | **Total** | |
| Are there other issues or concerns discovered that were not addressed in the above queries? | Items not addressed in the categories above - included in above per finding group of responsibility | O1 | | |