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REQUIREMENTS FOR SUPPLIER MATERIAL REVIEW
AUTHORITY**

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Table of Contents

Part I General Supplier Requirements for Material Review Authority	1
1.0 Introduction.....	1
2.0 Scope.....	1
3.0 Applicability	2
4.0 MRA Quality Management System Requirements.....	3
5.0 Material Review Organization Requirements.....	4
6.0 BDS Approval of Supplier MR Personnel.....	5
7.0 MR System Requirement.....	6
8.0 Customer Representative Right of Entry	7
9.0 Sub-tier MRA.....	7
10.0 Maintenance of MRA	8
11.0 MRA Noncompliance Actions	8
11.1 Probation	8
11.2 Abatement	8
11.3 Disapproval	8
12.0 Supplier Sub-tier Nonconforming Material	8
13.0 Continued Fabrication Processing During MR Process	9
Part II – Design Suppliers.....	10
1.0 Material Review Processing Requirement.....	10
2.0 Authority Limitations and Exceptions	10
3.0 Disposition of Nonconforming Product.....	11
4.0 MRA Verification/Audit Requirements.....	13
4.1 Boeing SQR On-site MRA Process Audit	13
4.2 Supplier Verification	13
4.3 Supplier Product Review Audit Requirements	13
4.4 BDS MR Engineering Audits.....	15
Part III Build to Print Suppliers	16
1.0 Material Review Processing Requirement.....	16
2.0 Authority Limitations and Exceptions	16
3.0 Disposition of Nonconforming Product.....	17
4.0 MRA Verification/Audit Requirements.....	20
4.1 Boeing SQR On-site MRA Process Audit	20
4.2 Supplier Verification	20

4.3 Supplier Product Review Audit Requirements	20
4.4 BDS Product Review Audits	22
Part IV Qualification and Requirements for MRA Delegation	23
1.0 MRA Candidate Pre-Assessment.....	23
2.0 Supplier MRA Candidate Phase	23
3.0 MRA Delegation.....	24
4.0 MRA Execution	24
List of Acronyms	25
Glossary	26
Appendix A Disposition Coordination with BDS	32
Active Page Record.....	34
Revision Record.....	35

Part I General Supplier Requirements for Material Review Authority

1.0 Introduction

During the course of product manufacturing, nonconformances between the approved design and the actual product configuration may occur. The delegating site or business of Boeing Defense Space and Security (BDS) (herein after referred to as BDS) is responsible for ensuring all contractual requirements are met when Material Review Authority (MRA) activities are performed on its products. This requires that BDS 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 Material Review (MR) Engineering, Quality Assurance, and Supplier Quality.

BDS 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 document 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 delegated MRA for BDS. The actions required to meet and verify MRA compliance are defined to ensure full communication and understanding of these expectations and requirements. The applicable BDS purchase contract and MRA delegation letter may include program requirements which modify or add to the requirements included herein.
- 2.2 This document defines the actions to be taken by BDS and the Supplier, should a Supplier fail to comply with or perform to all the requirements as defined in this document.
- 2.3 BDS reserves the right to define and interpret all requirements associated with this document and the delegated Supplier MRA delegation letter.
- 2.4 Delegation of MRA will only be granted when it is supported by a clear business case and the delegation is shown to be mutually beneficial to the Supplier, BDS and Customer as determined by the BDS Integrated Product Team (IPT) for the applicable program.
- 2.5 The terms used in this document may be found in the Glossary. BDS 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.

- 2.6 Material review of BDS 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. Arms Export Control Act (AECA) and ITAR laws. A valid export authorization document for a non-US Supplier or non-US Persons shall be in place which allows defense services to be performed in support of the material review process.
- 2.7 The Supplier can view the latest revision of this document by contacting the Boeing Supplier Quality Representative (SQR) that services their facility or by going to the Boeing Supplier Portal, <http://www.boeing.com/suppliers/>

3.0 Applicability

- 3.1 This document is applicable only:
- 3.1.1 For BDS purchase contracts that have Quality Clause Q230. BDS reserves the right to exclude MRA on a contract to contract basis.
- 3.1.2 The Supplier has an active BDS purchase contract in place. If a secondary Supplier site other than the contracted Supplier site has a need to perform MR activity on BDS product, Boeing may grant that site MRA. The Supplier shall request BDS delegation for the other site through the Boeing Procurement Agent and/or BDS site MRA Focal.
- 3.1.3 When the Supplier has an approved BDS MRA delegation letter that defines the scope of the MRA delegated.
- a) The MRA delegation letter will define the program(s) and product(s) parameters of the MRA delegation.
 - b) Any exceptions to this document will be explicitly defined in the MRA delegation letter by replacing the referenced D950-11135-1 paragraph(s) with the excepted paragraph(s).
 - c) The MRA delegation letter shall remain in effect until withdrawn or superseded by the delegating site.
- 3.1.4 Part I of this report applies to all Suppliers with MRA delegation as specified by the BDS contract. The extent of a Supplier's MRA is defined by the MRA delegation letter and as defined herein. Processes, definitions and restrictions defined in this report and the MRA delegation letter take precedence over those defined in the Supplier's MR procedures. Note: This report does not apply to COTS and Supplier catalogued items.
- 3.1.5 Part II of this report is applicable only to those Suppliers with delegated design material review authority. Part II details delegated MRA requirements for Design Suppliers in addition to the requirements defined in Part I.

- 3.1.6 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.
- 3.1.7 Part IV of this report details the qualification and process requirements for a Supplier to obtain MRA delegation.

4.0 MRA Quality Management System Requirements

4.1 The Supplier shall have a Quality Management System (QMS) that is approved and maintained per AS/EN/JISQ 9100 or ISO 9001 as described in their BDS delegated authority Purchase Contracts. The Supplier QMS shall:

- a) Provide for the control of nonconforming material including specific procedures for identifying, documenting, investigating, analyzing, dispositioning, and correcting nonconformances/failures.
- b) Apply to products furnished by Supplier's sub-tier suppliers.
- c) Provide for segregation and identification of nonconforming material to prevent its use.
- d) Support identification of root cause and corrective action which shall implement the goal of preventing recurrence.

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

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

4.4 The Supplier shall have a documented Quality Assurance and/or Material Review procedure that meets the MRA requirements defined herein, any exceptions defined by BDS in the MRA delegation letter, and any product defined material review requirements, such as traceability requirements. The procedure shall include annual internal audits as defined in Parts II & III Paragraph 4.2 to ensure compliance with MRA requirements. Any changes to the Supplier's MR procedure that impact the BDS MRA requirements and/or BDS product shall be submitted to the BDS Site MRA focal for review and written concurrence prior to implementation.

4.5 Corrective Action / Preventive Action

4.5.1 The Supplier 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 BDS following the procedures as defined by the corrective action system interface in use between the Supplier and BDS. The Supplier's corrective action process is subject to BDS assessment and auditing to ensure the system in place meets the AS/EN/JISQ 9100 standard or ISO9001 as described in their BDS delegated authority Purchase Contracts.

- 4.5.2 Any actions taken by the Customer (including MR cessation, Corrective Action requests, coordination requirement changes, etc.) or other Supplier customers which affect the Supplier's Material Review procedures or operations that would adversely impact BDS Product or the Supplier's delegated MRA shall be brought to the attention (in writing) of the Boeing SQR who services the Supplier's facility.

5.0 Material Review Organization Requirements

- 5.1 The Supplier shall have a Material Review Organization comprised of designated MR Engineering and Quality personnel responsible for performing MR activities. The requirements defined herein are minimum requirements for MR personnel qualification, training and oversight; BDS Programs may require additional levels of education or experience.
- 5.2 Suppliers shall select MR authorized personnel on the basis of their technical competence and product related experience. MR authorized personnel may call upon other BDS or Supplier personnel for technical advice.
- 5.3 The supplier's highest level of organizational leadership for MR Quality Assurance and Engineering shall be responsible and accountable for BDS-delegated MR authority. These responsibilities include administration of the supplier's MR processes, and MR personnel qualification, training, and oversight.
- 5.4 MR Authorized Personnel Requirements & Responsibilities - The Supplier MRB shall ensure all MR personnel are trained and understand the BDS product and MRA requirements. The Supplier MR procedure shall address the means of developing and maintaining records for the technical competency of Quality Assurance (QA) and MR Engineering personnel. A formal MR training plan 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 MR procedure. The Supplier shall establish a method of ensuring and maintaining the proficiency of all personnel inspecting, identifying, documenting and dispositioning nonconforming conditions on BDS products.
- 5.5 Quality Assurance MR authorized personnel performing documentation of discrepancies and inspection / verification of MR dispositions shall have, as a

minimum, a high school diploma or equivalent and have one year experience relevant to the job function.

- 5.6 MR Engineering authorized personnel responsible for dispositioning BDS product shall have a Bachelor of Science (B.S. or higher) Engineering degree that is relevant for the product being dispositioned. Examples of degrees include: Mechanical/Structures: Civil, Mechanical, Aerospace; Electrical/Systems: Electrical, Electronics, and Computer Science. ABET accredited (www.ABET.org) is preferred. If the degree is not ABET accredited, the course work should meet the requirements of “Boeing Standard Engineering MR Education Criteria and Guidelines” located in the Boeing Supplier Portal at <http://www.boeingsuppliers.com/>

Engineers with B.S. Engineering Technology (non-theory), Engineering Science degrees or Engineering degrees not meeting the above requirements shall submit a resume and college transcript to BDS as defined in the purchase contract or MRA delegation letter for evaluation and approval by BDS on a case by case basis.

- 5.7 The Supplier’s MR procedure may define specific education and experience requirements for MR authorized personnel, above and beyond those identified in paragraphs 5.6 & 5.7, which are applicable to the product.
- 5.8 The Supplier’s MR procedures shall require approval of each MR authorized person by the Supplier’s MRB. The Supplier shall maintain objective evidence of this approval including the resume (or other documented experience/MR training) in the MR records management system (i.e., Supplier’s retrievable records). The Supplier MR procedure shall provide for on-the-job-training (OJT) and performance of quarterly audits of the new MR authorized personnel for a minimum of one year. The Supplier’s procedures shall ensure that approval of personnel shall be specific to the Boeing program(s) and the Supplier shall include a current list by Boeing program in its MR records.
- 5.9 The Supplier shall maintain a current list of approved MR authorized personnel and any limitations of their MR authority for BDS products. Supplier MR authorized personnel not performing BDS MRB activity for a period of 18 months shall be removed from the BDS MRB authorization lists.

6.0 BDS Approval of Supplier MR Personnel

- 6.1 The Supplier shall provide a list of the authorized MR authorized personnel to the MRA Focal for the BDS site granting MRA approval (BDS Site MRA Focal) for approval by BDS. For new MR candidate(s), the Supplier shall submit the information identified in Paragraph 5.6 to the MRA Focal for BDS approval prior to allowing said candidate(s) to approve MR dispositions on BDS products.

- 6.2 BDS reserves the right to revoke the authority for Supplier MR individual(s) for BDS products at the sole discretion of BDS.

7.0 MR 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 Material Review Board approval of personnel
 - 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 nonconformance document (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 BDS nonconformance document (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. Special part notations (e.g., critical part classification, Safety of Flight, I&R, CFE, GFE)
 - 6. Description of the nonconformance (e.g. "As is" and "Should Be")
 - 7. Identification of affected specification, drawing, or other product definition requirements
 - 8. Program
 - 9. Quantity rejected
 - 10. Initiator
 - 11. Where detected
 - 12. Date of initiation

13. Preliminary responsibility (if readily available)
14. Defect codes or equivalent
15. Defect quantity
16. Disposition code (e.g, UAI, Repair, SRP, Rework, Scrap, etc.)
17. Disposition of nonconforming part/item
18. 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, 4, 8, 12, 14, 16 and 18 listed in paragraph 7.1.

8.0 Customer Representative Right of Entry

- 8.1 The Supplier's MR 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 BDS or the Customer as defined in the MRA Letter.
- 8.2 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 submitted to BDS for disposition per contractual requirements.
- 8.3 The Supplier shall provide a copy, when applicable, of the BDS issued MRA delegation letter to the Local Customer Representative servicing their facility, for which MRA is granted.

9.0 Sub-tier MRA

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

10.0 Maintenance of MRA

As a minimum, Supplier MR procedures shall be reviewed annually by the Supplier to reflect any and all changes to the BDS approved system, procedures, and personnel. Revisions to the Supplier MR procedures affecting the Supplier MRA shall be submitted to the BDS Site MRA focal for review and written concurrence prior to implementation. The Supplier MR procedure shall provide a summary record of changes made to the document or indication of review if no changes were made.

11.0 MRA Noncompliance Actions

When BDS determines the Supplier is non compliant to the requirements as defined herein, the following actions may be taken.

11.1 Probation

BDS 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 BDS oversight of the MR process to ensure contractual compliance. Corrective action (C/A) shall be required as defined in paragraph 4.5 (for Supplier C/A).

11.2 Abatement

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

11.3 Disapproval

If Supplier performance is such that it is not in the best interest of BDS and its Customer(s) to allow further processing of nonconformances per the MRA, BDS shall disapprove the Supplier MRA for a probationary time period or permanently. BDS can disapprove a Supplier's MRA with or without first implementing MRA abatement or probation.

12.0 Supplier Sub-tier Nonconforming Material

The Supplier shall exercise the delegated BDS MRA on nonconformance documents submitted from the Supplier's sub-tier suppliers. The Supplier shall audit their sub-tier suppliers to ensure they 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 BDS or the applicable Customer upon request.

13.0 Continued Fabrication Processing During MR Process

Planned work sequences/operations may continue on a part/assembly which contains a nonconforming condition while MR Engineering disposition 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 MR action(s). All continued work after the nonconforming condition is identified shall be at Supplier's risk. Supplier shall ensure further processing does not result in unauthorized work of the defect area. Nonconforming raw materials shall not be incorporated into the fabrication of details. Nonconforming detail parts shall not be incorporated into an assembly without a disposition and Customer approval when required

Part II – Design Suppliers

1.0 Material Review Processing Requirements

- 1.1 The nonconformance document is a record of the delivered product configuration. The document shall include, as a minimum, a complete and clearly defined description of the nonconformance, the disposition, documented verification of the disposition execution and all other documentation, as required herein. These records shall clearly indicate approval by authorized Supplier MR personnel and when required the Customer representative. Nonconformance records shall be retained and retrievable in accordance with contract requirements.
- 1.2 The nonconformance text entry shall contain a complete description of the nonconformance in simple direct language stating the “SHOULD BE” and “IS” condition. The product definition or specification requirements versus the existing condition should be noted with sufficient detail to provide stand alone documentation. Warranty date or date code shall be entered when applicable. Enough information should be entered to locate and adequately disposition the nonconformance and provide accurate historical data.
- 1.3 All manually written information on the nonconformance document and supporting attachments shall be clearly legible. Signatures of persons on documents or attachments shall include a printed name below the signature. The nonconformance document shall include elements required per the purchase contract requirements.

2.0 Authority Limitations and Exceptions

- 2.1 Supplier MR dispositions are limited to minor nonconformances. All major or critical nonconformances that cannot be reduced to a minor nonconformance shall be submitted to BDS per the requirements as directed by the purchase contract, for disposition and approval.
- 2.2 Deviations shall not be processed as nonconforming product. Deviations are beyond the scope of MRA and shall be submitted to BDS per contract requirements.

- 2.3 The Supplier shall not disposition any nonconformances affecting the conditions in a) through f). These shall be documented on a nonconformance document and submitted to BDS in accordance with the purchase 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 BDS 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, Flight Safety Parts, Critical, Fracture Critical Traceable, Fracture Critical, Maintenance Critical, Durability Critical, Critical Application Item, Critical Safety Item or any other critical designation item as defined by the engineering product definition. 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.
 - f) Boeing Supplied Material, Customer furnished equipment (CFE), Government furnished equipment (GFE), or nonconformances (not caused by the Supplier, i.e., present on delivery) on Boeing supplied materials or products. The Supplier shall notify their Boeing SQR for initiation of corrective action for any nonconformances on Boeing supplied material.

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 A rework to product specification requirements (e.g. Rework to Blue Print) disposition restores a product fully to the product contract requirements utilizing product defined process specifications. The need to disposition the use of processes

(e.g. D1-4426 processes) outside the product definition to restore a product to configuration requirements shall be classified as a Repair.

- 3.3 Standard Repair Procedure Disposition – Suppliers may develop SRPs or BDS may authorize the Supplier to use applicable BDS developed Standard Repair Procedures (SRP) for material review dispositions. These SRPs, when applied as defined, shall not require approval by the Customer.
 - a) Supplier developed 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, MRB 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. BDS SRPs may be used as a guideline in the development of Supplier SRPs.
 - 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.
- 3.4 Use As Is (UAI) Disposition – All UAI dispositions shall include a rationale statement and cite the name of the Supplier IPT Engineer as required per product MRA requirements.
- 3.5 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. All Repair dispositions shall cite the name of the approving Supplier IPT Engineer as required per product MRA requirements.
- 3.6 For nonconforming conditions that require “special handling” for additional work to be performed at Boeing, sub-tier suppliers and/or its customers, the disposition along with any previous Supplier material review activity associated with that condition shall be submitted to BDS in accordance with contractual requirements for approval of the “special handling” disposition only. Nonconformance documents submitted to BDS by the Supplier, as a result of this requirement, shall contain a recommended Special Handling disposition.
- 3.7 Scrap Disposition – Scrap dispositions shall include an explanation as to why the part(s) or assembly is unusable. Scrapped product shall be strictly controlled to preclude its usage or delivery to BDS.

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

4.0 MRA Verification/Audit Requirements

Verification of the Supplier's MRA shall be two-fold: Boeing SQR audit and Supplier's verification of MR procedure, product and technical compliance. BDS MR technical audits may be conducted as deemed necessary.

4.1 Boeing SQR On-site MRA Process Audit

The Supplier shall allow its Material Review system to be reviewed by Boeing SQR.

4.2 Supplier Verification

The Supplier MR 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 material review audit or upon request.

4.3 Supplier Product Review Audit Requirements

The Supplier MR procedure shall include an audit process for conducting technical audits of closed nonconformance documents initiated at the Supplier facilities. Audits shall be conducted to verify compliance to requirements and assure material review system, product integrity and document integrity. Product review audits should be conducted by a MR engineer other than the dispositioning engineer. Findings impacting the integrity of delivered product shall be immediately reported to Boeing per the disclosure process as defined in Purchase Contract requirements. Boeing Technical Audit Worksheets have been provided for reference on the Supplier Portal at <http://www.boeingsuppliers.com/>

4.3.1 The product review audit plan shall, as a minimum, meet the following requirements:

- a) Sample of closed nonconformance documents shall be calculated to a 95% confidence level with a 5% confidence interval as described below. Use of a sampling plan based on this requirement shall constitute an approved sampling plan. Deviations from this requirement shall be submitted to BDS Site MRA Focal for approval.

Determining appropriate sampling requirement

- Determine the population N1
- 5% confidence interval P = .05
- 5% Maximum Error E = .05
- 95% Confidence Level (Z(α/2))=1.96 Calculation for sample size
- Sample Size = n

Infinite population

$$n1 = P * (1 - P) * \left(\frac{Z(\alpha/2)}{E} \right)^2$$

Finding n1

$$0.05 * (1 - 0.05) * \left(\frac{1.96}{0.05} \right)^2 = 73$$

Finite population

$$n = \left(\frac{n1}{\left(1 + \left(\frac{n1}{N1} \right) \right)} \right) = \left(\frac{73}{\left(1 + \left(\frac{73}{N1} \right) \right)} \right) = \text{SampleSize}$$

- 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) Product audit rating criteria is as follows:

Audit Rating	
% Audited Tags with <i>NO</i> Findings	
> 90%	Blue – successful audit, corrective action may be required for individual findings.
75% to 89%	Green – successful audit, corrective action may be required for individual findings.
65% to 74%	Yellow – unsuccessful audit, corrective action required. More than two successive audits may result in MRA abatement.
< 65%	Red – audit failure, corrective action required and may result in immediate MRA abatement.

e) Future document review levels shall be based on audit results.

4.4 BDS MR Engineering Audits

BDS reserves the right to conduct a product review audit of the Supplier’s MR documents. BDS shall request a list of nonconformance documents for a defined time period in which the Supplier had exercised their delegated MRA. BDS will select a sample from the list and/or of the Supplier audited documents for the purpose of a technical audit review. When requested, the Supplier shall provide a complete copy of the selected sample documents and provide the supporting product definition documentation in a format that is acceptable to BDS within 10 working days of the request date. BDS shall formally communicate the results of any audit performed to the Supplier MRB. Boeing MRA Technical Audit Worksheets are available for Supplier use located in the Supplier Portal, <http://www.boeingsuppliers.com/>.

Part III Build to Print Suppliers

1.0 Material Review Processing Requirements

- 1.1 The nonconformance document is a record of the delivered product configuration. Nonconformance records shall contain sufficient detail to ensure a standalone document. The document shall include, as a minimum, a complete and clearly defined description of the nonconformance, the disposition, documented verification of the disposition execution and all other documentation, as required herein. These records shall clearly indicate approval by authorized Supplier MR personnel and when required the Customer representative. Nonconformance records shall be retained and retrievable in accordance with contract requirements.
- 1.2 The nonconformance text entry shall contain a complete description of the nonconformance in simple direct language stating the “SHOULD BE” and “IS” condition. The product definition or specification requirements versus the existing dimensions should be noted as well. Datum plane, affected surface of part, information regarding related features (such as remaining seal groove thickness), condition of defect (sharp, smooth, etc.), quantity of defects, size of undercuts, butt gap, structural gap, misalignment, out of round, tear out, double drilled, etc. shall be included. Warranty date or date code shall be entered when applicable. Enough information should be entered to locate and adequately disposition the nonconformance and provide accurate historical data.
- 1.3 All manually written information on the nonconformance document and supporting attachments shall be clearly legible. Signatures of persons on documents or attachments shall include a printed name below the signature. The nonconformance document shall include elements required per the purchase contract requirements.

2.0 Authority Limitations and Exceptions

- 2.1 Supplier MR dispositions are limited to minor nonconformances. All major or critical nonconformances that cannot be reduced to a minor nonconformance shall be submitted to BDS per the requirements as directed by the purchase contract, for disposition and approval.
- 2.2 Deviations shall not be processed as nonconforming product. Deviations are beyond the scope of MRA and shall be submitted to BDS per contract requirements.

- 2.3 The Supplier shall not disposition any nonconformances affecting the conditions in a) through g). These shall be documented on a nonconformance document and submitted to BDS in accordance with the purchase 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 BDS 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, Flight Safety Parts, Critical, Fracture Critical Traceable, Fracture Critical, Maintenance Critical, Durability Critical, Critical Application Item, Critical Safety Item or any other critical designation item as defined by the build-to-package. 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.
 - f) Regrade Dispositions. Scrap material designated for Regrade shall be submitted to BDS per purchase contract requirements.
 - g) Boeing Supplied Material, Customer furnished equipment (CFE), Government furnished equipment (GFE), or nonconformances (not caused by the Supplier, i.e., present on delivery) on Boeing supplied materials or products. The Supplier shall notify their Boeing SQR for initiation of corrective action for any nonconformances on Boeing supplied material.

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 A rework to product specification requirements (e.g. Rework to Blue Print) disposition restores a product fully to the product contract requirements utilizing product defined process specifications.
- 3.3 The need to disposition the use of processes (e.g. D1-4426 processes) outside the product definition to restore a product to configuration requirements shall be classified as a Repair.
- 3.4 Standard Repair Procedure Disposition - BDS may authorize the Supplier to use applicable BDS developed Standard Repair Procedures (SRP) for material review dispositions. These SRPs, when applied as defined, shall not require approval by the Customer.
- a) Suppliers may develop their own SRPs. Copies of all Supplier developed SRPs shall be submitted for coordination. All Supplier developed SRPs require approval by BDS and when required shall be submitted to the BDS Customer representative for review and approval prior to use. Supplier SRPs shall be submitted to BDS for review and approval. These SRPs shall only be applied to parts/assemblies associated with the programs noted in the MRA delegation.
 - b) SRPs 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.
- 3.5 Use As Is (UAI) Disposition – All UAI dispositions shall include a rationale statement and cite the name of the BDS MRB Engineer as required per product MRA requirements. Identify each part with the Supplier Nonconformance Document number and acceptance stamp per product definition requirements and BDS Site requirements for identification. When practical, place the stamp in the area of the nonconformance. Small parts shall be controlled by bagging as defined per product definition requirements.
- 3.6 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 through the execution and acceptance of the repair. The repair part numbers shall be referenced in the disposition text and on attachments. Identify each part with the Supplier Nonconformance Document number and acceptance stamp per product definition requirements and BDS Site requirements for identification. When practical, place the stamp in the area of the nonconformance. Small parts shall be controlled by bagging as defined per product

definition requirements. All Repair dispositions shall cite the name of the approving BDS MR Engineer as required per product MRA requirements.

- 3.7 When Appendix A is required per Supplier's MRA delegation letter, all Repair and UAI dispositions shall include the Record of Salvage Action (ROSA) as an attachment; the name of the BDS MR Engineer shall be cited in the text following the coordinated disposition. Proposed dispositions for defects with valid precedence shall include the disposition and cite the precedent nonconformance document number. Precedence files shall allow for precedence tags to be easily retrieved for the appropriate MR personnel.
- 3.8 For nonconforming conditions that require "special handling" for additional work to be performed at Boeing, sub-tier suppliers and/or its customers, the disposition along with any previous Supplier material review activity associated with that condition shall be submitted to BDS in accordance with contractual requirements for approval of the "special handling" disposition only. Nonconformance documents submitted to BDS by the Supplier, as a result of this requirement, shall contain a recommended Special Handling disposition.

When the Supplier detail parts or subassemblies require special handling, and these parts or assemblies are incorporated into the next level assembly at the Supplier, the special handling requirement shall be maintained throughout all subsequent Supplier assemblies, as well as through shipment to Boeing.

- 3.9 Scrap Disposition – Scrap dispositions shall include an explanation as to why the part(s) or assembly is unusable. Scrapped product shall be strictly controlled by the Supplier MR procedures.
 - a) The salvaging of details from a scrapped assembly shall be coordinated with BDS MRB Engineer 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 to contact the responsible program management to determine if regrade usage exists before disposal of scrapped items. Scrap material designated for Regrade shall be submitted to BDS per purchase contract requirements.
 - c) 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.
 - d) Nonconformance documents shall be closed at the time the material has been physically rendered unusable for its intended purpose.

4.0 MRA Verification/Audit Requirements

Verification of the Supplier's MRA shall be three-fold: Boeing SQR audit, Supplier's verification of MR procedure, product and technical compliance, and BDS product review audits.

4.1 Boeing SQR On-site MRA Process Audit

The Supplier shall allow its Material Review system to be reviewed by Boeing SQR.

4.2 Supplier Verification

The Supplier MR 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 material review audit or upon request.

4.3 Supplier Product Review Audit Requirements

The Supplier MR procedure shall include an audit process for conducting technical audits of closed nonconformance documents initiated at the Supplier facilities. Audits shall be conducted to verify compliance to requirements and assure material review system, product integrity and document integrity. Product review audits should be conducted by a MR engineer other than the dispositioning engineer. Findings impacting the integrity of delivered product shall be immediately reported to Boeing per the disclosure process as defined in Purchase Contract requirements. Boeing MRA Technical Audit Worksheets are available for Supplier use located in the Supplier Portal, <http://www.boeingssuppliers.com/>.

4.3.1 The product review audit plan shall, as a minimum, meet the following requirements:

- a) Sampling plans shall be calculated to a 95% confidence level with a 5% confidence interval as described below. Use of a sampling plan based on this requirement shall constitute an approved sampling plan. Deviations from this requirement shall be submitted to BDS Site MRA Focal for approval.

Determining appropriate sampling requirement

- Determine the population N1
- 5% confidence interval $P = .05$

- 5% Maximum Error $E = .05$
- 95% Confidence Level $(Z(\alpha/2))=1.96$ Calculation for sample size
- Sample Size = n

Infinite population

$$n1 = P*(1 - P) * \left(\frac{Z(\alpha/2)}{E} \right)^2$$

Finding $n1$

$$0.05 * (1 - 0.05) * \left(\frac{1.96}{0.05} \right)^2 = 73$$

Finite population

$$n = \left(\frac{n1}{\left(1 + \left(\frac{n1}{N1} \right) \right)} \right) = \left(\frac{73}{\left(1 + \left| \frac{73}{N1} \right| \right)} \right) = \text{SampleSize}$$

- 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) 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.

4.4 BDS Product Review Audits

4.4.1 The Supplier shall submit a list of all closed nonconformance tags dispositioned under their MRA authority to BDS (as described in the Supplier MRA delegation letter) on a monthly basis, within one week following the last day of the month. The list shall include, as a minimum, the nonconformance tag number, part number and disposition type. BDS MR Engineering will select a sample of those tags or Supplier audited documents for the purpose of a BDS MR Engineering quarterly product audit review and/or at a frequency as determined by BDS MR 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 BDS within 10 working days of the request date Boeing MRA Technical Audit Worksheets are available for reference in the [Supplier Portal](#).

4.4.2 The Supplier will be provided the results of the audits. If significant issues with the Supplier's MR procedure are identified, corrective action will be formally requested. BDS may request additional data submittals and/or increase the level of surveillance until the corrective action plan is implemented and deemed effective. As determined by BDS, failed audit(s) may result in probation, abatement or disapproval of MRA.

Part IV Qualification and Requirements for MRA Delegation

1.0 MRA Candidate Pre-Assessment

- 1.1 During the qualification process, the Supplier shall make their MR procedures, records, and processes available upon request by the BDS Site MRA Focal.
- 1.2 The supplier shall perform an initial MRA self-assessment, utilizing the Boeing SQR checklist and gap analysis form to verify that they meet the requirements established in this document and any additional requirements as defined by the granting MRA. Any deficiencies found shall be corrected in the Supplier's MR processes and procedures. The results of the MRA self-assessment including any gaps identified shall be submitted to the BDS Site MRA Focal for evaluation and determination to proceed with the MRA delegation process.
- 1.3 The Supplier shall submit the following to the BDS Site MRA focal for approval:
 - a) MR procedure
 - b) MR Authorized Personnel Candidates List
 - c) Résumés or qualification packages for all MR Engineering candidates for the supplier's Material Review Boards. (Per Part 1 Para. 5.6)
- 1.4 The Supplier shall provide sufficient support to the SQR to allow an effective and efficient initial on-site assessment of the Supplier's MR procedures. This requirement also applies to MRA delegations with the Supplier's sub-tiers.
- 1.5 The supplier shall be notified of deficiencies found during the Boeing review of the Supplier's MR procedures, records, and processes. The Supplier shall submit and execute a resolution plan for any of the issues before proceeding to the candidate phase.
- 1.6 MRA Candidacy consideration may be discontinued if any of the following exist:
 - a) Nonconformance documents do not meet the existing purchase contract requirements for submittal to BDS for disposition.
 - b) The Supplier has outstanding corrective action issues for noncompliance to BDS MR procedures.
 - c) The Supplier has any major outstanding corrective action issues for noncompliance to their QMS (e.g., Supplier Evaluation Report, etc.).

2.0 Supplier MRA Candidate Phase

- 2.1 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. BDS will identify areas requiring change prior to the delegation of MRA.

- 2.2 BDS MR Engineering will provide a list of Engineering contacts for the MRA candidate to consult with during the candidate phase.
- 2.3 All “Use As Is”, SRP and Repair dispositions for nonconformance documents during the candidate phase shall continue to be submitted to BDS per contract requirements. A note will be added to the nonconformance document that the disposition is from an MRA candidate. The Supplier shall submit a proposed disposition including the name and phone number of the Supplier MR Engineering providing the disposition with all nonconformances submitted to BDS.
- 2.4 When Appendix A is required per Supplier’s MRA delegation letter, all Repair and UAI dispositions shall include the Record of Salvage Action (ROSA) as an attachment; the name of the BDS MR Engineer shall be cited in the text following the coordinated disposition. Proposed dispositions for defects with valid precedence shall include the disposition and cite the precedent nonconformance document number. Precedence files shall allow for precedence tags to be easily retrieved for the appropriate MR personnel.
- 2.5 Proposed Standard Repair Procedures (SRP) dispositions do not require coordination with BDS or Supplier MR Engineering unless required per the SRP notes.
- 2.6 The BDS MR Engineers shall coach the Supplier MR Engineers as issues are identified while reviewing a nonconformance document.
- 2.7 When the Supplier’s MR Engineers have demonstrated competency in dispositioning, and with input from BDS IPT, MR Engineering and SQ, and a review of the BDS MR for any Supplier escapes, a decision shall be made by BDS to; a) continue with the MRA Candidate phase with defined corrective actions, b) delegate MRA, or c) discontinue MRA process.

3.0 MRA Delegation

The supplier shall not perform MRA until they have received an approved MRA delegation letter from the BDS Procurement Agent and Quality Clause Q230 is incorporated into the purchase contract as defined in Part 1, Paragraph 3.0, Applicability.

4.0 MRA Execution

Prior to executing the BDS MRA delegation, the following activities shall take place. The Supplier shall ensure their MR procedure meets the delegated MRA requirements defined herein, and any exceptions defined in the MRA delegation letter and contain any product defined material review requirements. The MR procedure shall be submitted to the BDS Site MRA Focal for review and concurrence by the delegating BDS site. If requested by BDS, Supplier MR personnel shall attend a briefing (in person or teleconference) on the MRA delegation.

List of Acronyms

Acronym	Definition
AECA	Arms Export Control Act
ATP	Acceptance Test Plan
BDS	Boeing Defense Space and Security
BTP	Build-to-Print
C/A	Corrective Action
CFE	Customer Furnished Equipment
FO	Foreign Objects
GFE	Government Furnished Equipment
I&R	Interchangeability & Replacibility
IPT	Integrated Product Team
ITAR	International Traffic in Arms Regulations
MR	Material Review
MRA	Material Review Authority
MRB	Material Review Board
ND	Nonconformance Document
OJT	On-the-job-training
QA	Quality Assurance
QMS	Quality Management System
ROSA	Record of Salvage Action
SQR	Supplier Quality Representative
SRP	Standard Repair Procedure
UAI	Use As Is

Glossary

<u>ABET</u>	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.
<u>Corrective Action (CA):</u>	Action to eliminate or mitigate the cause(s) of a detected nonconformity or other undesirable situation to prevent recurrence.
<u>Customer</u>	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.
<u>Defense Service</u>	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.
<u>Deviation</u>	A specific written authorization, granted <u>prior</u> 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.
<u>Disclosure</u>	Written notification of noncompliance affecting previously delivered product.
<u>Disposition</u>	The documented action(s) required to resolve a nonconformance.
<u>Foreign Object (FO)</u>	A substance, debris or article alien to a vehicle or system.
<u>Non-US Person</u>	A foreign person is someone who does not fall into one

	<p>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.</p>
<u>Interchangeable/Replaceable (I&R)</u>	<p>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.</p>
<u>Integrated Product Team (IPT)</u>	<p>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 BDS program engineering teams. For a Design Supplier, the IPT is typically the Supplier technical engineering teams.</p>
<u>International Traffic in Arms Regulations (ITAR)</u>	<p>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.</p>
<u>Material Review (MR)</u>	<p>Review of nonconforming product by designated persons to provide the appropriate disposition, including evaluation of the effects of the decision on interchangeability, further processing, performance, dependability, safety, and aesthetics.</p>

<u>Material Review Authority (MRA)</u>	Permission granted by BDS to process minor nonconformance in accordance with the requirements of this report.
<u>Material Review Board (MRB)</u>	A board consisting of technically qualified and authorized representatives who determine the proper disposition of nonconforming material referred to them.
<u>MR Engineer</u>	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.
<u>MR Quality Assurance</u>	Material review quality assurance person responsible for the quality aspects of the material review process.
<u>Material Substitution</u>	Any deviation from product definition requirements, such as material product form, process deviation, chemical composition, temper, etc.
<u>MRA Internal Control Plan (MICP)</u>	A documented process developed by the Supplier to flow down the requirements as defined within the MRA delegation letter and this report to their personnel.
<u>Nonconformance</u>	A departure from the requirements specified in the contract, specification, build-to media, or other approved product definition.
<u>Nonconformance Document (ND)</u>	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.
<u>Nonconforming Material</u>	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.
<u>Partial Disposition</u>	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)
<u>Precedence</u>	The use of a previously approved nonconformance disposition as the basis for the disposition of a current nonconformance.
<u>Proceed at Risk</u>	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.
<u>Product Definition</u>	The contract/blueprint/specification/model which defines the product.
<u>Record Retention</u>	The collection, maintenance, storage and access of nonconformance and related records.
<u>Record of Salvage Action (ROSA)</u>	<p>Documentation of the salvage requirement(s) from IPT Engineering to MR Engineer for disposition of a nonconformance. ROSA will indicate Salvage Type I, II, III or IV.</p> <p>Type I -- Deficiencies Which Do Not Actually Reduce Equivalent Strength -The salvaged part must be able to perform the identical "structural function" as the blueprint part. The margin of safety for the part has not been reduced.</p> <p>Type II -- Repairable Deficiencies-The part is repaired so as to restore the defective section or area to blueprint strength. Repairs must be performed if they will restore blueprint strength.</p> <p>Type III -- Non-repairable Deficiencies. Type III deficiencies are those which have all three of the following characteristics:</p> <p>A) Non-repairable. (The blueprint strength is not restored by the repair.)</p> <p>B) Scrapping or replacement of the deficient part involves major replacement costs.</p> <p>C) The repaired strength is less than blueprint.</p> <p>Type III deficiencies should be repaired if possible to restore as much strength as possible. The margins discussed below are after repair.</p> <p>Type III deficiencies fall into two categories.</p> <p>Type IIIA-The parts that have greater than equivalent strength than that of immediately adjacent parts attached in series. AND The margin of safety of the part is within .15 of the blueprint margin.</p> <p>Type IIIB-Parts that do not have greater than equivalent</p>

	<p>strength than that of immediately adjacent parts attached in series. BUT the margin of safety of the repaired part is .15 or greater and the margin of safety is within .15 of the blueprint margin.</p> <p>Type IV - Other Deficiencies, No Precedence Allowed</p> <p>Acceptance of parts that do not meet any of the Types I, II, IIIA, and IIIB requirements must be approved by a Senior Project Engineer. Note: Type IV deficiencies are not useable as precedence ROSA's for future parts/assemblies.</p>
<u>Regrade</u>	A disposition of a nonconformance that determines that the product is not acceptable for its intended design and directs the product to be re-designated or modified for an alternate use.
<u>Repair</u>	The subjection of nonconforming material to an approved disposition, designed to reduce, but not completely eliminate the nonconformance.
<u>Rework</u>	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.
<u>Scrap</u>	Nonconforming material that is not useable for its intended purpose or cannot be economically Reworked or Repaired.
<u>Standard Repair Procedure (SRP)</u>	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 MRB, program IPT Engineering and Customer Engineering representative.
<u>Sub-Tier Supplier</u>	A supplier contracted by the BDS Supplier to provide a product or service related to the BDS contract.
<u>Supplier</u>	Any entity with whom BDS contracts to provide product or service.
<u>Supplier Quality Representative</u>	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 BDS Supplier Quality activity that may or may not be supported by the SQR assigned to the Supplier.
<u>Technical Audit</u>	The audit review of nonconformance documents by MR engineering to ensure the effective implementation of the MR procedure, MRA requirements, product requirements and nonconformance documentation to ensure the integrity of the final product.
<u>Technical Data</u>	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.
<u>Unauthorized Work</u>	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 MR document.
<u>Use-As-Is Disposition (UAI)</u>	A disposition to accept minor nonconformance(s), in the present state without repair, when determined that product functional and performance requirements are maintained.

Appendix A Disposition Coordination with BDS

1.0 BDS IPT Coordination

- 1.1 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 BDS technical group, such as Structures IPT Strength Engineering or Material and Process Engineering. The package submitted to BDS IPT by the Supplier MR 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.
- 1.2 BDS IPT engineering shall provide a record of salvage action (ROSA) to the Supplier MR 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 BDS engineering as soon as possible for re-evaluation and receipt of an updated ROSA.
- 1.3 The MR engineer’s disposition for UAI, Repair and SRP (when required) shall cite the name of the BDS 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.

2.0 MR 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.

- 2.1 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 BDS MR Engineer approved disposition.

- 2.2 The usage of multiple previous nonconformance dispositions at the same location or a combination of multiple defects in near proximity requires BDS MR Engineering coordination for evaluation of the combined effects and shall be processed as a first time occurrence.
- 2.3 Precedence files shall be coordinated with BDS MR 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 BDS MR Engineer. The revalidated document shall become the new precedent document to cite.
- 2.4 When Customer Review requirements allow use of precedence, use of valid precedence shall include Customer approval. Precedence shall not be used in either of the following instances:
 - a) Precedence is limited and/or withheld by the MR Letter of Delegation
 - b) Customer has noted in writing within the nonconformance document when acceptance of the specific condition shall not be used for precedence.
- 2.5 The use of precedence files does not reduce the requirement to identify, investigate and execute corrective action to eliminate the defect.
- 2.6 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 BDS MR engineer and Customer, when required, with whom the nonconformance was coordinated. In some cases the precedent document cited for BDS MR Engineering may be different than the precedent document cited for Customer approval. When this occurs, both documents shall be denoted.

Revision Record

Revision Letter **A**
Changes in This Revision Corrected typographical error in Part II, Paragraph 2.3, page 11. Clarified customer precedence requirement in Attachment A, Paragraph 2.4, page 33.

Authorization for Release

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Revision Record

Revision Letter **B**
Changes in This Revision Clarified definition of BDS in Part I, Introduction; Rearranged text and clarified requirements in Part I, Paragraph 3.0; Removed text for standalone document in Part II Paragraph 1.1; Fixed typo in Part II Paragraph 2.3 f; Revised frequency from semi-annually to annually in Part II Paragraph 4.2. Deleted transcripts and add qualification packages to Part IV, Paragraph 1.2; added requirement to note that a disposition is from an MRA candidate to Part IV, Paragraph 2.3.

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