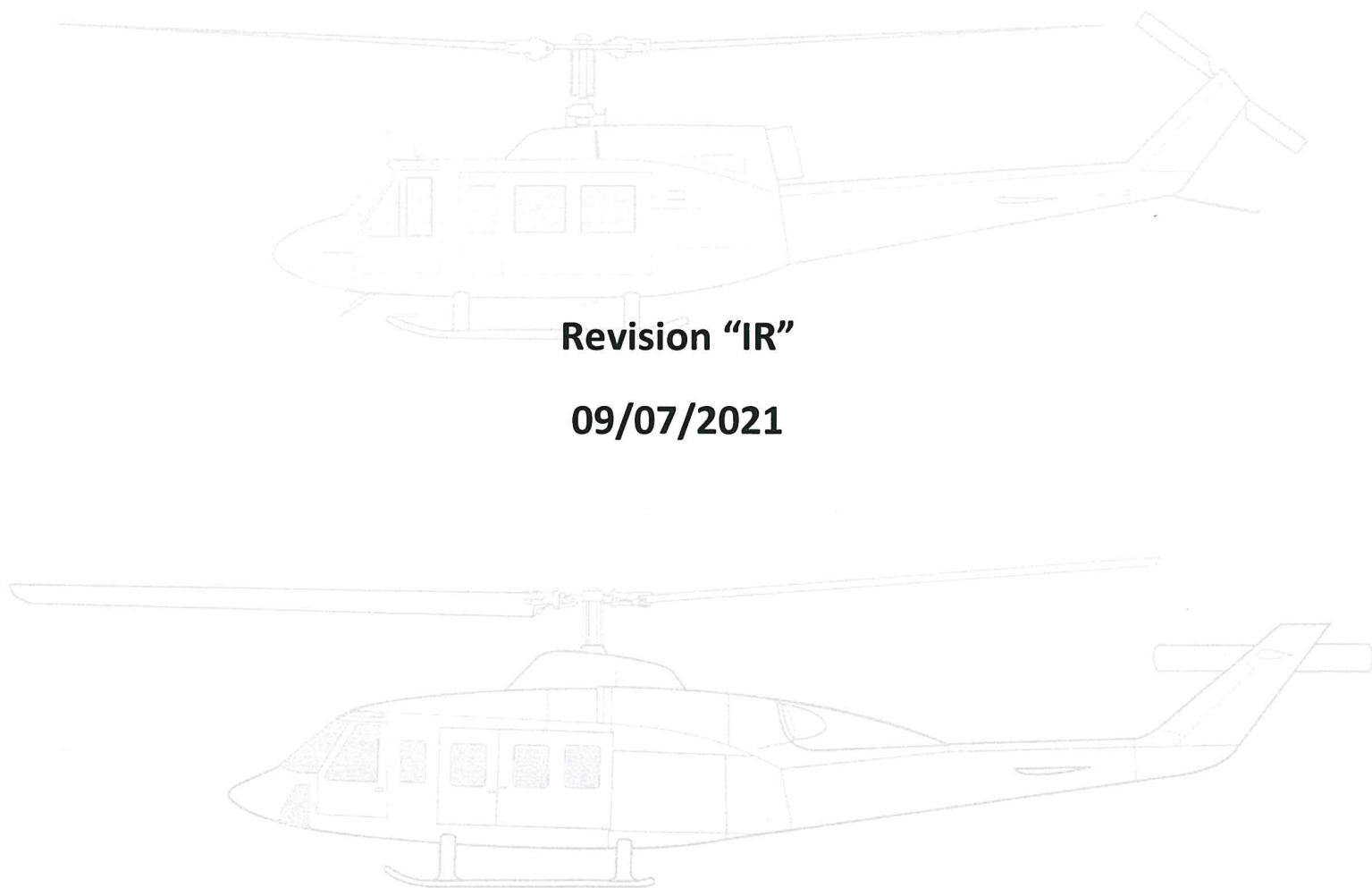


## **2003 Supplier Supplement**

**Revision "IR"**

**09/07/2021**






**REVISION RECORD**

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**REVISION SUMMARY**

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**CONCURRENCE**

Senior Director of Supply Chain		Director of Quality
		
Chief Engineer		
		

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## Overview

This supplement defines the procedures for complying with Erickson Specification 2003 (ES2003), Controlled Item Part Requirements For 214B/B-1 And ST. It contains Erickson Quality System requirements which supplement purchase order and design requirements for the manufacture and processing of Controlled Item Parts for model 214.

In cases of conflict between the requirements of this document and the Engineering documentation, the engineering requirements shall take precedence.

Erickson Quality is responsible for coordinating the approval of this supplement.

## A. General Requirements for Controlled Items

### 1. Program Administration

- a) All suppliers receiving Erickson purchase orders for the manufacturing of controlled items and/or processing operations for controlled items must be approved by Erickson.
    - (1) To ensure compliance with this supplement suppliers must establish and document a program within their Quality Management System that implements the applicable requirements and controls required within this supplement. The controls, responsibilities and processes to ensure compliance with requirements shall be defined in a documented procedure and be submitted for review and approval by Erickson Quality prior to "Controlled Item" approval status being granted. Any subsequent revisions shall also be submitted for approval prior to implementation.
    - (2) All documents applicable to controlled items (i.e., manufacturing, processing, procurement, quality, shipping, etc.) shall have clear notation of the item's designation ("Primary", "Critical", "Flight Safety", or forging, casting, or composite item designated as "Makes a Controlled Item Part").
    - (3) All documents (e.g., manufacturing planning, inspection records, purchasing documents, rejections, etc.) where "Significant" or "Critical" characteristics are noted shall identify these characteristics. A Significant characteristic shall be identified by the inverted triangle symbol "▼" or by clear annotation that characteristic is "significant". A Critical characteristic shall be identified on all documentation by the diamond-C symbol "◈" or by clear annotation the characteristic is "critical".
- Raw casting or forging characteristics that are critical will be shown on the finished item drawing. The characteristic will have a note stating it will be a critical characteristic on the finished controlled item.

### 2. Program Manufacturing/Process Planning

- a) A written plan in English outlining each manufacturing, processing, assembly or installation operation/process resulting in a controlled item shall be submitted to Erickson for approval and FREEZING by the Erickson Planning Review Board (PRB) prior to first delivery of a controlled item.
- b) After initial PRB approval, the detailed written manufacturing planning, product traveler and Inspection Check Sheet are considered "FROZEN". Any changes to "FROZEN" documents, including sequencing, must be submitted for approval by Erickson PRB except as noted below.
  - (1) Changes to update engineering revision status having no impact on the product being controlled by the frozen planning.
  - (2) Change from one piece of equipment of the same manufacturing type to another, providing the change does not alter the manufacture as established by the initially approved planning package or alter the programming, tooling, methodology, etc. Changing from one method of manufacturing to another is not permissible without prior approval through Erickson PRB.
  - (3) Addition of inspection sequences.
  - (4) Revised or changed tooling identification.
  - (5) Relaxed tolerance dimensioning when authorized by Erickson Engineering.
  - (6) Tightened tolerance dimensioning.



- (7) Typographical errors.
- (8) Minor dimensional machining revisions of planning to semi-finished attributes to allow for clean up or to compensate for process (including tooling) variation.
- c) Manufacturing or process planning documents shall be annotated as "FROZEN" and shall note that any changes must be approved by the PRB.
- d) Only the "FROZEN" planning being revised must be submitted for PRB approval, e.g. change to a sub-tier process plan must be re-submitted but does not in-and-of itself require re-submittal of the actual part manufacturing plan and vice versa. Suppliers are required to submit sub-tier supplier planning to Erickson PRB for approval on all frozen planning.
- e) PRB approval of planning is not to be considered as authorization for deviation from applicable engineering requirements. Any planning instruction that deviates from engineering requirements shall be corrected and resubmitted for PRB approval.

### 3. Records

Manufacturing and Quality records for controlled items are to be permanent and available for review.

## **B. Manufacturer Requirements for Controlled Items**

### 1. Traceability/Serialization

- a) Supplier must have a system providing controlled part traceability originating at the specific lot or batch of raw material, heat lot, or X-Ray number for castings and going forward to the final product supplied to Erickson.
  - (1) Traceability shall be maintained throughout manufacturing, processing, assembly and installation operations forward to the Suppliers shipping document.
  - (2) Items designated as "Primary" only and not designated Primary Part traceable are required to maintain traceability to the extent required to assure compliance to engineering requirements.
  - (3) In-process product is to be identified throughout manufacturing process via work orders, operation instruction sheets and identification tags to ensure visibility, identification and process continuity.
  - (4) All documentation and traceability information are carried forward to final inspection/certification and are incorporated into shipping documentation.
  - (5) Serialization per ES2002 is to be recorded and maintained on all applicable manufacturing, purchasing, inspection and certification documents.
  - (6) Serialized parts subcontracted by suppliers are to be controlled to assure accountability of quantities and traceability to specific operations performed by each sub-tier source involved via purchase orders. Certifications received from sub-tier sources must reflect the product serial numbers.

### 2. Manufacturing Process Review and Approval

- a) Planning for controlled items shall be submitted to Erickson for written Erickson PRB approval except as noted in subsection f) below. Submittal must include all supplier planning requirements noted below and the inspection check sheet for the part number being submitted
- b) Manufacturing planning and/or process sheets for all operations to be performed shall reflect the following as a minimum:
  - (1) Notation of part classification on planning document, e.g., "Primary", "Makes a Critical", "Critical", "Flight Safety".
  - (2) Manufacturers/processor's name and physical address.
  - (3) Planning revision level and/or date.

- (4) Planning Revision History showing initial release and reason for subsequent revisions.
- (5) Part number, complete with dash number.
- (6) The drawing revision letter, parts list revision level and any applicable Engineering Order numbers to which the finished item must comply.
- (7) The material used, including the applicable specification numbers, and provisions for verification of the correct material by supplier inspection personnel.
- (8) When an assembly, the identification of each controlled item part number contained within the assembly.
- (9) Sequential manufacturing, processing, test, and inspection operations, including sequencing options, with provisions for indicating acceptance or rejection and date of accomplishment for each operation.
- (10) Significant "▼" or critical characteristic "◊" identification at each point the characteristic is noted on the planning.
- (11) Provisions for recording traceability/serial numbers.
- (12) Equipment, tooling, fixtures, jigs, templates, etc. to be used.
- (13) Required special instructions or caution notes
- (14) Sketches, diagrams or supplemental instruction sheets used in the manufacture of the part.
- (15) Special packaging, preservation and identification requirements, including provisions for preservation and protection of products to sub-tier suppliers or special processors.
- c) For operations planned by the Supplier to be performed by sub-tiers, including special process sources, a copy of the sub-tier's technique documentation must be included as a part of the manufacturing plan submitted to the PRB for approval.
  - (1) Operations for outside processing, must include name(s) and physical address(s) of sub-tiers to be used.
  - (2) Sub-tier planning and/or technique documentation must include their customer's name (the firm contracting for the work to be performed or service provided).
  - (3) Erickson PRB will review the sub-tier planning for general layout and compliance to this supplement.
- d) Planning for controlled assemblies containing controlled detail items will include a listing identifying each controlled part number and serial number, if applicable.
- e) Manufacturing operations for controlled items offloaded by suppliers are to be performed per supplier manufacturing planning. Any planning changes requested must be approved by Erickson PRB prior to incorporation.
- f) Suppliers of supplier designed controlled item parts may approve frozen planning through their own internal PRB when approved by Erickson. Supplier shall notify Erickson in writing of each planning document's initial release and subsequent revision thereof. Notification to include the following as a minimum:
  - (I) Suppliers Name & physical address
  - (II) Erickson Part Number
  - (III) Erickson Drawing Number
  - (IV) Erickson Drawing & Parts List Revision and applicable EOs or ADCNs.
  - (V) Supplier Part Number
  - (VI) Supplier Drawing Number
  - (VII) Supplier Drawing Revision
  - (VIII) Planning Revision & Date (MM-DD-YY)
  - (IX) Inspection Check Sheet Revision & Date (MM-DD-YY)



### 3. Purchasing

- a) Supplier may subcontract controlled items to sub-tier sources for complete manufacture, individual manufacturing operation(s) or performance of special processes/NDI.
  - (1) Sub-tier controlled item manufacturing and process sources used by suppliers must be approved for controlled items by Erickson except as noted in ES2003. The list of approved suppliers is maintained on Erickson's B2B portal.
  - (2) Suppliers providing a controlled item designed by the supplier and manufactured to a supplier part number must approve manufacturing and processing sub-tier sources to the requirements contained within this supplement. Sub-tier source surveillance must be used to the extent necessary to ensure program compliance. Changing a sub-tier source requires revision to frozen planning and inclusion within the change notification sent to Erickson as required by the manufacturing planning requirements.

Supplier sub-tier sources for either completed designated product or for individual manufacturing operations that involve "Critical" characteristics must be approved by Erickson.
  - (3) Sub-tier sources providing non-controlled detail items within a controlled assembly must be approved and controlled by the Erickson quality system requirements.
- b) Approved controlled item sources for Bell Processing Specifications (BPS) requiring facility approval are identified within Erickson's Approved Processor Listing. Supplier purchase orders for processing controlled items shall include the following information in addition to standard quality system requirements:
  - (1) Controlled item level, e.g., "Primary", "Critical", "Makes a Critical", "Flight Safety".
  - (2) Serial numbers listed on the shipping documents.
  - (3) If the process operation involves a "Significant" or "Critical" characteristic, the characteristic level is identified on the shipping document.
- c) Processes controlled by specifications other than a BPS, such as MIL-SPECS or industry processing specifications involving a "Significant" or "Critical" characteristic shall require the source be Erickson approved to the "controlled item" level of hardware or higher. The purchasing documents for this type of processing of controlled items shall also include the additional information noted above.

### 4. Manufacturing Verification

Operator Buy-Off: Manufacturing shall signify completion of each Critical Characteristic "⬠" operation on the manufacturing operational planning with a buy-off by the operator(s) completing the operation. The buy-off consists of a legible name, employee number (or other suitable operator identification), initials, and date.

### 5. Inspection, Testing, and Documentation

- a) **Measurement Equipment:** All measurement and test equipment used to inspect Flight Safety items shall be discriminate to within ten percent (10%) of the total tolerance spread for the feature being inspected. For total tolerance spreads of less than .001 inch, measurement equipment is to discriminate to twenty percent (20%) of the spread. Equipment less discriminate shall only be used with the specific approval of Erickson PRB.
- b) **First Article Inspection:** When a FAI for a controlled item at the detail part level is completed, Supplier shall contact Erickson to determine if FAI verification will be performed at source. Supplier must request the inspection a minimum of 14 days in advance of the schedule date the inspection is to be accomplished. AS9102 is required per standard contract quality requirements.
- c) **Final Inspection Check Sheet:** A final inspection check sheet for each controlled item shall be used by Supplier to verify inspection of production lots to specified requirements and must accompany manufacturing planning submittal to the PRB for approval/freezing prior to delivery of first production parts.

- d) The inspection check sheet must provide traceability to the production order or traveler, quantity of parts in the manufacturing lot, including a list of all attributes as specified on the engineering documentation including dimensions, notes, material, actual test results, and document inspection results. Recording of actual results is not required for all parts in the lot.
- e) The method of inspection will be shown for each attribute, i.e., type instrument used, visual, or certification review.
- f) The names of sub-tier sources used for NDT and processing such as heat treat, cadmium plate, etc. shall be shown for each process.
- g) Check sheets will have significant "▼" or critical characteristics "◆" annotated or clear identification of characteristic level.
- h) Serial numbers, when applicable, will be noted on check sheets
- i) Hardness Inspection: When heat treating is required by engineering drawing, the applicable controlled item shall receive a hardness test which will be conducted after all processing or exposure to elevated temperature operations. In cases where it is not practical to check hardness after all thermal operations (for example parts that receive plating or coating that preclude accurate hardness tests) may be hardness checked earlier in the manufacturing process, provided that all subsequent thermal operations, such as embrittlement relief baking, are performed in ovens equipped with excess temperature controls such as automatic shutoff devices, audible alarms, or other suitable controls to prevent processing temperature exceedance. When the hardness is designated as a Significant "▼" or Critical Characteristic "◆" inspection records shall include documentation of actual hardness readings for each part.

**EXEMPTION NOTES:**

- (1) Hardness testing when followed by only chemical process tank operations performed above room temperature does not have to be repeated after the processing.
  - (2) Titanium, tungsten and non-metallic parts are exempt from this requirement.
  - (3) Product having specific engineering requirements as to when hardness testing is to be performed shall be exempt from this requirement.
- j) Thread Inspection: Threaded features related to controlled items require inspection methodology to assure correct thread form and size.
- (1) The proper gauging and controls shall be established during first article and continued during production, to assure a uniform thread configuration. The plan shall include:
    - (a) External threads: Dimensionally inspect major diameter (100%).
    - (b) Internal threads: 100% inspect minor diameter.
    - (c) Normal GO/NO-GO gauging and visual inspection. (Gage insertion depth must be sufficient to identify taper and lead error)
  - (2) In addition to the above controls, internal and external threads produced by single point tooling requires:
    - (a) External Threads - A 10% comparator evaluation of thread form.
    - (b) Internal Threads - A 10% thread cast and comparator evaluation of thread form.
    - (c) All thread form inspections are documented, including serial numbers, if applicable.

NOTE: A contour reader or equivalent may be used for the above inspections in lieu of casts.
  - (3) Any threaded parts used for setup, trial run, or test must be identified and segregated to prevent mixing with production parts. Once a part has been removed from setup, no additional threading shall be permitted.
  - (4) Taps used to produce threads shall be inspected to assure they will produce the specified thread configuration. Gauging of threads produced must be used to confirm continued uniform thread configuration.



- k) **Abusive Machining Detection:** Nital etch inspection shall be performed on controlled items fabricated from ferrous metals for detection of abusive machining as required by ES2003.
  - (1) Site facility approval as required by BPS 4092 will not be required unless BPS 4092 is invoked by the applicable engineering drawing.
- l) **Destructive Testing:** Controlled items requiring destructive testing will have the testing performed on a lot or batch basis as defined per engineering requirements or, if not defined by engineering, as defined within approved/frozen planning. No skip lots will be allowed.

#### 6. Material Review of Non-Conforming Parts

- a) Nonconformities must be submitted for Erickson Material Review Board consideration through the Non-Conformance Report (NCR) process. Nonconformities involving controlled items must be identified on rejection documents with the appropriate controlled item level, (e.g., "Primary", "Critical", "Flight Safety" including forging, casting, or composite item designated as "Makes a Controlled Item Part") in bold letters preceding the description of the nonconformance(s).
- b) Rejection documents for nonconforming "Significant" "▼" or "Critical" "⬠" characteristics must identify these characteristics by applicable symbol or clear identification of characteristic level.
- c) Rework planning for nonconforming controlled items requiring deviation from the initially approved planning package, must be submitted for review and approval by the PRB. Rework to the original work plan sequence does not require approval. Detailed rework and repair instructions documented in a non-conformance disposition may fulfill this requirement when approved by Erickson PRB. Rework planning, including special processes, is to be submitted and approved prior to accomplishment of the rework action.
- d) Any rework of a shot-peened surface must be approved by the PRB.
- e) Rework planning related to local, mechanical damage, i.e., nicks, dents and scratches, is not considered as rework that differs from the original planning instructions. However, any NDT and/or all chemical /organic finishes included in the original planning instructions must be included in the rework planning and accomplished locally on the part.
- f) Controlled items returned from customer or from service will be processed in accordance with the engineering requirements and approved procedures as specified in the contract.

#### 7. Shipping Identification

- a) Shipping documents for assemblies containing controlled item detail parts shall include a listing of each controlled detail part number, manufacturing date (if detail is not serialized) and serial number (when applicable).
- b) **Shipping Identification:** Suppliers will apply unit and container (intermediate and/or shipping) marking as required by applicable contract.
- c) The exterior of containers with controlled items or assemblies made with controlled items shall be identified with part number(s), serial number(s), if applicable, and the designation of the controlled items (e.g. "Primary Part", "Critical Part", "Makes a Critical Part", "Flight Safety Part")

### C. Process Source Requirements for Controlled Items

#### 1. Traceability/Serialization

When controlled items being processed are serialized, serial number traceability will be maintained throughout the process and will be recorded on processor's quality documents.

**2. Process Planning Review & Approval**

Processors of controlled items must provide Erickson with applicable process/NDT planning and technique card/sheet for each part number containing the following as applicable:

- (1) Notation of designation on planning document (e.g., "Primary", "Critical" "Makes a Critical", "Flight Safety").
- (2) Processor's name and physical location.
- (3) Planning revision level and/or date.
- (4) Planning Revision History Record Sheet showing initial release and reason for subsequent revisions.
- (5) Part number, complete with dash number.
- (6) The process specification revision along with any process engineering changes not yet incorporated.
- (7) Processing operations to a Bell or military/non-government specification must show direct reference to the process, technique or set-up card, and annotation of required bake time – temperatures when applicable. As an alternative, the planning may reference a supplier's internal process procedure which reflects the required time and temperature. The internal procedure becomes a part of the manufacturing planning and is considered "FROZEN" upon approval. Any changes to the procedure are to be submitted to Erickson PRB for approval prior to incorporation.
- (8) Significant "▼" or critical characteristic "◊" identification at each point the characteristic is noted on the planning.
- (9) Provisions for recording serial numbers when applicable.
- (10) Sketches, diagrams or supplemental instruction sheets used in the manufacture of the part.

**3. Purchasing**

Any subcontracting by a processor for a controlled item must be subcontracted to a source that is Erickson approved for controlled items. The list of approved suppliers is maintained on the Erickson B2B portal.

**4. Processor Verification**

Operator Buy-Off: Processor shall signify completion of each Critical Characteristic "◊" operation on Operational Planning with a buy-off by the processor personnel completing the operation. The buy-off consists of a legible name, employee number (or other suitable operator identification), initials, and date.

**5. Material Review of Nonconforming Parts**

- a) Nonconforming material must be segregated, documented and communicated to the Supplier who Erickson has contracted to provide the controlled item.
- b) Rework planning required due to deviation from the initially approved planning shall be developed and submitted to Erickson for PRB approval, reference rework planning requirements noted above.