The Marvin Group

FIRST ARTICLE INSPECTION GUIDEBOOK

2026 EDITION

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1.0 INTRODUCTION

1.1 Purpose

This guidebook provides directions on how to identify, plan for and satisfy Marvin Engineering Company (MEC) specific requirements for completing a compliant First Article Inspection (FAI). It is based on the latest revision of AS9102, and additional MEC expectations.

An FAI is performed to provide objective evidence that:

- All engineering, design, contractual and specification requirements are correctly understood, accounted for, verified and recorded.
- Materials, tooling, processes, documentation and personnel are capable of consistently producing compliant hardware.
- Part/assembly is 100% compliant, defined, base-lined and repeatable.

This document applies when an FAI is required by the purchase order and/or Purchasing Product Assurance Provisions (PAP) clause #24, or any reference documents (such as a Statement of Work). This document also applies to *all* sub-tiers who produce design characteristics and/or sub-assemblies.

1.2 Benefit

The benefit acquired from this guidebook will result in improved 1^{st} pass yield of first article document reviews and the enhancement of the supplier's reputation.

1.3 Target Audience: (Page 1)

This guidebook is intended for **MEC suppliers**, Quality Control personnel, Supplier Quality Engineers, Quality Engineers, **as well as professionals in Supply Chain and Manufacturing Engineering**.

2.0 REFERENCES

2.1 Reference Documents

- International Aerospace Standard 9102 Latest Released Revision
- Marvin Engineering Product Assurance Provisions (PAP 22, 24, 59)
- Reference: "http://www.marvingroup.com/index.php/supplier_information/" for more information regarding FAIs.

2.2 Required Forms

- AS9102 Form 1: Part Number Accountability
  This form is used to identify the product that is having the First Article Inspection (FAI) conducted on (e.g., detail part, subassembly, assembly:) referred to as "FAI part".

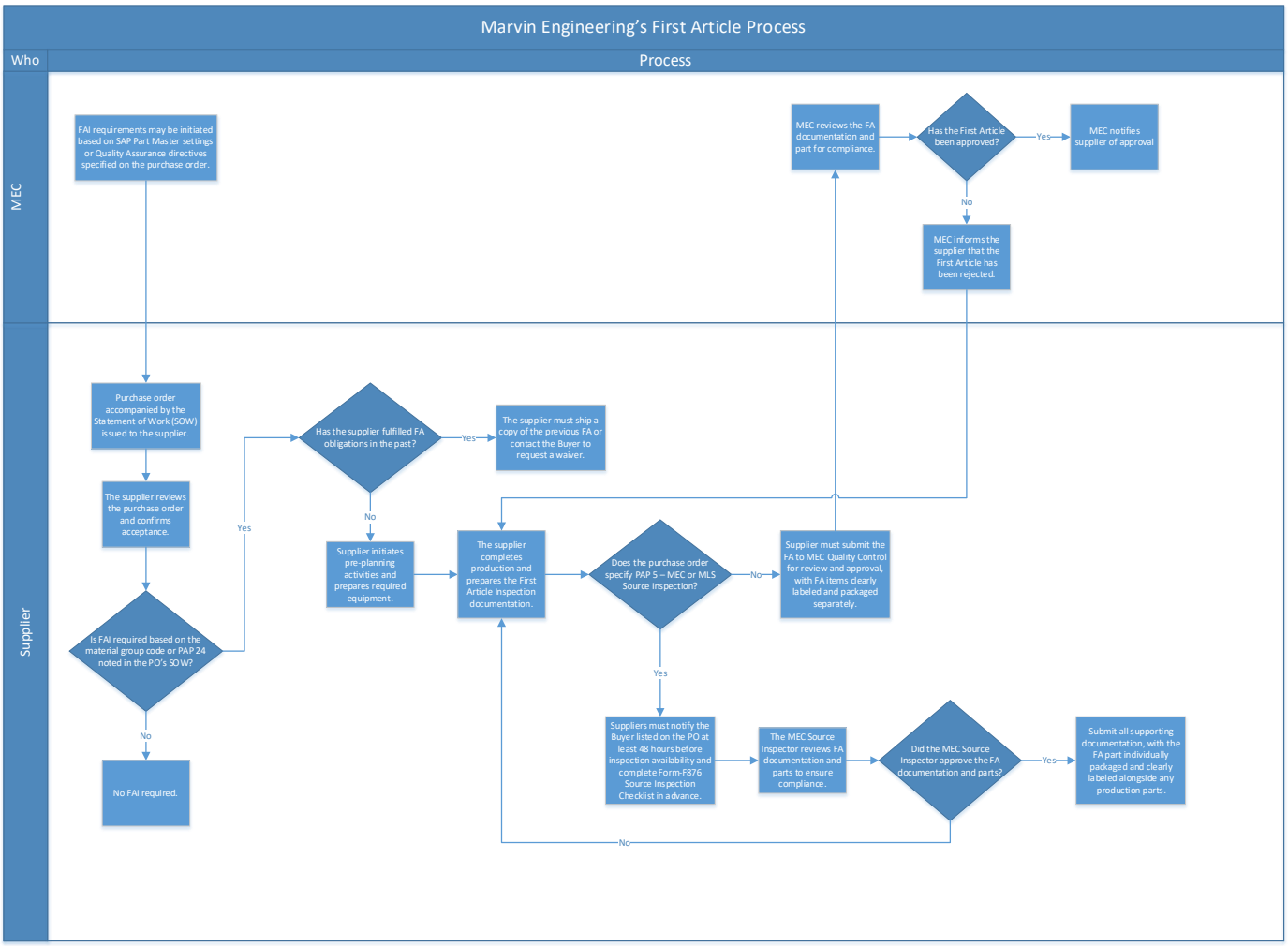
- AS9102 Form 2: Product Accountability - Raw Material, Specifications and Special Process(es) and Functional Testing.
  This form is used if any materials, special processes, or functional testing is defined as a design characteristic.

- AS9102 Form 3: Characteristic Accountability, Verification and Compatibility Evaluation or equivalent.
  This form is used to record inspection results for the design characteristics and document any applicable nonconformance's.

  NOTE: Suppliers may use their own format for FAI Reports if they contain all required and conditionally required information as outlined in AS9102

3.0 REQUIREMENTS

3.1 Marvin Engineering's First Article Process



3.2 Purchase Order FAI Requirement

FAI requirements are specified within the Purchase Order (PO) through one or more of the following:

- PO header notes
- PO line items
- The material code, referenced in the PAP clause Text section

Relevant PAP clauses associated with material code requirements can be accessed at https://marvingroup.com/pap.

When explicitly stated in the PO, the seller is required to perform a First Article Inspection and submit the documented results to an MEC Quality Representative. These results must be reviewed and accepted prior to the approval of any production parts.

If FAI is referenced within the PAP clauses of the PO, the seller must provide either a full or partial FAI in accordance with PAP 24 – First Article Inspection.

The scope of the inspection shall include, but is not limited to, a complete and documented verification of all dimensions, features, notes, and specifications outlined in the contract.

For any product changes, a delta FAI addressing only the changes is acceptable. Additionally, the supplier is responsible for verifying that all operations performed by subcontractors or external sources comply with the applicable requirements.

Suppliers shall utilize the *most current version* of AS9102 when preparing their First Article Inspection (FAI) report. This includes the use of AS9102 Forms 1, 2, and 3, or equivalent forms that capture all required and conditionally required information as outlined in the standard.

All applicable fields must be completed, including those designated as conditionally required. These fields must be populated when relevant data—such as special processes, material certifications, or sub-tier supplier involvement—applies to the part, assembly, or process being inspected. Omission of applicable conditional data may result in rejection or delay of the FAI package.

The supplier shall submit the FAI report, along with supporting documentation*, as evidence of compliance with this requirement. These documents must accompany the first shipment on the purchase order, as outlined above.

Upon request, the supplier shall also provide records of inspections conducted to verify conformance for subsequent build lots or shipments.

The supplier is responsible for retaining the First Article Inspection Report for a minimum of five years.

*Supporting documentation may include, but is not limited to:

- Certificates of Conformance for raw materials and special processes (as defined in the AS9100 specification and identified on the engineering drawing)
- Drawings
- Test reports

NOTE: A first article inspection report is not required for rework/repair purchase orders or for parts or material conforming to an established industry or national authority published specification, which has all characteristics identified by text description (i.e.,
COTS and Mil-Spec parts).

3.3 FAI Planning

The following items shall be taken into consideration *prior* to manufacturing compliant hardware and completing a FAI:

3.4 Pre-Planning Activities

- Ensure that the process, planning and tooling that will produce the part being presented is one that is repeatable enough to consistently yield compliant hardware.
- Compliance with MEC POs and associated PAP clauses are to be considered part of your pre-planning activities.
- Ensure that the Engineering package utilized is "Released" and the revision is per the PO requirement.
- Hardware utilized for an FAI shall be part of the first production run. This FAI part should not be a qualification unit since qualification is completed prior to FAI. (except for Partial/Delta FAIs)
- Ensure all parts and materials included on Parts List are part of the FAI package and include a Certificate of Conformance for each.
- Verify that 100% of drawing characteristics, notes, embedded specifications and sub- assemblies are achievable and supported with objective evidence (as applicable). Ensure all process measurements are accounted for and verified prior to final assembly.
- Identify special processes, and if required, ensure the use of MEC or MEC's customer approved Special Processors in accordance with PO requirements.
- Ensure applicable FAI requirements are flowed down to sub-tiers and are reviewed upon completion.
- Ensure controls and documented processes are in place to fulfill drawing requirements such as:
    - Quality Management Systems
    - Documented Production Processes
    - Qualification
    - Testing
    - Counterfeit Part Prevention
    - Inspection and acceptance tooling
    - Sub-tier Management
    - Approved Acceptance Test Procedure (ATP)/Verification Test Procedure (VTP)
    - Appropriate training of all personnel
    - Others (as applicable)
- Ensure production baseline process controls are in place to achieve and maintain compliance to PO process change control requirements as defined by Purchase Order (PAP22 and 59).
- Supplier or contractor shall notify MEC of any changes (any alteration to the design, technical specifications, materials, component sourcing, production process, facilities, location, cert lapse, cert loss, Major CAR from any audit etc.) whether instigated by seller or its sub-tier

suppliers.

- When PO PAP 5 is invoked, a Source Inspection applies, and an on-site FAI review may be required in advance of part shipment.

3.5 Equipment

- Have appropriate measurement equipment/methodology for each characteristic and ensure that all equipment is calibrated.
- Ensure equipment accuracy (i.e., at least 10X accuracy), and ensure it is capable of performing the measurement. Supplier should always consider measurement system analysis studies for close tolerances such as Gage R&R.

3.6 Digital Data (as applicable)

- Ensure use of MEC supplied models as applicable to the PO. This should be the latest approved model, revision, and version provided in accordance with the PO, software, etc.
- Ensure supplier is approved to special process/PO for Reduced Dimension Drawing (RDD) when required by drawing.
- Referenced models are not to be used for manufacturing or acceptance.

3.7 FAI Submittal

- FAI items that do not require source inspection must be completed at the supplier and submitted to MEC Quality Control for review and approval. First article items shall be separately packaged and clearly labeled as FA upon submission.
- All FAI submittals must be provided to MEC Quality Control prior to the submission of production material.
- Production material received without an approved FAI is subject to immediate return.
- Questions regarding FAI submittals should be directed to the buyer identified on the purchase order.

3.8 Partial/Delta FAI

- The FAI requirement, once invoked, shall continue to apply even after initial compliance.
- The FAI requirements may be satisfied by a partial FAI that addresses differences between the current configuration and prior approved configurations. When a partial FAI is performed, the organization shall complete only the affected fields in the FAI forms.
- FAI requirements may also be satisfied by previously approved FAI(s) performed on identical characteristics of similar parts produced by identical means as long as PAP 24 is adhered to. When FAI requirements (partial or complete) are satisfied in this manner, identify the approved configuration in the index of part numbers on AS9102 Form 1.
- The requirements which drive a Partial/Delta FAI are contained in PAP 24.

4.0 FIRST ARTICLE INSPECTION EXAMPLE

4.1 Ballooning an Engineering Drawing

Ballooning is a standardized technique used during First Article Inspection (FAI) to uniquely identify each design characteristic on the drawing. This method provides clear traceability and serves as objective evidence that all drawing requirements have been met.

To ensure accuracy and completeness, the FAI report package shall include a ballooned drawing of the accepted part. This drawing must correspond directly to the entries listed on AS9102 Form 3 (or equivalent documentation) and facilitate efficient review and approval.

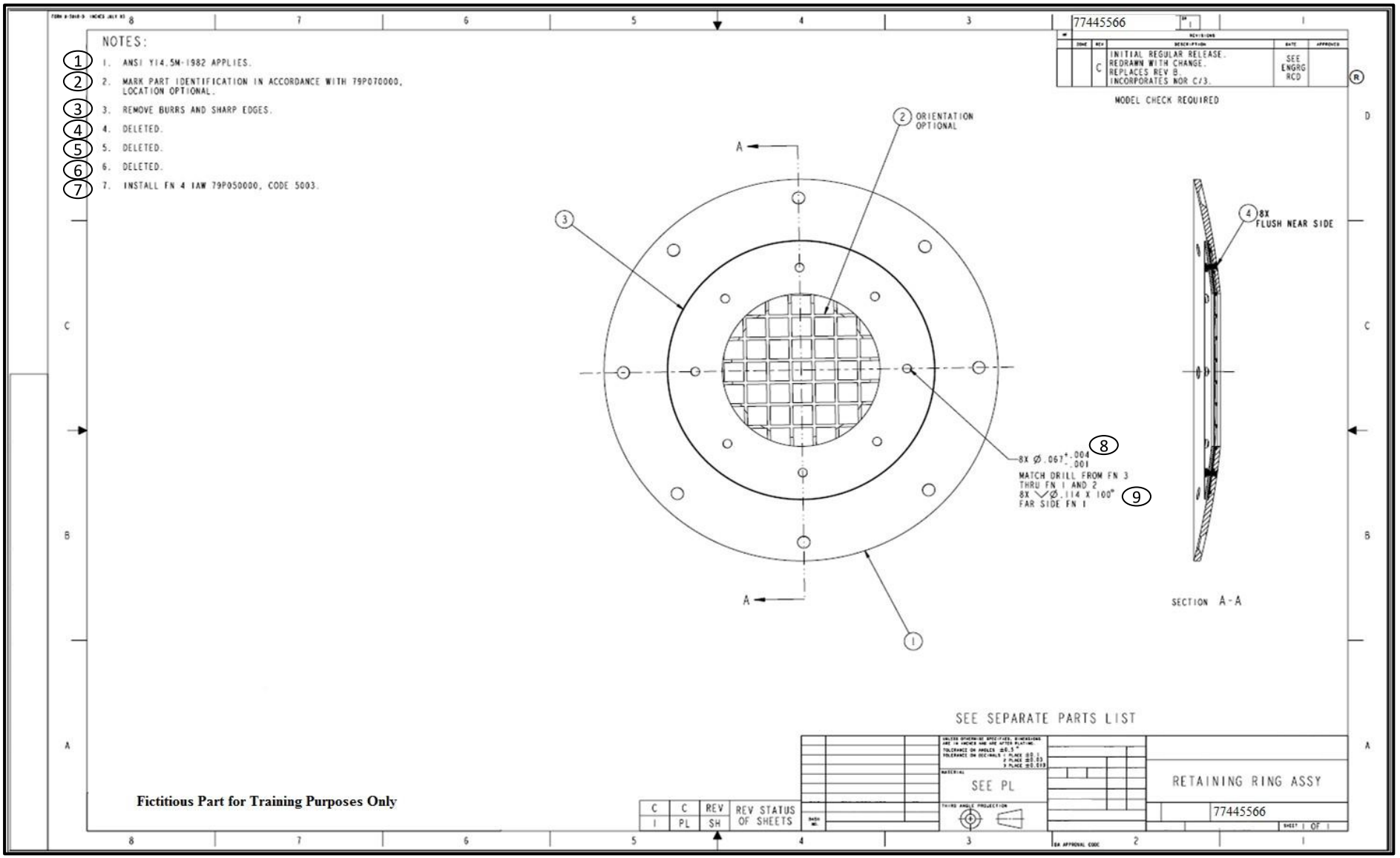
If ballooning is not feasible, an alternative referencing method—such as identifying sheet and zone(s)—may only be used with prior written approval from the customer or quality representative.

The example (below) highlights a top assembly drawing (with one sub-assembly) and illustrates how each required FAI form is filled out based on the example drawing requirements.

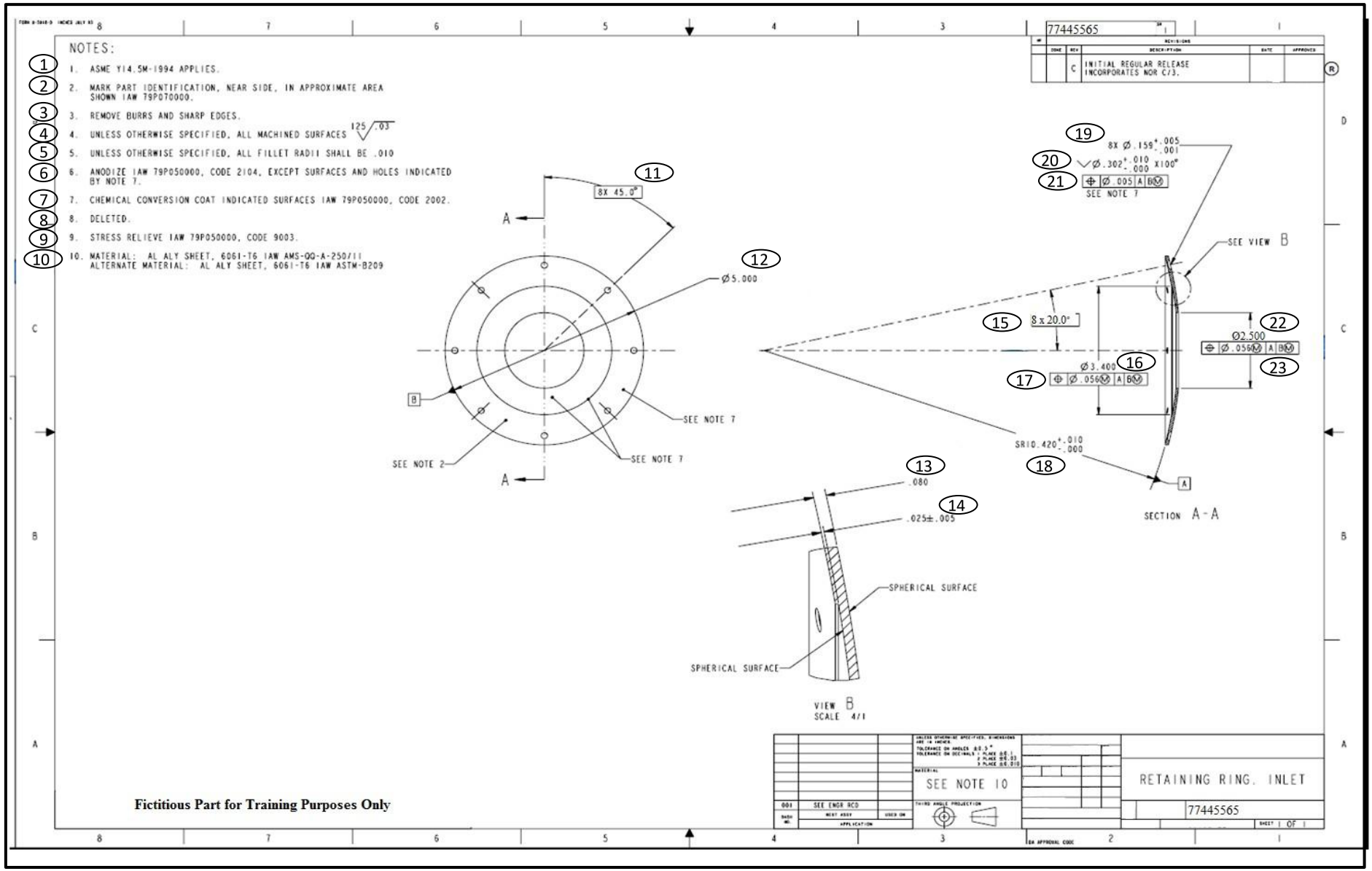
NOTE: Assembly and sub-assembly FAIs are required for all LM RMS designed details and sub-assemblies that constitute the end item as demonstrated in the example. First Article Inspection for LM RMS designed details and sub-assemblies shall be performed as required by the LM RMS PO.

The example FAI contained herein will map from initial drawing ballooning all the way through completion of the FAI. The “balloons” in the example below are used to reference the item numbers listed on AS9102 Form 3 (Characteristic Accountability, Verification and Compatibility Evaluation).

4.1.1 Top Assembly



4.1.2 Sub-Assembly



4.2 FAI Form Examples

Each field in the forms below will be identified as:

- (R) Required: This is mandatory information
- (CR) Conditionally Required: This field must be completed when applicable.
- (O) Optional: This field is provided for convenience

4.3 AS9102 Form1 – MEC Form F-806

MARVIN ENGINEERING CO., INC. 261 West Beach Avenue • Inglewood, CA 90302 Phone (310) 674-5030 • Fax (310) 673-9472	AS9102 REV C FORM 1: PART NUMBER ACCOUNTABILITY Sheet 1 of 1

1. Part Number:	2. Part Name:	3. Serial Number:	4. FAIR Identifier:
5. Part Revision Level:	6. Drawing Number:	7. Drawing Revision Level:	8. Additional Changes:
9. Manufacturing Process Reference:	10. Organization Name:	11. Supplier Code:	12. Purchase Order Number:
	Marvin Engineering Co. Inc.		

13. Detail	14. Full FAI ☐	Baseline Part Number (including revision level):
Assembly	Partial FAI ☐	
	Reason for Full/Partial FAI:	

a) If the part number above is a detail part only, go to Field 19
b) If the part number above is an assembly, go to the "INDEX" section below

INDEX of part numbers or sub-assembly numbers required to make the assembly noted above.

15. Part Number	16. Part Name	17. Part Type	18. FAIR Identifier

19. Does FAIR Contain a Documented Nonconformance(s)?		
20. FAIR Verified By:	21. Date:	
22. FAIR Reviewed/Approved By:	23. Date:	
24. Customer Approval:	25. Date:	
26. Comments:		

4.4 MEC Expectation for Proper Form AS9102 Form 1 Completion

(NOTE) For all fields which are not applicable, supplier shall notate N/A. There shall be no blank fields.

1. (R) Part Number: Number of the FAI part [e.g., customer part number contained on the purchasing documents; part number from the associated Bill of Materials (BOM); manufacturer part number from internal parts, when customer part number is not available].

2. (R) Part Name: Enter the name of the part as shown in the title block.

3. (MEC Requirement) Serial Number: Unique Identifier.

4. (R) FAIR Identifier: Enter the reference number that identifies the FAI. This may be an internal report number. Identifier for the First Article Inspection Report (FAIR) for the first article part number provided per purchase order.

5. (MEC Requirement) Part Revision Level:

Revision level of part being inspected per MEC purchase order. When the part is controlled by a part revision and the part has not been revised, indicate as such (e.g., N/C, No Change).

***NOTE 1**: The latest drawing or DPD revision (see field 7) does not always affect all parts contained on a drawing or DPD.*

***NOTE 2**: This is the revision level that is identified on the part. Not all organizations use a part revision level for tracking configuration.*

LM EXAMPLE: For LM drawings that do not callout a separate Parts List (part), Block 5 should be left blank or marked N/A.

LM EXAMPLE: For LM drawings that callout a separate Parts List (assemblies), PO Part Revision Number to Block 5 should be as shown below.

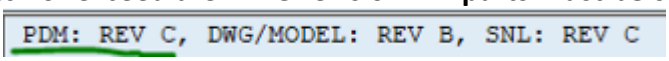
PO Part Revision Number	Block 5
-C000--	-
-D001-A	A
K/K	K
_A001_B	B
AB000AB	AB

6. (MEC Requirement) Drawing number listed on MEC purchase order, build to print drawing number, or DPD data set associated with the FAI part.

7. (MEC Requirement) Drawing Revision Letter: Drawing revision/parts list rev/stamp rev.

NOTE: PDM – The Product Data Manager (PDM) governs all information related to the part number. The overall part revision corresponds directly to the PDM revision

letter, which also dictates the associated drawing (DWG) and SNL letter. The PDM revision will always match or exceed the DWG revision**. All parts must be certified to the PDM revision.**



8. (CR) Additional Changes: Includes design modifications, engineering or manufacturing changes, or any deviations from, or omissions of, specified drawing or DPD requirements.

9. (R) Manufacturing Process References Reference number that provides traceability to the manufacturing planning record (work order, Traveler, etc.) of the FAI report.

NOTE: Add the Manufacturing Process Reference information as required.

10. (R) Organization Name: Enter the name of the organization performing this FAI and program name if available.

11. (O) Supplier Code: Enter the supplier code which is a unique number provided by MEC to the Supplier.

NOTE: It is sometimes referred to as a vendor code, vendor identification number, supplier number, etc.

12. (O) P.O. Number: Enter the Customer Purchase Order number/Item number, if applicable or required.

13. (R) Detail/Assembly: Article or part manufactured in accordance with engineering specifications, excluding any assembly operations (i.e., procedures that combine two or more components). 'Detail' refers to a single part or component and may include required processing, surface finishes, or special process(es).
Select 'Detail' for standalone parts.
Select 'Assembly' when the PO Part Number involves multiple components or reflects prefix/suffix changes.

14. (R) Full or Partial FAI (FAI):

Full First Article Inspection (FAI): Required when no prior FAI has been conducted, when significant changes are introduced, or upon customer request.

Partial FAI: Permitted only if a previously MEC-approved Full FAI exists.

NOTE: MEC defines a Full FAI as one that satisfies all criteria outlined in the Statement of Work. For example, if Marvin Engineering Co., Inc. requests the exclusion of processing operations, it is still considered a Full First Article.

(CR) Baseline Part Number

(Including Revision Level): For a Partial FAI, reference the previously approved FAI part number (baseline) and specify the associated revision level on which the current Partial FAI is based. Include a copy of the signed Form 1 from the approved FAIR. If the baseline FAI lacks MEC approval, submit the full FAI package for review.

(R) Reason for Full/Partial FAI

New part number, lapse in production, changes in design, process, manufacturing location or purchase order request for a first article.

15. (CR) Part Number: Enter the detail or next level sub-assembly part number to be included in the assembly.

NOTE: This entry is required only if the part number in field 1 is an assembly requiring lower-level parts to be installed into the assembly.

16. (CR) Part Name: Enter the part name as shown on the drawing.

NOTE: This entry is required only if the part number in field 1 is an assembly requiring lower-level parts to be installed into the assembly.

17. (CR) Part Type: Identify part type – detail, sub-assembly, software, standard catalog item, COTS.

NOTE: This entry is required only if the part number in field 1 is an assembly requiring lower-level parts to be installed into the assembly.

18. (CR) Fair Identifier: Include the FAI report number for all detail parts and associated assemblies manufactured per print (MEC/Supplier drawing). Applicable items must demonstrate FAI flow down to sub-tier suppliers. For all other purchased components, certification and/or PO numbers are acceptable. All referenced documentation must be included in the FAI package.

NOTE: This entry is required only if the part number in field 1 is an assembly requiring lower-level parts to be installed into the assembly.

19. Does FAIR Contain a Documented Nonconformance(s)?

Yes – One or more non-conformances have been documented on the FAIR Form 3, Field 1

No – No documented non-conformances. NOTE: If there is an existing variance, ATS, SATSS, etc., then this field is to be marked "Yes."

20. (R) Fair Verified By: Signature of supplier user verifying that the evaluation activities specified in AS9102 are complete. To sign Field 20 and prepare the FAIR for closure or submission:

(1) All mandatory fields must be completed on Forms 1, 2, and 3.

(2) One or more results must be provided for all reportable characteristics entered on Form 3.

(3) All applicable certifications provided, and certification number documented for all material or processes notes on Form 2 and Form 3.

21. (R) Date: Date when field 20 was populated.

22. (R) FAIR Reviewed/Approved By: The "Reviewed By" field must contain the approval signature of an individual from the supplier's organization who has reviewed and approved the FAIR. This individual may also be the same person who performed the verification. By signing this field, the supplier formally submits the FAIR to the customer identified on the form.

23. (R) Date: Date when Field 22 was populated.

24. (CR) Customer Approval: Used by customer to record approval

25. (CR) Date: Date when Field 24 was populated.

26. (O) Comments: Any supporting comments (e.g., associated nonconformance information, identification of associated documentation)

4.5 AS9102 Form 2 – MEC Form F-807 (New Form Added)

MARVIN ENGINEERING CO., INC.
261 West Beach Avenue • Inglewood, CA 90302
Phone (310) 674-5830 • Fax (310) 675-9472

AS9102 REV C FORM 2:
PRODUCT ACCOUNTABILITY

Materials, Special Processes, and Functional Testing

Sheet 1 of 1

1. Part Number:	2. Part Name:		3. Serial Number:		4. FAIR Identifier:
5. Material or Process Names:	6. Specification Number:	7. Code:	8. Supplier:	9. Customer Approval Verification:	10. Certificate of Conformance Number:
11. Functional Test Procedure Number:	12. Acceptance Report Number:				

4.6 MEC Expectation for Proper AS9102 Form 2 Completion

NOTE: An asterisk "" before the field descriptions indicates an MEC requirement in addition to the AS9102 forms.*

1. (R) Part Number: Number of the FAI part [e.g., customer part number contained on the purchasing documents; part number from the associated Bill of Materials (BOM); manufacturer part number from internal parts, when customer part number is not available].

2. (R) Part Name: Enter the name of the part as shown in the title block.

3. (MEC Requirement) Part Serial Number: Enter the Unique Identifier.

4. (R) FAIR Identifier: Identifier for the First Article Inspection Report (FAIR) for the first article part number provided per purchase order.

5. (MEC Requirement) Material or Process Name: Enter the name of material or process.

NOTE: List material certifications and any special process referenced on the engineering drawing.

6. (CR) Specification Number:

Material specifications and material form (e.g., sheet, bar) for all materials incorporated into the FAI part (e.g., weld, braze filler).

Special process specifications: including class, if applicable, and permitted substitutions.

If Commercial-Off-the-Shelf (COTS)/standard catalogue items are modified, then list the non-modified standard hardware or COTS item part number.

NOTE: Non-modified standard catalogue item(s), when part of an assembly, are listed on Form 1, "Part Number Accountability".

7. (O) Process Code: Enter any required code from the Customer for material or process listing.

8. (MEC Requirement) Supplier: Identify organization (internal or external) performing special process(es) or supply material.

- Name
- Address
- Code (when available).

NOTE: The process must be included on Form 2, regardless of whether it was performed internally.

Raw materials supplied by Marvin Engineering Co. Inc. must be documented using the full company name and corresponding address.

9. (CR) Customer Approval Verification: Indicate if the special process or material source is approved by the Customer. Enter "Yes" if approved. "No" if approval is required, but process source is not approved; or "N/A" if customer approval is not required.

NOTE: Indicate 'YES' if the contents reference special processes or material sources approved by Marvin Engineering Co., Inc.

10. (CR) Certificate of Conformance Number: The applicable certificate number (e.g. special process completion certificate, raw material test report number, modified standard catalogue item compliance report number, traceability number.)

11. (CR) Functional Test Procedure Number: Enter the Functional Test Procedure

12. (CR) Acceptance Report Number: The functional test certification indicating that test requirements have been met.

NOTE: When software is uploaded as part of a test procedure, record the software and revision level and acceptance report number.

13. (O) Comments: Enter and comments as applicable.

4.7 AS9102 Form 3 – MEC Form F-808

Marvin Engineering Co., Inc. 261 West Beach Avenue Inglewood, California 90302 USA		MEC INSPECTION REPORT Characteristic Accountability, Verification and Compatibility Evaluation		
1) Part Number	*1A) Rev.*	**2) Part Name**		**4) FAIR Identifier** (Production Order/Lot #)
3) Serial Number(s):		*3A) Sample Size:*	*3B) Quantity:*	

Characteristic Accountability				Inspection / Test Results					
5) Char. No.	*6) Ref. Loc.*	*7) Characteristic Designator*	**8) Requirements**	**9) Results**	9A) QCI	9B) Date	*10) Designed Qualified Tooling*	*11) Nonconformance Number / QN*	12) Additional Data / Comments

4.8 MEC Expectation for Proper AS9102 Form 3 Completion

NOTE: An asterisk "" before the field descriptions indicates an MEC requirement in addition to the AS9102 forms. (O)=Optional; (R)=Required; (CR)=Conditionally Required*

1. (R) Part Number: Number of the FAI part [e.g., customer part number contained on the purchasing documents; part number from the associated Bill of Materials (BOM); manufacturer part number from internal parts, when customer part number is not available].

2. (R) Part Name: Enter the name of the part as shown in the title block.

3. (MEC Requirement) Unique Identifier

4. (CR) FAIR Identifier: Identifier for the First Article Inspection Report (FAIR) for the first article part number provided per purchase order.

5. (R) Char. Number: Enter the unique assigned number for each Design Characteristic

6. (CR) Reference Location: Enter the location of the Design Characteristic (e.g., drawing zone (page number and section), specification, etc.).

NOTE: If drawing is not ballooned, reference locations are required

7. (CR) Characteristic Designator: If applicable, enter the characteristic type (e.g., key characteristic, flight safety, critical, major, etc.)

8. (R) Requirement: Enter the specified requirement for the Design Characteristic (e.g., drawing dimensional characteristics with nominal and tolerances included, drawing notes, specification requirements, etc.).

***9. (R) Results:** Actuals & Number of Observations - Enter measurement(s) obtained for the Design Characteristics. For marking, document actual part marking in Results field.

NOTE: For Multiple Characteristics, list each characteristic as an individual value or list with the minimum and maximum of measured values attained. (example :(x8), (x16), (x6), etc. after the range) see Char 6 & 7 for an example.
If a characteristic is found to be non-conforming, then the results for that characteristic must be listed individually with the measured value(s).

When qualified tooling is used as a go/no-go gage (reference 9102, 4.7.3), record the results as an attribute (e.g. pass/fail)

If a Design Requirement requires verification testing, then the actual results shall be recorded on the form. If a laboratory report or certificate of test is included in the FAI, then these results need not be written on the form, record the reference number in this field. The laboratory report or certificate of test must show specific values for requirements and actual

results. Attach copies of reports or certificate, as applicable.

For metallurgical characteristics with visual verification requirements that are rated against standard photographs, list the photo number of the closest comparison. A statement of conformance is acceptable (record the reference number in this field).

For processes that require verification per Design Characteristic, include statement of compliance (e.g., certification of compliance, verification indicator such as "accept," etc.).

For part marking, ensure that marking is legible, correct in content and size and properly located, per applicable specification.

10. (CR) Designed/Qualified Tooling: If a specially designed tool (including Numerical Control (N/C) programming) is used as a media of inspection, enter the tool/N/C identification number and revision level.

11. (CR) Non-Conformance Number: Record a non-conformance document reference number if the characteristic is found to be non-conforming.

NOTE: Any non-conformances must be dispositioned and closed out. Supporting documents should be added to FAI package to confirm this. If this is a Marvin Engineering part number, MRB authority must be granted by Marvin Engineering.

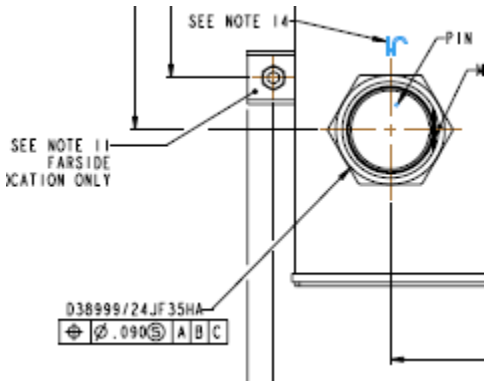
12. (O) Additional Data/Comments: This area is reserved for optional fields; add additional columns as required, by the organization or customer.

5.0 COMMON ERRORS WHICH CAUSE FAI REJECTION

- Identification - The product wasn't identified as an FAI. The FAI was combined with production parts.
- Dimension verification - Dimension comes before Finish, meaning the supplier must show the FAI before completing the finish process.
- FOD - Parts received are not clean, especially inside the holes.
- Dimension out of tolerance - Dimensions out of tolerance as per the drawing.
- Misinterpret the drawing - Question on the drawing, please get in touch with the buyer for assistance.

5.1 Common mistakes found in submitted FAI packages.

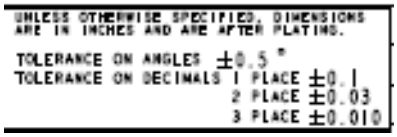
- Typos – incorrect data (revisions, numbers, values, etc.) are one of the most numerous causes for FAI rejections.
- Missing or hidden requirements for Detailed Commercial Off the shelf “COTS” Parts where dimensions are not included on the assembly drawing.
    - When required, requirements for detail parts/hardware installation must comply with the document specified. In this example, D38999 requires a hole for the installation of the connector to the assembly. The dimensions are located in the D38999 spec and not the drawing.
    - These dimensions shall be included in the FAI package.



- Example: MIL-DTL-38999 has the requirements for the hole size for the connector illustrated as well as torque requirements.
- All dimensions and/or notes are not accounted for.

- Any notes that contain a dimension shall have a physical measurement recorded. The use of “accept” or “OK” is not permitted.

- Incorrect or missing special process flow down requirements such as.
  - Special process supplier shall be MEC approved per purchase order requirements.
  - Supplier shall be certified to build to RDD (Reduced Dimension Drawing) per purchase order requirements.
- Incorrect tolerances assigned to dimension resulting in part non-conformance.
  - Standard dimension tolerances such as .100 (three place decimal meaning +/- .010) are found in the tolerance block located in the lower right part of the drawing as shown below.
  - Basic dimensions are normally defined as a dimension surrounded by a box as shown below
    .



  - Tolerances assigned to this dimension are defined by the Feature Control Frame associated with the Basic Dimension. The Geometric Symbol associated with the Feature Control Frame could be True Position, Profile, Flatness, etc.
- Incorrect Raw material/adhesives information provided.
  - Shelf life shall not be expired; appropriate adhesive shall be used on labels, etc.
  - Raw Material required to be indicated on form MEC-0293/AS9102 Form 2.
- Parts for an assembly identified on the wrong form.
  - Parts for an assembly are required to be indicated on form MEC-0292/AS9102 Form 1.
- Incorrect revision level.
  - Ensure PO revision matches released engineering specified for item(s) on FAI report.
  - Verify the required revision of MEC specifications, like 79P050000, by using the link provided on the PO or by contacting the MEC Buyer. Indicate all revision levels in block 6 of MEC-0293/AS9102 Form 2.
  - Ensure through MEC Procurement that you are working to the latest released engineering.
  - NOTE: There are many types of drawings and release processes. Most drawings will have an “Official Engineering Release” symbol normally at the top right of the first page of the drawing indicating released. If this does not appear, check with MEC Procurement.

- Special Process certifications should be to the latest revision. This is a standard PO Note for all PO's (TCR838 Note).

- Incorrect inspection equipment used or not noted on FAI report.
  - When inspection equipment is listed, ensure that inspection equipment has sufficient measurement accuracy for requirements being measured.
- Wrong part number identified on FAI form(s).
  - There shall be no typographical errors, missing dash numbers, and/or designators such as Q1, D1, TPSS
  - Example: If the purchase order requires P/N 7979797-003 Q1 the FAI form shall read the full P/N: 7979797-003 Q1

- Missing Certificates of Conformance, test reports, and FAI forms as part of the FAI package.
  - Ensure there is no Missing/Incomplete sub-tier supplier data such as:
    - Improper material alloy listed
    - Incorrect special process used
    - Incorrect specification revision levels listed
  - Ensure supplier equivalent forms meet the MEC/AS9102 form requirements.
  - Ensure all forms (including Form MEC-0295) are provided in the FAI package.
- FAI form(s) not signed/approved by appropriate representative and/or dated.
  - Form(s) MEC-0293 & MEC -0294 should be signed by the preparer of the FAI.
- Incomplete recording of "multiple actuals."
  - A feature that is required multiple times requires recording multiple actuals.
    - Example: FIN #6 has to be installed in 12 places (need to indicate 12 places or measurements as defined by engineering). This can include a range with max/min indicated followed by (x12).

6.0 FREQUENTLY ASKED QUESTIONS

The items listed below describe and answer FAQs concerning Supplier First Article Inspection.

6.1 Q. What forms are required for a partial / delta First Article Inspection?
A. Forms 1 through 3 are required for all First Article Inspections. Complete only the affected fields for the characteristics that need to be revalidated.

6.2 Q. Do drawing notes that contain dimensions need to have a measurement recorded?
A. Yes. All dimensions shall have a measurement, tolerance and inspection method recorded.

6.3 Q. Do requirements for COTS items not included on the assembly drawing need to be included?
A. Yes. When details for part / hardware installation are contained within that specification and produced on our assembly the dimensions shall be included.

6.4 Q. Will use of unapproved Marvin Engineering Special Processors cause my First Article to be rejected?
A. Yes. This is also considered a part nonconformance.

6.5 Q. Why would equipment or instrument recorded under designed tooling be rejected?
A. The MEC quality representative reviewing the First Article does not have confidence a valid, repeatable and reproducible measurement is obtainable.

6.6 Q. What are the most common documentation errors that cause a First Article Inspection Report to Fail?
A. Typo errors: (inverted numbers and tolerances, etc.)
A. Part numbers and subassembly parts missing (form 1)
A. Incorrect revision level (form 1)
A. Missing specification revision (form 2)
A. MEC Form (First Article Inspection: Product/Process Verification Checklist) missing
A. Visual inspection method used for a dimension (form 3)
A. Special process hierarchy not complete (form 2)
A. Special process supplier code & Supplier missing (form 2)

6.7 Q. When a feature indicates multiple places are measurements required for each place?
A. Yes. A feature that is required multiple times requires multiple actual or a min/max range followed by the number of times it was measured . . . ex. (x12).

6.8 Q. If material certifications, test reports are not included will my first article be rejected?
A. Yes. All documentation is required for objective evidence to demonstrate the First Article meets requirements.

6.9 Q. Can I develop my own acceptance tooling for use without Marvin Engineering approval?

A. No. All supplier self-developed acceptance tooling must be approved by Marvin Engineering

6.10 Q. What is the best process to ensure a measurement process will produce repeatable and reproducible results?

A. A Gage Repeatability and Reproducibility study.

6.11 Q. What if I have additional questions concerning the completion of a First Article Inspection?

A. Questions can be directed to Marvin Engineering Procurement or Supplier Quality Departments.

7.0 DEFINITIONS

Approved FAI

Documented approval from MEC Quality Control Inspection representative. MEC approval is required to ship material unless otherwise directed by MEC Buyer.

Ballooning

This technique establishes an organized method to capture objective evidence that each drawing requirement is met. Ballooning is recommended to ensure accuracy and completeness. It is preferred if a ballooned drawing of the accepted FAI is submitted as part of the officially documented FAI package.

Certificates of Conformance (C of C)

The Contractor shall submit with each shipment, a Certificate of Conformance which shall be dated and bear the signature, electronic equivalent, or electronically generated title of an authorized contractor's Representative, stating that the materials furnished to Marvin Engineering are in conformance with applicable requirements of the Contract, drawings, and specifications, and that supporting documentation is on file and will be made available to Marvin Engineering or Government Representatives upon request. Certification shall include name of contractor of materials being supplied, quantity shipped, and Contract number.

An example of an acceptable statement of Certification of Conformance is as follows: "This is to certify that all items noted are in conformance with the Contract, drawings, specification and other applicable documentation, that all process certifications, chemical and physical test reports, are on file at this facility and are available for review by Marvin Engineering."

Change Control

Formal process used to ensure that changes to a product or system are introduced in a controlled and coordinated manner throughout the life cycle. This includes flowing the change through the appropriate channels within Marvin Engineering before incorporation.

Corrective Action

Action(s) to eliminate the cause(s) of a detected nonconformity or other undesirable situation in order to prevent recurrence. The extent of corrective actions shall be proportional to the effects of related nonconformities. The FAI is not complete until the organization closes all non-conformances affecting the part and implements corrective actions. The organization shall re-do an FAI for those affected characteristics and shall record the results.

Equivalent Form

Interchangeable AS9102 or company specific forms that include the additional requirements (“9” requirements) from MEC FAI forms F-806, F-807, F-808.

First Article Inspection:

A procedure that provides objective evidence that all engineering, design and specification requirements are correctly understood, accounted for, verified, recorded, and that the combination of material, tooling, processes, documentation and personnel is capable of producing compliant hardware. FAI includes the manufacturing/inspection planning, manufacturing processes, tooling and software, (Numerical Control (N/C) tapes and Coordinate Measuring machine programs), test, inspection methods and equipment used in the fabrication of products.

FAI Plan

A documented plan for the company's FAI procedure. Preparation requires gathering all source documents including: Contract requirements (Purchase Order), Ballooned engineering drawings, specifications referenced in drawings, embedded or layered specifications, raw material certifications, Capability Maturity Model data, planning/shop routers, documentation validating integrity, production processes (i.e., soldering, plating, heat treating, etc.)

FAI Rejection

First Article Inspection Reports where nonconformance/s are identified shall have the status of Rejected. Nonconforming product shall not be delivered to the Buyer without required Material Review Board approval (Buyer approved Waiver or other document). The FAI shall remain in a rejected status until the corrective actions associated with nonconformance have been completed, a subsequent build has been accomplished, and an acceptable Delta FAI has been completed. Any non- conformances must be dispositioned and closed out per internal requirements (i.e. MRB, RC/CA, etc.). Supporting documents should be added to the FAI package.

Manufacturing Suffix Part Number

A part number with a qualifier at the end (such as Q1, D1, TPSS). Part numbers with a manufacturing suffix have additional documentation indicating the part will deviate from engineering in some way. Ensure the technical data or engineering package received includes the required documentation. Contact the buyer if the documentation is missing.

Reduced Dimension Drawing (RDD)

Drawings that do not contain all the information required to fabricate and inspect the part but must be used in conjunction with the computer-generated model file.

Source Inspection

MEC supplier quality reserves the right to perform in- process inspection, in-process surveillance and/or audits at any time during the life of the purchase order. Parts, assemblies, processes and tests are subject to detailed inspection by the MEC quality representative prior

to assembly, test and/or delivery when required. Such inspections, tests and mandatory inspection points (MIPs) shall be identified during the purchase order review process, and failure to comply with agreed upon MIPs with MEC supplier quality shall be cause for rejection of completed end items.

Special Process

A documented method used to manufacture products where a product undergoes a physical, chemical or metallurgical transformation where conformance to the specification cannot be readily verified by normal inspection methods, and the quality of the product depends on use of specific equipment operated in a specific manner, under controlled conditions, by trained personnel with instructions, procedures and standards. All special processes must be performed at a MEC approved supplier.

Sub-tier

Any and all suppliers that the contracted supplier uses for products and/or services.

Variables Data

Quantitative measurements taken on a continuous scale.
For example, the diameter of a cylinder or the gap between mating parts.

The Marvin Group

FIRST ARTICLE INSPECTION
GUIDEBOOK
2026 EDITION

Marvin Engineering
261 West Beach Avenue
Inglewood, California 90302 USA
310-674-5030 • Fax: 310-673-9472
sales@marvineng.com

Marvin Land Systems
261 West Beach Avenue
Inglewood, California 90302 USA
310-674-5030 • Fax: 310-673-9472
sales@marvinland.com

Marvin Test Solutions
1770 Kettering
Irvine, California 92614 USA
949-263-2222 • Fax: 949-263-1203
info@marvintest.com

Clean Water Technology
151 West 135th Street
Los Angeles, California 90061 USA
310-380-4648 • Fax: 310-380-4658
info@cleanwatertech.com