GENERAL DYNAMICS Ordnance and Tactical Systems	REVISION DATE 02/04/2022	NUMBER QS-GD-10.7.2
	Rockets Business Unit	
PLAN AND REPORT COMPLETION GUIDE **HYDRA-70 FY20-24**	CONTENT LEAD Program Quality Engineering	
	DOCUMENT OWNER Sr. Manager, Quality	

1. PURPOSE

This guidance document provides information to the suppliers working with General Dynamics Ordnance and Tactical Systems, Inc. (GD-OTS) on how to complete the plan and report templates provided for their use.

2. REFERENCES

Most reference documents, forms and templates listed in this section are available in the general Subcontract Management folder on the SharePoint collaboration site. They are also listed in the internal GD-OTS Policies and Procedures section of SharePoint.

2.1 Reference

Document	Description
FY20-24 Quality Clauses	Quality Clauses for the FY20-24 Contract
Supplier Bulletins	SharePoint Folder: GD-OTS Supplier Bulletins
QS-GD-10.7.1	Pre-Validation and Process Change Guide

2.2 Forms and Templates

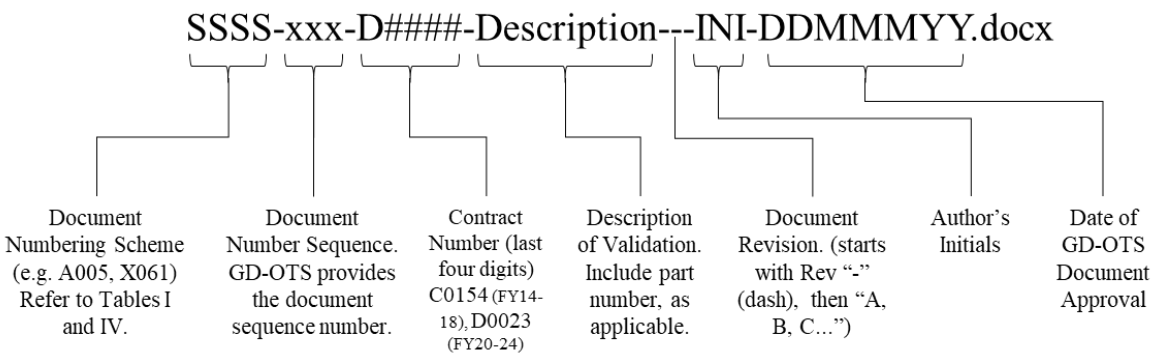
Form / Template	Description
QS-AP-10.7.1	Hydra-70 FY20-24 Contract Standard Measuring Equipment
QS-FM-10.7.1	FY20-24 Process Change Request Form
QS-TP-10.7.1	FY20-24 FAT/TFAT Plan Template
QS-TP-10.7.2	FY20-24 FAT/TFAT Report Template
QS-TP-10.7.3	FY20-24 FPI Plan Template
QS-TP-10.7.4	FY20-24 FPI Report Template
QS-TP-10.7.5	FY20-24 BQFAT Plan Template
QS-TP-10.7.8	FY20-24 ITE Plan Template
QS-TP-10.7.9	FY20-24 ITE Report Template

3. GUIDE

The following sections provide guidance on filling out each section of the plan and report templates. This section provides general information that applies to all of the templates.

File Naming Standard

For all plans and reports submitted to GD-OTS, please use the following naming format. This is also listed on the first page of each template.



The file names must be under 64 characters long and cannot contain spaces or the following invalid characters: ~ " # % & * : < >? / \ + { | } due to SharePoint file naming requirements.

The first page of each template file identifies the template. Please delete the first page prior to using the template.

Distribution Restrictions

Do not include any documents that are of a more restrictive nature than the distribution statement of the document to which they will be added.

The plans and reports have a default Distribution Statement C. Distribution Statement B is allowed for these documents if they contain Proprietary information.

Check the distribution statement on the documents that are planned to be included. Drawings and documents with distribution statement C can be embedded in the plans and reports.

! Please check with GD-OTS Quality if you have any questions about Distribution Statements.

- DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

- DISTRIBUTION STATEMENT B. Distribution Authorized to **U.S. Government Agencies Only**; Administrative and Operational Use, Export Controlled, (*date of determination*). Requests for this document shall be referred to: Project Manager, Tactical Aviation and Ground Munitions Project Office, ATTN: SFAE-MSL-TA, Redstone Arsenal, AL 35898.

- DISTRIBUTION STATEMENT C. Distribution Authorized to **U.S. Government Agencies and their Contractors**; Administrative and Operational Use, Export Controlled, (*date of determination*). Other requests for this document shall be referred to: Project Manager Tactical Aviation and Ground Munitions Project Office, ATTN: SFAE-MSL-TA, Redstone Arsenal, AL 35898.

- DISTRIBUTION STATEMENT D. Distribution Authorized to **DOD and DOD Contractors Only**; Administrative or Operational Use, Export Controlled, (*date of determination*). Other

requests for this document shall be referred to: Project Manager, Tactical Aviation and Ground Munitions Project Office, ATTN: SFAE-MSL-TA, Redstone Arsenal, AL 35898.

- DISTRIBUTION STATEMENT E. Distribution Authorized of technical documents to **DOD components only;** Export Controlled, (*date of determination*). Other requests for this document shall be referred to: Project Manager, Tactical Aviation and Ground Munitions Project Office, ATTN: SFAE-MSL-TA, Redstone Arsenal, AL 35898.

- DISTRIBUTION STATEMENT F. Further dissemination only as directed by Tactical Aviation and Ground Munitions Project Office (*date of determination*) or higher DoD authority.

! Use of Conforming/Compliant Components During Validations

GD-OTS has updated the FPI and FAT/TFAT plan templates to add specific wording that confirms all components, including subcomponents, to be used in the validation are fully compliant and conforming to all technical data package (TDP) requirements (including inspection requirements, as applicable). The FAT/TFAT template includes a section to list any exceptions, if applicable. Any listed exceptions must be approved by GD-OTS and our government customer (i.e. TAGM/ARSGM).

The new wording can be found in the Section 1 Introduction of the plan templates. See the wording in the Plans section below. The templates are available on the Supplier SharePoint page.

3.1 Plans

This section of the guide explains completing all validation plan templates. Subsection 3.1.1 will cover BQFAT, FAT, TFAT, and FPI plans. Subsection 3.1.2 will cover ITE plans.

Table I. Plan Templates with Document Numbering Scheme

TEMPLATE NUMBER	TYPE OF DOCUMENT	DOCUMENT NUMBER SCHEME	CDRL (Y/N)
QS-TP-10.7.1	FAT/TFAT Plan	A005	Y
QS-TP-10.7.5	BQFAT Plan	A005	Y
QS-TP-10.7.3	FPI Plan	A014P	N
QS-TP-10.7.8	ITE Plan	X060	N

The plan template QS-TP-10.7.1 can be used for a FAT or a TFAT.

3.1.1. BQFAT, FAT, TFAT, and FPI Plans

The following sections represent the format of the BQFAT, FAT, TFAT, and FPI test/inspection plans. The information here can be added to the template information already in the plans, if applicable or necessary. If there are any instructions unique to a particular plan, they will be identified as such.

The section "VALIDATION READINESS REVIEW/DRY RUN" has been removed from the plans. Pre-validation runs are now required for all validations in accordance with Q-clause Q728-1. **QS-GD-10.7.1** section 3.3 provides more information on the pre-validation requirements.

☑ Use AS9102 Forms 1, 2 and 3 for the Master Test List, where possible. Supplemental data sheets can be added to the AS9102 forms when sample sizes are greater than 25. (The Supplemental Data Sheet can be found in Attachment 2.) Sample sizes are defined in accordance with the GD-OTS statement of work (SOW) from the government and flowed down as Q-clause Q720:

> "*Unless otherwise specified in the TDP, sample quantities shall be*
>
> - ***25*** *for Safety, Special, Critical and Major Characteristics,*
> - ***10*** *for Minor Characteristics,*
> - ***2*** *for Unlisted Characteristics, and*
> - ***1*** *for Reference and Basic Characteristics.*"

For FAT and BQFAT validations, please check the applicable specification for First Article Inspection requirements when determining sample size. Note the "**Examination for Defects**" quantities listed in the First Article Inspection table in section 4 of the specifications apply to unlisted characteristics, not just to the listed characteristics. Reference and basic characteristics will remain at a sample quantity of 1. If Examination for Defects calls for less than 25 samples, Safety, Special, Critical and Major characteristics will remain at 25 or the quantity defined by the TDP. Refer to the specification excerpt in Figure 1.

CATEGORY	EXAMINATION OR TEST	NO OF SAMPLE UNITS	AC OR 100
FAT	Housing, Booster (Dwg. 8883682)		
	Examination for defects	25	100
FAT	Device, Safety and Arming (Dwg. 9215619-1 or -2)		
	Torque Test of Rotor Stop Stud	25	100
	Examination for defects	25	100
FAT	Device, Safety and Arming (Dwg. 9215617-1 or -2)		
	Examination for defects	75 (a)	100
	Arming Time	25 (b) (c)	100%
	Arming and detent functioning	25 (c)	100
	Setback weight Return Capability	25 (c)	100
	Rotor Reset Capability	25 (c)	100
	Non-Arming	25 (c)	100%
FAT	Device, Safety and Arming (Detonator only) (Dwg. 9215617-1 or 9215617-2)		
	Detonator Push Test	10	100
FAT	Fuze, Rocket, Less Booster and Booster Lead (Dwg. 9254707-1)		
	Examination for defects	376	100
	S&A position check	376	100
	Jolt	12	100
	Jumble	12	100%
	Five Foot Drop	45	100
	Aircraft Vibration (g)	96	100%

FAT	Fuze Body Assembly (Dwg. 9254706)		
	Examination for defects	25	100%
	Leak Test	25	100%
	Corrosion resistance of anodic coating	25	100%
FAT	Spring, Detent (Dwg. 8883713)		
	Examination for defects	10	100%
	Spring embrittlement	10	100%
FAT	Spring, Setback Weight (Dwg. 8883718)		
	Examination for defects	20	100%
	Spring embrittlement	10	100%
	spring set		

Figure 1. Examination for Defects

The following sections mimic the plan layouts and provide helpful hints on what each section includes.

TITLE PAGE

Fill in the Green information (Supplier Name, Supplier Location, Applicable Drawing Number and Title, Test Subject).

1. INTRODUCTION

Provide overview of the test, addressing the following areas:

- Describe, briefly at a high level, the validation-what is being validated (e.g. new supplier, new machine, process change, etc.) and relate the description to Attachment 0012/Q728.
- Describe why the change is needed (i.e. what is the motivation for the validation?)
- List supplier name and location
- Describe what is being validated (e.g. all TDP characteristics, tailored characteristics, other). For FATs, TFATs, and FPIs, note if there are any changes to critical items (parts with critical characteristics). The PCR should identify if the change affects the Critical Characteristics Control Plan.
  If critical items are **not** affected, use: *This change does not affect critical items.*
  If critical items are affected, use: *This change affects critical items. As such, the Critical Characteristic Control Plan needs review. Updates, if required, will be noted in the report.*
- Describe any validation impact on higher level parts/assemblies or special process validations (i.e. does this validation drive other validations - such as special process validations for coatings, finishing, welding, etc. as required by specification).
- Describe if any rework process will be validated in this validation.
- List any TDP exceptions and deviations here with reason for exception. For confirming all components, including subcomponents, to be used in the validation are fully compliant and conforming to all TDP requirements (including inspection requirements, as applicable), the following wording should be used.

  Retain all validation samples until the report is approved in case the GD-OTS or the Customer has a question on a sample or requests additional measurements.

  For FPI Plans:

  All FPI samples, including all sub-components, will be fully conforming and compliant with all Technical Data Package (TDP) requirements. FPI samples will be retained, at a minimum, until the report is approved.

  ! Note: If nonconforming or noncompliant material is planned to be used in the validation, then a FAT or TFAT will need to be performed to get ARSGM approval. Or find an alternate method to document customer approval for the use of nonconforming/noncompliant components to perform an FPI.

For BQFAT and T/FAT Plans: If there will be no nonconforming or noncompliant items used, delete the green text and table.

All BQFAT/TFAT samples, including all sub-components, will be fully conforming and compliant with all Technical Data Package (TDP) requirements, except the following item(s) as listed. BQFAT/TFAT samples will be retained, at a minimum, until the report is approved.

The following components/sub-components to be used in this validation do not meet all of the requirements of the TDP. <*Describe the reason for using nonconforming/noncompliant samples.*>

<*Insert Caption*> Table x. Nonconforming/Noncompliant Items"

Part Number	Nomenclature	Qty	Nonconformance/ Noncompliance	Validation Use

2. APPLICABLE DOCUMENTS

☑ Include document revisions and Change Notices (CNs) with corresponding Notices of Revision (NORs) as listed on the TDP status report. If there is no corresponding NOR with a CN, enter N/A (Not Applicable) in the applicable column. Include master test list (MTL) test documents (typically AS9102 Forms) in Appendix A.

The plan author is responsible for the accuracy of listed document configurations. Confirm the configuration by checking with your GD-OTS Supplier Quality Engineer (SQE) or by using a current baseline report from your Purchase Order.

☑ **Best Practice**: Obtain written confirmation of configuration accuracy from a member of the Configuration Management (CM) group.

If there are CNs or NORs, add to the note after the table:

Notices of Revision (NORs) and Temporary Change Notices (TCNs) are provided in Appendix # for information.

! Remember to check the distribution statements of documents that will be included in the plan. Do not include any documentation with a more restrictive distribution statement than the distribution statement indicated on the cover page of the plan.

3. FLOW DIAGRAM AND TEST PROGRAM APPROACH

☑ Provide a basic flow diagram reflecting a functional description of the steps that must be completed to execute the test program. Use test numbering format 1.0, 2.0, 3.0, etc.

☑ Add caveats to the test acceptance criteria statement if you predict this will cause difficulty during the validation. For example:

Each test/inspection will be performed one cycle for each sample except normal process anomalies (illegible marking due to excess ink or leak test failure due to improperly seated cover) shall be corrected in accordance with SOP instructions and shall not cause the testing to be placed on hold or IPT notification.

4. TEST OBJECTIVES

☑ Use the text in the template and edit as necessary.

5. MASTER TEST LIST (MTL)

☑ AS9102 Form 1, 2, & 3 shall be used for FATs/TFATs/FPIs/BQFATs.

☑ Add caveats to the statements in the template if you predict difficulty during the validation. For example – "*Each test/inspection will be performed one cycle for each sample except normal process anomalies (illegible marking due to excess ink or leak test failure due to improperly seated cover) shall be corrected in accordance with SOP instructions and shall not cause the testing to be placed on hold or IPT notification."*

☑ For TFATs, and FPIs, add this statement if there are characteristics that are not being validated. "*Refer to report(s) report #(s) for previously validated characteristics that are not part of this TFAT/FPI*." Remember to use the "-C0154" or "-D0023" designation in the report number to identify the contract for which these reports were completed.

☑ **Best Practice**: When referring to any documents (typically reports) from the FY14-18 contract, please include the "-C0154" that is in the filename directly following the document number (e.g. A021-A008-C0154). For FY20-24 documents, use "-D0023".

A note may be added after the sentence "All characteristics test/inspections specified in the MTL will be validated during the execution of this plan":

- *Grayed out features will not be inspected as part of this validation.*

This may also be added in the header section of the AS9102 Form 3.

☑ Include ITE review. Describe the ITE effect and include ITE change implementation plan and any update to the approved ITE list. If a new supplier is performing the validation, list the ITE and AQL levels to be used for production conformance. If ITE is new or changing, a gage validation report X061-XXX-D0023 must be approved before conducting this validation, and state as such in this plan. If there is no effect on ITE, use either of the following statements. The ITE statement can be changed to suit the application.

- *ITE has been reviewed for applicability. There are no changes to the baselined ITE therefore no ITE gage validations are required.*

- *ITE has been reviewed for applicability. There are no listed characteristics within the scope of this validation.*

☑ Make sure the AS9102 forms list equipment, support equipment (other equipment integral to test-normally not applicable. If applicable, refer to DI-NDTI-80566A section 4.9.8 for requirements.). List special test equipment (equipment fabricated or procured just for this validation, see DI-NDTI-80566A section 4.9.9), and instrumentation (see DI-NDTI-80566A section 4.9.11- list the instrumentation type and recording devices that will be used and the number and types of parameters to be recorded) to be used in the test.

6. DATA REDUCTION, ANALYSIS AND PROCEDURE FOR VALIDATION OF TEST RESULTS

If there will be data reduction, adjust the wording in the plan. Add the following sentence at the end of the second paragraph.

- *Data reduction and analysis will be performed on (describe data reduction areas) using (identify technique(s)) techniques.*

7. SCHEDULE ESTIMATE & MILESTONES

☑ Refer to the Pre-Validation and Process Change Guide QS-GD-10.7.1 for validation steps and times.

FAT / TFAT schedule:

	Expected Completion Notes
TFAT Plan Submittal to IPT	Allow time for GD review and approval
TFAT Plan Approval	30 days for government approval
Conduct TFAT-Start/Test Duration	30 days for notification
TFAT Report Submittal to IPT	Allow time for GD review and approval. Needs to be submitted within 30 days of completion of validation.
TFAT Report approval	30 days for government approval.

BQFAT Schedule:

	Expected Completion
BQFAT Plan Submittal to IPT	Allow time for GD review and approval
BQFAT Plan Approval	30 days for government approval
Conduct BQFAT	30 days for notification. If multiple P/Ns in BQFAT Plan, this is the date of the first P/N to start.
BQFAT Report Submittal to IPT	Allow time for GD review and approval. Needs to be submitted within 30 days of completion of validation. Again, this is

	the date of the first P/N report to be submitted.
BQFAT Report Approval	Date expected for report approval of the last P/N.

FPI Schedule:

	Expected Completion
FPI Plan Approval	Allow time for GD review and approval
Conduct FPI – Start / Test Duration	30 days for notification
FPI Report Approval	Allow time for GD review and approval

☑ If testing is broken up for separate locations or dates, add additional lines. Any special circumstances impacting the FAT schedule should be discussed in this section.

8. PARTICIPATION

☑ Use template wording and table.

9. LOCATION

☑ Identify the facilities (company name, city, state) where all of the testing will be performed. List each location separately. This includes location where sample parts will be manufactured, location of any special processing (plating, heat treat, etc.), and location where inspections will be performed.

☑ Identify if any Government facilities will be used, if applicable.

10. SECURITY

☑ Use template wording and table.

11. PRODUCTION LOT NUMBER EFFECT

☑ Select one of the following statements in the plan; delete the ones that don't apply. The interfix change should be agreed to with TAGM and indicated on the PCR form, if applicable.

Option 1- *N/A The part does not use MIL-STD-1168 lot numbering.*

Option 2 - *The MIL-STD-1168 production lot number interfix will not increment as a result of this validation report approval.*

Option 3 - *The MIL-STD-1168 production lot number interfix will increment as a result of this validation report approval.*

APPENDICES

Appendices may be used to include any test/inspection documentation to be used when conducting the validation. The templates have the standard Appendices used. Add appendices as needed. Talk to your GD-OTS SQE if you need help with any of the attachments.

Typical documents include:

- MTL data sheets, typically AS9102 Forms. The template for AS9102 Forms 1 and 2 are found in Attachment 12. The Form 3 is generated from InspectionXpert.
- Ballooned drawing(s)
- PCR (not required).
- Additional information that may be helpful (photos, graphics, floor layouts, etc.)

☑ Ensure the plan identifies the specific inspection features requiring photos, e.g. specifically request photos with the salt spray results for part finish requirements.

☑ Make sure all Form 2 and Form 3 tests are listed on the appropriate form. Some Form 3 requirements listed on Form 2 may need test requirements broken out further on Form 2, e.g. Water break test, adhesion test, salt spray.

! Certifications must be made to the Government TDP, via the GD-OTS purchase order and document baseline, not to supplier documents.

☑ Ensure each inspection record contains the signature block. The formatting may push a signature block to a different page.

3.1.2. ITE Plans

The ITE plans are formatted a bit differently from the other plans. The ITE plan is not a required deliverable to the government for the FY20-24 contract. However, GD-OTS requires ITE validations to ensure all ITE is capable of the required accuracy and precision for determining conformance to all technical and contractual requirements. The information from the ITE validation for a particular part is the basis for the Master List of ITE (MLITE) for that part.

The MLITE for a particular part number includes the ITE for Special/Safety, Critical, Major or Minor characteristics. The ITE validation plans, including the gage repeatability and reproducibility (R&R) studies, will cover the ITE for Special/Safety, Critical, and Major characteristics. Information for the Minor characteristics will be included in the ITE report.

ITE for minor characteristics:

- Add the ITE information to the MTL (or a separate MTL) for minors and include it in the ITE report.
  1. Detailed equipment description (brand, model, serial number, schematic and/or drawing shall be provided for unique equipment, etc.).
  2. Dimension(s) and tolerance(s) of the Minor feature(s) for which the equipment will be used.

3. Manufacturers statement of accuracy
4. Equipment calibration record

Use the additional templates within the ITE plan template QS-TP-10.7.8 to complete the ITE validation plan. The templates are described in the paragraphs below.

The following sections mimic the plan layouts and provide helpful hints on what each section includes.

TITLE PAGE

Fill in the Green information (Supplier Name, Supplier Location, Applicable Drawing Number and Title, Test Subject).

1. INTRODUCTION

Provide an overview of the validation, addressing the following areas:

- Describe, briefly at a high level, the validation-what measurement device is being validated (e.g. test equipment, gage, etc.).
- Describe why the validation is needed (i.e. what is the motivation for the validation? Related to new or changed gage.)
- List supplier name and location where the gage will be used.

Applies to ITE for Safety, Special, Critical, and Major characteristics.

For ITE plans with more than one part number, add the following sentence at the end of the paragraph after the bulleted list:

There is a separate MTL data sheet for each part number in Appendix A.

If the ITE includes attribute gages and/or test equipment, fill out the template "Descriptions_partnumber_Template.docx" in Attachment 10 and add the following sentence at the end of the paragraph after the bullet list:

Additional description information for go/no go gages and special test equipment is provided in Appendix C.

1.1 Schedule

	Expected Completion
ITE Validation Plan Approval	Allow time for GD review and approval. Note: Revision to rejected plan should be resubmitted within ten (10) calendar days of rejection.
Conduct ITE Validation	14 days for travel arrangements for GD participant(s), if applicable.
ITE Validation Report Approval	Submit report to GD-OTS within fourteen (14) calendar day of completion of the validation.

1.2 Location

Provide the supplier name and location where the ITE validation will take place.

☑ If the validation will take place at multiple locations, insert Caption (Table) into the plan and adjust wording:

ITE Validation activities will be performed at the facilities listed in Table x.

Table x. Locations of ITE Validations

Supported Part No.	Location
P/N	*Supplier Name* *Supplier Address*

☑ Identify if any Government facilities will be used, if applicable.

☑ To determine if the ITE you have is Standard Measuring Equipment (SME) and if you can use the "or equivalent", please refer to GD-OTS document QS-AP-10.7.1 Hydra-70 FY20-24 Contract Standard Measuring Equipment.

1.3 Security

☑ Use template wording and update as necessary.

2. APPLICABLE REFERENCE DOCUMENTS

List documents, revisions and hanging paper that are applicable to this validation. The drawing and specification typically identify the characteristic being measured. List the applicable device drawings, work instructions, and/or Standard Operating Procedures (SOPs).

3. TEST DESCRIPTION

List each device and the proposed method of validation in the MTL. (Use the MTL template provided in Attachment 3.) Common methods to be used are:

- Comparison to previous approved devices as equal to or better.
- Visual – Work instructions, visual standards, reproducibility study, test against known good/bad samples
- Standard Measuring Equipment (SME), Commercial Equipment (CE) – Calibration records, Gage R & R
- Custom measuring devices – Calibration, Gage R & R
- Full description of the ITE – make, model, serial #, internal identification #, resolution, accuracy

Government owned and operated devices are excluded from validation requirements.

General rules:

- Methods to ensure measurements using non-standard inspection equipment are the same as measurements using standard measuring equipment.

- The contractor shall ensure that all ITE is capable of the required accuracy and precision for determining conformance to all technical and contractual requirements.
- In order to meet the accuracy requirement for variable ITE, the measurement device should have an accuracy one decimal place to the right of the number of decimal places in the specification (not the tolerance). The digit in this decimal place can be any number from 1 through 9.

> **Significant Digit Rule (in Q740):** The measurement accuracy of the Inspection/Test equipment shall be at least one additional significant digit to the right of the specification (for example if the specification for a characteristic is .315", the accuracy of the Inspection/Test equipment must be +/-.000X" or better where X can be any digit between 1 and 9.) Note that this requirement applies to the feature being measured and is independent of the tolerance band. If this requirement is not met, GD-OTS approval is required before the Inspection/Test equipment may be used and if approved, Guard Banding as noted above may be required to be applied; that is, the Guard Banded tolerance shall have its lower limit increased and upper limit decreased by the measurement accuracy.

- Calibration of the ITE shall be traceable to NIST.

Table II. Gage R&R Requirements

Test No.	Part #	Category / Classification of Characteristic I.D. / Spec. Para.	Test/Inspection Description	Equipment	Attribute / Variable
1					
2					
3					
4					

! Note: Action is required if any ITE fails the R&R. The template wording is as follows:

If any ITE fails the validation, a Stop Ship Quality Assurance Temporary Notice (QATN) will be put into effect until a successful validation for replacement ITE is performed. If replacement ITE is identified at the time of the validation, that ITE may undergo the tests identified for the failed ITE. Results shall be documented in the report.

4 DATA REDUCTION, ANALYSIS AND PROCEDURE FOR VALIDATION OF TEST RESULTS

☑ Use template wording and update as necessary.

APPENDICES

MTL Data Sheet

- List the related specification on the MTL as applicable.
- There must be a separate MTL for each physical test location (for example: Supplier X and Camden Operations) and for each part number (if ITE for more than one part number is being validated).
- Fill in the MTL based on the table below. Shade the Results blocks that do not apply. The tab "Validation Blocks" in the MTL template also includes this information.

Table III. ITE Data Sheet Recording Blocks by ITE Type

ITE Type	Meets Significant Digit Rule?	Accuracy	Accuracy to Tolerance %	Work Instruction # & Rev	Calibration Report ID	Accept or Reject (A/R)
Variable	X	X	X		X	X
Attribute/Variable	X	X	X		X	X
Attribute					X	X
Visual				X		X
Data Reduction				X		X
Certification						X
Support Equipment					X	X

The following is a description of each ITE type and notes on how to validate.

Table IV. ITE Types

ITE Type	Description	Validation Criteria
Attribute	Output of accept or reject. Calibration checked, drawings for unique/designed gages reviewed.	Calibration Report
Attribute/Variable	An example would be a Dial Indicator with an upper and lower limit marked: an accept decision made if the output is between the upper and lower limits and a reject decision is made if the output is either over the upper limit or under the lower limit.	Calibration Report, Accuracy Verification
Variable	Numerical output upon which an acceptance or rejection is based.	Calibration Report, Accuracy Verification

ITE Type	Description	Validation Criteria
Visual	Accept or reject decision based on a visual inspection of the characteristic by either a human or vision system.	Review of Work Instructions and Inspection Samples
Data Reduction	Accept or reject decision based on calculation of data gathered. (e.g. Bruceton test for 233AS912 Initiator (FAI 4-3)).	Review of Work Instructions and Data Algorithms
Certification	Review and acceptance or rejection of a certification, usually a sub-tier supplier certification.	None
Support Equipment	Equipment used to aid in one of the measurements above, but does not by itself allow an accept or reject decision to be made. E.g. V blocks, surface plates, set blocks, power supply, etc.	Calibration Report

ITE Equipment Descriptions

For non-SME attribute gages and unique test equipment, include the descriptions, dimensions, pictures or drawings, if available, in the ITE Equipment Description Template. Refer to Attachment 10. An example is provided as Attachment 11.

R&R Documentation

Templates for the Repeatability and Reproducibility (R&R) studies are as follows:

R&R Template	Attachment Number
Variable Gage R&R Protocol Sheet	4
R&R Data Sheet – Variable (1 Sheet per Operator) – *Typically used if the operators are filling in their own results.*	5
R&R Data Sheet – Variable (All on One Page) – *Only used if someone separate from the operators is filling in the results.*	6
Attribute Gage R&R Protocol Sheet	7
R&R Data Sheet – Attribute (1 Sheet per Operator) – *Typically used if the operators are filling in their own results.*	8
R&R Data Sheet – Attribute (All on One Page) – *Only used if someone separate from the operators is filling in the results.*	9

3.2 Reports

This section of the guide explains completing all validation report templates. Subsection 3.2.1 will cover FAT (including BQFAT), TFAT, and FPI reports. Subsection 3.2.2 will cover ITE validation reports.

Table V. Report Templates with Document Numbering Scheme

TEMPLATE NUMBER	TYPE OF DOCUMENT	DOCUMENT NUMBER SCHEME	CDRL (Y/N)
QS-TP-10.7.2	T/FAT Report BQFAT Report	A013	Y
QS-TP-10.7.4	FPI Report	A014	Y
QS-TP-10.7.9	ITE Report	X061	N

The report template QS-TP-10.7.2 can be used for a FAT, TFAT, or BQFAT.

3.2.1. BQFAT, FAT, TFAT and FPI Reports

The following sections represent the format of the BQFAT, FAT, TFAT and FPI test/inspection reports. The information here can be added to the template information already in the reports, if applicable or necessary. If there are any instructions unique to a particular report, they will be identified as such.

For use of any red lines in the reports, refer to Section 4 of this guidance document.

AS9102 Checklist

☑ The checklist provided as Attachment 1 to this document is a guideline for ensuring AS9102 Forms are completed properly for the reports. The file referenced in the checklist, "Completing AS9102 Forms – R3.ppt", is available in the SharePoint general Subcontract Management folder.

The following sections mimic the plan layouts and provide helpful hints on what each section includes.

TITLE PAGE

Copy Green information (Supplier Name, Supplier Location, Applicable Drawing Number and Title, Test Report Subject) from FPI Plan, except test date, use the actual test date(s).

1. INTRODUCTION

Generally, copy over the introduction information from the Plan, change to past tense, modify as needed, and add any other pertinent information without being redundant with para. 1.1-1.3.

This report contains the results associated with the execution of approved TFAT Plan A005-XXX and provides the test data to validate <topic of validation>.

1.1 Test / Inspection Objectives

☑ Include any additional details as needed from the 1st paragraph of Test Objectives from the approved plan.

1.2 Items Tested / Inspected

☑ Delete lines if not applicable

1.3 Test / Inspection Requirements

☑ Use template wording and update as necessary.

2. APPLICABLE REFERENCE DOCUMENTS

☑ Include document revisions and CNs with corresponding NORs as listed on the TDP status report. If there is no corresponding NOR with a CN, enter N/A (Not Applicable) in the applicable column. Include master test list (MTL) test documents (typically AS9102 Forms) in Appendix A.

The report author is responsible for the accuracy of listed document configurations. Confirm the configuration by checking with your GD-OTS SQE or by using a current baseline status report from the purchase order.

> ☑ **Best Practice**: Obtain written confirmation of configuration accuracy from a member of the Configuration Management (CM) group.

If there are CNs or NORs, add to the note after the table and include copies in the appendix:

> *Notices of Revision (NORs) and Temporary Change Notices (TCNs) are provided in Appendix # for information.*

! Remember to check the distribution statements of documents that will be included in the report. Do not include any documentation with a more restrictive distribution statement than the distribution statement indicated on the cover page of the report.

3. TEST/INSPECTION REQUIREMENTS AND PROCEDURES

☑ Copy the test flow diagram from the approved plan.

4. TEST EQUIPMENT IDENTIFICATION

Select one of the following calibration statements:

All ITE, including equipment listed on the required ITE list, were verified to be in calibration at the time of the test. Supporting calibration information is included in Appendix C.

OR

The GD-OTS witness verified all ITE, including equipment listed on the required ITE list, were in calibration at the time of the test.

Select one of the following applicability statements:

ITE has been reviewed for applicability. There are no changes to the approved ITE. Therefore, no ITE validations were required.

OR

ITE has been reviewed for applicability. There are no Safety, Special, Critical, or Major characteristics within the scope of this validation. Therefore, an ITE validation was not required.

5. TEST/INSPECTION FACILITY INSTALLATION AND SET-UP

☑ Fill in the supplier name and supplier city and state.

The default wording states that no government test facilities were used. If government test facilities were used, update that statement and identify the government facility(ies) and the location(s).

Include any additional information about the test setup or test item, if it will help the reader better understand the validation.

- Location, orientation, or settings of test equipment and instrumentation
- Location, orientation, or settings of sensors and probes
- Location or orientation of interconnects, cables, and hoop-ups.
- Electrical power, pneumatic, fluidic, and hydraulic requirements
- Drawings, diagrams, and pictures may be used for clarification.

6. TEST/INSPECTION RESULTS AND ANALYSIS

☑ Use the template wording.

☑ If data was only captured electronically, keep this sentence.

All data was captured electronically during the inspection. So, no handwritten Form 3s exist.

☑ At the end of the second paragraph, identify what will be done with parts not used as validation samples. Be specific.

- *Parts not used as validation samples will be used in production; or*
- *Parts not used as validation samples will be scrapped; or*
- *Parts not used as validation samples will be….. <other>*

This information may also be included in Section 1.2 Items Tested / Inspected.

TFAT Lot Qty: (lot quantity manufactured for this validation) *e.g. 100; 25 samples, Remaining qty 75 used in production.*

☑ For the statements concerning review of the certifications and all inspections on Form 3, include the Drawing Number, revision #, and any applicable TCN#(s)/NOR#(s).

☑ Include any additional results or issues concerning the validation, as applicable.

☑ If the AS9102 Forms have any red lines or corrections, include the following statement and information on ALL red lines on any of the forms.

The following red lines to the AS9102 forms for P/N ###### are changes from the approved (T)FAT Plan (A005-##) or are recording errors:

1. *Change:*
   Reason for Change:
2. *Change:*
   Reason for Change:

☑ In the last paragraph, identify the signatures included in the report forms. If someone was present for the validation, but did not sign the forms, include "*PDNS*" (Present, Did Not Sign) on the signature line on the form.

7. PRODUCTION LOT NUMBER EFFECT

☑ Copy lot number interfix effect from the approved plan.

8. SUMMARY, CONCLUSION AND RECOMMENDATION

☑ Use template wording and fill in the part number, part description, and supplier/facility name.

APPENDICES

☑ Attach AS9102 Form 1, 2, & 3. This includes any certifications that are required on Form 2. Attach original data inspection documents, no transcriptions.

☑ Attach any ballooned drawings, TCNs, and NORs. Be careful to watch the Distribution statements for the documents and make a note in Section 3 if the documents cannot be included. Review and ensure the AS9102 Forms have been signed in all of the required places. Ensure any red lines are initialed and dated.

☑ Attach any calibration information that allows the "All test / inspection equipment, including equipment listed on the required test/inspection equipment list, were verified to be in calibration at the time of the test" statement in Section 4. Calibration reports do not need to be included if a GD-OTS witness verified the equipment to be in calibration.

☑ Attach any relevant photos discussed in the body of the report and as noted in the plan. Include photos (reduced file size) of judgement/subjective inspections (e.g. workmanship, salt spray, adhesion testing) as specified in the plan.

3.2.2. ITE Reports

The ITE report provides evidence that the ITE tested is capable of the required accuracy and precision for determining conformance to all technical and contractual requirements and is acceptable for AQL acceptance inspection of the part(s) the ITE supports. ITE reports must be approved before the ITE can be used in production. To ensure approval goes more smoothly, please ensure all required documents are submitted and signed, as appropriate. The following guidelines provide some tips for submitting the completed documents.

- When all forms have been completed, submit the forms and all attachments for approval. These may be submitted as hard copies or as a scanned electronic copy.
- For ITE validation plans that support more than one part number, have all information for a particular part number with the data sheet. Create a separate file for each part number with the data sheet and all attachments supporting that data sheet. If creating zip files, create a zip file for each part number. Having all data together for each part number streamlines the review of the report package.
- Ensure all documentation is legible. We understand that the work environments may result in some dirt, etc. on the forms. This is acceptable as long as everything is still legible.
- If you are not a direct supplier to GD-OTS, submit the completed forms to your customer who will make the submission to GD-OTS.
- Suppliers to GD-OTS may submit hard copies via US Mail to your GD-OTS buyer or submit a scanned file electronically via the SharePoint Collaboration Site. Electronic submission is preferred.

The following sections provide information for adding to the standard wording in the report template.

TITLE PAGE

Copy Green information (Supplier Name, Supplier Location, Applicable Drawing Number and Title, Test Report Subject) from ITE Plan, and include the actual test date(s).

1. INTRODUCTION

☑ Fill in the part name, part number for which the ITE will be used for conformance acceptance inspection, and list the ITE validation plan number X060-XXX.
If this ITE validation is being performed in support of a BQFAT or FAT, include a reference to the validation plan after identifying the ITE plan:

This document provides the test data to demonstrate the ITE used for conformance acceptance inspection <Part Name> P/N <Part Number> as required by ITE Plan X060-XXX and in support of Baseline Qualification First Article Test (BQFAT)/First Article Test (FAT)/Tailored First Article Test (TFAT) Plan A005-XXX.

1.1 Test / Inspection Objectives

☑ Use template language.

1.2 Items Tested / Inspected

☑ Fill in the name and address of the company where the ITE will be located and the ITE plan number X060-###. If ITE includes attribute gages and/or test equipment, ensure this next sentence is added.

Additional description information for attribute gages and special test equipment is provided in Appendix D.

☑ Refer to QS-AP-10.7.1 to confirm which ITE is considered Standard Measuring Equipment (SME) and can be listed with the words "or equivalent" in the Description of Equipment block.

2. APPLICABLE REFERENCE DOCUMENTS

☑ Copy the Applicable Documents table from the ITE Validation Plan. Update as required, and add any clarifying notes after the table, if needed.

3. TEST DESCRIPTION

In the paragraph before the Gage R&R Requirements table, specify why this validation is taking place. The ITE can be new (replacing current ITE, adding ITE, establishing ITE for a new requirement), modified (modified for more effective use, modified for repair or improvement, modified for a changed requirement), or other conditions (moving/relocating large ITE (e.g. CMM) or test equipment, transfer from different physical supplier locations, etc.).

☑ Copy the Gage R&R table from the plan.

4. TEST/INSPECTION FACILITY INSTALLATION AND SET-UP

☑ Insert the name and address of the facility where the ITE validation took place.

5. TEST/INSPECTION RESULTS AND ANALYSIS

☑ Discuss the ITE results which may include accuracy evaluation, calibration results, guard banding required, etc.

☑ If data is entered directly into the electronic data sheets so there is no hand-written data sheet, add the following:

The data for the ITE MTL data sheet was entered directly into the Excel files during validation. So, no hand written data sheets exist.

☑ Discuss any red lines made during the course of execution of the ITE validation or due to any other circumstances. Include the following in the report:

The following changes were redlined from the approved ITE Plan X060-###:
1. Change:
Reason for Change:
2. Change:

Reason for Change:
Etc.

☑ If there were no changes from the approved plan, state:
This ITE Validation was executed in accordance with ITE Validation Plan X060-XXX without change or update.

☑ If any ITE needs guard-banding, the requirements compliance statement should read:
*All ITE, **with the exception of the items listed in Table III**, meets the requirements of Q-clause Q740 and SOW C-5.1.1.2.1.1, which requires inspection/test equipment shall be at least one significant digit to the right of the specification.*

If no ITE needs guard banding, then remove "*with the exception of the items listed in Table III*".

If ITE needs guard banding, include the following paragraph and table in the report:
Based on the print tolerance and the gage accuracy, Table III contains the guard banding approach recommended by GD-OTS for each piece of ITE that does not meet the requirements of Q-clause Q740 and SOW C-5.1.1.2.1.1.

Table III. ITE Requiring Guard Banding

Characteristic	ITE	Accuracy	Drawing Requirement	GD-OTS Proposed Guard Banding

Gage R&R Studies:

☑ If any ITE requires guard banding, include the following at the end of the paragraph before the R&R Study Results table:
*All ITE met the requirements for an acceptable R&R study**, except xyz listed in Table III**.*

For the last two columns in the R&R Study Result table:

- Enter "*Pass*" (or "*Fail*") in the Pass/Fail column for attribute R&Rs with "*N/A*" in the P/T Ratio % column.
- Enter the P/T Ratio that was determined for the measurements of a characteristic using Minitab in the P/T Ratio % column and "N/A" in the Pass/Fail column.

! **Notice**: Notify the GD-OTS SQE if any ITE fails the validation and whether you have other ITE that can be validated in place of the failed ITE. If not, provide the part number and characteristic information so a Stop Ship QATN can be issued until different ITE can be validated.

! Use the following wording in the report.

The <name of equipment> for characteristic Mxxx failed the R&R study. Stop Ship Quality Assurance Temporary Notice (QATN) YY-xxx will remain in effect until a successful validation for replacement ITE is performed.

OR

The <name of equipment> for characteristic Mxxx failed the R&R study. Replacement ITE <name of equipment> successfully completed the R&R study and data sheet requirements. Results for the replacement ITE is included in this report.

6. SUMMARY, CONCLUSION AND RECOMMENDATION

☑ In the first paragraph, identify the signatures included in the report forms. The standard wording is:

Supplier signatures and GD-OTS witness signatures are included in the report.

If there were Government witnesses and they signed, add "*and Government witness signatures*" to the signature sentence.

If a government witness was Present but Did Not Sign, indicate "*PDNS*" on the data sheet and note it in this section. "*A Government witness was present, but did not sign.*"

☑ Results. If any of the ITE required guard-banding, after the part name and part number, add "*with the guard banding as noted in Table III*". Ensure the table numbering is correct. The guard banding table will be added if it is needed, as discussed in the previous section.

APPENDICES

☑ Add lines to the appendix tables if there are multiple files.

☑ Delete a table if it will not be used. Be sure to "update field" for the Captions that come after it and update the List of Appendices on the Table of Contents page.

4. RED LINES

The following guidelines are provided for red lines, as discussed with the Government.

- Redlines constitute anything that has changed, specifically for the AS9102 Forms 1, 2 and 3. This includes strikeout and correction of recorded data.
- For ALL recorded data entered in Form 3 (handwritten or electronic):
  - If an entry is lined out and corrected handwritten or electronically, it must be initialed and dated. These should be in red.
  - These changes should also be included in a statement in Section 6. Can be "Characteristic 12.1 redlined to correct a recording error." Or whatever the reason.
  - If the data was entered electronically, include the hand written data sheet, if there is one. Otherwise, include a statement in the report (section 6) that there are no handwritten data sheets as we have noted in applicable reports. "*Form 3 inspection and measurement data was entered directly into the excel files during validation. So, no hand-written data sheets exist.*"
- For digitally inserted redlines for configuration information, characteristic information, ITE, or sample quantities on Forms 1, 2 and 3, typically when there are multiple red lines on the pages:
  - At the bottom of each page for the AS9102 Forms 1, 2, and 3, add "*Redlines*" and include initials and date.
    redlines BJH 09/13/2018 (Example)
  - We can include the sentence "Digitally inserted redlines on Forms 1, 2 and 3 were created by the author of this report and are true and accurate as of the date indicated on the cover page."
- Ensure enough detail is included in Section 6 information about the changes to understand the change.

! Ensure the redlined forms are reviewed with the Defense Contract Management Agency (DCMA) representative when red lines or corrections are required after DCMA has already signed the Forms.

! The use of pencil, whiteout/correction fluid or correction tape or the obliteration of errant entries is strictly prohibited on all QMS documents and/or records.

Where errant entries require correction or other spot/temporary changes (i.e. not formally revised at the time of the change) are required/necessary, these shall be completed by the operator striking out the errant entry with a single line (so as to allow for the entry to remain legible but clearly indicating it has been struck out), entering the correct or updated information, and initialing and dating the change.

5. ACRONYMS AND DEFINITIONS

5.1 Acronyms

Acronym	Definition
AQL	Acceptance Quality Limit

Acronym	Definition
ARSGM	Aviation Rockets and Small Guided Munitions
BQFAT	Baseline Qualification First Article Test
CM	Configuration Management
CN	Change Notice
DCMA	Defense Contract Management Agency
DOD	Department of Defense
FAT	First Article Test
FPI	First Piece Inspection
GD-OTS	General Dynamic Ordnance and Tactical Systems, Inc.
ITE	Inspection and Test Equipment
MLITE	Master List of Inspection and Test Equipment
MTL	Master Test List
N/A	Not Applicable
NIST	National Institute of Standards and Technology
NOR	Notice of Revision
PCR	Process Change Request
Q-Clause	Quality Clause
Qty	Quantity
R&R	Repeatability and Reproducibility
SME	Standard Measuring Equipment
SOW	Statement of Work
SQE	Supplier Quality Engineer
TAGM	Tactical Aviation and Ground Munitions
TCN	Temporary Change Notice
TDP	Technical Data Package
TFAT	Tailored First Article Test

6. ATTACHMENTS

Attachment Number	Description	File
1	AS9102 Checklist	AS9102 Checklist.xlsx
2	AS9102 Supplemental Data Sheet	SupplementalDataSheet_Working.xlsx
3	ITE MTL Data Sheet	ITE-Gage-Validation_MTL-DataSheet_2(
4	Variable Gage R&R Protocol Sheet	Variable-Gage-R&R-Protocol_Template.
5	R&R Data Sheet – Variable (1 Sheet per Operator)	Gage-R&R_DataSheet-Variable_Single-S
6	R&R Data Sheet – Variable (All on One Page)	Gage-R&R-Variable_DataSheet_1-Page.:
7	Attribute Gage R&R Protocol Sheet	Attribute-Gage-R&R-Protocol_Templat(
8	R&R Data Sheet – Attribute (1 Sheet per Operator)	Gage-R&R_DataSheet-Attribute_Single-:
9	R&R Data Sheet – Attribute (All on One Page)	Gage-R&R-Attribute_DataSheet_1-Page
10	ITE Equipment Description Template *(ITE Plan Appendix C)*	Descriptions_partnumber_Template.do

Attachment Number	Description	File
11	Example ITE Equipment Description	Descriptions_PNEXAMPLE123.docx
12	AS9102 Forms 1 and 2 Template *(Form 3 to be generated from InspectionXpert)*	AS9102 Forms1&2_GD-OTS_

