



# **WE-005 Weld Supplier Approval and Weld Procedure Submittal Process**

## **1.0 PURPOSE /SCOPE**

This process details the requirements for submitting and processing of CDR007 for Welding-Combat Vehicles.

This document addresses the following aspects of the Supplier Weld Procedure Process:

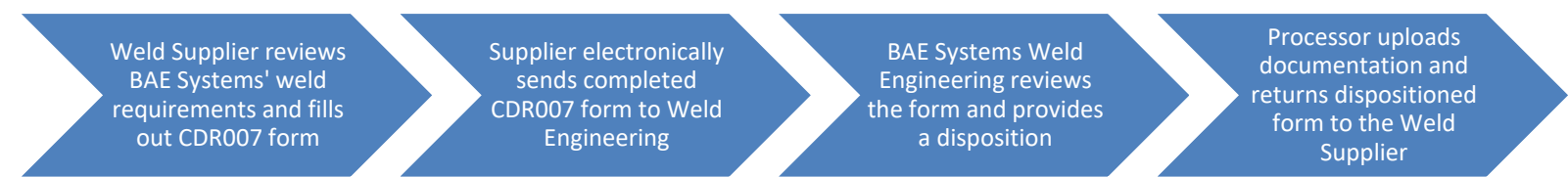
- BAE Systems' Approved Supplier Requirements- Welding
- Supplier Options For Welding/Brazing Procedure Selection
- Supplier Welding Procedure Submission Approval Process

## 2.0 FLOWCHARTS

### 2.1 BAE Systems' Weld Procedure Approved Suppliers Process



### 2.2 BAE Systems' Weld Procedure Review Process



### 3.0 Reference Documents and Forms

Input	BMS Document Number	Storage Location
Supplier Welding Procedure Submission Form	<b>089136</b>	BAE Systems Purchasing Website
Contract Deliverable Requirements (CDR)	<b>095871</b>	BAE Systems Purchasing Website
Supplier Quality Assurance Manual (SQAM)	<b>095870</b>	BAE Systems Purchasing Website
Ground Combat Vehicle Welding Code-Steel	<b>092566</b>	BAE Systems Purchasing Website
Ground Combat Vehicle Welding Code-Aluminum	<b>092567</b>	BAE Systems Purchasing Website
BAE Systems Weld Procedure Approved Supplier/ Weld Process Audit List	<b>N/A</b>	SharePoint Site
Supplier Quality Weld Process Audit Checklist	<b>092167</b>	BMS
WE-015/ WE-015.1 SWPS Process Guide and Checklist	<b>N/A</b>	Weld Engineering O:Drive
WE-022 WPS Training	<b>N/A</b>	Weld Engineering O:Drive

### 3.1 AFFILIATED LINKS

BAE Systems Purchasing Website

<https://pns-purchasing.us.baesystems.com/york/Quality/index.shtm>

### 4.0 ACTIVITIES

Activity	Responsible Role	Details
<b>BAE Systems' Approved Supplier Requirements- Welding</b>		
4.1.1 BAE Systems' Requirements Review	BAE Systems' Approved Supplier	<p>The Supplier <b>shall</b> be deemed a BAE Systems' approved Supplier per the BAE Systems' Supplier Quality Assurance and Purchasing requirements <b>PRIOR</b> to beginning the Weld Supplier Approval and Weld Procedure Submission Process.</p> <p>The Supplier <b>shall</b> review the CQR package <b>PRIOR</b> to submitting a Supplier Welding Procedure Submission Form and beginning welding and fabrication of BAE Systems' part(s):</p> <ol style="list-style-type: none"> <li>a. Drawing Requirement(s) <ol style="list-style-type: none"> <li>i. Welding/Brazing Note(s)</li> <li>ii. Weld Section/Criticality (Section 8,9,10 and/or Non-Critical, Critical, Ballistic)</li> <li>iii. Welding/Brazing Specification(s)</li> <li>iv. Material Requirement(s) (Optional Material(s) and Material Thickness(es))</li> <li>v. Weld Callouts</li> <li>vi. Joint Geometry</li> </ol> </li> <li>b. Code(s)/Specification(s)</li> <li>c. Weld Procedure Documentation</li> <li>d. BAE Systems SQAM</li> <li>e. BAE Systems CDR</li> </ol>

		<p>f. BAE Systems Purchase Order</p> <p>The Supplier <b>shall</b> review and satisfy <b>ALL</b> criteria listed in the current CDR007, Welding- Combat Vehicles, <b>PRIOR</b> to the start of welding and fabrication of BAE Systems' part(s).</p>
<b>4.2 Supplier Options For Weld Procedure Selection</b>		
4.2.1 Weld Procedure Submission Options	BAE Systems' Approved Supplier	<p>Approved BAE Systems' Suppliers <b>shall</b> select <b>ONE</b> of the following options to satisfy the CDR007 Purchase Order/ CQR requirement, for certain circumstances, a combination of both options <b>may</b> be utilized:</p> <p><u>Option 1</u>: Utilize a Supplier qualified and/or provided Weld Procedure(s)</p> <ol style="list-style-type: none"> <li>Reference Section 4.3.3 for submittal requirements for Arc Welding, Resistance Welding, and Brazing</li> <li>Reference Section 4.2.5 for the use of Sub-Tier Suppliers/Welding Fabricators for outsourcing</li> </ol> <p><u>Option 2</u>: Utilize BAE Systems' qualified Weld Procedure(s)</p> <ol style="list-style-type: none"> <li>Reference Section 4.2.3-4.2.4 to determine Supplier eligibility to utilize BAE Systems' qualified Weld Procedures</li> </ol> <p>For all other processes, such as Brazing and/or Resistance Welding, Suppliers are required to satisfy <u>Option 1</u>.</p> <p><u>Option 2</u> is <b>ONLY</b> applicable for Arc/Fusion Welding processes.</p>
4.2.2 Ballistic Welding Procedure Submission Options	BAE Systems' Approved Supplier	<p>Approved BAE Systems' Suppliers who are required to perform Ballistic Welding for BAE Systems <b>shall</b> select <b>ONE</b> of the following options to satisfy the CDR007 Purchase Order/ CQR requirement:</p> <p><u>Option 1</u>: Utilize a Supplier qualified Ballistic Weld Procedure(s)</p> <p>Suppliers requesting to utilizing a Ballistic Weld Procedure <b>shall</b> also submit the following documentation for review:</p> <ol style="list-style-type: none"> <li>Ballistic Firing Record(s)</li> <li>Procedure Qualification Record(s) (PQR)</li> <li>Weld Procedure Specification (WPS)</li> <li>Welder/Operator Performance Qualification(s)</li> <li>Weld Machine Calibration(s)</li> </ol> <p><u>Option 2</u>: Utilize BAE Systems' qualified Ballistic Weld Procedure(s)</p> <p>Reference Section 4.2.3-4.2.4 to determine Supplier eligibility to utilize BAE Systems' qualified Weld Procedures.</p> <p>Suppliers requesting to utilize a Ballistic Weld Procedure <b>shall</b> also submit the following documentation for review:</p> <ol style="list-style-type: none"> <li>Welder/Operator Performance Qualification(s)</li> <li>Weld Machine Calibration(s)</li> </ol>

		Additional documentation required for Option 1 and Option 2 <b>shall</b> be attached and submitted to the CDR007 submittal form.
4.2.3 Supplier Weld Training Prerequisites	BAE Systems' Approved Supplier	<p>The Supplier <b>shall</b> be a BAE Systems' approved Supplier, as defined by the BAE Systems' Purchasing Quality Assurance Department, <b>PRIOR</b> to attending the Supplier Weld Procedure Training course provided by BAE Systems' Weld Engineering.</p> <p>Suppliers <b>may</b> submit welding/brazing procedure(s) for review and approval to BAE Systems' Weld Engineering, provided a BAE Systems' Authorized Purchasing Quality Assurance Representative has deemed the Supplier as a BAE Systems' Approved Supplier.</p> <p>Suppliers <b>shall</b> contact their BAE Systems' Authorized Purchasing Representative to determine their Supplier status.</p>
4.2.4 BAE Systems Supplier Weld Procedure Training	<p>BAE Systems' Approved Supplier</p> <p>BAE Systems Weld Engineering</p>	<p>In order for a BAE Systems' Approved Supplier to become eligible to utilize BAE Systems' qualified Weld Procedure(s), a minimum of <b>ONE</b> representative from the Supplier's company <b>shall</b> attend a BAE Systems' Supplier Weld Procedure Training and the company representative <b>shall</b> submit and pass the written examinations with a <b>minimum score of 80%</b>.</p> <p>Trainings <b>shall</b> be scheduled during Q1 of the applicable business year for the calendar year. <u>Four trainings</u> are required to be held per year; one training per quarter. Once the dates are scheduled, a Quality Notice containing applicable training information <b>shall</b> be placed on the BAE Systems' Purchasing Website <b>AND</b> a BAE Systems' representative <b>shall</b> announce the sessions during the quarterly Supplier Communications held by BAE Systems' Supplier Quality.</p> <p>Suppliers are required to attend the training session(s) in its entirety.</p> <p>Upon completion of the training course, the Supplier is allotted <u>5 business days</u>, following the receipt of the examinations, to return the completed exams back to the BAE Systems' Supplier Welding Procedure Training administrator. Failure to return the exams within the allotted time period will result in the Supplier's ineligibility to satisfy this requirement and will be required to attend the course again at a later date.</p> <p>Suppliers <b>shall not</b> be eligible to utilize BAE Systems' Weld Procedures until successful completion.</p> <p>Once a Supplier has completed the course with satisfactory test results, the Supplier <b>shall</b> be added to the BAE Systems Weld Procedure Approved Suppliers/Audit list, for BAE Systems' reference <b>ONLY</b>.</p> <p>In the event that the Supplier does <b>NOT</b> complete the BAE Systems Weld Training and/or does not intend to utilize the BAE</p>

		<p>Systems qualified Weld Procedures, the Supplier <b>shall</b> provide their own Weld Procedure and supporting documentation for each part via the Supplier Welding Procedure Submission Form to satisfy the CDR007 requirement.</p> <p><u>Following the successful completion of the BAE Systems' Supplier Weld Procedure Training, the Supplier <b>shall</b> undergo a Weld Process Audit performed by BAE Systems' Supplier Quality Team.</u></p> <p>Once the Weld Process Audit is completed <b>AND</b> all Supplier Corrective Action Report(s) have been satisfied, the Supplier <b>may</b> utilize BAE Systems' qualified Weld Procedures.</p>
4.2.5 Use of Sub-Tier Suppliers/ Welding Fabricators	BAE Systems' Approved Supplier	<p>In the event that a BAE Systems' approved Supplier outsources the welding and fabrication of BAE Systems' parts to a Sub-Tier and/or Welding fabricator with the intention to utilize BAE Systems' qualified Weld Procedures, the Sub-Tier Supplier <b>shall</b> also be subject to the training requirements listed in <u>Section 4.2.4.</u></p> <p>Failure to adhere to the WPS Training requirements listed above <b>shall</b> result in the Primary Supplier <b>AND</b> Sub-Tier Suppliers ineligibility to weld utilizing BAE Systems' qualified Weld Procedures.</p> <p>It <b>shall</b> be the BAE Systems' approved Supplier's responsibility to submit the required documentation for CDR007 approvals to BAE Systems' Weld Engineering, not the Sub-Tier/Welding Fabricator.</p> <p>It <b>shall</b> be the BAE Systems' approved Supplier's responsibility to ensure that their Sub-Tier/Welding Fabricator is adhering to all the welding requirements listed in the applicable Weld Code and part drawing(s).</p> <p>The Supplier <b>shall</b> also flow down all essential information to their Sub-Tier/Welding Fabricator(s) to ensure compliance with BAE Systems' requirements.</p>
4.2.6 Supplier WPS Refresher Training	BAE Systems' Approved Supplier	<p>Suppliers are required to attend a Weld Procedure Refresher Training course <u>at a minimum of every 3 years.</u> BAE Systems' <b>may</b> increase the frequency of this attendance to satisfy Supplier corrective actions for weld related non-conformances and CDR007 submittals.</p> <p>At a minimum, Suppliers requiring refresher training during the specific calendar year <b>shall</b> be notified, via E-Mail, that they are required to attend a BAE Systems' Supplier Weld Procedure Training <b>PRIOR</b> to the end of the calendar year in order to continue to utilize BAE Systems' qualified Weld Procedures for CDR007 submittals and part fabrication.</p> <p>Failure to attend a training and pass the exams by the close of the calendar year will result in the Supplier's ineligibility to reference and submit BAE Systems' qualified Weld Procedures. These Suppliers <b>shall</b> be removed from the BAE Systems' Weld Procedure Approved Supplier/Audit List.</p>

4.2.7 Training Record Traceability	BAE Systems' Weld Engineering	Supplier training attendance and examination records <b>shall</b> be retained by BAE Systems for permanent traceability.
4.2.8 Procedure Qualification Responsibility	BAE Systems' Approved Supplier	In the event that BAE Systems does <b>NOT</b> have an applicable Weld/Brazing Procedure for the BAE Systems' Approved Supplier to utilize, it <b>shall</b> be the responsibility of the Supplier to qualify and/or provide an applicable Procedure Qualification Record (PQR), Mechanical Test Results, and Weld Procedure Specification (WPS) <b>PRIOR</b> to the welding and fabrication of BAE Systems part(s).  All procedures <b>shall</b> be submitted via the Supplier Welding Procedure Submission (089136) and <b>reviewed AND approved</b> by BAE Systems' Weld Engineering <b>PRIOR</b> to use.
4.2.9 Distribution of BAE Systems' Technical Documentation	BAE Systems' Authorized Purchasing Representative	Due to the technical nature of the BAE Systems' Weld Procedure Books, all technical documentation <b>shall</b> be distributed to authorized Suppliers via SFTS and/or other secure platforms.
<b>4.3 Supplier Welding Procedure Submission Approval Process</b>		
4.3.1 Supplier Welding Procedure Submission Form Submittal	BAE Systems' Approved Supplier	The Supplier <b>shall</b> submit the completed Supplier Welding Procedure Submission Form (089136) to the following E-Mail address for processing:  <a href="mailto:SWPS.payk@baesystems.com">SWPS.payk@baesystems.com</a>  Upon receipt of the Supplier Welding Procedure Submission Form, BAE Systems <b>shall</b> review <b>AND</b> provide a disposition to the Supplier within <b>five (5) business days</b> .
4.3.2 Initial Supplier Welding Procedure Submission Form Processing	BAE Systems' Weld Engineering	The BAE Systems' processor <b>shall</b> reference WE-015/WE-015.1 as a guideline to process Supplier Welding Procedure Submission Forms.
4.3.3 Supplier Welding Procedure Submission Form Review	BAE Systems' Weld Engineering	Failure to provide the required elements of the Supplier Welding Procedure Submission Form, as defined in the Checklist on Form 089136, and/or utilizing an incorrect revision of the form <b>shall</b> be subject to immediate rejection and returned to the Supplier without further review.  BAE Systems' Weld Engineering <b>shall</b> review the following, but not limited to, elements listed below: <ul style="list-style-type: none"> <li>a. Drawing Requirement(s) <ul style="list-style-type: none"> <li>1. Weld/Braze Classification</li> <li>2. Welding/Brazing Specification(s)</li> <li>3. Material Requirement(s) (Optional Material(s) and Material Thickness(es))</li> <li>4. Weld Callouts</li> <li>5. Joint Geometry</li> </ul> </li> <li>b. Code(s)/Specification(s)</li> </ul>

		<p>c. WPS/BPS Listed</p> <p>d. BAE Systems' Weld Procedure Approved Supplier/Audit List</p> <p>A Supplier's approval status <b>shall</b> be verified in the event the Supplier utilizes BAE Systems qualified Weld Procedure(s).</p> <p>The Weld Procedure(s) requested via the submitted form <b>shall</b> satisfy the above requirements and any additional applicable weld requirements.</p> <p>For Suppliers utilizing BAE Systems' qualified Weld Procedures, reference <u>Section 4.3.4</u>. For Suppliers submitting their own procedure(s), continue within the section below:</p> <p><b><u>Arc/Fusion Welding</u></b></p> <p>In the event the Supplier provides their own Weld Procedure and/or is not approved to utilize BAE Systems' qualified Weld Procedure(s), the BAE Systems' Weld Engineer <b>shall</b> review following documents, in addition to the requirements listed above:</p> <ol style="list-style-type: none"> <li>PQR(s)</li> <li>PQR Mechanical Testing Results</li> <li>WPS(s)</li> </ol> <p><u>The Supplier <b>shall</b> submit the Weld Procedure and supporting documentation to BAE Systems' Weld Engineering <b>AND</b> gain approval <b>PRIOR</b> to the fabrication and welding of parts.</u></p> <p><b><u>Braze Welding</u></b></p> <p>Suppliers <b>shall</b> submit the following supporting documents for Braze/Braze Welding Procedures:</p> <ol style="list-style-type: none"> <li>BPQR(s)</li> <li>BPQR Mechanical Testing Results</li> <li>BPS(s)</li> </ol> <p>The Supplier <b>shall</b> complete the following applicable requirements for Braze Welding:</p> <ol style="list-style-type: none"> <li>Develop a Brazing Procedure by completing a Brazing Procedure Qualification Test as required per ANSI/AWS B2.2/B2.2M Specification for Brazing Procedure and Performance Qualification and/or applicable Brazing Code.</li> <li>The Supplier <b>may</b> use the BAE Systems Brazing Procedure Form located in the attachments of the Supplier Welding Procedure Submission Form (089136), as supplemental information, in addition to the other supporting documents mentioned above.</li> <li>Documents <b>shall</b> specify all essential variables as listed per the applicable code/specification</li> <li>The Brazing Procedure and supporting documents <b>shall</b> be documented and attached to the Supplier Welding Procedure Submission Form (089136) for submittal.</li> </ol>
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- e. The Supplier **shall** submit the Brazing Procedure to BAE Systems' Weld Engineering **AND** gain approval **PRIOR** to the fabrication and brazing of parts.

The use of alternate methods of assembly, as permitted by the specified code, such as fusion tack welding, **shall** be qualified and approved in accordance with the BPS.

**Resistance/Spot Welding**

Suppliers **shall** submit the following supporting documents for Resistance Welding Procedures:

- a. PQR(s)
- b. Mechanical Testing Results
- c. WPS(s)

The Supplier **shall** complete the following applicable requirements for Resistance Welding:

- a. Develop a Resistance Welding Procedure by completing a Resistance Procedure Qualification Test as required per the applicable Resistance Welding Code.
- b. The Supplier **may** use the BAE Systems Resistance Welding Procedure Form located in the attachments of the Supplier Welding Procedure Submission Form (089136) as supplemental information, in addition to the other supporting documents mentioned above.
- c. Documents **shall** specify all essential variables as listed per the applicable code/specification.
- d. The Resistance Welding Procedure and supporting documents **shall** be documented and attached to the Supplier Welding Procedure Submission Form (089136) for submittal.
- e. The Supplier **shall** submit the Resistance Welding Procedure **AND** equipment certification(s) to BAE Systems' Weld Engineering and gain approval **PRIOR** to the fabrication and welding of parts.

In the event that any of the above requirements listed in this section fail to meet the specified requirements or Weld Procedure applicability, the Weld Engineer **shall** reject the submission.

In the event that the Supplier lists BAE Systems' qualified Weld Procedure(s) on the Supplier Welding Procedure Submission Form, the Program Weld Engineer **shall** verify the Supplier's approval status via the BAE Systems' Weld Procedure Approved Supplier/Audit List to ensure that the Supplier has completed the requirements to utilize BAE Systems' qualified Weld Procedure(s).

Regardless of the welding and/or brazing process, the Supplier Welding Procedure Submission Form (089136) **shall** be submitted with the applicable documentation, outlined above, to BAE

		Systems' Weld Engineering for CDR007 approval. Absence of this form and/or the required supporting documentation <b>shall</b> result in the immediate rejection and return of the documents.
4.3.4 Supplier Welding Procedure Submission Form Review-BAE Systems' Weld Procedures	BAE Systems' Approved Supplier	<p>In the event that a Supplier is authorized to utilize BAE Systems' qualified Weld Procedures, the Supplier is required to fill out the Supplier Welding Procedure Submission Form (089136) per CDR 007 and list the BAE Systems' Weld Procedure(s) for the particular application.</p> <p><u>The Supplier <b>shall</b> submit the Weld Procedure to BAE Systems' Weld Engineering <b>AND</b> gain approval <b>PRIOR</b> to the fabrication and welding of parts.</u></p>
4.3.5 Supplier Welding Procedure Submission Form Disposition	BAE Systems' Weld Engineering	<p>Upon approval of the Supplier Welding Procedure Submission Form, the BAE Systems' Weld Engineer <b>shall</b> electronically sign and date the form.</p> <p>In the event that the form is rejected, the BAE Systems' Weld Engineer <b>shall</b> provide applicable comments indicating the reason(s) for rejection, along with signing and dating the form.</p> <p>Once the form is dispositioned, the Weld Engineer <b>shall</b> file the completed form in the proper folder for final processing, depending on the disposition of approval or rejection.</p>
4.3.6 Supplier Welding Procedure Submission Form Approval	BAE Systems' Approved Supplier	Upon approval and electronic receipt of the approved submittal, the Supplier <b>may</b> begin fabrication <b>ONLY</b> for the part(s) and WPS(s) submitted <b>AND</b> approved.
4.3.7 CDR007 Non-Conformances	BAE Systems' Supplier Quality/Receiving Inspection	<p>Verification of CDR007 approval for Purchase Order Part Numbers <b>shall</b> be performed in the event of a Source Inspection and/or upon BAE Systems' receipt of Supplier provided parts.</p> <p>A Supplier's failure to submit <b>AND</b> gain approval of CDR007 <b>PRIOR</b> to welding and fabrication <b>may</b> result in the Supplier being issued a Supplier Corrective Action Report (SCAR).</p>
4.3.8 Supplier Welding Procedure Submission Form Resubmittals	BAE Systems' Approved Supplier	<p>The following changes <b>shall</b> drive a Supplier to resubmit a Supplier Welding Procedure Submission Form:</p> <ol style="list-style-type: none"> <li>1. A change in part number and/or part configuration <ol style="list-style-type: none"> <li>i. Ex.: XXXXXXXX*00 to XXXXXXXX*01</li> </ol> </li> <li>2. A change in material (different from the original submission and/or use of an optional material listed on the drawing)</li> <li>3. A change in weld procedure or process <ol style="list-style-type: none"> <li>i. Ex.: Switching from GMAW to GTAW, and/or adding an alternate process)</li> </ol> </li> <li>4. A change in welding facility location</li> </ol>
4.3.9 Record Retention	BAE Systems	<p>Supplier Welding Procedure Submissions for CDR007 <b>shall</b> remain indefinitely.</p> <p>Approvals <b>shall NOT</b> expire and are valid <u>unless one or more of the changes above in Section 4.3.8 occur.</u></p>

## 5.0 OUTPUTS

Output	Description
BAE Systems' Weld Procedure Approved Supplier	A BAE Systems' Approved Supplier that has satisfied all the requirements to utilize BAE Systems Qualified Weld Procedures
CDR007 Approval	Welding- Combat Vehicles; approval of Weld Procedure(s) to be utilized on BAE Systems' product prior to the start of welding and fabrication

Records shall be identified, controlled and managed to allow for ease of retrieval. Records shall be retained as required per BAE Systems, Inc. Policy 218, Record Management, U.S. Records Retention Schedule and/or FAR 4.7 whichever is longest.

## 6.0 DEFINITIONS

- **Approved Supplier** – A supplier that has met the requirements of the BAE Systems Purchasing Quality Assurance Department
- **ASME**- The American Society of Mechanical Engineers
- **AWS**- The American Welding Society
- **BPQR**- Brazing Procedure Qualification Record
- **BPS**- Brazing Procedure Specification
- **CDR**- Contract Deliverable Requirements
- **CQR**- Contract Quality Requirements
- **NIST**- National Institute of Standards and Technology
- **PO**- Purchase Order
- **PQR** – Procedure Qualification Record: A document generated by qualifying a welding process to be evaluated in accordance with applicable codes, standards, and/or specifications
- **SCAR**- Supplier Corrective Action Report
- **SFTS**- Secure File Transfer Service
- **SME**- Subject Matter Expert
- **SQAM**- Supplier Quality Assurance Manual
- **WPS** – Welding Procedure Specification: A document containing a welding procedure intended for production usage, in accordance with applicable codes, standards, and/or specifications.

## 7.0 KEY PROCESSES

- Weld Engineering
- Supplier

## 8.0 TAILORING

Tailoring of this document is Not Allowed.

## 9.0 REVISION HISTORY

Rev	Date	Change Description	Approved By	Change Request #
01	04/08/2008	No change history documented, document migrated over from EPF	N/A	N/A
02	05/05/2015	Removed "process owner approval" on 1 <sup>st</sup> page. Removed "title" from title on pg. 1. Modified 1.2, 4.1.1, and 4.1.2. Removed LAA-5128 example. Added page numbers, rev #, rev. date, form #, and disclaimer to footer. Changed BAE logo in header. Added revision history.	Michael Davis	BPMS-02260
02a	10/03/2017	Reviewed no changes	Christina Ulrich	N/A
03	12/14/2020	Reviewed no changes	Angela Stover	BPMS-06098
04	12/16/2021	Document restructure.	Angie Stover	BPMS-06902
05	02/02/2022	Removed proprietary note for Purchasing Website use. Updated Section 4.3.3 for Brazing and Resistance Welding Requirements.	Angela Stover	BPMS-07026