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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***This Process checklist is divided into four (4) sections. Questions marked with an asterisk (\*) are considered key areas, and should be the minimum areas audited.***  Supplier Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Supplier No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Audit Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | | | | | | | | |
| SECTION A: GENERAL | | | | | | | | | | | | | | |
| A 1.  \* | Does supplier have the necessary welding/welding repair controls and procedures in place to perform on existing contracts?  ***An UNSAT here would require a STOP WORK and an investigation into what has been delivered to NNS will be required.***  ***This question should be the last area annotated, and is based on the auditor’s overall assessment of the supplier’s welding program.*** | | | | | | | | | | | | | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| A 2  \* | a. Weld Processes Used (check applicable boxes): | | | | | | | | | | | | |  |
|  | Stick SMAW | MIG  GMAW | | TIG  GTAW | | | | Sub Arc  SAW | | Flux Core FCAW | | | Other  \_\_\_\_\_\_\_ |  |
|  | Define Other: | | | | | | | | | | | | |
|  | b. Weld Procedure Qualifications (check applicable boxes): | | | | | | | | | | | | |  |
|  | A S M E | | MIL-STD-248 Revision D | | | | Tech Pub 248 | | Customer Approved | | | Other | |  |
|  | Define Other:  ***This question (A2 b.) evaluation should be based on NNS/EB welding requirements passed down in our purchase orders (such as Appendix K-662, EB standard clause 60-67, etc…).*** | | | | | | | | | | | | |
|  | c. Materials Welded/Weld Repaired (check applicable boxes):  ***This area is for information purposes only.*** | | | | | | | | | | | | |  |
|  | HY100  \_\_\_\_\_ | | HY80  \_\_\_\_\_ | | HSLA100  \_\_\_\_\_ | | | | HY100  \_\_\_\_\_ | | | HY80  \_\_\_\_\_ | |  |
|  | Stainless/ Ferrous \_\_\_\_\_ | | Material Requiring Preheat/Interpass Temp. Control \_\_\_\_\_ | | | | | | Pipe/Mach  \_\_\_\_\_ | | | Other  \_\_\_\_\_ | |
|  | Define Other: | | | | | | | | | | | | |  |
| A 3.  \* | Applicable Weld Process Specifications (check applicable boxes):  ***This area is for information purposes only.*** | | | | | | | | | | | | |  |
|  | MIL-STD-1689 | | | | | MIL-STD-1681 | | | | | MIL-STD-1688 | | |  |
|  | A S M E | | | | | MIL-STD-278 | | | | | PPD694 | | |  |
|  | PPD720 | | | | | PPD689 | | | | |  | | |  |
|  | S9074-AD-GIB-010/278 | | | | | T9074-AD-GIB-010/1688 | | | | | Other | | |  |
|  | Define Other: | | | | | | | | | | | | |  |
| A 4.  \* | Procedure Parameters/ Approvals:  ***An UNSAT here would require a STOP WORK and an investigation into what has been delivered to NNS will be required.*** | | | | | | | | | | | | |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Proc Number | Materials to be welded | Required filler material | Approval No: |  |
| A 5. | a. Is there a procedure in place to assure compliance with welding procedures and fabrication documents and are they readily available?  ***This will NOT require Stop Work but should require a closer look at in process work. If the welder is not using the required weld procedure further investigation may require a Stop Work.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | b. Is there a QA audit/surveillance procedure in place to weld procedures and fabrication documents?  ***This will NOT require Stop Work but should require a closer look at in process work. If the welder is not using the required weld procedure further investigation may require a Stop Work.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| A 6.  \* | Do travelers/work instructions give detailed welding instructions or refer the welder to applicable documents?  ***This will NOT require Stop Work but should require a closer look at in process work. If the welder is not using the required weld procedure further investigation may require a Stop Work.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| A 7.  \* | Does the supplier invoke all Customer contract/purchase order requirements for welding to his sub tier suppliers?  ***This could impact the Sub-tier supplied material and could require STOP WORK. Investigation into work being subcontracted will determine this.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| SECTION B: WELDER QUALIFICATIONS / WELDING CONTROLS | | | | | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| B 1.  \* | Is there a system to assure that welding (including Tack and Temporaries) is only performed by operators qualified in the procedure and position?  ***This MAY require Stop Work but should require a closer look at in process work. If the welder is not qualified STOP WORK and see who else is not and what has NNS received to date.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 2.  \* | Is there a system to assure qualifications are maintained? (MIL-STD-248 Quarterly) (S9074-AR-GIB-010/248)  ***This will NOT require Stop Work but should require a closer look at in process work. If the welder is not qualified STOP WORK and see who else is not and what has NNS received to date.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | a. Is there evidence of annual vision tests?  ***This should STOP WORK until the welders have received eye exams, Follow-up after the eye exam results my reveal that the welder was welding without corrective lenses.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 3.  \* | Does the Traveler/Process Sheet/Other Instruction identify each required inspection and NDT?  ***This MAY or may not Stop Work but verification that the correct NDT is being performed will be required. If it’s determined that the supplier has not been performing the required NDT, a STOP WORK will be required.***  ***.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 4. | Are contractual records maintained?  ***This will NOT Stop Work*** | | | | \_\_\_Sat \_\_\_Unsat |
|  | a. Performance of inspections | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | b. Records of defects found | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | c. Welder identification where required | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | d. Electrodes/Flux Test Report | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | e. Qualification and Vision Test | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 5. | Explain/describe records reviewed in regards to clarify, accountability and specification compliance: | | | |  |
| B 6.  \* | a. Are there records to assure that electrodes are purchased and issued to the required military specifications?  ***If the wrong filler metal is being purchased (commercial vice Military) this will STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | b. Is the weld wire verified for conformance by reviewing certifications for compliance to the applicable Wire Specifications?  ***This will NOT Stop Work however further review may uncover wrong filler metal which will STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 7.  \* | Are weld consumables adequately identified, segregated and controlled?  ***This MAY or may not Stop Work. If it’s determined that the supplier’s system could inadvertently cause commercial material to be used instead of military, STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | a. In Wire Room and Ovens? | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | b. While issued to Production? | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 8. | Is a Wire Chit system in use?  ***This will NOT Stop Work***.  ***Some suppliers may choose to use a document call a “Wire Chit”, which is a document that describes the weld joint, procedure and weld consumables needed*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 9. | Are electrodes returned to the issuance point?  ***This MAY not Stop Work. However, if further review uncovers the wrong filler metal is or could be used this will require STOP WORK.***  ***At completion of a job or end of day/shift, the welder should be able to discuss what happens to remnant electrodes. There should be a positive control mechanism in place to ensure return or disposal.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 10. | Does the supplier bake electrodes?  ***Not all electrodes require this. If the Supplier is required to and does not it will STOP WORK.***  ***Baking ovens are to be held at 800F for ½-1 hour.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | a. Are controls in accordance with applicable specification requirements?  ***Based on electrode specification*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 11. | Are Baking/Holding ovens properly used? (Flux and covered electrodes)  ***Not all electrodes require this. If the Supplier is required to and does not it will STOP WORK.***  ***During the baking process, the ovens should be maintained at 800F. Holding ovens shall be vented and held between 150-300F. Electrodes should be thinly spread over the various trays. In addition, a segregation and labeling system should be employed so that the supplier has positive control of what exact type/spec material is in the ovens.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 12. | Are electrode moisture tests performed?  ***If required by the electrode/wire specification*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 13. | Are Baking/Holding ovens adequately maintained?  ***Based on question B11 above.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 14. | Does system control compatibility of wire/flux combination to the base material?  ***This will NOT require a Stop Work. However, further investigation is required to determine if the correct wire is being used. That may require help from O37. The weld procedures should tell the base metals and the required filler metal. If the supplier has used the wrong flux/wire for the applicable procedure, this will require a STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 15. | Is a written procedure in effect describing weld quality and completeness requirements?  ***If there is no WWT in place this is a STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 16. | To what extent is welding process monitoring being done? | | | | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
|  | a. Are all welding attributes and controls reviewed? Are records kept?  Explain:    ***This will NOT Stop Work.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 17. | Are workmanship\* inspections documented? | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | a. Are detailed records or a more generalized record of accomplishment used?  Explain    ***Based on results of inquiries from the above question.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| B 18.  \* | Are weld repair operations, including required evaluations and approvals, properly documented and traceable to the completed material? Explain documentation:  ***This will NOT Stop Work.***  ***If weld repairs are necessary, the supplier need to document the repair evolution, including evaluations, router updates and re-work inspections.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| SECTION C: WELDER WORKMANSHIP TRAINING  MIL-STD-248D (para 5.2.3.1), and/or: S9074-AQ-GIB-010/248  ***All areas of this section are considered key questions. All questions can be audited and reviewed for compliance prior to arriving on-site (i.e. desk audit) by obtaining the information from the supplier up front.*** | | | | | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
| C 1.  \* | Is there a written procedure covering all aspects of training and associated responsibility?  ***If there is no WWT in place this is a STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| C 2.  \* | Is there evidence of approval by the authorized representative as required by Technical Manual S9074-AQ-GIB-010-/248, paragraph 5.2.3.1.a of this training procedure?  ***This will be cause to STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| C 3.  \* | Is there evidence of training in workmanship and detailed visual inspection requirements of all fabrication documents to which welding is performed?  ***This will be cause to STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| C 4.  \* | Have all welders passed written examinations covering detailed workmanship and visual inspection requirements with a grade of 75 percent or greater?  ***This will be cause to STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| C 5.  \* | Is there evidence of approval of Items 1, 3 and 4 above by a Level III examiner or other NAVSEA approved individual? (MIL-STD-248, paragraph 5.2.3.1.d)  ***This will be cause to STOP WORK.***  ***The supplier’s designated Level III NDT Examiner needs to show evidence that they have reviewed and approved the WWT procedure, the training and the exams. NOTE: The approved Level III Examiner does not need to be a VT Examiner. The Level III Examiner’s credentials should be verified as outlined in the NAV03 NDT LITE checklist.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| C 6.  \* | Do examination records for each welder include: name, fabrication/acceptance standards covered, date of test, and certifying signature of test administrator?  ***This will NOT Stop Work.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| C 7.  \* | Is each welder retested every 3 years?  ***This will NOT Stop Work.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| C 8.  \* | Is the entire training program audited by the Level III Examiner or other NAVSEA approved individual (MIL-STD-248, paragraph 5.2.3.1.d) at least once every 2 years to assure adequacy?  ***This will NOT Stop Work.***  ***This should be verified by objective evidence that the designated Level III Examiner has performed this necessary audit.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
| SECTION D: PERFORMANCE A DETAILED OBSERVATION OF WELDERS  ***Section D is considered optional- time permitting.*** | | | | | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
|  | (Complete one section for each welder observed) NOTE: If determined to be N/A, provide explanation | | | |  |
| D 1. | 1. Welder Identification (name, badge or clock #, shift):   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_ \_\_\_\_\_\_  ***Should be provided by the welder.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | b. Wire Chit on file (in-house system):  ***If this system is being used by the supplier, verify proper weld chit approvals are in place and complete.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | 1. Welding Process observed:   ***Self explanatory.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | 1. Base Material(s) being welded: | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | e. Is the welder qualified for observed welding procedure?  ***This will be cause to STOP WORK. This will also drive the who else and where else*** ***questions as well as determining if any previously delivered material may be impacted.***  ***Welder qualifications for the welder being observed should be researched and verified*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | f. Is the welder familiar with details of the procedure?  ***The auditor should be able to assess this by questions and answers with the welder of the various different aspects of the weld procedure*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | g. Is procedure/technique sheet readily available?  ***The welder should have, as a minimum, access to their weld procedure/weld instructions, and demonstrate to the auditor how to obtain them.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | h. Procedure Number:  ***For informational purposes.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | i. Electrode/Filler Wire/Flux in use:  1. Type  2. Specification  ***If it’s determined that the welder is not using the proper filler/wire material for the job – STOP WORK.***  ***.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | j. Material Identification:  On records \_\_\_\_\_\_\_\_\_\_Yes\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    On hardware \_\_\_\_\_\_\_\_\_\_\_\_No\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  ***The base material alloy type should be listed on the material and on the records. The filler material specification and type should be on the certifications and on the container (along with the appropriate heat/lot).*** | | | |  |
|  | k. Parameters:  Amperage was not maintained in the procedure range requirements (procedure MF06-N01C requires amperage range of 150-250, but during weld, amperage measured between 130 and 140). Amperage is a required electrical characteristic per NAVSEA Tech Pub 248 Table V. | | | |  |
|  | 1. Current    ***Info from the weld procedure – the auditor should verify the welder is within this parameter.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | 2. Voltage    ***Info from the weld procedure – the auditor should verify the welder is within this parameter.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | 3. Travel Speed  ***Info from the weld procedure – the auditor should verify the welder is within this parameter.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | 4. Wire Size    ***Info from the weld procedure – the auditor should verify the welder is within this parameter.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | l. Joint Preparation, Fitup and Clean  ***Info from the weld procedure – the auditor should verify the welder is compliant with these aspects.*** | | | | \_\_\_Sat \_\_\_Unsat \_\_\_N/A |
|  | m. Visual Weld Quality and Workmanship  ***This may or may not cause STOP WORK. If the welder demonstrates a complete lack of knowledge, this should cause a STOP WORK until impact is determined (with input from NNS Level III Examiners).*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | n. Is preheat/interpass required?  ***Info from the weld procedure/*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | 1. Is preheat temperature compliance checked? | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | 1. Is interpass temperature range confirmed? | | | | \_\_\_Yes \_\_\_ No \_\_N/A |
|  | o. Overall, is operator complying with procedure and specifications?  ***Depending on any findings made in observations above with the procedure parameters, this may require a STOP WORK. NNS weld engineering should be consulted to determine if non-compliance to procedures/specification should cause a STOP WORK.*** | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |
|  | p. Are required documents organized in an orderly manner? (e.g. procedure and mods, Approval documents, etc., in one accessible location)? | | | | \_\_\_Yes \_\_\_ No \_\_\_N/A |

Additional Comments/Concerns: