

Supplier Name: _____
 Supplier No: _____
 Audit Date: _____

HIL-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

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.*

SECTION A: GENERAL

A 1. *	Does supplier have the necessary welding/welding repair controls and procedures in place to perform on existing contracts? <i>An UNSAT here would require a STOP WORK and an investigation into what has been delivered to NNS will be required.</i> <i>This question should be the last area annotated, and is based on the auditor's overall assessment of the supplier's welding program.</i>	___ Sat ___ Unsat ___ N/A
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A 2 *	a. Weld Processes Used (check applicable boxes):	
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	Stick SMAW	MIG GMAW	TIG GTAW	Sub Arc SAW	Flux Core FCAW	Other _____	
	_____	_____	_____	_____	_____	_____	

	Define Other:	
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	b. Weld Procedure Qualifications (check applicable boxes):	
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	A S M E	MIL-STD-248 Revision D	Tech Pub 248	Customer Approved	Other	
	_____	_____	_____	_____	_____	

	Define Other:	
	<i>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...).</i>	

	c. Materials Welded/Weld Repaired (check applicable boxes):	
	<i>This area is for information purposes only.</i>	

	HY100	HY80	HSLA100	HY100	HY80	
	_____	_____	_____	_____	_____	

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

	Stainless/ Ferrous _____	Material Requiring Preheat/Interpass Temp. Control _____	Pipe/Mach _____	Other _____	
	Define Other:				
A 3. *	Applicable Weld Process Specifications (check applicable boxes): <i>This area is for information purposes only.</i>				
	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: <i>An UNSAT here would require a STOP WORK and an investigation into what has been delivered to NNS will be required.</i>				

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

	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? <i>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.</i>				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	b. Is there a QA audit/surveillance procedure in place to weld procedures and fabrication documents? <i>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.</i>				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A 6. *	Do travelers/work instructions give detailed welding instructions or refer the welder to applicable documents? <i>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.</i>				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A 7. *	Does the supplier invoke all Customer contract/purchase order requirements for welding to his sub tier suppliers? <i>This could impact the Sub-tier supplied material and could require STOP WORK. Investigation into work being subcontracted will determine this.</i>				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
SECTION B: WELDER QUALIFICATIONS / WELDING CONTROLS					<input type="checkbox"/> Sat <input type="checkbox"/> Unsat <input type="checkbox"/> 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? <i>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.</i>				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
B 2. *	Is there a system to assure qualifications are maintained? (MIL-STD-248 Quarterly) (S9074-AR-GIB-010/248) <i>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.</i>				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
	a. Is there evidence of annual vision tests? <i>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.</i>				<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

B 3. *	Does the Traveler/Process Sheet/Other Instruction identify each required inspection and NDT? <i>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.</i>	___ Yes ___ No ___ N/A
B 4.	Are contractual records maintained? <i>This will NOT Stop Work</i>	___ 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? <i>If the wrong filler metal is being purchased (commercial vice Military) this will STOP WORK.</i>	___ Yes ___ No ___ N/A
	b. Is the weld wire verified for conformance by reviewing certifications for compliance to	

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

	<p>the applicable Wire Specifications?</p> <p><i>This will NOT Stop Work however further review may uncover wrong filler metal which will STOP WORK.</i></p>	<p>___ Yes ___ No ___ N/A</p>
B 7. *	<p>Are weld consumables adequately identified, segregated and controlled?</p> <p><i>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.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>a. In Wire Room and Ovens?</p>	<p>___ Yes ___ No ___ N/A</p>
	<p>b. While issued to Production?</p>	<p>___ Yes ___ No ___ N/A</p>
B 8.	<p>Is a Wire Chit system in use?</p> <p><i>This will NOT Stop Work.</i></p> <p><i>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</i></p>	<p>___ Yes ___ No ___ N/A</p>
B 9.	<p>Are electrodes returned to the issuance point?</p> <p><i>This MAY not Stop Work. However, if further review uncovers the wrong filler metal is or could be used this will require STOP WORK.</i></p> <p><i>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.</i></p>	<p>___ Yes ___ No ___ N/A</p>
B 10.	<p>Does the supplier bake electrodes?</p> <p><i>Not all electrodes require this. If the Supplier is required to and does not it will STOP WORK.</i></p> <p><i>Baking ovens are to be held at 800F for 1/2-1 hour.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>a. Are controls in accordance with applicable specification requirements?</p> <p><i>Based on electrode specification</i></p>	<p>___ Yes ___ No ___ N/A</p>
B 11.	<p>Are Baking/Holding ovens properly used? (Flux and covered electrodes)</p> <p><i>Not all electrodes require this. If the Supplier is required to and does not it will STOP WORK.</i></p> <p><i>During the baking process, the ovens should be maintained at 800F. Holding ovens</i></p>	<p>___ Yes ___ No ___ N/A</p>

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

	<i>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.</i>	
B 12.	Are electrode moisture tests performed? <i>If required by the electrode/wire specification</i>	___ Yes ___ No ___ N/A
B 13.	Are Baking/Holding ovens adequately maintained? <i>Based on question B11 above.</i>	___ Yes ___ No ___ N/A
B 14.	Does system control compatibility of wire/flux combination to the base material? <i>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.</i>	___ Yes ___ No ___ N/A
B 15.	Is a written procedure in effect describing weld quality and completeness requirements? <i>If there is no WWT in place this is a STOP WORK.</i>	___ 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: <i>This will NOT Stop Work.</i>	___ 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 <i>Based on results of inquiries from the above question.</i>	___ Yes ___ No ___ N/A

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

<p>B 18. *</p>	<p>Are weld repair operations, including required evaluations and approvals, properly documented and traceable to the completed material? Explain documentation:</p> <p><i>This will NOT Stop Work.</i></p> <p><i>If weld repairs are necessary, the supplier need to document the repair evolution, including evaluations, router updates and re-work inspections.</i></p>	<p>___ Yes ___ No ___ N/A</p>
<p>SECTION C: WELDER WORKMANSHIP TRAINING MIL-STD-248D (para 5.2.3.1), and/or: S9074-AQ-GIB-010/248</p> <p><i>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.</i></p>		<p>___ Sat ___ Unsat ___ N/A</p>
<p>C 1. *</p>	<p>Is there a written procedure covering all aspects of training and associated responsibility?</p> <p><i>If there is no WWT in place this is a STOP WORK.</i></p>	<p>___ Yes ___ No ___ N/A</p>
<p>C 2. *</p>	<p>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?</p> <p><i>This will be cause to STOP WORK.</i></p>	<p>___ Yes ___ No ___ N/A</p>
<p>C 3. *</p>	<p>Is there evidence of training in workmanship and detailed visual inspection requirements of all fabrication documents to which welding is performed?</p> <p><i>This will be cause to STOP WORK.</i></p>	<p>___ Yes ___ No ___ N/A</p>
<p>C 4. *</p>	<p>Have all welders passed written examinations covering detailed workmanship and visual inspection requirements with a grade of 75 percent or greater?</p> <p><i>This will be cause to STOP WORK.</i></p>	<p>___ Yes ___ No ___ N/A</p>
<p>C 5. *</p>	<p>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)</p> <p><i>This will be cause to STOP WORK.</i></p> <p><i>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.</i></p>	<p>___ Yes ___ No ___ N/A</p>
<p>C 6. *</p>	<p>Do examination records for each welder include: name, fabrication/acceptance standards covered, date of test, and certifying signature of test administrator?</p> <p><i>This will NOT Stop Work.</i></p>	<p>___ Yes ___ No ___ N/A</p>

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

C 7. *	Is each welder retested every 3 years? <i>This will NOT Stop Work.</i>	___ 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? <i>This will NOT Stop Work.</i> <i>This should be verified by objective evidence that the designated Level III Examiner has performed this necessary audit.</i>	___ Yes ___ No ___ N/A
SECTION D: PERFORMANCE A DETAILED OBSERVATION OF WELDERS <i>Section D is considered optional- time permitting.</i>		___ Sat ___ Unsat ___ N/A
	(Complete one section for each welder observed) NOTE: If determined to be N/A, provide explanation	
D 1.	a. Welder Identification (name, badge or clock #, shift): _____	___ Yes ___ No ___ N/A
	<i>Should be provided by the welder.</i>	
	b. Wire Chit on file (in-house system): <i>If this system is being used by the supplier, verify proper weld chit approvals are in place and complete.</i>	___ Yes ___ No ___ N/A
	b. Welding Process observed: <i>Self explanatory.</i>	___ Yes ___ No ___ N/A
	c. Base Material(s) being welded:	___ Yes ___ No ___ N/A
	e. Is the welder qualified for observed welding procedure? <i>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.</i> <i>Welder qualifications for the welder being observed should be researched and verified</i>	___ Yes ___ No ___ N/A

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

	<p>f. Is the welder familiar with details of the procedure?</p> <p><i>The auditor should be able to assess this by questions and answers with the welder of the various different aspects of the weld procedure</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>g. Is procedure/technique sheet readily available?</p> <p><i>The welder should have, as a minimum, access to their weld procedure/weld instructions, and demonstrate to the auditor how to obtain them.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>h. Procedure Number:</p> <p><i>For informational purposes.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>i. Electrode/Filler Wire/Flux in use:</p> <p>1. Type</p> <p>2. Specification</p> <p><i>If it's determined that the welder is not using the proper filler/wire material for the job – STOP WORK.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>j. Material Identification:</p> <p>On records _____ Yes _____</p> <p>On hardware _____ No _____</p> <p><i>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).</i></p>	
	<p>k. Parameters:</p> <p>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.</p>	
	<p>l. Current</p>	<p>___ Yes ___ No ___ N/A</p>

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

	<p><i>Info from the weld procedure – the auditor should verify the welder is within this parameter.</i></p>	
	<p>2. Voltage</p> <p><i>Info from the weld procedure – the auditor should verify the welder is within this parameter.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>3. Travel Speed</p> <p><i>Info from the weld procedure – the auditor should verify the welder is within this parameter.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>4. Wire Size</p> <p><i>Info from the weld procedure – the auditor should verify the welder is within this parameter.</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>l. Joint Preparation, Fitup and Clean</p> <p><i>Info from the weld procedure – the auditor should verify the welder is compliant with these aspects.</i></p>	<p>___ Sat ___ Unsat ___ N/A</p>
	<p>m. Visual Weld Quality and Workmanship</p> <p><i>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).</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>n. Is preheat/interpass required?</p> <p><i>Info from the weld procedure/</i></p>	<p>___ Yes ___ No ___ N/A</p>
	<p>1. Is preheat temperature compliance checked?</p>	<p>___ Yes ___ No ___ N/A</p>
	<p>2. Is interpass temperature range confirmed?</p>	<p>___ Yes ___ No ___ N/A</p>

HII-NNS WELDING/WELD REPAIR AUDIT CHECKLIST (LITE)

	o. Overall, is operator complying with procedure and specifications? <i>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.</i>	___ 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: