

**NAV03 UT - NONDESTRUCTIVE TESTING (ISO 4.9)**

**Vendor:** \_\_\_\_\_ **Auditor:** \_\_\_\_\_ **Date:** \_\_\_\_\_

1.	Routine Scheduled Audit a. Annual <input type="checkbox"/> b. Semi-annual <input type="checkbox"/> c. Other <input type="checkbox"/>
2.	Product driven Audit a. Product received by the Prime Vendor that does not meet specification requirements. <input type="checkbox"/> b. Product that was installed or was being installed the does not meet specification requirements. <input type="checkbox"/> c. Product has failed in service and investigations show it did not meet specification requirements. <input type="checkbox"/>
What specification is the Audit being performed to?	
3.	Governing Specification: Mark the appropriate specification a. MIL-STD-2132 <input type="checkbox"/> b. NAVSEA 250-1500-01 (Welds) <input type="checkbox"/> c. MIL-STD-271 (F) <input type="checkbox"/> d. T9074-AS-GIB-010/271 ACN1 <input type="checkbox"/> e. T9074-AS-GIB-010/271 Revision 1 <input type="checkbox"/> f. Other _____ <input type="checkbox"/>
4.	Program Type: Mark the appropriate program type a. Level I/ SubSafe <input type="checkbox"/> b. Nuclear Plant Material <input type="checkbox"/> c. Fly by Wire Ships Control System <input type="checkbox"/> d. Navy Propulsion Program <input type="checkbox"/> e. Naval Nuclear Propulsion Program <input type="checkbox"/> f. Deep Submergence Systems / Scope of Certification Program <input type="checkbox"/> g. Aircraft Launch and Recovery <input type="checkbox"/> h. Other _____ <input type="checkbox"/>
5.	Does the vendor have an NDT Examiner? a. In house <input type="checkbox"/> b. Contracted <input type="checkbox"/> c. Certified in the method <input type="checkbox"/> d. Available for the Audit <input type="checkbox"/> e. No Examiner <input type="checkbox"/>
6.	Is the NDT inspection program administration code or specification complaint? a. Level III Approved written practice <input type="checkbox"/> b. Approved procedures i. Level III <input type="checkbox"/> ii. Prime contractor <input type="checkbox"/> iii. Clearly specifies inspection requirements <input type="checkbox"/> iv. Clearly specifies acceptance criteria <input type="checkbox"/> v. Qualified to find known defects <input type="checkbox"/>

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	<ul style="list-style-type: none"> <li>c. Approved technique sheet <ul style="list-style-type: none"> <li>i. Level III <input type="checkbox"/></li> <li>ii. Prime contractor <input type="checkbox"/></li> <li>iii. Clearly specifies inspection requirements <input type="checkbox"/></li> <li>iv. Clearly specifies acceptance criteria <input type="checkbox"/></li> </ul> </li> <li>d. Approved technical work documents <ul style="list-style-type: none"> <li>i. Level III <input type="checkbox"/></li> <li>ii. Prime contractor <input type="checkbox"/></li> <li>iii. Clearly specifies inspection requirements <input type="checkbox"/></li> <li>iv. Clearly specifies acceptance criteria <input type="checkbox"/></li> </ul> </li> <li>e. Inspector records <ul style="list-style-type: none"> <li>i. Is there a current eye examination <input type="checkbox"/></li> <li>ii. Certifications are current <input type="checkbox"/></li> <li>iii. Previous certifications included <input type="checkbox"/></li> <li>iv. Educational history <input type="checkbox"/></li> </ul> </li> <li>f. Workmanship standards <ul style="list-style-type: none"> <li>i. Available <input type="checkbox"/></li> <li>ii. Controlled <input type="checkbox"/></li> </ul> </li> </ul>
7.	<p>Are material controls in place?</p> <ul style="list-style-type: none"> <li>a. Segregated (Level I, Subsafe, etc.) <input type="checkbox"/></li> <li>b. Controlled <input type="checkbox"/></li> <li>c. Traceable <input type="checkbox"/></li> <li>d. Procedure for disposition <input type="checkbox"/></li> </ul>
8.	<p>Are records maintained to confirm that all required inspection processes were performed?</p> <ul style="list-style-type: none"> <li>a. Description and unique identification of item being inspected <input type="checkbox"/></li> <li>b. Approved procedure identification <input type="checkbox"/></li> <li>c. Acceptance standard used <input type="checkbox"/></li> <li>d. Date of inspection <input type="checkbox"/></li> <li>e. Signatures of inspectors <input type="checkbox"/></li> <li>f. Disposition (accept / reject) of the item inspected <input type="checkbox"/></li> <li>g. Retention (Where and how long) <input type="checkbox"/></li> </ul>
9.	<p>1. Technical Concerns: List the technical concerns associated with the method.</p> <ul style="list-style-type: none"> <li>a. <u>Pre-Weld Fit-up and Dimensional</u>: Pre-weld dimensions and fit-up attributes should be verified when applicable.</li> <li>b. <u>Weld Contour (as welded or ground)</u>: An improper weld contour can have a detrimental effect on the integrity of the weld joint and higher level NDT methods such as MT, PT, UT and RT.</li> <li>c. <u>Weld size (minimum and maximum)</u>: Specified weld sizes are based upon engineering, design and service requirements. Weld size verification is an important attribute to ensure the engineered strength weld and component can meet its intended purpose.</li> <li>d. <u>Acceptance Criteria</u>: Acceptance criteria can vary depending on joint design, weld classification and higher level NDT requirements (PT, MT, UT, RT). Inspection procedure and Acceptance criteria should be available to inspector at workstation</li> <li>e. <u>Inadequate Process Controls</u>: Thorough and technically comprehensive VT procedures ensure the inspector has adequate and detailed direction to evaluate any weld or applicable surface.</li> </ul>

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		<p>f. <b>Inadequate Technique:</b> Inspector technique and methodology when performing visual weld inspection, especially measuring and dimensional verification of weld size and discontinuity size, are critical. Proper use of lighting is an important and helpful component of the inspection to enhance identification of surface discontinuities. Shadow formation caused by ridges and crevices are more readily visible and identifiable with proper flashlight angulation.</p>
10.	Known Process Problems: List the known process problems	<p>a. Required inspection tools available</p> <p>b. Inspection tools calibrated (when required)</p> <p>c. Is the lighting adequate (is there a procedure requirement?)</p>
<p>Checklist Instructions: Be specific and ask follow-up questions as appropriate.</p> <p>a. Any condition that is considered to be non-compliant must be specifically documented as to what the deficiency is.</p> <p style="margin-left: 20px;">i. Specification</p> <p style="margin-left: 20px;">ii. Page</p> <p style="margin-left: 20px;">iii. Paragraph</p> <p style="margin-left: 20px;">iv. Detailed description of what was observed</p> <p>b. Document comments or observations on the checklist at each checkpoint or the comment section, as needed, no matter if the checkpoint is satisfactory or unsatisfactory.</p> <p>c. Comments on any checkpoint may be positive, as well as negative.</p> <p>d. If it is observed that an attribute requires additional attention but does not invalidate the inspection, mark the Needs Improvement (NI) column and provide a recommendation in the comments area.</p>		
<p><b><u>Review all findings with the vendor to be sure there is no confusion as to what the findings are before you leave the vendor site.</u></b></p>		
<p>Inspector Name: _____</p> <p>Procedure: _____</p> <p>Part examined: _____</p>		<p>VPAR Approval: _____</p>
<p><b>Administrative Attributes</b></p>		
1.	<p>Are the UT inspection personnel currently certified in accordance with contract requirements (Shear wave, Longitudinal, Special technique, Are records available to include last certification cycle)?</p>	<p>Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/></p>
2.	<p>Do the inspection personnel have current vision acuity examinations?</p>	<p>Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/></p>

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3.	Is there an onsite NDT Level III Examiner qualified to contract requirements?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
4.	Did the inspector have the procedure/technique at the examination site and refer to it during the examination? Is the procedure/technique the latest revision?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
5.	Is the procedure/technique approved and signed by the Level III Examiner? If required, has the procedure/technique been approved/qualified by the prime contractor or customer?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
6.	Is the procedure/technique in accordance with the specifications called out for in the contract and meet all applicable inspection requirements?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
7.	Does the Level III regularly perform the required number of surveillances and technical performance evaluations for ultrasonic inspection personnel?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
8.	Are the product and materials used to perform the tests controlled and traceable throughout the process?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
9.	<p>Procedure:</p> <ul style="list-style-type: none"> <li>- Is equipment identified in the procedure or addendum and is it being used?</li> <li>- Instrument manufacturer</li> <li>- Instrument model no.</li> <li>- Transducer diameter</li> <li>- Transducer frequency</li> <li>- Transducer type</li> <li>- Beam angle</li> <li>- Search units, wedges, shoes, or saddles</li> <li>- Transducer focal length</li> <li>- Couplant</li> <li>- Scanning (manual or automatic)</li> <li>- Scanning (speed, overlap)</li> <li>- Calibration block identification</li> <li>- Reflector size</li> <li>- Reflector TMD's</li> <li>- Test mode used (straight,/angle beam, L or S-wave)</li> <li>- Inspection record requirements</li> </ul>	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>

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<b>Calibration Process</b>		
10.	Is inspection and testing equipment of the required adequacy, accuracy, precision, and range to assure supplies produced comply with specifications and drawings? What Items were sampled and were they part of the supplier's calibration program and within the calibration/check cycle?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
11.	Is the instrument currently qualified and labeled according to specification and procedure requirements?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
12.	Was the selection of transducer correct for the part and procedure requirements?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
13.	Was the screen range set correctly to a size that will cover the inspection range?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
14.	Were the calibration block(s) used for setting screen size and reference level correct for the product form and procedure?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
15.	Is the calibration block the same material and as-built dimensions as the inspection area? Does the cal block drawing have the required notch/FBH/SDH measurements to meet specification requirements for the item inspected and technique being used?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
16.	If required, was an acoustic compatibility check performed? Was a minimum of 3 areas checked for worst penetrability? If sensitivity adjustment was required, was it done correctly?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
17.	Was the screen range set correctly to a size that will cover the inspection range?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
18.	Was the exit point and angle of the transducer checked? (Shear Wave Only)	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
19.	What is the search unit contact area on the component or material and how does that compare to the calibration standard?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
20.	Is the calibration block(s) surface equal to or rougher than the item being inspected?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
21.	Is the calibration block(s) correctly identified by material type and uniquely identified (serialized)? Record calibration blocks material type and identification number	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
22.	Is instrument calibration checked prior to starting inspection, periodically during inspection, as required, and rechecked at the completion of inspection? Is equipment qualification/calibration current?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>

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23.	Does the UT instrument have a current calibration? Is a system in place to qualify equipment, including master transducers and calibration blocks? Instrument vertical and horizontal linearity checked within the requirement?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
24.	Was the reference level set accurately and correctly? (e.g. TCG set at correct level, amplitude of the highest peak set properly, range of exam covered)	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
25.	Are acoustic compatibility/attenuation checks performed, if required? Were the areas of best and worst penetrability of the component or material checked and compared against the calibration standards?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
26.	Is the inspector familiar with the equipment used to perform the Calibration/Testing?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
<b>Scanning</b>		
27.	Were all good safety practices being followed?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
28.	Has the weld joint/part been properly identified?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
29.	Has the surface of the weld/part been properly prepared for inspection?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
30.	Is the surface finish of the piece being tested in accordance with the procedure?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
31.	Was the area to be inspected properly cleaned and prepared?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
32.	Are proper scanning techniques used? (overlap, scanning speed, oscillation, sensitivity, signal monitoring, etc.) <sup>Note 1,2</sup>	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
33.	Are the proper inspection angles being used? (0, 45, 60, etc.) <sup>Note 1,2</sup> (Shear Wave Only)	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
34.	Was the couplant that was used for the examination also used for the calibration?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
35.	Did the inspector get proper coverage of weld and HAZ and all required directions? <sup>Note 1,2</sup>	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
36.	Did the inspector leave the job during the inspection? Was a calibration check performed?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>
37.	Are these products in the their final form or configuration? If these products are not in the final form (fastener, hollow round pressure containing part, etc.) are they being inspected to the requirements of their final form and at the latest stage of manufacture?	Sat <input type="checkbox"/> Unsat <input type="checkbox"/> NI <input type="checkbox"/> N/A <input type="checkbox"/>

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38.	For complex shaped components or materials does the inspection ensure adequate examination of the entire volume from all available surfaces (scan plan showing coverage)? <i>Note 1,2</i>	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>
39.	Was the Inspector attentive to the instrument display during examination?	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>
40.	If required, was the back echo monitored and Loss of Back Reflection (LOBR) properly evaluated? <b>(Longitudinal Wave Only)</b>	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>
41.	Is couplant promptly and completely removed upon completion of inspection?	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>
42.	Was the calibration checked at the conclusion of the exam prior to turning off the equipment? Was it within acceptable limits when/if checked?	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>
43.	If the inspector did not follow the procedure or was not following best practices, did the Level III address the inspector and instruct the inspector on the proper techniques and procedure requirements after the audit?	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>
<b>Ultrasonic Evaluation</b>		
44.	Are indications properly evaluated and documented? <i>Note 1,2</i>	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>
45.	<p>Are inspection records adequate to meet procedural requirements and include at least the following:</p> <ul style="list-style-type: none"> <li>- Description and unique identification</li> <li>- Approved procedure identification</li> <li>- Instrument manufacturer, model number, and serial number</li> <li>- Transducer size and type</li> <li>- Search beam angle</li> <li>- Test frequency</li> <li>- Couplant</li> <li>- Calibration standard number</li> <li>- Acceptance standard used</li> <li>- Date of inspection</li> <li>- Signature(s) of inspector(s)</li> <li>- Disposition (accept/reject)of the item inspected</li> </ul>	<i>Sat</i> <input type="checkbox"/> <i>Unsat</i> <input type="checkbox"/> <i>NI</i> <input type="checkbox"/> <i>N/A</i> <input type="checkbox"/>



