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RECORD OF REVISIONS

Rev	Date	Description	POC	RM
0	10/01/09	Initial issue supporting expansion of chapter to include non-welding NDE.	Kelly Bingham, <i>ES-DE</i>	Larry Goen, <i>CENG-OFF</i>
1	11/21/13	Added J2 vision requirement to Para. 5.1.B; added Para. 5.2.G where AWS-CWI & AWS-SCWI = VT Level II	David Bingham, <i>ES-EPD</i>	Larry Goen, <i>ES-DO</i>

Contact the Welding Standards POC for upkeep, interpretation, and variance issues.

WIGN 6-02	<u>Welding POC and Committee</u>
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This document is online at <http://engstandards.lanl.gov>

WIGN 6-02 NDE INSPECTOR QUALIFICATION

1.0 PURPOSE AND SCOPE

- A. The purpose of this procedure is to establish the qualification and certification requirements for personnel performing NDE in support of the LANL Welding Program, or other NDE work except weapons applications. (See WIGN 6-01 for welding inspector qualification)
- B. The scope of this procedure applies to personnel conducting NDE, including subcontractor personnel when invoked by specification or contract.

2.0 REFERENCES

- 1. LANL [P.330-8](#), Inspection and Test for Acceptance
- 2. GWS 1-01, Introduction and Scope
- 3. GWS 1-02, Administrative Control of Welding & Brazing
- 4. ESM Chapter 16, IBC Program, Section IBC-TIA
- 5. Applicable codes and standards as specified in the LANL Engineering Standards Manual (ESM) and Master Specifications or other specified programmatic requirements including NDE procedures (e.g., ITM-1306-NDE series)

3.0 ACRONYMS AND DEFINITIONS

Acronym / Term	Description
CM-CE	Construction Management – Construction Engineering (LANL)
ET	eddy current
ES	Engineering Services Division (LANL)
GWS	General Welding Standards (LANL)
MT	magnetic particle
NDE	Non-destructive examinations; an examination process conducted to detect internal or surface defects in materials using techniques that do not damage or destroy the item being tested. The most common types of NDE are RT, UT, MT, PT, and ET methods. Depending on the applicable code, VT may also require control as an NDE process in accordance with this procedure
PT	liquid penetrant
RT	radiographic testing
UT	ultrasonic testing
VT	visual examination
WPA	Welding Program Administrator (LANL)

4.0 GENERAL

4.1 Responsibilities

- A. The **LANL Welding Program Administrator (WPA)** is responsible for certification and/or approval of NDE personnel in accordance with this procedure.
- B. The **LANL Project / Program Managers and Facility Managers** are responsible for coordination of welding and other NDE conducted in support of assigned projects, in accordance with the Administrative Control of Welding section (GWS 1-02) of this program.
- C. **Subcontractor NDE personnel** shall be qualified and certified in accordance with this procedure or an equivalent procedure approved by the LANL WPA when invoked by specification or contract, and in accordance with Reference 1 & 2.
- D. **NDE personnel** shall be independent of production (i.e., they shall not have direct responsibility for performance or supervision of the work they are assigned to inspect/examine) and shall be certified or approved by LANL WPA or his designee.
- E. **NDE personnel** must perform examinations using procedures approved by LANL WPA; approved LANL procedures are posted on the Volume 6 website.
- F. **NDE personnel** must document examinations. For welding-related NDE, see GWS 1-02 (Para. 5.6, 5.8) and Attachment 3, *Weld Inspection Record*; for pressure vessels see ESM Ch 17 Procedure ITM-342-1701)
- G. **Personnel performing welding** at LANL shall be qualified and certified in accordance with GWS 1-05, *Welder Performance Qualification and Certification* unless excluded or exempt in accordance with GWS 1-01 *Introduction & Scope* Para. 5.2 & or 5.3. *Guidance Note: This procedure is not applicable to welders conducting in-process inspection or visual examination of their own work.*
- H. *The LANL IBC Program (ref. 4) uses this qualification procedure/process to maintain LANL Building Official-approved welding inspection agencies and inspection personnel.*

5.0 PROCEDURE

5.1 Vision Requirements

- A. NDE personnel shall undergo an annual vision examination by LANL Occupational Medicine. Results of this examination shall be recorded on Attachment 1, or an equivalent form, for all vision examinations.
- B. Vision examinations shall assure natural or corrected near distance visual acuity such that the individual can read J1 & J2 letters on a standard Jaeger chart, or equivalent, in at least one eye. The ability to perceive an Ortho-Rater minimum of 8 or equivalent shall be considered an acceptable Jaeger equivalent.
- C. Natural or corrected far distance visual acuity shall be verified at 20/30 or better in at least one eye using the Snellen scale or equivalent.

- D. A color test shall be administered upon initial certification to confirm that each individual can recognize four basic colors (red, yellow, blue and green). The color test need not be repeated unless there is reason to believe the individual has experienced a change in color vision.
- E. Individuals not passing the near or far distance vision test requirements shall obtain the necessary correction prior to certification. Personnel who fail to identify the minimum number of color plates shall be required to demonstrate the capability of distinguishing and differentiating contrast between colors. This may be accomplished by practical demonstration (e.g., yarn test). The WPA responsible shall review such tests for impact during certification.
- F. *Guidance: Elimination of the need for corrective lenses due to surgery (e.g., laser vision correction) should be noted on the annual re-certification.*

5.2 Qualification and Certification

Personnel performing NDE for acceptance shall be qualified and certified in accordance with the following:

- A. Certified or approved by LANL WPA or his designee.
- B. Personnel performing NDE test methods shall be qualified and certified as Level II, a Level III or a Level I working under the direct supervision of a Level II or Level III in the appropriate test methods.
 - Qualification and certification shall be in accordance with a written practice (certification program) developed to meet the requirements of the applicable code or standards and ASNT SNT-TC-1A or CP-189, as applicable. See Attachment 3.
 - Only Level II or Level III certified personnel may evaluate and accept test results.
 - Personnel interpreting only radiographic results (film interpreters) shall be certified as RT Level II (R) "Restricted" as a minimum. Personnel certified as RT Level II or Level III shall be considered qualified film interpreters.
- C. All Levels of NDE personnel shall be recertified periodically in accordance with one of the following criteria:
 - Evidence presented to LANL WPA of continuing performance in the respective NDE method.
 - Re-examination as defined for each level of certification as determined by LANL WPA.
- D. Recertification intervals are:
 - Level I & II - every three (3) years; and
 - Level III – every five (5) years.
 - NDE personnel may be reexamined any time at the discretion of LANL WPA and have their certifications extended or revoked.
- E. Where permitted by applicable codes or standards, personnel performing NDE (including VT) may alternatively be qualified and certified in accordance with a program established for or accepted by LANL.

- F. As a minimum this program shall include the following:
1. Instruction in the fundamentals of NDE
 2. On-the-job training for familiarization with the appearance and interpretation of indication of weld defects
 3. An annual eye examination
 4. An oral or written examination, and performance examination, to determine qualification to perform the required examinations and interpret the results.
- G. Current AWS-CWIs and AWS-SCWIs may be certified to VT Level II without further examination.¹
- H. Attachment 2, *Inspector Certification* or equivalent shall be completed for individuals meeting the criteria for NDE certification.
- I. LANL WPA shall maintain a file of qualification & certification records for LANL NDE personnel. The certification files may be stored in the form of an electronic database.
- Internal listing available from Ch 13 webpage [here](#).*

5.3 Owners Inspector

When applicable Codes or Standards specify that work be inspected by an owners representative:

Guidance Note: Several codes and standards require two levels of inspection, one by the contractor/fabricator and the other by an owner's inspector.

See GWS 1-02 Para. 5.8 Owner Inspector requirements and GWS 1-02 Attachment 4 for a list of codes and standards that require two levels of inspection.

- A. Owner Inspector personnel shall be qualified & approved by (Construction Management – Construction Engineering) CM-CE.
- B. Inspections shall be performed and documented as required by CM-CE.
- C. At LANL's discretion, LANL inspectors may serve as both the manufacturer/fabricator examiner and owners inspector. *Guidance Note: Some Codes (example AWS D1.1) require that if this is exercised it must be invoked by contract with the manufacture/fabricator.*

6.0 ATTACHMENTS

Attachment 1: Visual Acuity Record

Attachment 2: Inspector Certification

Attachment 3: Written Practice for NDE Personnel Qualification and Certification

¹ Based on ASNT Agreement with AWS permitting AWS-CWIs and SCWIs to transition to ASNT ACCP VT Level II without additional examination.