

TABLE OF CONTENTS

Volume 1, GENERAL WELDING STANDARDS

GWS 1-11	Inspector Qualification - Visual and NDE	3
1.0	Purpose and Scope	3
2.0	References	3
3.0	Acronyms and Definitions	3
4.0	General	4
4.1	Responsibilities	4
5.0	Procedure	4
5.1	Vision Requirements	4
5.2	Welding Inspector Qualification (Other than NDE)	5
5.3	Owners Inspector	5
5.4	Nondestructive Examination Personnel	6
6.0	Attachments	7
	Attachment 1: Visual Acuity Record	7
	Attachment 2: Inspector Certification	7
	Attachment 3: NDE Personnel Qualification and Certification	7

RECORD OF REVISIONS

Rev	Date	Description	POC	RM
0	8/16/04	Initial issue; effective 8/16/04.	Kelly Bingham, FWO-DECS	Gurinder Grewal, FWO-DO
1	2/1/06	Added Welding Insp doc reqts (4.1.G); changed eye exam std from Jaeger 1 to Jaeger 2 (5.1.B); OST became ISD.	Kelly Bingham, ENG-DECS	Mitch Harris, ENG-DO
2	10/27/06	Administrative changes only. Organization updates from LANS transition. IMP and ISD number changes based on new Conduct of Engineering IMP 341. Other administrative changes.	Kelly Bingham, <i>FM&E-DES</i>	Kirk Christensen, <i>CENG</i>
3	6/06/08	Added WPA certification of welding & NDE inspection personnel vice IQ_MG, and requirement for Owners Inspector when required by codes -- and who qualifies them.	Kelly Bingham, <i>ES-DE</i>	Kirk Christensen, <i>CENG</i>

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

GWS 1-11	Welding POC/Committee http://engstandards.lanl.gov/engrman/HTML/poc_techcom1.htm#weld
-----------------	---

GWS 1-11 INSPECTOR QUALIFICATION - VISUAL AND NDE

1.0 PURPOSE AND SCOPE

- A. The purpose of this procedure is to establish the qualification and certification requirements for personnel performing visual welding (VT) inspections and/or other nondestructive examinations (NDE) in support of the LANL Welding Program.
- B. The scope of this procedure applies to personnel conducting visual welding inspections (VT) and NDE under the LANL Welding Program, including subcontractor personnel when invoked by specification or contract.

2.0 REFERENCES

- 1. GWS 1-01, Introduction and Scope
- 2. GWS 1-02, Administrative Control of Welding & Brazing

3.0 ACRONYMS AND DEFINITIONS

Acronym Term	Description
ET	Eddy current
ES	Engineering Services Division
GWS	General Welding Standards
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 penetrate
RT	Radiography
SSS	Support Services Subcontractor
UT	Ultrasonic
VT	Visual Examination
WPA	Welding Program Administrator (LANL)

4.0 GENERAL

4.1 Responsibilities

- A. The **LANL WPA** is responsible for certification and or approval of LANL welding inspection and NDE personnel in accordance with procedure.
- B. The **LANL Project / Program Managers and Facility Managers** are responsible for coordination of welding inspections and nondestructive examinations conducted in support of assigned projects, in accordance with the Administrative Control of Welding section (GWS 1-02) of this program.
- C. Qualified and certified personnel of the **SSS** may be used in support of required welding inspections and NDE performed under the LANL Welding Program.
- D. **Subcontractor inspection and 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.
- E. **Welding inspection and 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.
- F. **Welding inspection and NDE personnel** - Welding inspections shall be documented. (Ref. GWS 1-02 Para. 5.6, 5.8, & Attachment 3)
- G. Personnel performing welding at LANL shall be qualified and certified in accordance with GWS 1-05, *Welder Performance Qualification and Certification*.

NOTE: This procedure is not applicable to welders conducting in-process inspection or visual examination of their own work.

5.0 PROCEDURE

5.1 Vision Requirements

- A. Welding inspection and NDE personnel shall undergo an annual vision examination by LANL HSR2. 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 J-2 letters on a standard Jaeger chart, or equivalent, in at least one eye. The ability to perceive an Ortho-Rater minimum of 10 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 responsible NDE Level III Engineer shall review such tests for impact during certification.
- F. 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 Welding Inspector Qualification (Other than NDE)

- A. Personnel who perform welding inspections for acceptance shall:
 - i. be certified or approved by LANL WPA or his designee and
 - ii. hold a current AWS-CWI, AWS-SCWI, or AWS-CAWI under the direct supervision of an AWS-CWI, an ASNT-SNT-TC-1A Level II or Level III in visual method, or:
- B. Alternately, they may apply for a LANL WPA approved equivalent certification and be considered qualified provided they meet the following:
 - A high school diploma or equivalent and a minimum of five (5) years experience in design, fabrication, welding, installation, and inspection of related industrial or nuclear construction; or
 - A related technical school diploma and a minimum of two (2) years experience in design, fabrication, welding, installation, or inspection of related industrial or nuclear construction, or
 - Demonstrate to WPA a working knowledge of the welding discipline through a combination of interviews, ability demonstrations, and/or written or verbally administered examinations.
- C. When engineering specifications and fabrication/construction codes do not mandate formal certification for visual welding inspectors, the qualification requirements of paragraph 5.2.B may be applied to individual welders or craft/technician supervision.

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 CM-CE.
- B. Inspections shall be performed and documented as required by CM-CE.
- C. At LANLs 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 Para. 5.3.C is exercised it must be invoked by contract with the manufacture/fabricator

5.4 Nondestructive Examination Personnel

Personnel performing NDE for acceptance in support of the LANL Welding Program 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.
 - A PS-1 IQMG written practice (procedure) shall include rules covering the duration of interrupted service that requires re-examination and recertification.
- 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 LANL inspections.
- F. As a minimum this program shall include the following:
 - Instruction in the fundamentals of NDE
 - On-the-job training for familiarization with the appearance and interpretation of indication of weld defects
 - An annual eye examination
 - An oral or written examination, and performance examination, to determine qualification to perform the required examinations and interpret the results.

- G. Attachment 2, *Inspector Certification* or equivalent shall be completed for individuals meeting the criteria for NDE certification. The NDE personnel shall require recertification when a specific NDE method has not been performed within one year, or when there have been substantial changes in the associated procedures or equipment.
- H. LANL WPA shall maintain a file of qualification records for LANL welding inspection and NDE personnel. The certification files may be stored in the form of an electronic database.

6.0 ATTACHMENTS

Attachment 1: Visual Acquity Record

Attachment 2: Inspector Certification

Attachment 3: NDE Personnel Qualification and Certification