

Chapter 4. Ethical and Essential Requirements for the Welding Inspector

Prior to presenting the specific processes of welding and its allied processes, some thought should be given to those attributes that should be possessed by the type of individual we call a welding inspector.

Categories of Inspectors

There are many different kinds of welding inspectors, depending upon the applicable technical requirements for the particular fabrication process or processes. Today is an age of specialization and the complexities of the hardware being built are awesome. There are destructive testing specialists, nondestructive testing specialists, code inspectors, military (government) inspectors, owner's representative inspectors, and on and on. All of these individuals may, at one time or another, consider themselves welding inspectors, for they do, in fact, inspect welds. There are three basic work function categories into which most of these inspectors may fall:

- (1) Overseer
- (2) Specialist
- (3) Combination of overseer and specialist

An overseer can be one individual (for example, a code inspector) or many individuals whose degrees and ranges of skill and expertise vary such that any amount or type of workmanship may be inspected, from the contractor's quality assurance program down to the last "nut and bolt" of the welding operation. Economics and technical requirements will determine the extent to which these types of inspectors will group themselves and specialize in the various areas of expertise.

A specialist is an individual, who may or

may not perform independently of an overseer, who performs some refined aspect of one or more inspection processes. An example of a specialist is the nondestructive testing radiographer, whose responsibility is to accept or reject the results of the radiography, which in turn determines certain aspects of the weldment. A specialist could also be diversified to perform all common types of NDT, etc. The specialist has only limited responsibilities in the weld inspection process.

In some industries it is quite common to combine the overseer and the specialist inspector concept as follows: All welding inspectors are employed as overseers and are assigned to a given section of the shop or to a given geographic area. In addition, each inspector is trained as a specialist in one specific field, such as radiography, welder qualification, or aluminum welding. This enables an overseer inspector to obtain in-house assistance from another overseer inspector with the speciality needed to resolve a particular problem.

For purposes of this text, however, consideration is given to only a single inclusive category of "inspector" that includes as many different categories basic to the responsibility of the individual inspector as the job requires. This would depend upon the specific requirements, duties, and responsibilities of each inspector.

Ethical Requirements

In order to safeguard the public's health and well-being and to maintain integrity and high standards of skills, practice, and conduct in the occupation of welding inspection, the welding inspector must be a special kind of individual

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who must sometimes "walk a two-way street." He or she must render decisions promptly while remaining impartial and tolerant of the opinions of others. The following are considered ethical features or desirable qualities of a welding inspector.

Integrity: Welding inspectors hold positions of responsibility and should conduct themselves as responsible persons with good character, ability, and common sense. Above all, welding inspectors must be honest, not readily influenced by prejudiced opinions, gifts, or special services.

Responsibility to the Public: The welding inspector is obligated to preserve the health and well-being of the public by performing the duties required of weld inspection in a conscientious and impartial manner to the full extent of his or her moral and civic responsibilities and qualifications. Accordingly, the welding inspector shall:

(1) Undertake and perform assignments only when qualified by training, experience, and capability.

(2) Be completely objective, thorough, and factual in any written report, statement, or testimony of the work and include all relevant or pertinent information in such communiques or testimonials.

(3) Sign only for work that he or she has inspected, or for work over which he or she has personal knowledge through direct technical control.

(4) Neither associate with nor knowingly participate in a fraudulent or dishonest venture.

Public Statements: The welding inspector will issue no statements, criticisms, or arguments on weld inspection matters connected with public policy that are inspired or paid for by an interested party, or parties, without first identifying the party, the speaker, and disclosing any possible pecuniary interest. The welding inspector will publicly express no opinion on a weld inspection subject unless it is founded upon adequate knowledge of the facts in issue, upon a background of technical competence pertinent to the subject, and upon honest conviction of the accuracy and propriety of the statement.

Conflict of Interest: The welding inspector shall conscientiously avoid conflict of interest with the employer or client and will disclose any

business association, interests, or circumstances that might be so considered.

The welding inspector shall not accept compensation, financial or otherwise, from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed and agreed to by all interested parties or their authorized agents.

The welding inspector shall not solicit or accept gratuities, directly or indirectly, from any party or parties dealing with the client or employer in connection with the welding inspector's work.

The welding inspector shall neither inspect, review, nor approve any work on behalf of another party or parties while serving in the capacity of an elected, retained, or employed public official.

Solicitation of Employment: The welding inspector shall neither pay, solicit, nor offer directly or indirectly any bribe or commission for professional employment with the exception of the usual commission required from licensed employment agencies.

The welding inspector shall neither falsify, exaggerate, nor indulge in the misrepresentation of personal academic and professional qualifications, past assignments, accomplishments, and responsibilities, or those of his or her associates.

Essential Requirements

The following are considered to be essential features or desirable characteristics of a welding inspector.

Physical Condition: An inspector's physical condition must be sufficiently good to permit him to fulfill his duties. Some inspection processes require climbing around large fixtures and assemblies, and conditions are often difficult since the work is positioned primarily for the welder's or welding operator's convenience. Good vision (the AWS certification requirement is 20/40 natural or corrected distance acuity) is vital to an inspector, who must look closely at welds and inspection test results. Some inspection processes may make it desirable for the inspector to have good color vision. Any necessary corrective aids, such as eye glasses, must be used during the inspection process.

Attitude: The importance of the attitude adopted by inspectors cannot be over-emphasized. It determines the degree of their success or failure. To be successful, they are very much dependent upon the cooperation of their associates in all departments, and they must command the respect of those associates in order to obtain it. Attitude plays an important role in this. Since many decisions may involve marginal material, all decisions must be considered, impartial, and consistent. A definite policy of inspection procedure and standards should be adopted and followed faithfully. Inspectors can be neither stubborn nor easily swayed. Under no circumstances can they seek favor or incur obligation through their decisions. The most difficult period for all inspectors is those first few weeks on any new location. During that time, those with whom they must deal will be testing them for weakness in policy. If they are informed, fair, and consistent, and if they follow the intent of the contract specifications, they will earn respect and cooperation.

Knowledge of Welding: Inspectors must have sufficient knowledge of welding processes to know what defects are most likely to occur and where to look for them. They should be familiar with all the procedure specifications that apply to their area of responsibility. In particular, each inspector should know the variables of the particular welding process and should monitor these variables during the operation.

Knowledge of Drawings, Specifications, and Procedures: Most welding inspection requires at least some fundamental knowledge (and, in many instances, detailed specific knowledge) of the drawings and specification requirements. Therefore, the welding inspector should most assuredly have the ability to read blueprints and drawings and have a good understanding of basic specification requirements. In particular, a working knowledge of welding and nondestructive testing symbols is essential. In almost all cases, the welding inspector should be thoroughly familiar with working procedures used for both inspection and fabrication processes. Vital materials should be carried to the job site by the inspector, readily available for reference at all

times, without reliance on memory. In this way, the inspector's knowledge of the job should become comprehensive.

Knowledge of Testing Methods: Numerous weld testing methods are available to the inspector. It would be highly desirable, regardless of the particular responsibilities of the individual inspector, to have a good fundamental knowledge of each of the common methods. Some may require more than just familiarity; i.e., they may require personal expertise in a particular method. However, since almost all testing methods (including destructive and nondestructive tests) have advantages and limitations, the welding inspector would be well advised to learn some basics in each. Some weldments may require extended evaluations in many different methods, or some weldments may require combinations of engineering judgment with a particular test method. Still other weldments may reveal a particular condition requiring referral to a specialized test method for more complete evaluation. The successful welding inspector maintains a diversified knowledge of testing methods.

Records: An inspector should be able to maintain adequate records. Inspectors must be able to write clear and concise reports so that superiors will have no difficulty understanding their meaning. Also, they must be able to recall the reasons for past decisions if these must be reviewed later. Inspection reports should be concise, yet complete enough to be clear to a reader unfamiliar with the product inspected. In preparing the records, the most basic facts must be included even though they are well known and understood at the time of writing, since they may not be remembered so clearly later. Thus, good records not only protect the inspectors who wrote them, they also help in adhering to a policy of uniform standards.

Education and Training: As with almost any discipline, education and training are essential to welding inspectors. How much education and training and how they receive them will depend upon the individuals and the requirements of the particular job. As mentioned previously, some requirements will be more stringent than others and thus require advanced knowledge. In some instances, education can supplement exten-

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sive training; i.e., the amount of training required can be offset by previous skill acquired by the inspector who was well educated. Usually the more diversified the education and training are, the more diversified the welding inspector will be. The weld inspector who has fundamental knowledge of engineering and metallurgical principles, in addition to other essentials mentioned herein, will be exceedingly diversified regardless of whether such knowledge was obtained through education or experience.

Welding Experience: Actual experience as a welder or welding operator is valuable to welding inspectors. It effectively broadens their welding knowledge and gives their opinions more authority if they are requested to offer constructive criticism when rejecting poor work.

Inspection Experience: The attitude and point of view of good inspectors are acquired only through inspection experience. Any such experience will be extremely helpful in the inspection of welding, since good inspectors develop distinct ways of thinking and working. Those without such experience should observe how experienced inspectors perform their duties.

Certification of Qualification: Education, training, and experience provide some desirable characteristics with regard to qualification essentials of the welding inspector. A potential welding inspector should be aware that the increasing variety of welding processes, materials,

codes, and standards applied to today's product technologies makes it correspondingly more difficult to properly fulfill the inspection function and to enforce or meet design requirements. This simply means that welding inspectors have an increasingly important job and that this job must be done in a more uniform manner throughout the United States. At this writing, the American Welding Society is working to help all concerned meet this challenge by offering a qualification and certification service that will assist in standardizing this job. Certification of any qualification will be made in accordance with the AWS QC1, Standard for Qualification and Certification of Welding Inspectors, latest edition.

Nationwide examinations for welding inspector certification will normally be offered several times each year in various locations throughout the United States by AWS. The minimum levels of experience, educational training, and vision requirements set forth by the AWS Committee on Qualification and Certification must be met to qualify for the exam. If all the requirements are met and the exam is successfully completed, AWS will certify, register, and document the qualification with a certificate and wallet card. Recertification would normally be required every three years. More complete information, including updated examination schedules and locations on this certification service, is available from AWS.