Summary of Changes in

ASME Section IX, 2007 Edition

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Changes to ASME Section IX, 2007 Edition

The following is a summary of the changes that appear in 2007 edition of ASME Section IX. Significant changes and related discussion are reported by Walter J. Sperko, P.E., Vice-chairman of Subcommittee IX; minor changes, such as editorial corrections, are readily identified in the "Summary of Changes" which begins on page xxv. Readers are advised that the opinions expressed in this article are those of Mr. Sperko and not the official opinion of Subcommittee IX. These changes become mandatory January 1, 2008.

Section IX Gets a New Name

Section IX has a new name: Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators. The old title, Welding and Brazing Qualifications, was just as descriptive, but the new one is consistent with ISO formatting where the nature of the standard, in this case, "Qualification, " is the first word, similar to ISO 9606-1, *Qualification test of welders — Fusion welding — Steels*. In its effort to reinforce recognition as an international standard, ASME seems to be headed in the direction of reformatting it's standards after ISO Standards. While not a bad idea, ISO standards tend to be highly specialized individual standards rather than being written as complete stand-alone documents (e.g. in order to determine the visual acceptance standards for a welder test coupon, one has to go to another standard, ISO 17637.). In the writer's opinion, standards that are mostly stand-alone, such as Section IX and other ASME Code Sections, are more user-friendly.

Welding Procedure (QW-200) Changes

Table QW-451.1 has been revised to incorporate the provisions previously found in QW-403.7. That paragraph dealt with how to qualify for welding of materials that were over 8 inches (200 mm) in thickness, and it has been deleted. There is a new line in QW-451.1 that says that, for test pieces that are 6 inches (150 mm) thick, the minimum thickness qualified is 3/16 inches and the maximum thickness qualified is 1.33 times the test coupon base metal and weld deposit thickness.

During this revision, there was considerable discussion attempting to identify purpose of this variable. This variable has been around for decades, and some of the old-timers on the committee were consulted to illuminate its origins. Seems that 50 years ago, the art of steelmaking was such that a plate over 8 inches thick did not have very uniform properties through its thickness, and to ensure that fabricators could weld such thick plates successfully, Subcommittee IX members imposed a requirement to qualify on material that was over 8 inches thick if one was going to weld on materials over 8 inches in thickness. While significant variations in properties may not be a technical concern when welding heavy sections today, no data was available to show that it was not, so the technical requirement to qualify heavy sections was sustained, although in a more user-friendly format.

Those doing resistance welding of titanium and zirconium can rest easy. The requirements of qualification of the welding machine (essentially an endurance test of

the power supply and related equipment) did not address how to show that the equipment was adequate when welding titanium and zirconium and now QW-284 specifically addresses those materials. This was simply an oversight when QW-284 was revised in 2005.

Welder Qualification (QW-300) Changes

The only change in the rules for welder qualification were in QW-322. A user asked if it was necessary, when extending a welder's qualifications for a process, for that welder to be doing welding under the supervision and control of the organization that qualified him, or could that organization accept the word of another manufacturer or contractor that the welder had used the process. The reply was that the former was required, and QW-322.1(a)(1) and (2) were revised to specify that, in order for a welder's or welding operator's qualifications to be extended for an additional six months, the welder or welding operator must weld under the supervision and control of the manufacturer or contractor who qualified him. The exception (and there is always an exception. . .) is when testing was done under QW-300.3 which allows for mass simultaneous qualification, such as is done under the "Common Arc" program.

Section IX requires that manufacturer or contractor observe and document that his welders have welded with each processes for which they are qualified in order for those welders to continue to be qualified. The purpose of this requirement is not only to document that those welders have "struck an arc" with the process, but that the manufacturer or contractor is satisfied with the quality of work that that welder has produced with that process. This does not happen if someone other than the manufacturer or contractor that qualified the welder observes him welding.

This revision should present no problem where welders and operators work in a shop, but in the construction environment, ASME B31 piping code sections permit welders and welding operators to be interchanged among contractors without requalification; this means that, under the new QW-322.1 rules, once a welder is no longer working for the contractor who qualified him, his qualifications will quickly expire, even though he may be working and producing satisfactory welds for his new employer. However, the B31 subcommittees have reviewed the matter and philosophically agreed that, since the B31 Sections allow interchange of welders among contractors (taking exception to Section IX in this matter), it would be inconsistent not to allow a contractor other than the qualifying contractor to extend a welder or welding operator's qualification. Most of the B31 Code Sections will have made appropriate changes to allow the contractor for whom the welder is working to extend his continuity by the time the revision to QW-322.1 is mandatory, or they have determined that no changes are necessary due to the way a specific B31 Code Section is written.

Base Metals and Filler Metals

Various grades of materials were added and deleted from QW/QB-422. Those changes are most easily identified in the "Summary of Changes" that begin on page xxv of Section IX.

SFA 5.4 and 5.9 been updated to add several new duplex and austenitic filler metals and to eliminate several ferritic filler metals E/ER502, E/ER-505 and E7Cr. The ferritic alloys have already been moved to SFA 5.5 except for the E7Cr which is no longer manufactured.

Brazing (QB) Changes

There were no significant changes to the rules on Brazing, but all of the forms have been revised and are an improvement over the previous forms.

Inquiries

One inquiry is of particular interest to those who use SI (metric) units in their welding documents. The first question was, when working in US customary units, was it acceptable to leave welder qualification records in metric units provided the welder did not exceed the weld deposit thickness for which he was qualified. The reply was "yes," provided there were convenient tools, such as a conversion table, so that the limits were not exceeded. The second question asked if the same practice was permitted for WPSs and the reply was positive.

Coming Attractions

Pending exciting changes in Section IX include revision of the welding forms, addressing qualification of "G" classification electrode and filler metal, provisions to use a macro-etch specimen for materials with less than 3% ductility in lieu of a bend test and possibly the elimination of S-numbers by turning them all into P-numbers. Finally, due to significant concerns over abuse of Grade 91 and similar creep strength enhanced ferritic steel such as Grades 92, 911, 23, etc. during postweld heat treatment and other local heating operations, all these new materials will be assigned P-15A through P-15G to distinguish them from the older P-5A through P-5C materials. Special rules will be prepared for dealing with these materials similar to those that I reported on in my 2006 Addenda update (see *Welding Journal*, April, 2007) for Grade 91.

Readers are advised that ASME Code Committee meetings are open to the public; the schedule is available on the writer's web site and at www.asme.org.

Mr. Sperko is President of Sperko Engineering, a company that provides consulting services in welding, brazing, metallurgy, corrosion and ASME Code issues located at www.sperkoengineering.com. He also teaches publicly offered seminars sponsored by ASME on how to efficiently and competently use Section IX. He can be reached at 336-674-0600, FAX at 336-674-0202 and by e-mail at: sperko@asme.org.