TECHNICAL EDITOR'S PAGE

In the early 1900's, hundreds of persons were killed and hundreds more injured each year in the United States of America because of serious boiler accidents. These unnecessary deaths and injuries continued until the ASME formulated a set of rules acceptable to manufacturers which might be adopted by all the states as the basis of their laws pertaining to boilers and pressure vessels. As further pointed out in the writeup on Pressure Vessel Reliability by C. F. Larson in the February 1975 issue of the JOURNAL OF PRESSURE VESSEL TECHNOLOGY, the initial version of the Code was adopted by the Council of the ASME in 1915. The Council also set up the ASME Boiler Code Committee that had the responsibility to provide interpretations, rulings, revisions and additions to the Code. Larson goes on to point out that in the period of transition from non-Code to Code Vessels, "the Code was criticized in certain quarters as 'an affront to personal liberty,' 'un-American,' 'a dangerous form of socialism,' and a 'work of the Devil.' " The implementation of the Code has saved many thousands of lives in the intervening years. In recent years, pressure vessel and boiler failures in the United States have practically disappeared even though the number of boilers and pressure vessels has been multiplied manyfold. The Code has been used in many other countries around the world with similar results.

The Code is a safety document. The sections of the Code first developed are intended to guard against burst by direct control of the allowable pressure boundary wall thickness and by means of rules covering materials, design, fabrication, manufacture, inspection, etc. These rules were based on experience and test. There are additional modes of possible failure that were not explicity covered by Code rules. These are sometimes specifically indicated as an item for the manufacturer to consider. In any case, the manufacturer is held responsible for the integrity of the vessel he builds.

With the imminence of nuclear power plants for commercial use, an even higher reliability was sought to cover nuclear vessels. In addition, there were conditions to consider in nuclear vessels which were of a special type. It was advantageous from a consistency and a general safety point of view to develop a single set of rules and limits for all to use. Section III of the Code resulted. This section of the Code required substantially more analysis than the prior sections. It was fortunate that the digital computer came into general usage at about the same time to permit the more detailed analytical study. What was also recognized was that these new nuclear rules could not be extended into the range of metal creep without much additional work and the consideration of additional possible failure modes. Thus the rules were only made applicable below the creep range of materials. There was also another important step forward in Section III of the Code. It was required that the Stress Analysis Reports be certified by one or more Registered Professional Engineers competent in the applicable field of design. What is certified is that all the requirements of Section III have been met.

In order that other than nuclear vessels could benefit from the use of the new analytical tools and the available computer programs, Section VIII, Division 2, similar to Section III, was developed as an alternative design Code. A Registered Professional Engineer experienced in pressure vessel design is required to certify compliance of the Manufacturer's Stress Report with the requirements of Section VIII, Division 2.

In recent years, new nuclear vessel requirements arose in which pressure vessels had to be designed in the creep range of material behavior. It was not valid to accept the simplistic approach that other Sections of the Code use in order to design for higher temperatures. Therefore, to meet this nuclear need, various Code Cases have been developed. The implementation of these Code Cases require a much broader knowledge and understanding of special technical disciplines than is required of the design of nuclear vessels below the creep range. It therefore requires substantial technical sophistication to evaluate the Design Specifications and Stress Analysis Reports. Professional registration alone is certainly not sufficient to indicate competence.

In 1973, the AdHoc Committee on Engineering Certification and Continuing Education of the ASME requested that the Pressure Vessels and Piping Division consider the question of whether or not it would be willing to set up a certification program in its field of competence as related to the ASME Boiler and Pressure Vessel Code.

On March 28, 1973 there was an expanded meeting of the Executive Committee of the Pressure Vessels and Piping Division. There was much discussion about the new and complex areas of design, analysis, etc., that require special skills and training for competent evaluation. One concern was the difficulty that management personnel may encounter in assessment of the competence of engineers in these areas of expertise. The general public has less chance for an adequate assessment of competence. Thus there seemed to be a need for a peer certification program in terms of specific bodies of information in addition to Professional Registration.

It was moved and accepted by the Executive Committee of the Pressure Vessels and Piping Division that the PVPD would be receptive to a charge from the ASME Council along the lines of the suggestion of the CTA Committee on Engineering Certification and Continuing Education for the formulation and implementation of a certification program for Engineers competent in the design of pressure systems and components. This action will be implemented by formulation of a committee whose responsibilities include establishment of liaison with other interested ASME parties.

About two years subsequent to this action by the PVPD, the AdHoc Committee on Engineering Certification and Continuing Education wrote its final report. In that report, the Committee recommended that the ASME become engaged in the development and operation of engineer certification programs which attest to the level or currency of technical competence of its members in some specialized technical areas of interest to the Society. Hopefully, at some point the Society will act favorably on this recommendation. I am certain that if the ASME does initiate a certification program, it will be criticized in some quarters as "an affront to personal liberty," "un-American," "a dangerous form of socialism," and a "work of the devil." Hopefully, a concern for human lives, public confidence and professionalism will prevail.

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