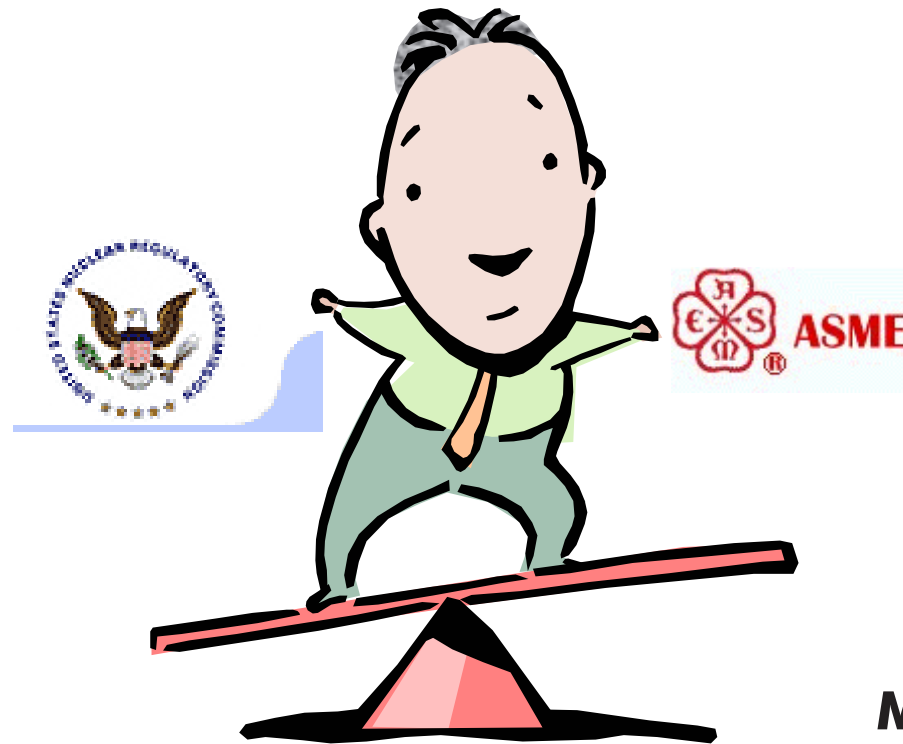


# Code status



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## Code status – Supplement 7

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- ◆ **From last PDI/NRC meeting minutes - "A proposed action going through the ASME Code committees address all of the differences between 10 CFR 50.55a(b)(2)(xv) and 2004 Edition with 2005 Addenda of the ASME Code Section XI, Appendix VIII except for Supplement 7, Paragraph 3.5 which provides a qualification exemption for Supplement 6 qualified personnel performing Supplement 7 examination. 10 CFR 50.55a(b)(2)(xv) applicable to Supplement 7 is for both procedure and personnel qualifications. The staff believes that there are enough differences between examinations from the nozzle bore and the vessel inside surface to warrant a separate Supplement 7 personnel qualification. This item will be addressed as the proposed Code change moves through the ASME Code committees."**
- ◆ **At February ASME Appendix VIII Task Group meeting NRC request to apply personnel qualification requirements to Appendix VIII, Supplement 7 was approved.**
- ◆ **Subsequently approved at May SG NDE meeting.**
- ◆ **Last identified difference between Rule, PDI, and Code.**

## ***Code - Expansion***

- ◆ **From last PDI/NRC meeting minutes - “ PDI is extending the qualification of personnel previously qualified to Supplement 11 by adding-on performance demonstration for 2-inch diameter weld overlaid pipe. The add-on has the same number of flaws in the 2-inch diameter test specimens as would normally be used in test sets selected for the diameter range and wall thickness range of the procedure. This concept is analogous to a person being qualified for a single diameter pipe. The ASME Code is silent on this point for Supplement 11 qualifications. Examples of the acceptability of the add-on concept are Supplement 12, Supplement 14, and the intergranular stress corrosion cracking qualification of personnel. The NRC staff asked if the add-on concept should be formalized in the ASME Code. Action: PDI will assess the applicability of formalizing the add-on concept in the ASME Code. ”**

# Code – Expansion, Cont.

- ◆ **Need to assure uniform implementation program for RPV, Piping, and Bolting.**
- ◆ **Need to address Personnel qualification versus Procedure expansion.**

## VIII-3130 ESSENTIAL VARIABLE RANGES

(a) Any two procedures with the same essential variables [VIII-2100(d)] are considered equivalent. Pulsers, search units, and receivers that vary within the tolerances specified in VIII-4100 are considered equivalent. When the pulsers, search units, and receivers vary beyond the tolerances of VIII-4100, or when the examination procedure allows more than one value or range for an essential variable, the qualification test shall be repeated at the minimum and maximum value for each essential variable with all other variables remaining at nominal values. Changing the essential variable may be accomplished during successive personnel performance demonstrations. Each examiner need not demonstrate qualification over the entire range of every essential variable.

(b) When the procedure does not specify a range for essential variables and establishes criteria for selecting values, the criteria shall be demonstrated.

## VIII-3140 REQUALIFICATION

When a change in an examination procedure causes an essential variable to exceed a qualified range, the examination procedure shall be requalified for the revised range.

## QUALIFICATION EXPANSION

Expansion of an existing procedure or personnel qualification to include one or more new essential variables shall be conducted in accordance with the applicable Supplement and the following additional requirements.

(a) Expansion to include a new essential variable that expands the applicability of the procedure (e.g., extend thickness range), or that produces a comparative deficiency in the quality or quantity of ultrasonic data (e.g., increase in scanning speed), requires requalification of both the procedure and all personnel using the new essential variable.

(b) Expansion to include other essential variables (e.g., additional ultrasonic instrument or search unit or different instrument settings), only requires requalification of the procedure. Requalification is not required for personnel using the new essential variable.

(c) Qualification test sets shall have sufficient examples to result in failure if the new essential variable is not viable. Failure to qualify the new essential variable has no impact on the previous procedure or personnel qualifications.

# Code – Essential variables

- ◆ From last PDI/NRC meeting minutes - “ PDI discussed the need for adding to the ASME Code a criterion for essential variables that are not explicitly addressed in Appendix VIII, VIII-2100 but are necessary for producing reliable and reproducible examination results. For instance, the use of profilometry to improve UT performance for examinations performed from the inside surface is a procedure-specific essential variable. The existence of procedure-specific essential variables is not clearly recognized in the ASME Code. Action: PDI will champion a change or clarification to ASME Code that addresses essential variables not specifically mentioned in Appendix VIII, VIII-2100.

## VIII-2100 PROCEDURE REQUIREMENTS

(a) The examination procedure shall contain a statement of scope that specifically defines the limits of procedure applicability (e.g., materials, thickness, diameter, product form).

(b) The examination procedure shall specify a single value or a range of values for the variables listed in VIII-2100(d).

(c) Any calibration method may be used provided it is described and complies with VIII-2100(d)(5).

(d) The examination procedure shall specify the following essential variables:

(1) instrument or system, including manufacturer, and model or series, of pulser, receiver, and amplifier;

(2) search units, including manufacturer, and model or series, and the following:

(a) nominal frequency or, if Supplement 1 is used, the center frequency and either bandwidth or waveform duration as defined in VIII-4000;

(b) mode of propagation and nominal inspection angles;

(c) number, size, shape, and configuration of active elements and wedges or shoes;

(3) search unit cable, including the following:

(a) type;

(b) maximum length;

(c) maximum number of connectors;

(b) The examination procedure shall identify all essential variables and for each shall specify a single value, a range of values, or define a process for establishing the value(s).

(d) The following provides a list of typical essential variables. Additional essential variables may be associated with specialized instruments or examination techniques.

# Code – Surface roughness

- ◆ **From last PDI/NRC meeting minutes – “PDI has established a criterion for the surface smoothness needed for an effective UT examination. The surface smoothness is 1/32-inch (0.75mm) maximum gap between the component’s surface and the bottom of the transducer. This definition of surface smoothness has been added to PDI’s generic procedures. However, ASME Code has been using a definition for surface smoothness as 1/32-inch per square inch in the proposed Code Case N-740 and Section XI, non-mandatory Appendix Q. The differences in surface smoothness between ASME Code and procedures and personnel qualified under the PDI program may affect examination coverage for transducers with a foot print greater than 1 square inch. Action: PDI will address the difference between definitions for surface smoothness with the ASME Code.”**

- ◆ **From proposed BWSCC Mitigation Code Case:**

- 3.0 Examination and Inspection

- In lieu of all other examination requirements, the examination requirements of this Case shall be met. Nondestructive examination methods shall be in accordance with IWA-2200, except as specifically addressed herein. Nondestructive examination personnel shall be qualified in accordance with IWA-2300. Ultrasonic examination procedures and personnel shall be qualified in accordance with Appendix VIII, Section

- XI

Deleted: Appendix I

- (a) Acceptance Examination

- (1) The weld overlay shall have a surface finish of 250 micro-in. (6.3 micrometers) RMS or better and a flatness sufficient to allow for adequate examination in accordance with procedures qualified per Appendix VIII. The weld overlay shall be examined to verify acceptable configuration.

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## Code status - Threads in Flange

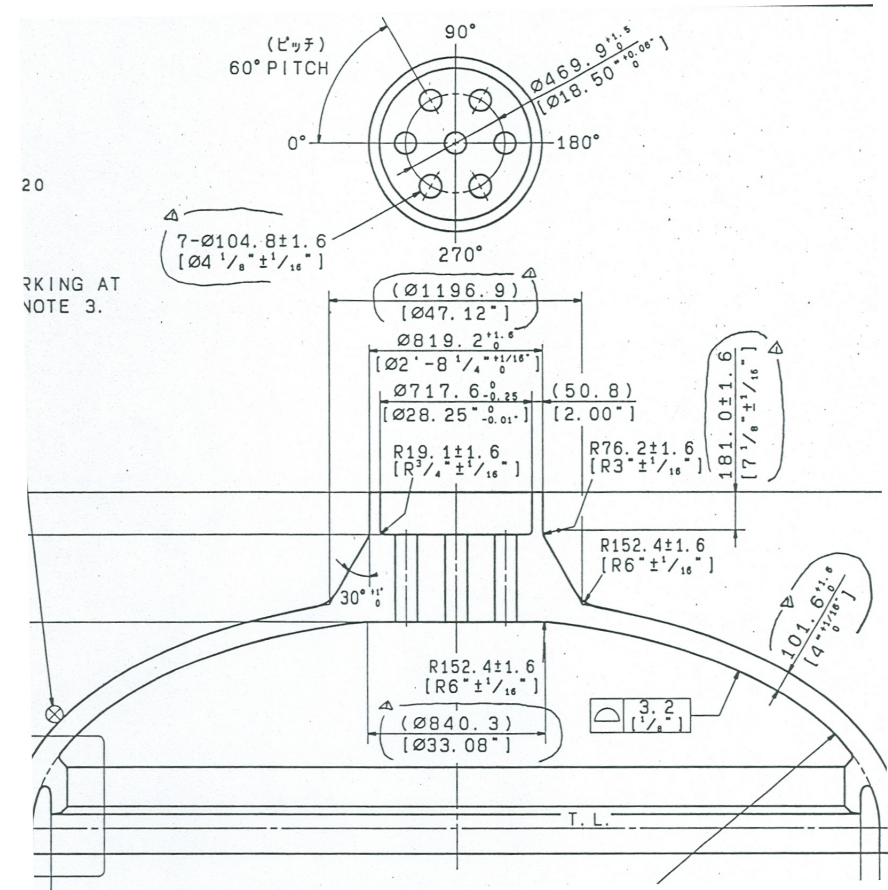
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- ◆ **WG ISI optimization agreed to accept action to eliminate this examination requirement.**
- ◆ **Next step – contract for, or otherwise obtain, supporting white paper.**



## Code status – Non-standard Nozzle ICR

- ◆ WG ISI optimization agreed to accept action to evaluate this examination requirement for non-standard nozzles.
- ◆ Next step – contract for, or otherwise obtain, supporting white paper.



## Code status - Coverage Procedure

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- ◆ **Passed WG PQ & SV**
- ◆ **Passed WG PQ & VE**
- ◆ **Two parts:**
  - Mandatory requirement to evaluate coverage
  - Non-mandatory Appendix for the “how-to”
- ◆ **Comment at SG NDE - Mandatory requirement should be revised to address PSI = 100% and ISI = 90+%.**
- ◆ **Open item - repair/replacement activities**

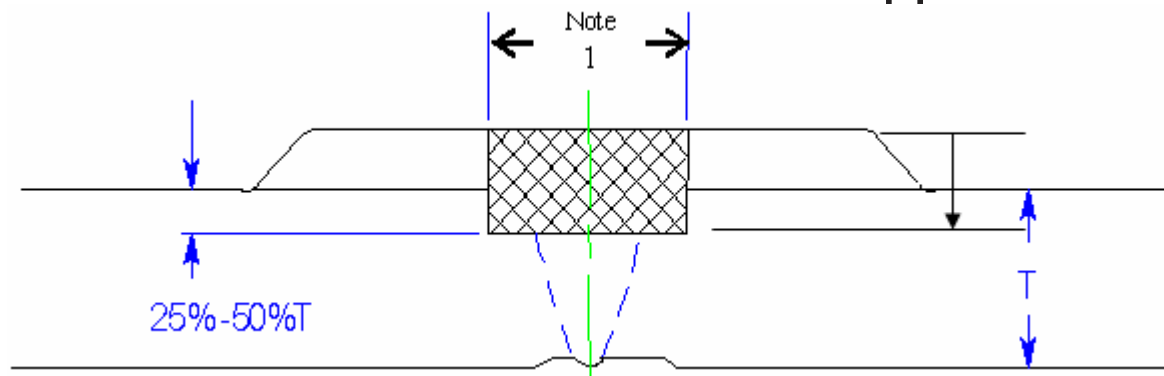
## ***Code – Additional discussion items***

### ◆ **UT in Lieu of RT**

- Prepare Code case/revision to address:
  - Upper 2/3 t for piping welds,
  - Inclusion of fabrication flaws,
  - Indicate Supplements 4, 5, 6, and 7 are OK as – is,
  - Personnel qualification versus procedure expansion?

### ◆ **Mitigation overlays**

- Prepare Code case/revision to address upper 50% examination?



Note 2: Depth of Exam Volume below surface depends on type of PWOL applied (25% for full structural; 50% for optimized structural)