



NIST

UNITED STATES DEPARTMENT OF COMMERCE
National Institute of Standards and Technology
Gaithersburg, Maryland 20899-0001

February 26, 1994

Dr. James A. Davis
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Dear Dr. Davis:

Stan Johnson and Jim Harrington visited with me last week. They were unhappy with what I had told you in our telephone conversation. They felt I had given you the impression that NIST has changed its position on the use of indicating gages. I think, perhaps, I did not say what I had meant to say. Let me clarify.

My position is that the System 21 (plug and ring) acceptance method does not insure that threads are within the dimensional specifications. I think this is almost self-evident to anyone who thinks about thread measurement. I personally do not feel comfortable stating that a thread meets the dimensional requirements of the ANSI/ASME standard using only this method.

But I also said that I do not think NIST should state what tolerances industry places on their fasteners, nor the method they use to inspect them. I think we lack the expertise to make these judgements.

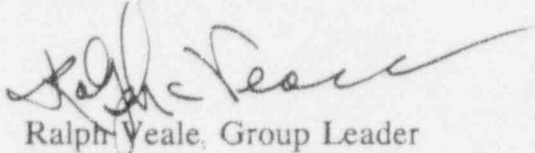
I also said that I support the proposal by the American Bolting Council to do a study to relate fastener performance to dimensional tolerances. I think there is insufficient public information available in this area. While I don't propose to know what requirements users of threaded fasteners need, I think it makes little sense to place tight tolerances on the individual elements of a thread, but then to state that the individual elements are unimportant, e.g., pitch diameter, and to state there is no need to test for pitch diameter conformance.

Again let me state that I did not mean to say indicating gages are not necessary when measuring critical fasteners, nor did I say that System 21 is adequate. I am enclosing a paper that Art Strang and I recently wrote. While the paper shows that care should be used with indicating gages when measuring threads with form errors outside of product

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tolerances, it also shows that indicating gages measure pitch diameter very well when the thread form is near nominal, and it shows that for threads with nominal form, the difference between pitch diameter and functional diameter is small. Using indicating gages to monitor the variation between pitch diameter and functional size is a common quality control procedure in industry.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ralph Yeale".

Ralph Yeale, Group Leader
Dimensional Metrology
Precision Engineering Division
Manufacturing Engineering Laboratory