
Facsimile Cover Sheet

To: Dr. Charles E. Rossi
Company: Nuclear Regulatory Commission
Phone: 301-504-2903
Fax: 301-504-2968

From: James H. Harrington
Company: Johnson Gage Company
Phone: 719-481-9661
Fax: 719-481-9663

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**Pages including this
cover page:** 3

Comments: Reference the Johnson Gage visit with you and NRC members on March 8, 1994, concerning the nuclear industry's use of a flawed thread gaging system, System 21, that will allow the acceptance and use of dimensionally sub-standard, non-conforming threaded product. Mr. Johnson and I cited several National Institute of Standards and Technology letters on the subject and the results of threaded product measurements at several nuclear plants we have recently visited.

Mr. Johnson and I also visited NIST on March 8 and requested that they clearly state their position reference System 21 gaging to the NRC. The NIST position is stated in the attached letter to Mr. Davis.

The principle thread used within the nuclear industry is the Unified thread defined in ASME B1.1 for which System 21 can not assure dimensional conformance. Following our NRC visit on March 8, we visited several nuclear plants presenting our thread seminar. At one facility we measured some bonnet studs and nuts for a RCV-1 valve. This facility was having troubles with this particular threaded product. We measured eight studs and found them to be dimensionally conforming. They looked great. However, upon measuring the nuts we found the following:

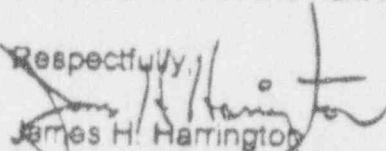
50 NUTS measured**RESULTS:**

- 18 Well out of tolerance (36%)**
- 31 Marginal (At the high limit for pitch diameter) (62%)**
- 1 Within tolerance (2%)**

This is alarming especially since 62% were at the high limit on pitch diameter meaning that they had the minimum amount of thread material required per ASME B1.1. These threads, upon being installed, torqued and put into service, stand a very high probability of relaxing and allowing leakage. This is the very condition for which the plant was experiencing problems. Simply stated, the threads lacked the material (the beef) to hold the joint under load.

The NRC, and the nuclear power industry, has never measured threaded components per System 22 where problems have and presently exist. The industry's major concern, in past failure analyses, has been on material hardness and composition. They have always assumed that the threaded components were dimensionally conforming. System 21 is totally inadequate for thread inspection for nuclear applications.

Mr. Johnson also agreed, during our visit, to prepare a "Strawman" Information Notice for your consideration. That effort is underway and I will forward this Strawman within the next few days.

Respectfully,

James H. Harrington
Director of Technical Services & Operations