

May 13, 2013

MEMORANDUM TO: Robert O. Hardies, Senior Level Advisor  
Division of Engineering  
Office of Nuclear Reactor Regulation

FROM: David Alley, Senior Materials Engineer */RA/*  
Component Performance, NDE, and Testing Branch  
Division of Engineering  
Office of Nuclear Reactor Regulation

SUBJECT: ANNUAL EVALUATION OF THE QUALIFICATION AND APPLICATION  
OF GUIDED WAVE ULTRASONIC INSPECTION TECHNIQUES FOR  
EVALUATION OF PIPING CONDITION

Buried piping action plan item 2-8 requires an annual status report concerning the qualification and application of guided wave as an inspection tool for buried and underground piping. While this status report is an annual event, DE's review of the qualification and application of guided wave is an ongoing process. DE's previous reports on this subject are contained in a memoranda from David Alley to Robert Hardies dated May 24, 2011, Agencywide Document Access and Management System Accession Number ML111440356 and May 24, 2012 ML12145A522. In these reports the staff concluded:

- a) in terms of the ASME code, guided wave remains an unqualified inspection technique;
- b) there is no reason to believe that guided wave will become a qualified inspection procedure within the next year;
- c) guided wave is currently used in an effective manner as a screening tool to indicate locations at which further evaluation should be conducted; and
- d) guided wave is currently not an acceptable substitute for qualified inspection techniques such as ultrasonic inspection because it is not capable of precisely determining the extent of localized pipe wall loss.

Also in the initial report, the staff provided a basis for these conclusions.

During the past year the staff is aware of activities associated with guided wave in three areas: technical improvements in the software/methods used to analyze guided wave inspection

results; standards development by the ASME; and standards development by NACE International.

It is the staff's understanding that developments in software/analysis techniques have improved the ability of guided wave examinations to characterize indications observed, especially those in the vicinity of bends or other sound reflectors. It is also the understanding of the staff that the capability of guided wave to fully characterize a flaw, e.g., depth size, remains beyond the capability of the technique.

In addition to the technical advances made in the field of guided wave ultrasonic inspection the staff is aware of, and participating in, the development of standards for use in performing these inspections by ASME and NACE International. Both organizations are making progress in their efforts. The NACE standard is in the balloting process and may be approved during the next year. The development of these standards will assist all interested parties in performing and evaluating guided wave examinations. These standards, however, are not expected to fully resolve items a – d above.

While the staff is encouraged by the efforts concerning guided wave which have occurred during the past year, the staff's position concerning the use of guided wave, as stated in items a – d above, remains unchanged.

CONTACT: David Alley, NRR/DE  
301-415-2178

results; standards development by the ASME; and standards development by NACE International.

It is the staff's understanding that developments in software/analysis techniques have improved the ability of guided wave examinations to characterize indications observed especially those in the vicinity of bends or other sound reflectors. It is also the understanding of the staff that the capability of guided wave to fully characterize a flaw, e.g., depth size, remains beyond the capability of the technique.

In addition to the technical advances made in the field of guided wave ultrasonic inspection the staff is aware of, and participating in, the development of standards for use in performing these inspections by the ASME and NACE International. Both organizations are making progress in their efforts. The NACE standard is in the balloting process and may be approved during the next year. The development of these standards will assist all interested parties in performing and evaluating guided wave examinations. These standards are, however, not expected to fully resolve items a – d above.

While the staff is encouraged by the efforts concerning guided wave which have occurred during the past year, the staff's position concerning the use of guided wave, as stated in items a – d above, remains unchanged.

CONTACT: David Alley, NRR/DE  
301-415-2178

DISTRIBUTION:

PUBLIC DE R/F

**ADAMS Accession No.: ML13129A153**

<b>OFFICE</b>	NRR/DE/EPNB
<b>NAME</b>	DAlley
<b>DATE</b>	05/13/2013

**OFFICIAL RECORD COPY**