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May 2, 2018

MEMORANDUM TO: George A. Wilson, Director
Division of Materials and License Renewal
Office of Nuclear Reactor Regulation

FROM: Brian E. Thomas, Director */RA Christopher M. Regan for/*
Division of Engineering
Office of Nuclear Regulatory Research

SUBJECT: IMPENDING PUBLICATION OF TECHNICAL LETTER REPORT,
PNNL-26399, ENTITLED "ANALYSIS OF PARENT TECHNIQUE
DATA"

This is to notify you of the impending publication of the enclosed technical letter report (TLR) entitled "Analysis of PARENT Technique Data." This TLR was prepared by Pacific Northwest National Laboratories (PNNL) as part of the international Program for Assessing the Reliability of Emerging Nondestructive Technologies (PARENT) project. This report documents work performed in support of Task 4 in User Need Request NRR-2013-009, "Evaluating the Reliability of Nondestructive Examinations of Vessels and Piping." RES plans to publish this TLR within 2 weeks from the date of this memo unless we hear otherwise from you.

In this report, analysis of the PARENT blind test data at the technique level is documented along with a combined analysis of the Program for Inspection of Nickel-Alloy Components (PINC) and PARENT data collected from inspection of bottom-mounted instrumentation (BMI) test blocks. The analysis of data at the technique level is motivated by the desire to increase the sample size of eddy current testing (ECT) data collected from dissimilar metal weld test blocks and to provide opportunity for more extensive comparison of data collected during PARENT round robin testing. The result of increasing the PARENT ECT data sample size by including techniques-level ECT data was an improvement in the estimated detection performance. The motivation for performing a combined analysis on data collected on BMIs in PINC and PARENT is also to increase sample size in an effort to derive more insight on the performance of techniques applied to inspect BMI test blocks. The results indicated that higher frequency ECT techniques performed better than lower frequency ECT techniques and that techniques implemented with an array probe configuration performed worse than techniques not implemented in an array probe configuration. The results provide insights on the influence of inspection variables on ECT detection performance and can be used to help direct future research activities.

Staff representatives from the Division of Materials and License Renewal in NRR have reviewed a draft of this TLR. Please notify the responsible RES contact if you have any questions concerning the impending public release of this TLR.

Enclosure:
As stated

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