




UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 17, 2021

MEMORANDUM TO: Mohamed Shams, Director
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

FROM: Louise Lund, Director  Bowen, Jeremy signing on behalf
of Lund, Louise
Division of Engineering on 09/17/21
Office of Nuclear Regulatory Research

SUBJECT: IMPENDING PUBLICATION OF TECHNICAL LETTER
REPORT: TLR-RES/DE/REB-2021-08, "ASSESSMENT OF
GRAPHITE PROPERTIES AND DEGRADATION INCLUDING
SOURCE DEPENDENCE."

The Office of Nuclear Regulatory Research (RES) completed Technical Letter Report (TLRs), TLR-RES/DE/REB-2021-08, "Assessment of Graphite Properties and Degradation Including Source Dependence," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21215A347) and the supporting appendices (ADAMS Accession No. ML21215A346).

The technical information enclosed in this TLR reviews the impact of source dependency variables, e.g., source material, grain size, fabrication method, graphitization temperature, etc. on the nonirradiated and irradiated properties of graphite. While clear correlations exist between source dependency variables and nonirradiated graphite properties, this report was unable to identify significant quantitative correlations between the same source dependency variables and irradiated graphite properties. This finding is consistent with both historical and current literature, including recent large-scale irradiation studies of nuclear graphite. This report shows graphite manufacturers are capable of producing consistent properties for the same grade of graphite over decade-long time periods, which is a topic of interest if applicants choose to use historical data as described in ASME BPVC, Division 5, Article HHA-III-5000, "Use of Historical Data."

CONTACT: Matthew Gordon, RES/DE/MEB
(301) 415-2152

Staff from the Division of Advanced Reactors and Non-power Production and Utilization Facilities in the Office of Nuclear Reactor Regulation (NRR) reviewed drafts of the TLR. The final report reflects resolutions of the NRR staff's comments. Nonetheless, please feel free to notify the responsible RES contact if you have any questions concerning the impending public release of the TLR.

RES established an online quality survey to collect feedback from user offices on the usefulness of RES products and services. This survey can be found online at the [RES Quality Survey](#). I would appreciate the responsible manager or supervisor completing this short—about 5 minutes—survey within the next 10 working days to present your office's views of the delivered RES product. Please share any concerns with me or the Division of Engineering contact listed below, so that they may be addressed.

If additional information is required, please contact Matthew Gordon of my staff at 415-2152 or mxg9@nrc.gov

Enclosures:

1. TLR-RES/DE/REB-2021-08, Assessment of Graphite Properties and Degradation Including Source Dependence
2. TLR-RES/DE/REB-2021-08, Appendices to Assessment of Graphite Properties and Degradation Including Source Dependence

IMPENDING PUBLICATION OF TECHNICAL LETTER REPORT DATE September 17, 2021

DISTRIBUTION:

- MHayes, NRR/DANU
- BBeasley, NRR/DANU/UARL
- RRivera, NRR/DANU/UARL
- SMagruder, NRR/DANU/UARL
- AHull, RES/DE/CMB
- JHoellman, NRR/DANU/UARP
- SRuffin, RES
- MThaggard, RES/DRA
- KWebber, RES/DSA
- RTregoning, RES/DE
- TLalain, RES/DSA
- CAraguas, RES/DRA
- MOrenak, NRR/DORL/LLPB

ADAMS Accession No.: ML21215A344; ML21215A348

| | | | | |
|--------|--------------|--------------------|-------------------------------|-----------|
| OFFICE | RES/DE/CIB | RES/DE/CIB | RES/DE | |
| NAME | MGordon | <i>MG</i> Rlyengar | <i>R/</i> LLund JBowen for | <i>JB</i> |
| DATE | Aug 10, 2021 | Sep 13, 2021 | Sep 17, 2021 | |

OFFICIAL RECORD COPY