



# International Fatigue Database

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# Background

- NRC has created separate fatigue databases containing laboratory specimen data
  - NRC-JNRA (formerly JNES) created database containing results in air & LWR environments for carbon, stainless, and nickel materials
  - NRC-EdF created database containing results for stainless steel materials in air.
  - Data sharing was achieved through existing agreements between the NRC and JNRA and NRC and ASN.
- Separately, other database efforts have been pursued internationally
  - INCEFA+ project
  - Incorporated some MHI data during initial INCEFA+ phase
- In 2017, a broader collaboration was proposed to create an international database
  - Initially, develop agreement between NRC, JRC, and INCEFA+ partners
  - Expand participation to other organizations that will abide by the terms and conditions of agreement

# INCEFA+ Project

- 5-year European project under Horizon 2020
- Project approved in Feb. 2015 and initiated in July 2015
- 16 organizations participate
- Objectives
  - Conduct testing on austenitic stainless steels in air and LWR environments to study 3 parameter effects (surface finish, mean strain/stress, hold times) and their interaction (~200 tests)
  - Propose new methods to account for these effects

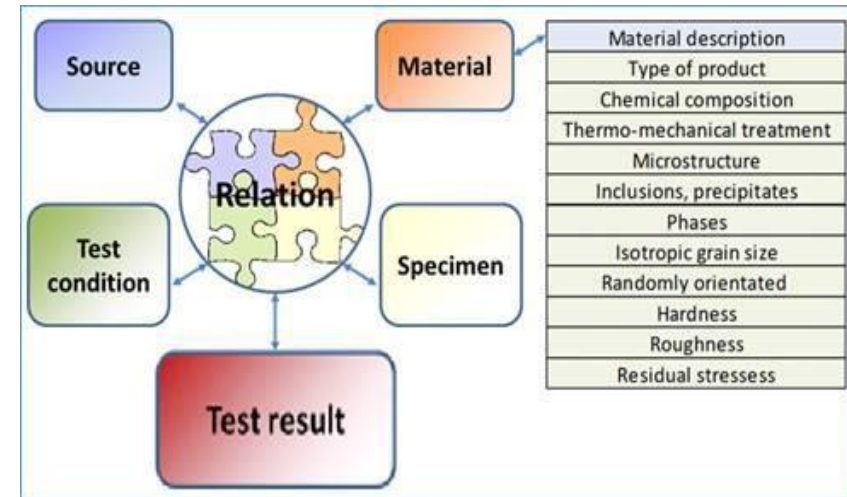


# Agreement Structure

- Participants
  - Initial: NRC, JRC, INCEFA+ participants
    - Wood PLC is the coordinating organization for INCEFA+
  - Future: other interest organizations agreeing to conditions
- Technical Approach
  - JRC will provide data administration as well as data entry training and support
  - All sides will develop a common data template to govern data submission
  - All sides will upload data to MatDB and provide appropriate access.
- Agreement Approach
  - Use existing NRC/Euratom agreement as the umbrella agreement
  - Develop an addendum describing the data sharing terms and conditions
  - Complete technical and legal review by signatories and finalize the addendum

# MatDB

- Online database application designed for storing and exchanging engineering materials data from mechanical testing.
- Data model dates to the 1980s and was established in collaboration with national laboratories in the US and Japan
- A MatDB data set consists of a test result and accompanying metadata.
- Modules for data entry, data retrieval, and data citation.
- Manual, semi-automated and fully-automated data entry is supported.
- Data retrieval module supports open, registered and restricted access



# Agreement Status and Plans

- Technical staff from all sides generally agree on terms and conditions
- Final review from INCEFA+ participants is nearly complete
  - Wood PLC consolidating proposed changes
- Final US NRC and JRC review will occur once INCEFA+ proposed changes are added
- Signing and implementation of the agreement is planned for Fall 2018
- Once agreement is initiated, will consider participation by CSNI organizations that have expressed interest (e.g., Korea, Czech Republic) and other interested organizations
- Current agreement contains provision that allows additional signatories upon unanimous consent of existing signatories