

**LONG-TERM ELEVATED TEMPERATURE MECHANICAL PROPERTIES
OF AN ADVANCED TYPE 316 STAINLESS STEEL***

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ABSTRACT

Type 316 FR stainless steel was developed as a candidate structural steel for fast breeder reactor service in Japan. This material has proven superiority in certain elevated temperature mechanical properties over that of type 316 stainless steel. In this paper, analysis of data will be presented from tests conducted during a program lasting approximately 6 years at Oak Ridge National Laboratory. These tests were conducted with specimens taken from 50-mm-thick plate from both base material and a weldment at temperatures of 500 to 600°C. Results will be presented from long-term creep-rupture, creep-fatigue, and tests designed to determine material tensile properties following possible off-normal plant operating circumstances. These latter tests include either periods of prolonged creep or creep-fatigue loading prior to tensile testing.

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