MA957 has outstanding low-temperature tensile and high-temperature creep strength and potential for managing radiation damage, including high helium levels in fusion environment. The excellent properties of nanostructured ferritic alloys (NFAs), such as MA957, derive from a high density of nm-sized Y-Ti-O precipitate cluster and/or complex oxides (NF), such as Y₂Ti₂O₇ and Y₂TiO₅, which form during hot consolidation following mechanical alloying. The low temperature strengthening contributions have been evaluated in previous studies. However, the strengthening contributions of NF at high temperatures are not well understood. In this study we develop high temperature constitutive models for MA957, primarily from interrupted compression tests in the temperature (T₁) range from about 600 to 900 °C, over a range of strain rates down to less than 10⁻⁶/s. In probing the high stress regime for power law creep, our objective is to characterize the NF dislocation pinning dynamics. This information will then be used to build physical creep models, such as those based on threshold stress concepts, which can be extrapolated to lower stress regimes. Comparing this data to actual lower stress creep data we generate, as well as that taken from the literature, will help to discriminate the contributions of the NF to overall creep strength. The models will be used to construct Ashby type creep maps and to guide future experimental studies.