Final Report

NASA Contract
NAG-8-156

Submitted to
Dr. Ann F. Whitaker
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL, 35812

Solar Radiation Effects on Glasses
Contract Period:
4/12/90-6/17/93

Prepared by:
Donald L. Kinser
Department of Engineering and Applied Sciences
Vanderbilt University
Nashville, TN 37235

May 20, 1994
Abstract:
The work subject of this work was begun in 1978 under NASA grant NAS8-32695 which prepared the samples which were included in the assemblage of samples on LDEF which was placed in earth orbit by Challenger crew members during mission 41C on April 1984. Those samples, recovered in February 1990 were exposed to earth orbit environment for a total of approximately 5.8 years. Following their recovery the optical and mechanical properties were characterized and sample surfaces were examined so as to characterize micrometeorite impact sites.

Copies of the following are attached to and form a part of this final report:

Published papers describing results obtained under this contract include:


Papers in preparation for publication:

1. "Elastic Modulus and Thermal Expansion Measurements of LDEF Glasses and Glass-ceramics using a Speckle Technique" D. W. Wiedlocher and D. L. Kinser, to be submitted as a communication to the American Ceramic Society

2. "Mechanical Failure Probability of Glasses in Earth Orbit" D. L. Kinser and D. E. Wiedlocher, to be submitted to the Journal of The American Ceramic Society: