

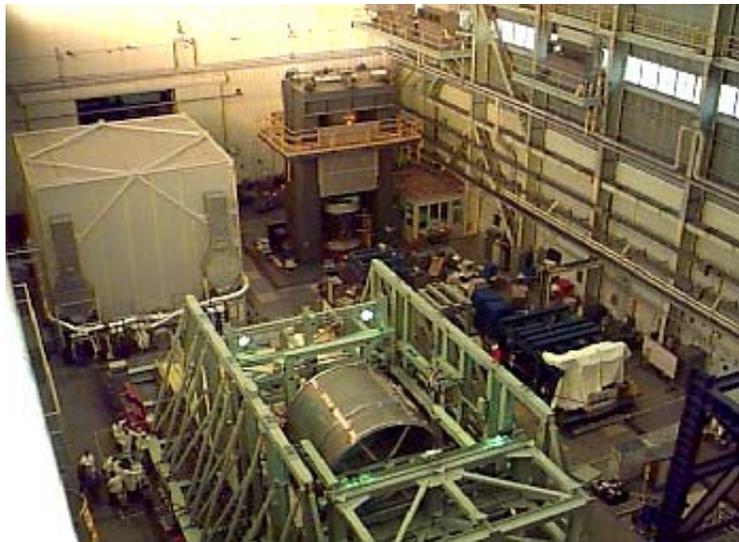


# Large Structural Quasi-Static Load Facility

## **Purpose:**

**To provide for full-scale quasi-static structural load testing and functional performance verification.**

The loading profiles are applied using automatic servo loop load control systems in this facility. The capability for quasi-static and fatigue testing modes are available in the range of 112 active channels. The loading profiles, application rates, and release of loads are computer controlled and the load limit and error tolerance controls are utilized for test article protection. An extensive inventory of force transducers and hydraulic actuators are available ranging from a few pounds-force to several million pounds-force. The Structural Loads Test Measurement Acquisition System (SLTMAS) is the main data acquisition system used to measure the structural strength test responses. The SLTMAS consists of 4,600 channels with an overall system accuracy of  $\pm 0.075\%$  of full-scale range up to a 100kHz sample rate. The binary data acquired is converted to engineering units in a background process and stored to a hard disk that then is immediately available to the analyst. On-line access to data is provided to stress analysts in engineering units. Data formats include Excel spreadsheets with two-dimensional graphic display of discrete values and plots, and three dimensional finite element values. Elastic strain data is processed in real time with corrections for temperature affects. Supplementary strain gauge data can be acquired on surfaces that include high radius of curvatures using photo elastic strain measurement technology. Photo elastic strain measurements are acquired with a modular reflection polariscope system that includes a null balance compensator, telemicroscope, monochromator, stroboscopic light source, and a 35mm camera.



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