

LSC Six-Month Progress Report

Organization Stanford Advanced Gravitational Wave Interferometry Group

Report Date February 15, 2003

Attachment A - LIGO I Development Group
For the period August 2002 to February 2003

During the period of Aug 15, 2002 through February 15, 2003, Brian Lantz and other members of the Stanford Gravitational Wave Group collaborated with LIGO and various Attachment A LSC members to ameliorate the ground motion at the LIGO Livingston Observatory (LLO) by accelerating the development of the Advanced LIGO external hydraulic system so that it can be installed in initial LIGO if deemed appropriate. Pursuant to this agreement:

- a) Brian Lantz has served as the lead scientist for the hydraulic isolation system, with all the rights and privileges thereof.
- b) We have received the first article of the LASTI actuator (actuator version 3 – all welded with internally plumbed returns) and shown that it meets the design specifications.
- c) The control valves for LASTI have been calibrated and delivered.
- d) The new stand for the calibration of the Parker DYP-2S hydraulic control valves has been designed and the manufacture is mostly complete.
- e) Version 1 of the Matlab/ Simulink model of the LASTI hydraulic pre-isolation system has been completed, and has been used to develop control methods for the system. Since it is a modular system, development will continue.
- f) The hydraulic pre-isolation system is now installed and running at the LASTI facility. Corwin Hardham, Brian Lantz, and Mike Hennessy have spend significant time in travel to the LASTI facility. The system is now controlled in all 6 degrees of freedom, and we have measured isolation from about 0.1 Hz to about 10 Hz.