

## CDS Installation at Hanford.

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**SCANNED**

# Installation Time Line

**Table 1: CDS Installation.**

System	Dates
Vacuum Controls	January 1997 - September 1997. Racks built and tested in warehouse and installed into LVEA and VEAs as deliverable to PSI for vacuum system commissioning.
Networks	January 1997 - Summer 1998. Temporary ethernet installed into LVEA. Then ATM installed into mid and end stations when fibre optics were installed spring 98. ATM in LVEA fall 98. Control room and MSR converted to fibre optics winter 98.
PSL	September 1998 installation of 2k PSL
Suspension Controllers	Summer 1998 for 2k SOS, Spring 1999 for 2k LOS. First test stand system in optics lab was built. Followed by 2k SOS and 2k LOS.
PEM	Summer 1998 through to today.
Data Acquisition	Spring 1998 through to today.
GPS	GPS time support in MSR and 2k IFO.

## Vacuum Controls System.

Was being built at Hanford when the corner station looked like this:



Consists of 7 VME Rack systems

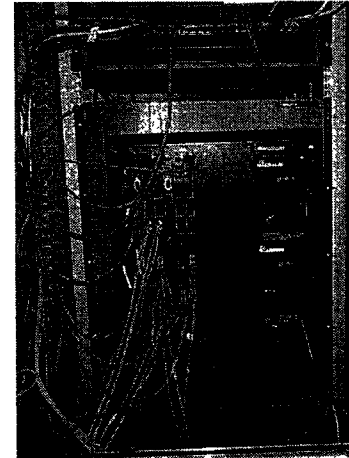
(2 LVEA, 1 Mech Room, 1 each Mid and End)  
EPICS controller software developed, tested  
and maintained at Hanford.



# CDS Infrastructure and Support.

## Networks

Reflective Memory for Data Acquisition.  
Fibre Optics for Video  
ATM for LAN (ethernet and direct ATM)

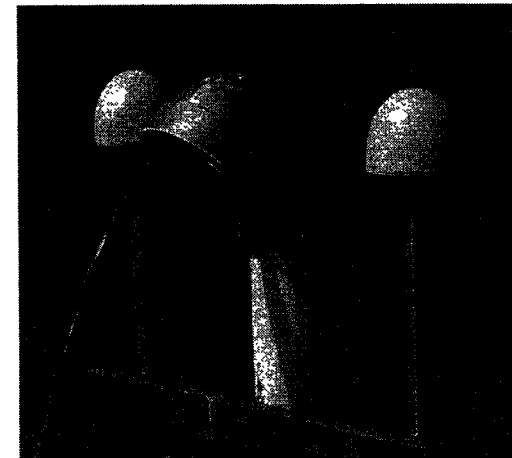


## Timing Services

GPS Timing Services to front end systems.

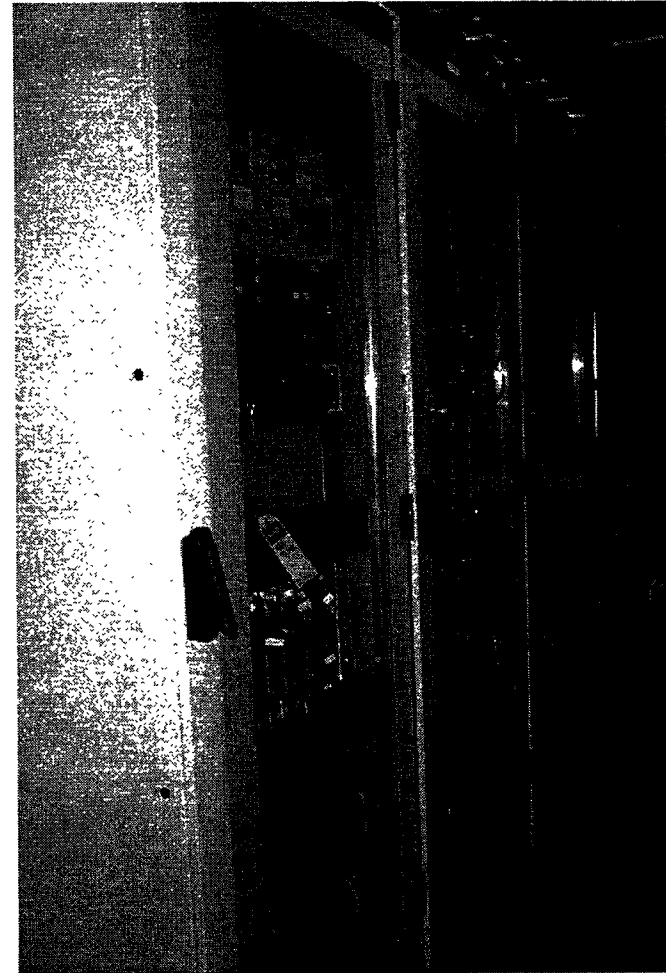
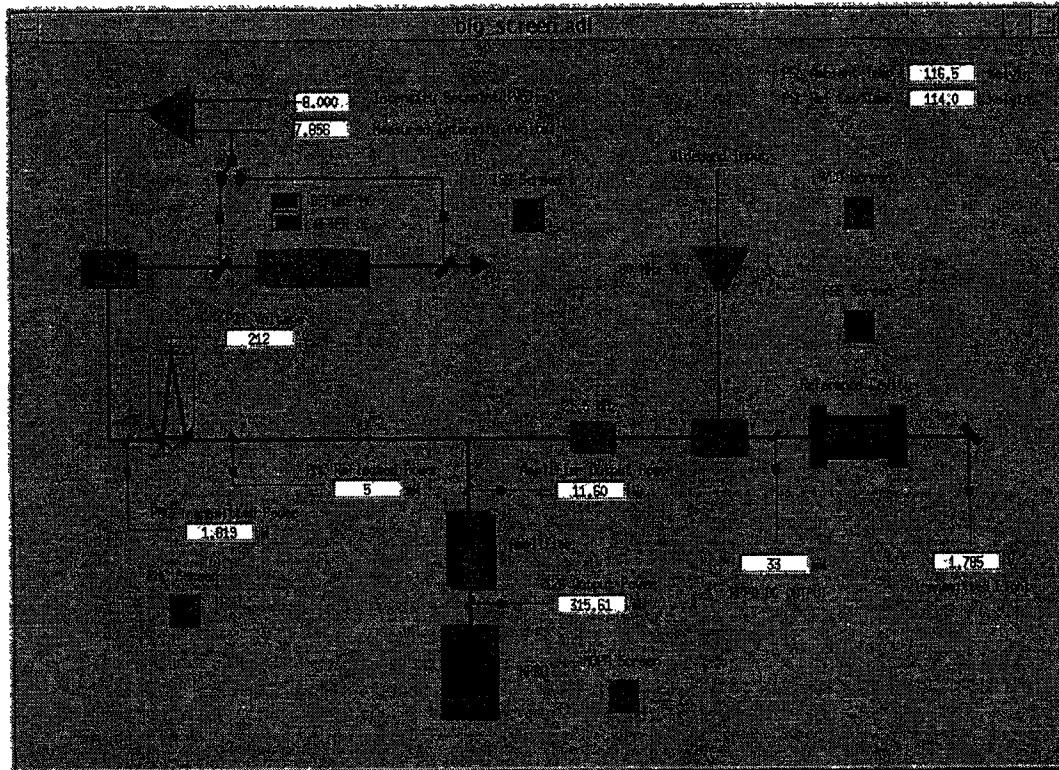
## Electrical

CDS power  
CDS grounds



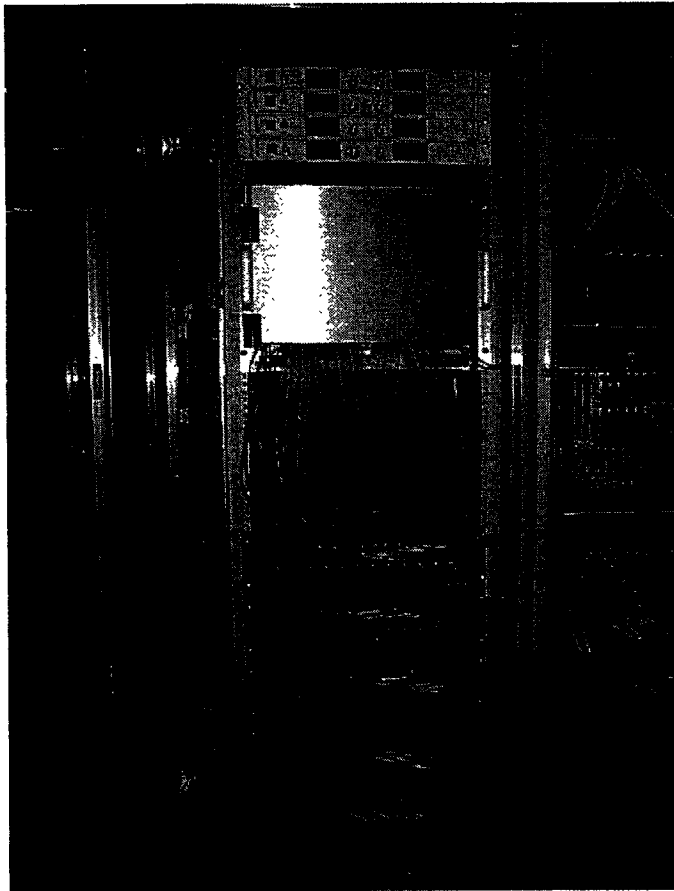
# 2k PSL

## EPICS Controller of PSL

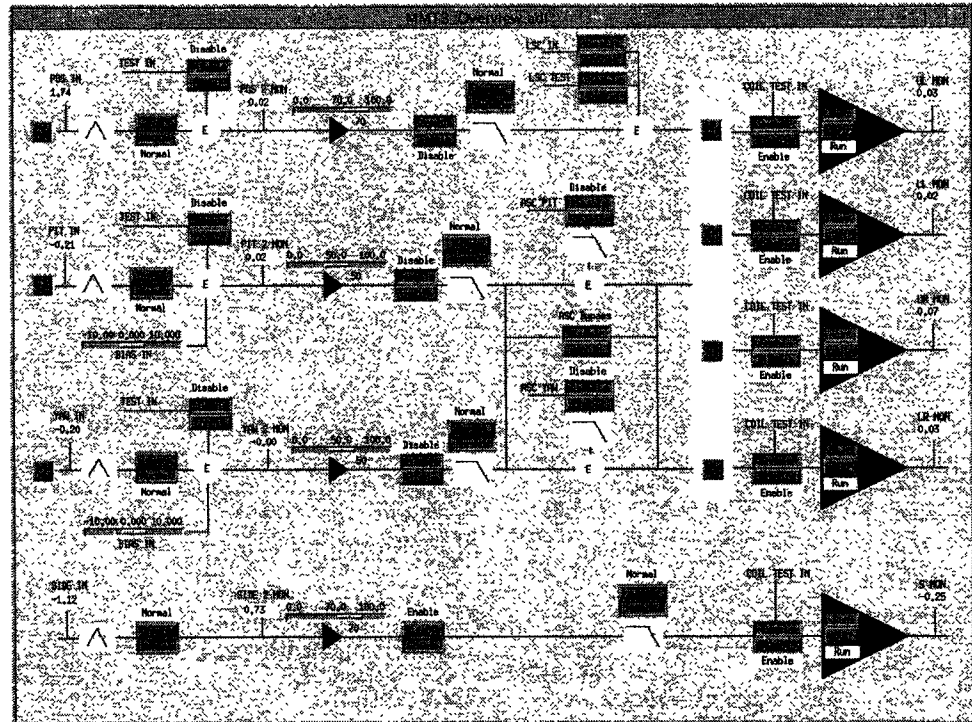


# Suspension Controllers

2k IFO Small Optics and Large Optics  
Suspension Controllers



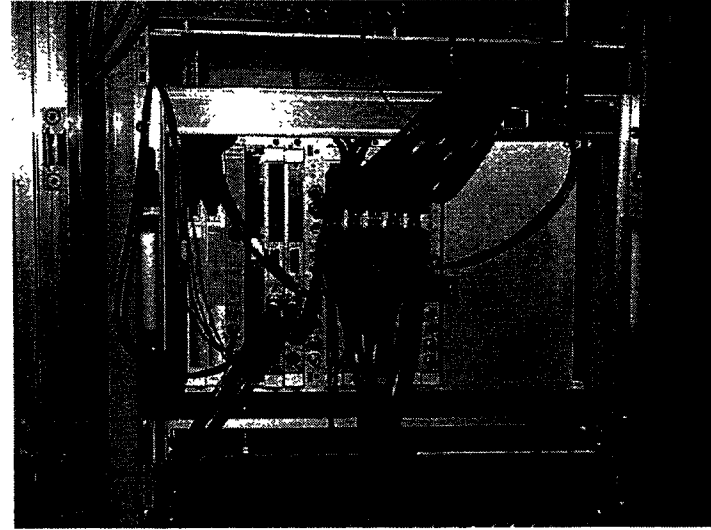
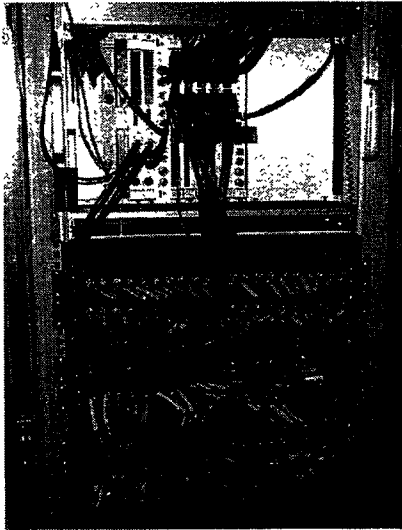
EPICS Controls



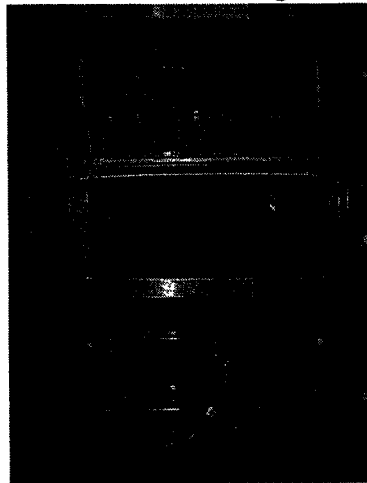
# Data Acquisition System

Front end systems (DCUs).

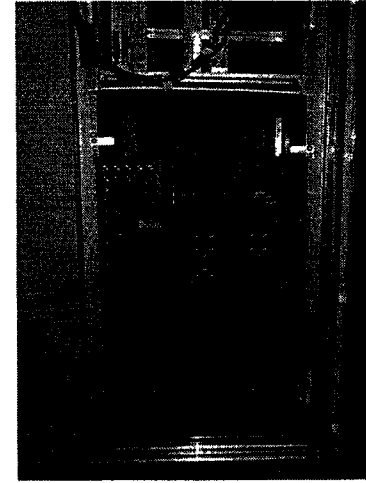
4 installed in 2k LVEA.



Controller and Configuration Manager.



Frame Builder and Network Data Server



## Control Room



Sun Microsystems Workstations

2 or 3 monitor systems

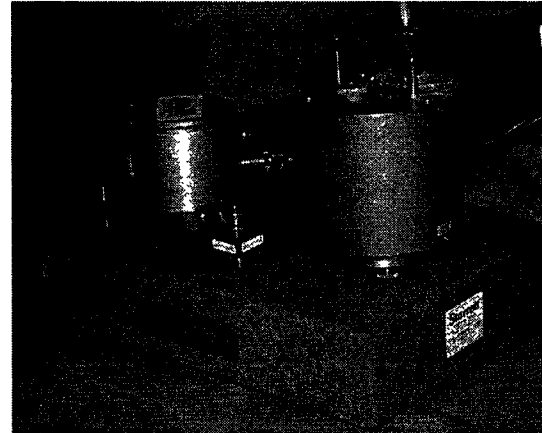
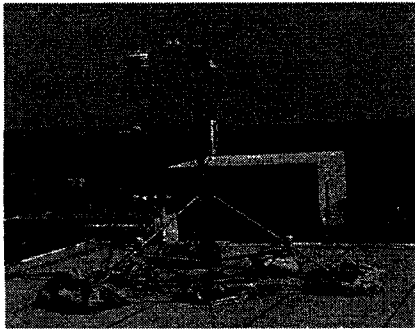
ATM networked

Any screen can access any control system.

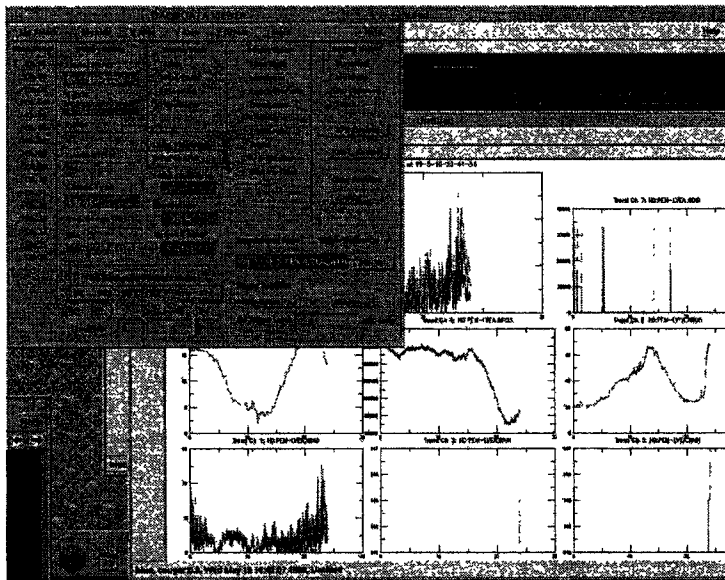


# PEM and Data Analysis

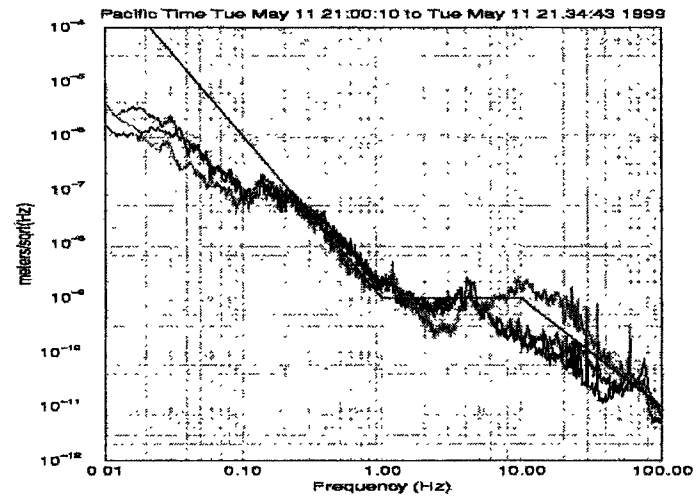
## PEM



## Analysis



Ground motion (x: black y: red z: green LIGO:blue)



## Current and Near Term Work.

Integrating ASC/LSC systems with DAQ.

Building all CDS systems for Left Mid Station.

Building Global Diagnostics Systems.

Testing new analysis tools.

Improving system performance and reliability.