

The Alignment Engineering Group

RTK Mapping Presentation – June 4, 2002

Introduction
www.slac.stanford.edu/grp/met



GPS at SLAC

*Alignment
Engineering*



Overview

Instrumentation

Software

Site Network

Base Station

RTK Mapping

The Alignment Engineering Group

RTK Mapping Presentation – June 4, 2002

Introduction GPS:Overview

The Alignment Engineering group, in cooperation with Site Engineering and Maintenance, has acquired three Leica SR530 GPS (Global Positioning System) receivers and associated equipment in October of 2001 [[Leica Demo](#)]. These geodetic receivers will be used for a variety of projects:

- To establish a dense and precise three-dimensional on-site reference network to be used by all interested parties
- To enable SE&M's Facilities Management to map SLAC structures in those areas presently without monuments using RTK technology
- To complement any current or future surveys at SLAC that will require external control points
- To design and analyze the installation phase of future physics accelerator projects such as the NLC

The Alignment Engineering Group

RTK Mapping Presentation – June 4, 2002

Introduction Timeline

October 2001	Demo + 2 trainings
November 30	Tracy training
December 13-17	First campaign
January 2002	Bernese software
February	Base station decision
March 18-25	M40 7 days
April	RTK mapping begins
May 4-12	M40 new series
June 4	RTK presentation
June	SLAC pillar strategy
July 22-30	Linac penetration pts

The Alignment Engineering Group

RTK Mapping Presentation – June 4, 2002

Introduction Datum

WGS 84	Broadcast ephemerides
IGS00	Precise orbits
ITRF00	Global stations
NAD83	Official US datum
SLAC	Our own datum!

M40 ARP 7 days series

- ITRF00 2002.22 Bernese results

X = -2703115.949 m

Y = -4291767.428 m

Z = 3854247.948 m

- NAD 83 2002.22 using published
Helmert transformation

X = -2703115.287 m

Y = -4291768.692 m

Z = 3854247.903 m