Memorandum

Honeywell Technology Solutions, Inc.
Lanham, Maryland

Date: June 22, 2007

To: Distribution

From: Jim Long

Subject: Results from 2007 TLRS-3 Calibration Survey

The recent geodetic survey was performed at the TLRS-3 site at the Universidad Nacional de San Agustin Geophysical Observatroy, near Arequipa, Peru, during the period from April 25 to May 8, 2007. The survey effort included: the determination of the TLRS-3 eccentricities, the calibration target data, and the local ties to GPS and DORIS. The TRLS-3 mount was re-installed over station 7403 in 2006, after modifications and upgrades. The following information is for the new TLRS-3 occupation.

Survey data were obtained with with precise Leica electronic survey instruments utilizing precise survey methods and techniques . The survey data was adjusted using the network adjustment software HAVAGO. The coordinates for the GPS station AREQ (DOMES No. 42202M005), as listed in the ITRF 2005 (2000.0) solution were held fixed in the HAVAGO adjustment.

Station Position

The TLRS-3 mount was re-installed over the 7403 survey mark. The coordinates for CDP Station 7403, listed below, are from the results of the adjustment and are in ITRF 2005 (Epoch 2000.0). The geodetic coordinates are referenced to the GRS80 ellipsoid with the constants: A=6378137.0 and 1/f = 298.2572221.

GEODETIC COORDINATES

STATION	LATITUDE	LONGITUDE	HEIGHT(M)
CDP Station 7403	16° 27′ 56.59111″ S	71° 29′ 34.65505″ W	2488.821

CARTESIAN COORDINATES

STATION	X (M)	Y (M)	Z (M)
CDP Station 7403	+1942807.623	-5804069.735	-1796915.763

SYSTEM ECCENTRICITIES FROM CDP STATION 7403

ΔN	ΔE	ΔUP
+0.014	-0.002	+2.679

ΔX	ΔY	ΔZ
+0.815	-2.440	-0.746

The following is the calibration data for TLRS-3. Historically, the primary pier for TLRS-3 was Pier C. However, due to the continuing build-up of residences near the pier, it is no longer safe to range to Pier C. Pier B is now the primary calibration pier. The distance to Pier D is less than 29 meters. Since TRLS-3 can not range to a target below 70 meters, Pier D is no longer included in the calibration data table.

TLRS-3 CALIBRATION DATA

TARGET / PRISM	RANGE (M)	AZIMUTH	ELEVATION ANGLE
Pier A / 86-1	105.943	011.519°	-1.963°
Pier B / LTN 91-P	105.974	048.169°	-1.257°

Conclusions and Remarks

Prior to this survey, the most recent geodetic survey at TLRS-3 was perfomed in March 2002. Comparing the results from the two adjustments (2002 and 2007), show that the Arquipa site is very stable, with position variances at 0.002 or less.

If there are any questions concerning this survey or the calibration data, please contact me at (410) 964-7435.

Jim Long,
Geodetic Surveyor

Distribution:
David Carter, NASA/GSFC Code 453
Carey Noll, NASA/GSFC Code 690.5
Scott Wetzel
Julie Horvath
Howard Donovan
TLRS-3