

Post Launch
Mission Operation Report
No. E-894-88-05

01 20, 1988

TO: A/Administrator
FROM: M/Associate Administrator for Space Science and Applications
SUBJECT: San Marco D/L Post Launch Report #2

The San Marco D/L spacecraft was successfully launched by a Scout expendable launch vehicle (S-206) from the San Marco Platform on March 25, 1988, at 1450:46 EST. The launch occurred 0 hours 5 minutes into the 1 hour 45 minute window. Vehicle performance was within 1 sigma; the achieved orbit, however, was slightly lower than planned.

Initially, all instruments performed as designed. However on April 19, the Wind and Temperature Spectrometer Instrumentation (WATI) system experienced a failure. Repeated efforts to reactivate the WATI were unsuccessful and the associated experiments were terminated. The remaining four experiments are operating satisfactorily and the primary objectives of the San Marco D/L Mission have been met.



L. A. Fisk

NASA MISSION OBJECTIVES FOR SAN MARCO D/L

PRIMARY OBJECTIVE

- o To explore the possible relationship between solar activity and meteorological phenomena.

SECONDARY OBJECTIVE

- o To determine the solar influence on low atmosphere phenomena through the thermosphere by obtaining measurements of parameters necessary for the study of dynamic processes occurring in the troposphere, stratosphere, and thermosphere.



Charles J. Pellerin, Jr.
Director, Astrophysics Division

Date: 3/3/88



Lennard A. Fisk
Associate Administrator for Office
of Space Science and Applications

Date: MAR 9 1988

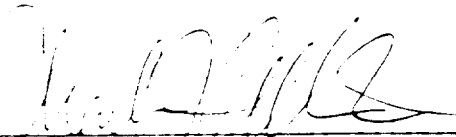


Shelby G. Tilford
Director, Earth Science and
Applications Division

Date: 3/4/88

ASSESSMENT OF THE SAN MARCO D/L MISSION

Based upon the results of the mission with respect to the approved prelaunch objectives, the San Marco D/L Mission is adjudged to be successful.



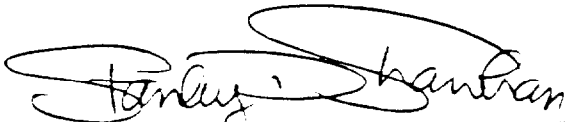
Charles J. Pellerin, Jr.
Director, Astrophysics Division

Date: 7/1/88



Lennard A. Fisk
Associate Administrator for Space
Science and Applications

Date: 7/1/88



Stanley Shorman
Director, Space Physics Division

Date: 12 July 1988

ASSESSMENT OF THE SAN MARCO D/L MISSION

Based upon the results of the mission with respect to the approved prelaunch objectives, the San Marco D/L Mission is adjudged to be successful.

Charles J. Pellerin, Jr.
Director, Astrophysics Division

Lennard A. Fisk
Associate Administrator for Space
Science and Applications

Date: _____

Date: _____

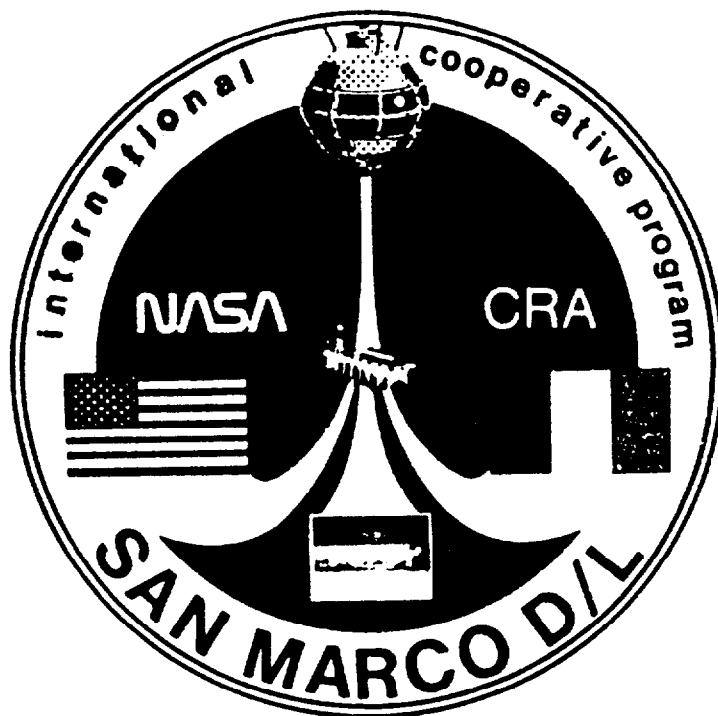
Stanley Shawhan
Director, Space Physics Division

Date: _____

Mission Operation Report

OFFICE OF SPACE SCIENCE AND APPLICATIONS

REPORT NO. E-894-88-05



SAN MARCO D/L POST LAUNCH REPORT

SAN MARCO D/L

The San Marco D/L spacecraft, utilizing a NASA supplied Scout expendable launch vehicle, was launched from the San Marco Range, located off the coast of Kenya, Africa, on March 25, 1988 at 19:50 GMT. The launch was conducted by an Italian crew assisted by LaRC and LTV personnel. The San Marco D/L was the fifth in a series of Italian and United States satellites.

The purpose of the mission is to explore the relationship between solar activity and the physics of the equatorial thermosphere and ionosphere. Information now being collected will augment, and be used in correlation with, data and information obtained from ground based facilities and other satellites.

The spacecraft was placed in the expected orbit with the following elements:

- . Perigee - 260 km
- . Apogee - 614 km
- . Inclination - 2.9 Degrees
- . Period 93 minutes
- . Spin Rate - 6.0 rpm

Predicted lifetime - 7 months minimum.

The sequence of post launch operations performed after separation and Moment of Inertia booms deployment occurred as follows:

- . Spacecraft turn on to set planned spin rate and attitude.
- . Turn spacecraft spin axis normal to orbit plane.
- . Eject Wind and Temperature Instrument (WATI) vacuum seals.
- . Extend Electric Field Instrument (EFI) wire antenna located about the equator of the spacecraft.
- . Uncage and turn on Drag Balance Instrument.
- . Adjust EFI wire antenna length.
- . Effect final spin rate.
- . Effect final attitude adjustment.
- . Attitude sensor calibration.
- . Initiate science operations.

The above pre-science operations required approximately 22 days.

All instruments were operated during pre-science and full-up science periods and were found to be functioning satisfactorily; however, after approximately 3 weeks of full-up operations, the Wind and Temperature Instrument (WATI) did not respond to turn-on commands. Attempts to turn on the instrument have failed. At the present time, the principal investigator, N. W. Spencer, the University of Michigan, GSFC, and CRA are investigating the anomaly. A failure analysis report will be issued at a later date in cooperation with GSFC Reliability and Quality Control. All other instruments are operating successfully and are providing useful scientific data to the Rome Control Center and the Principal Investigators (PI's).

Science operations plans for each U.S. instrument are obtained from the PI's, coordinated, formatted, and sent to the Rome Control Center by the Project Scientist. These commands are then computer integrated with spacecraft commands and thereafter forwarded to the Kenya station for spacecraft operations.

All systems aboard the spacecraft currently show favorable performance, and with the science data from the operating instruments, provide the international scientific community with a successful equatorial investigation.