BRI-ACE-109-Rev1

SEPICA Static Magnetic Field Test Procedure

Revision 1

Bartol Research Institute
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Related Documents:

All lifting of the SEPICA instrument will be performed in accordance with the SEPICA lifting procedure, NSI Procedure No. 33-01-656.

SEPICA Static Magnetic Test Procedure:

Transportation to the GSFC magnetics test site will be arranged separately. This document assumes delivery at the magnetics test site bay door. The test will be performed in the 40 foot coil facility. All lifting of the SEPICA instrument will be covered by procedure NSI-33-01-656.

Attendance by at least one representative of the SEPICA team is required. That individual must be empowered to make decisions regarding (1) handling, (2) the removal of lifting fixtures, and (3) the placement of compensating magnets on the instrument.

______1. The SEPICA instrument will be removed from the truck and transported to the door of the test facility.

______2. The SEPICA instrument is flight hardware and appropriate measures must be taken to maintain instrument cleanliness and safety.

- The nonmagnetic test cart used by the magnetic test facility will be cleaned prior to setting the SEPICA instrument on it and covered.
- Latex gloves must be worn by anyone who contacts the instrument.
- The instrument contains parts that are sensitive to electrostatic discharge. All I&T personnel within 1 meter of the instrument must be electostatically grounded using wrist straps. These wrist straps should have load resistors greater than 200 Kilo-ohms and less than 1 Mega-ohm in series from the wearer to the ground point.

______3. Prior to removal from the storage container, sniff for isobutane.

______4. During lifting operation (even if done by hand) the lifting harness must be in place. The lifting harness is removed after work around the payload is completed.

______5. The SEPICA instrument will be placed on the nonmagnetic test cart used by the 40 foot coil facility.

- Only a static field test will be performed. The instrument GSE is not required and need not accompany the instrument, or need not be unpacked for use if it does. The instrument will be tested unpowered.

______6. Either the exhaust fan of the facility's airconditioning unit will be operating during this test, or a portable fan will be placed so as to disperse any isobutane leak that may occur.

______7. The lifting points and all nonflight hardware will be removed from the instrument after being placed on the nonmagnetic test cart. **This test pertains only to flight-configured hardware.**

______8. The SEPICA instrument will be secured to the test cart using nonmagnetic materials.

  - Darryl Mitchell of the GSFC magnetics facility will obtain the SEPICA bolt pattern directly from the Bldg. 7 personnel.

______9. A standard 1-axis rotation static field characterization of the instrument will be performed at this point. The following outlines the procedure, but standard magnetics facility procedures will be followed:

  ______9.1. The Earth's field will be nulled within the coil facility to the accuracy required.

  ______9.2. The SEPICA instrument will be brought in on the nonmagnetic cart to the center of the coil facility.

  ______9.3. The SEPICA instrument and magnetics test cart will be rotated 360° in 10° increments.

  ______9.4. The magnetic field of the instrument will be recorded at fixed locations about the instrument.

    - The exact location of the magnetometers will be determined at the time of testing. It is expected that standard predetermined positions exist for this test sequence.
    - A worksheet will be developed once the magnetometer locations are determined.

  ______9.5. The SEPICA instrument may then be removed from the coil facility.

  ______9.6. An assessment of the measurements will be conducted and the static field of the instrument at the 2 MAG sensors (in flight configuration) will be computed.

    - The stated goal for the static field is < 0.1 nT at the MAG sensors when deployed.
    - The configuration of the ACE spacecraft, mounting location of the SEPICA instrument, and deployment location of the MAG sensors is attached to this procedure.

  ______9.7. If compensation is required, compensating magnets will be epoxied to the instrument with the cooperation and approval of the SEPICA team representatives.

______9.8. If compensation is performed, a repeat of the above procedure will be conducted to verify proper compensation of the instrument.

______10. When characterization and compensation of the SEPICA instrument is complete, the instrument will be recrated and takento the truck in accordance with existing handling procedures.