H.5 TIDI — Spacecraft Integration and Test

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I&T Plans - Flow I

- **Pre-Ship**
  - Function test performed at Michigan
  - Packed and shipped to APL
- **Post-Ship**
  - Unpacked at APL, set up on bench (2 to 3 days)
  - Functional test repeated (2 days)
- **Installation on spacecraft**
- **Interface Tests**

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I&T Plans - Flow II

- **Spacecraft Qualification**
  - Functional test repeated as required
    - before environmental test
    - after environmental tests
    - during thermo-vac
  - Support anomaly resolution as required
- **Mission simulations**
  - Full data paths exercised
    - Command Flow from TIDI POC through all elements to spacecraft
    - TM flow from spacecraft through all elements to TIDI POC
  - Major activities tested
    - Spacecraft activation
    - Instrument activation
    - Routine data collection

I&T Plans - Operational Activities (A day in the life of the TIDI I&T Staff)

- **Activities controlled by the S/C I&T Plan**
  - Functional tests performed to support S/C goals
  - Instrument monitoring whenever power is applied
- **Functional Test**
  - Command Preparation
    select a prepared command message
  - Command Transmission
  - Monitor instrument operation in real time
  - Test evaluation
    use analysis tools to determine success of test
    simple tests are evaluated by the instrument computer
    transmit alarm logs to test conductor
  - Anomaly resolution (as required)
    generate Housekeeping log
    review logs from involved subsystems

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Flight POC Testing

- **Test and Flight POC consist of identical hardware and software**
- **Testing will include**
  - **Execution of the accepted test plan per SDP**
  - **Usage during instrument integration and test**
  - **Mission Simulations**