Uplink Life Cycle Scenario

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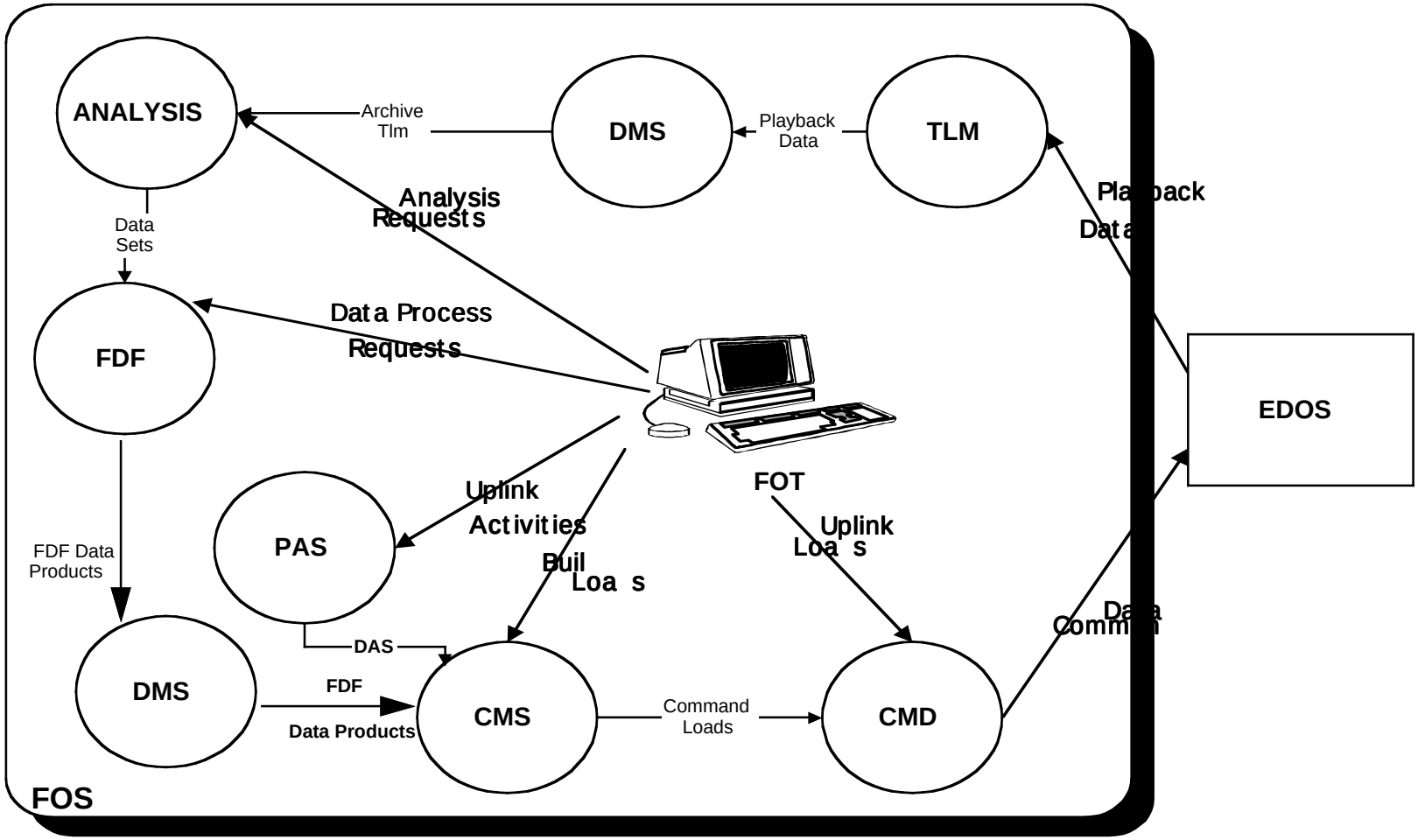
Uplink Life Cycle Description

The FOT is Required to Uplink the Following Data to AM-1 on a Daily or as Needed Basis:

- **FDF Orbit and Attitude Control data(ephemeris)**
- **Sensor Calibration data**
- **ATC Load for bus and selected Instrument control**
- **Instrument unique Microprocessor Loads**
- **Flight Software Table Loads(Mode flags)**
- **Flight Software(code and data)**
- **Relative Time Command Sequence Loads**
- **The FOT and or IOT uses the *RTS Builder*, *Table Builder*, *Load Manager*, and *ATC Load Generator* tools to assemble, convert, and manage uplinks**

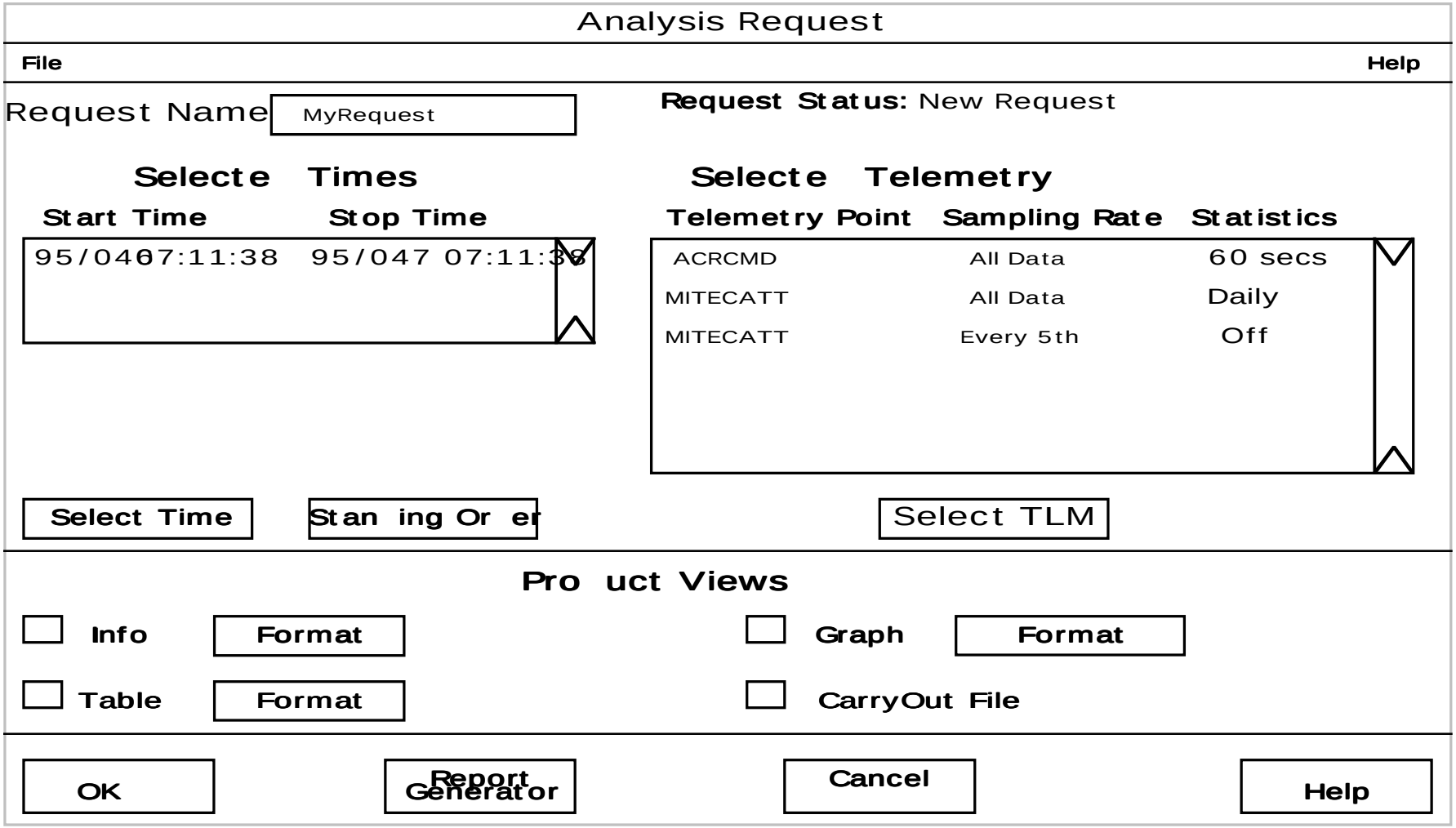
FDF Load Life Cycle



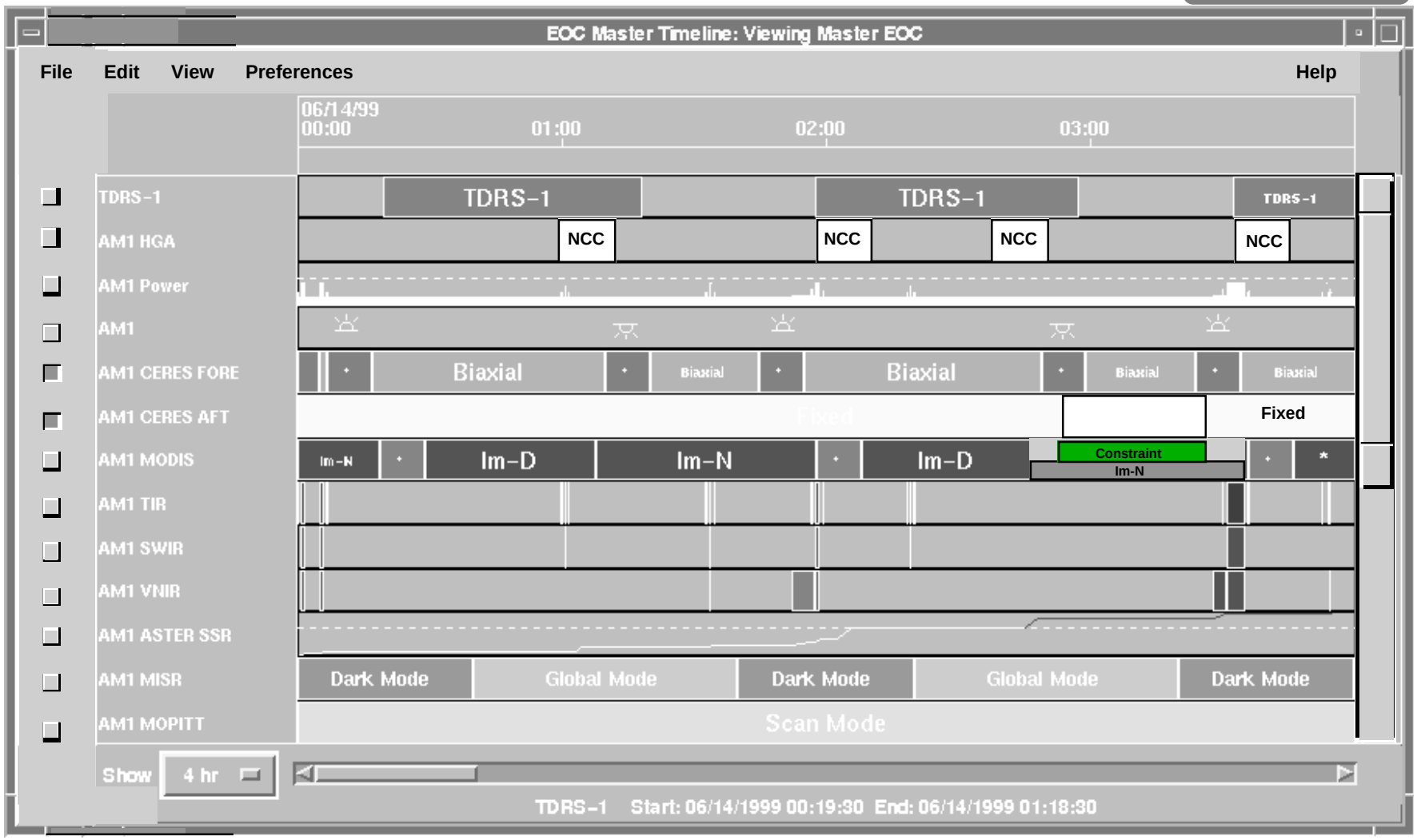
FDF Load Life Cycle

- The FOT establishes standing orders to generate datasets to transfer to the FDF wks
- The FOT executes the FDF software to generate planning products and loads for AM-1
- CMS informed of new FDF load content availability, generates uplink load, updates load catalog, informs FOT
- FDF load uplink activities are scheduled automatically and added to the Ground Script
- FOT uplinks loads to AM-1 during a TDRS contact
- Uplink is verified via CRC in telemetry

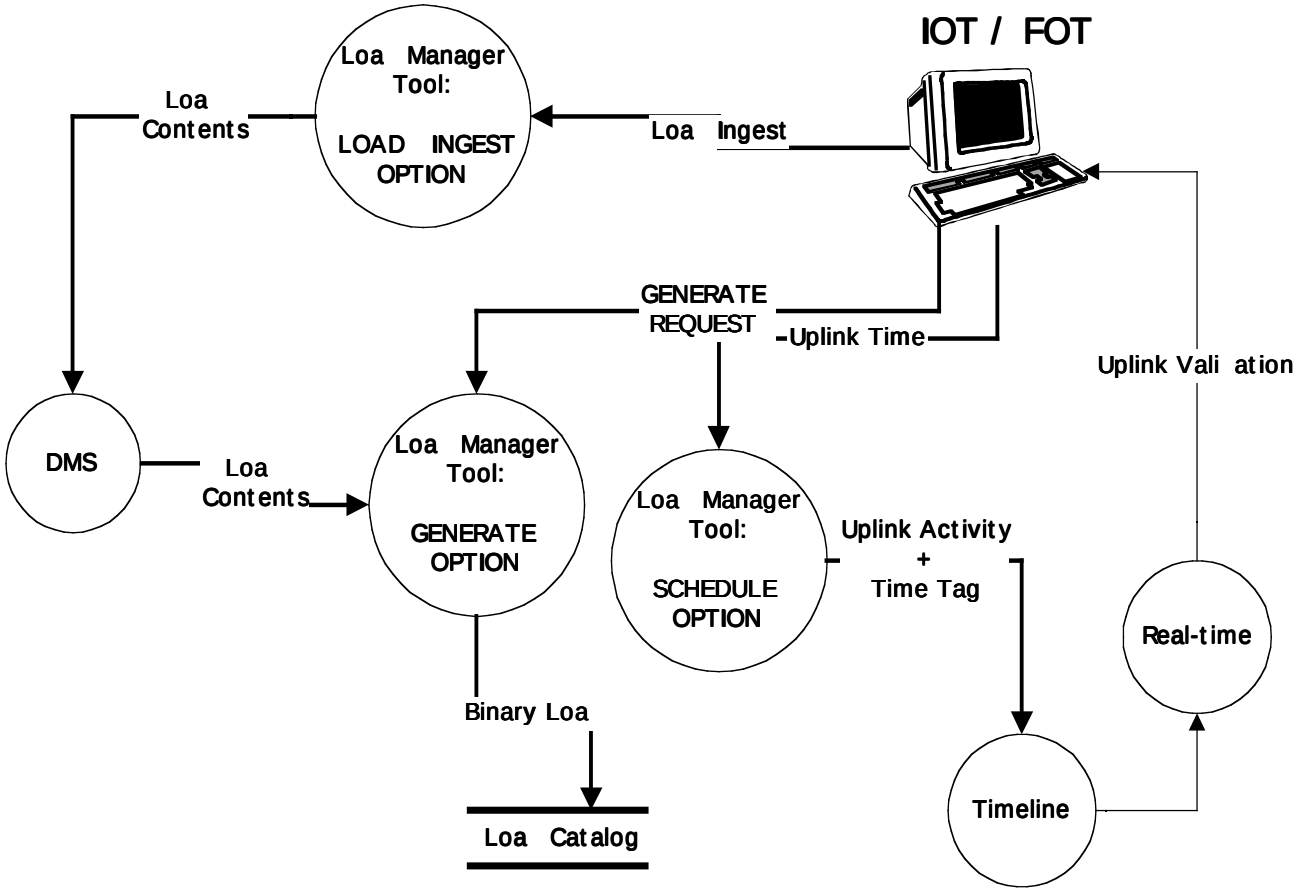
Analysis Request Display



Timeline Display



Microprocessor Load Life Cycle

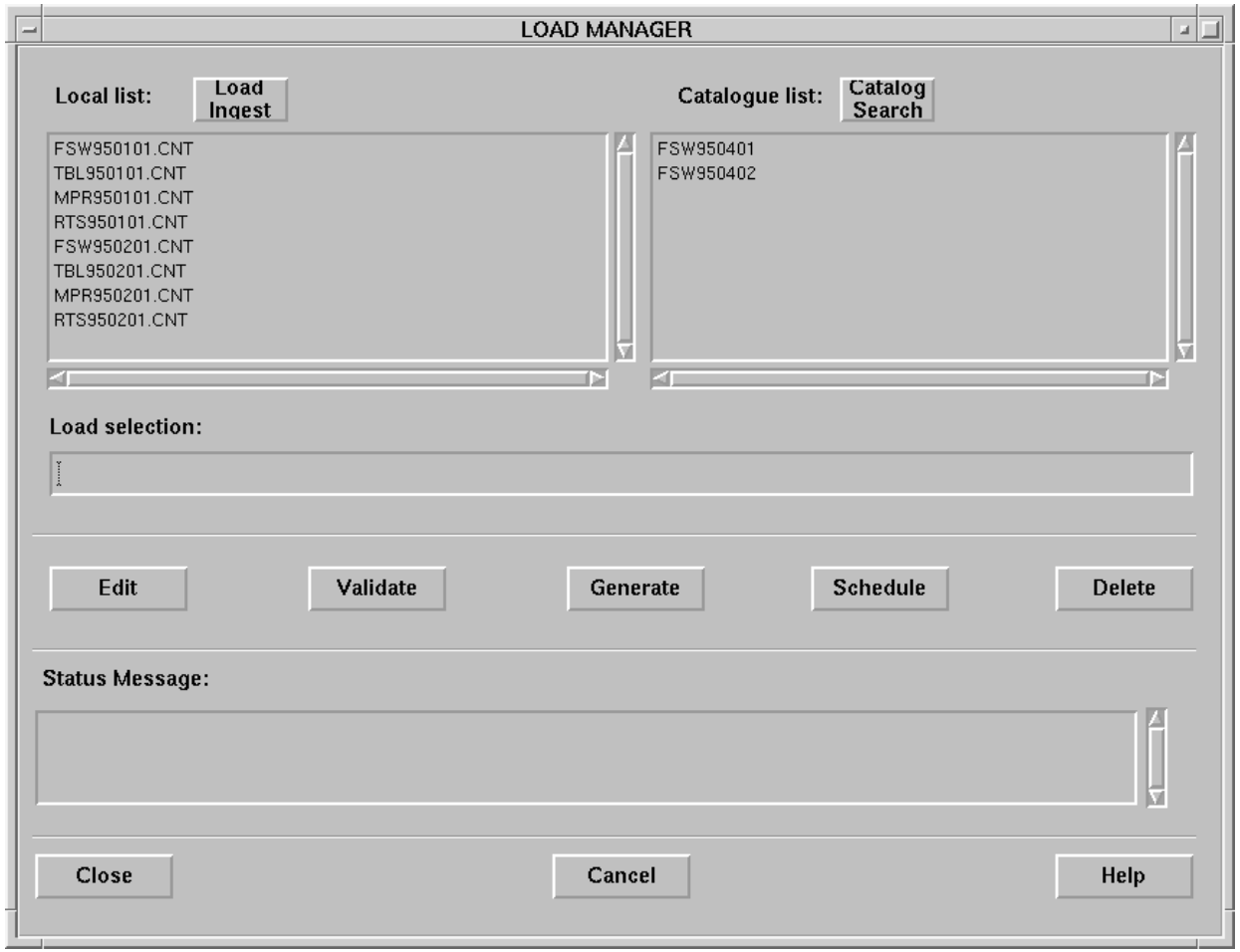


Microprocessor Load Generation

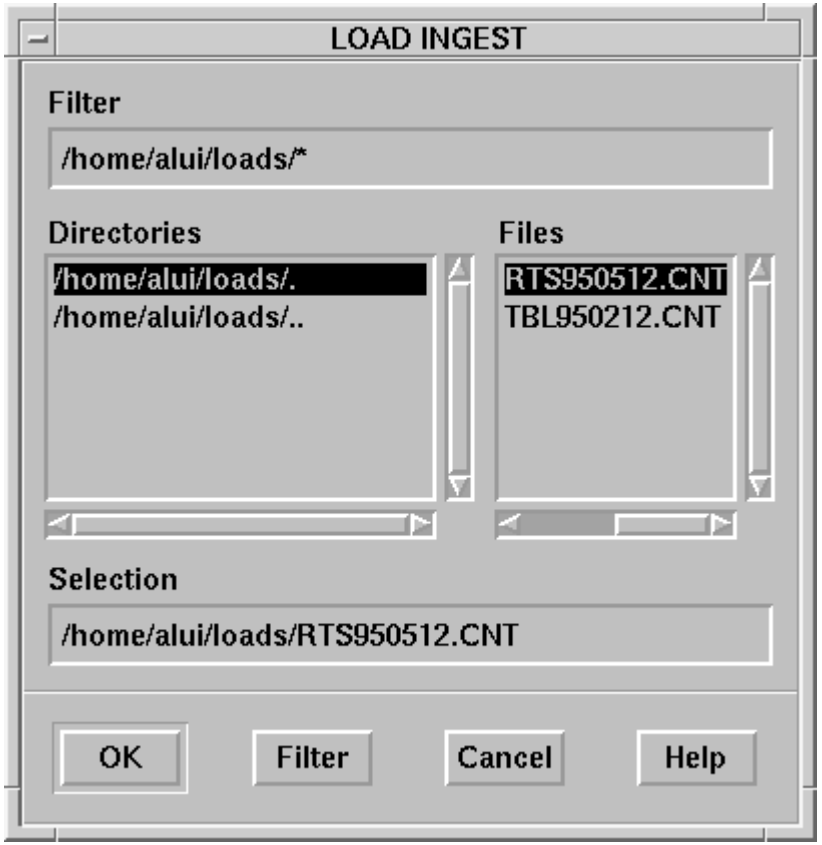
Instrument unique Microprocessor loads

- **IOTs use the *Load Ingest* subdispay of the *Load Manager* tool to enter load contents into the FOS**
- **The IOT or the FOT selects the GENERATE option of the *Load Manager* tool to create the binary load**
- **The FOS Load Catalog is updated with the new load**
- **IOT or FOT uses the SCHEDULE subdisplay of the *Load Manager* tool to schedule the load uplink activity onto the Timeline**
- **The DAS processing updates the Ground Script with the uplink activity**
- **All errors detected in the load conversion or activity scheduling are reported to the user**
- **Ops. Controller interacts with IOT prior to TDRS contact that contains the load uplink activity**
- **Uplink verified via telemetry and or dump and compare**

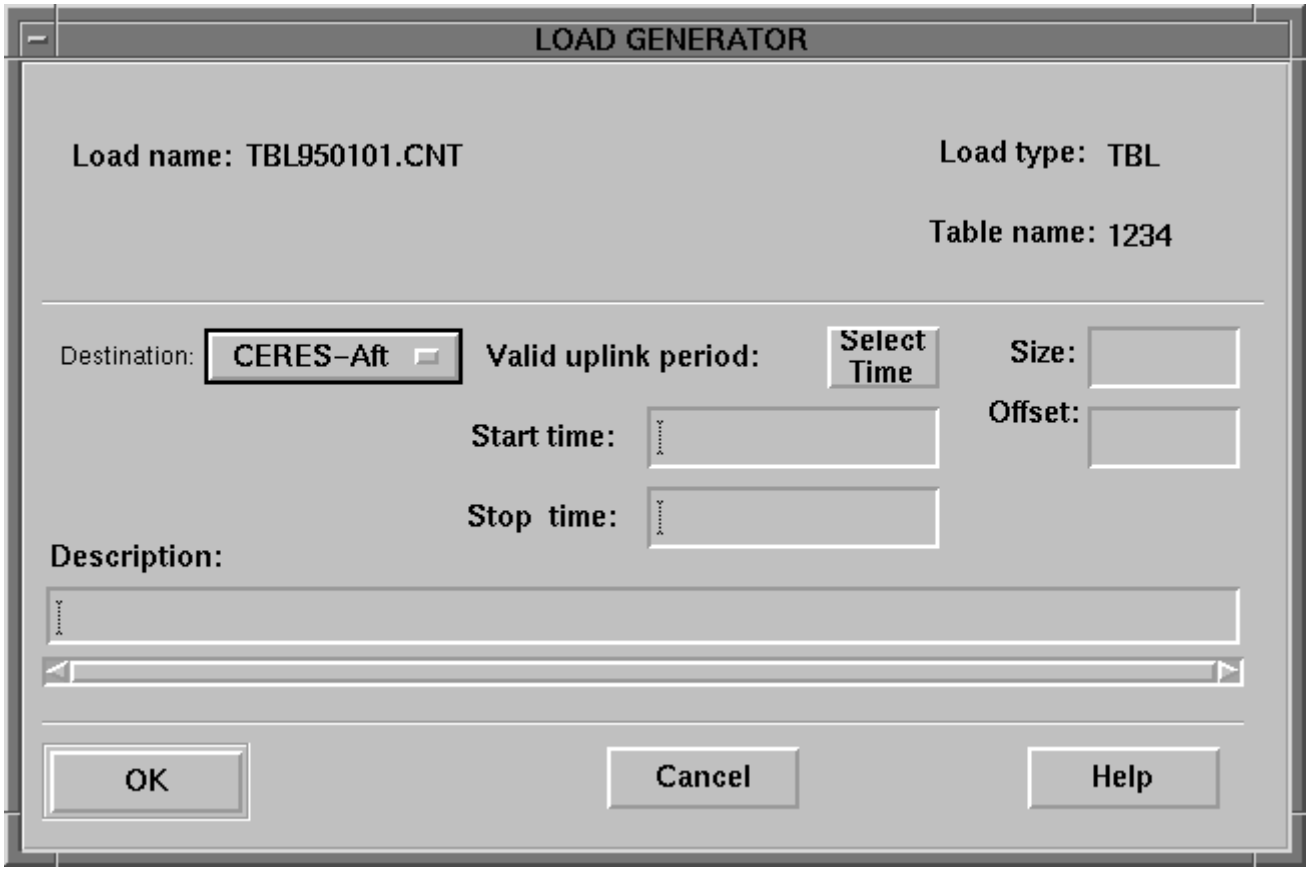
Load Manager Tool



Load Ingest Tool



Load Generator Tool



Load Scheduler Display

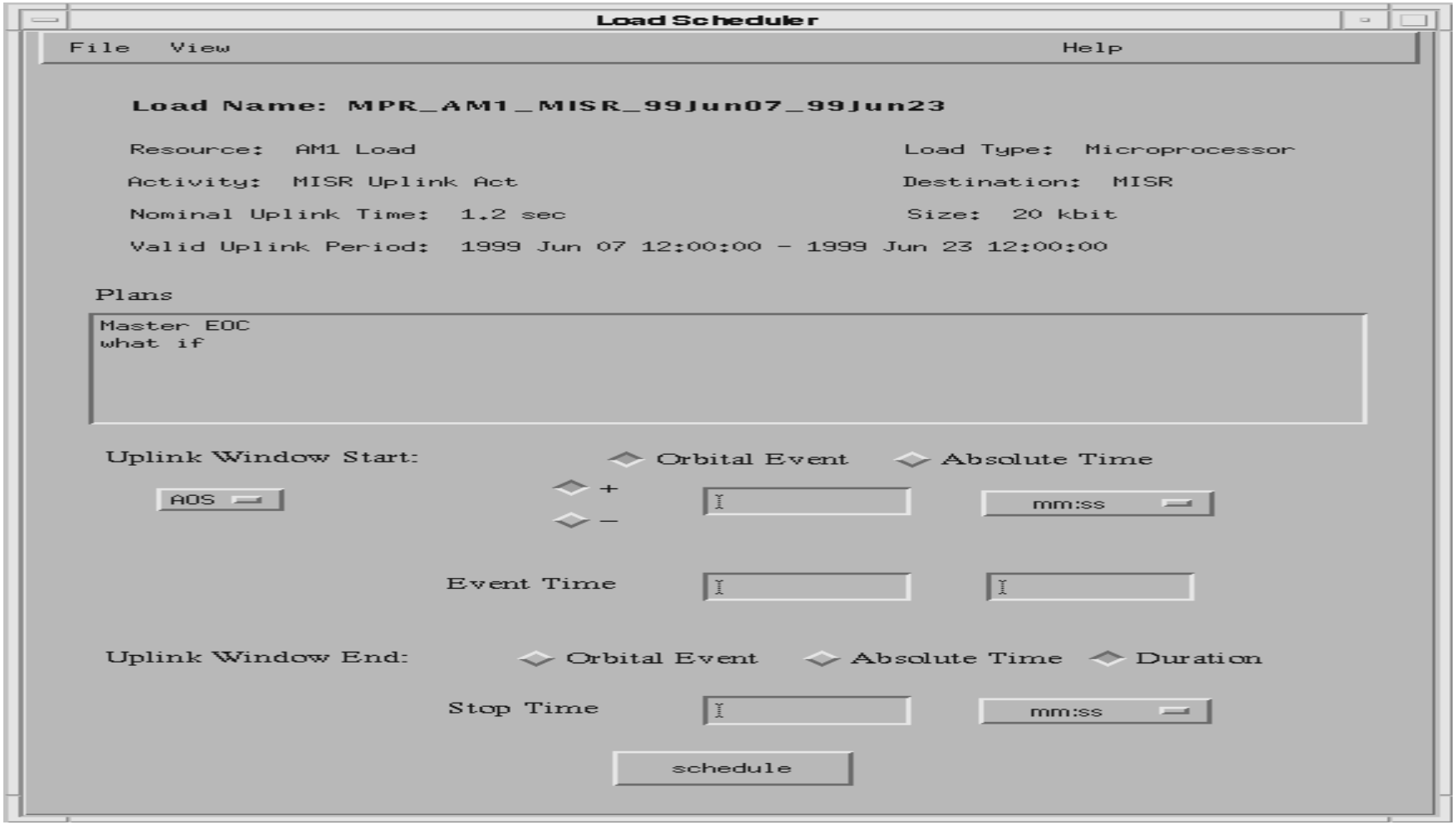


Table Loads

- **The FOT uses the *Table Load Builder* tool to assemble and build tables needed to control the Flight Software**
  - **The *Table Load Builder* Tool provides the FOT the ability to:**
    - **Edit a new table**
    - **Edit an existing table**
    - **Create a table from a table dump**
    - **Save all edits**
    - **Validate the table parameters against the database template.**
    - **Generate the binary uplink load**
- **The FOT schedules the load uplink via the SCHEDULE option on the *Load Manager* tool, for subsequent insertion into the Ground Schedule**

Table Load Builder Display

Table Load Builder

File Utility Help

Table Name: Spacecraft ID:

Table Type: Instrument ID:

Uplink Time Period

Start Time Stop Time Select Time

Field #1:

Field #2:

Field #3:

:

:

<< status line>>

Flight Software Loads

- LMC will be the source for software updates during AM-1 Launch and IOC
- The Code 512 supported AM-1 Flight Software Testbed is the source for software updates for routine AM-1 operations
- The FOT obtains Flight software load contents and ingests them via the Load Ingest Display of the *Load Manager* tool
- The FOT converts the load contents to the binary uplink load
- The FOT schedules the load on the Timeline
- The uplink is validated by CRC or dump and compare