

Introduction to LIS

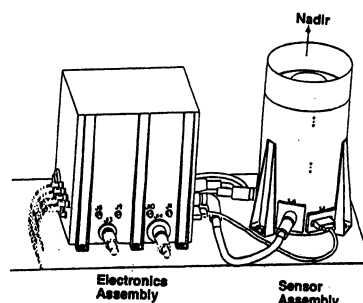
R. Geveden / FA63

CDR
March 1, 1994

LIS

LIS Project Description

- **Instrument Description**
 - Passive, near IR imager
 - Two assemblies: sensor head, electronics box
 - Mass: ~20 kg
 - Power: ~ 30 W
- **Measurement Objective: Global lightning intensity and location (day & night)**
- **Mission: Tropical Rainfall Measuring Mission (TRMM)**
 - 370 km
 - 35 degree inclination
- **Launcher: H-II (Japanese)**
- **Key Milestones**
 - Instrument delivery: June 1, 1995
 - Launch: August, 1997



CDR
March 1, 1994

LIS

MAJOR ELEMENTS AND DEVELOPMENT RESPONSIBILITIES

LIS

Sensor
Assembly



Sensor Box: MSFC

Lens System: Kaiser Electro-Optics
Barr Associates (Filter)

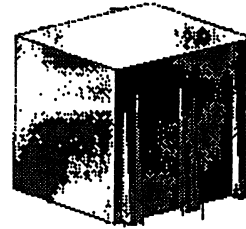
CCD: Lockheed - Palo Alto,
Loral (Wafers, Chips)

Interface Hardware:

- CCD-Lens: Lockheed
- Box-Lens: MSFC

System Engineering and
Integration: MSFC

Electronics
Assembly



Box: MSFC

Electronics: MSFC

CDR
March 1, 1994

LIS

Development Approach

- **Secondary science payload on TRMM**
 - i.e., Not critical to mission success
- **Class C instrument development**
- **Protoflight qualification**
- **LIS program content**
 - Protoflight development (w/ spare)
 - One engineering model (Optical Transient Detector)
 - Converted to flight configuration
 - » Environmentally tested to Microlab-1 mission levels
 - » Fully calibrated
 - » Launches on Pegasus in June 1994 (two year mission)

CDR
March 1, 1994

LIS

Spares List

- **One complete flight spare**
 - Calibrated
 - Acceptance tested
- **One spare lens subsystem:**
 - Ring-lens-strut assembly
 - Integrated and aligned camera (CCD system)
- **One additional spare camera**
- **12 spare CCD chips**
- **Miscellaneous EEE parts and fasteners**

CDR
March 1, 1994

LIS

Open PDR Actions

- **PDR**
 - A-3 Prototype and Flight Model Verification
 - » To be addressed at CDR in Verification Plan
 - A-9 Thermal (Electronics)
 - » Data to be presented at CDR
- **Delta PDR**
 - A-2 LIS Thermal Analysis
 - » Accepted; Data to be presented at CDR

CDR
March 1, 1994

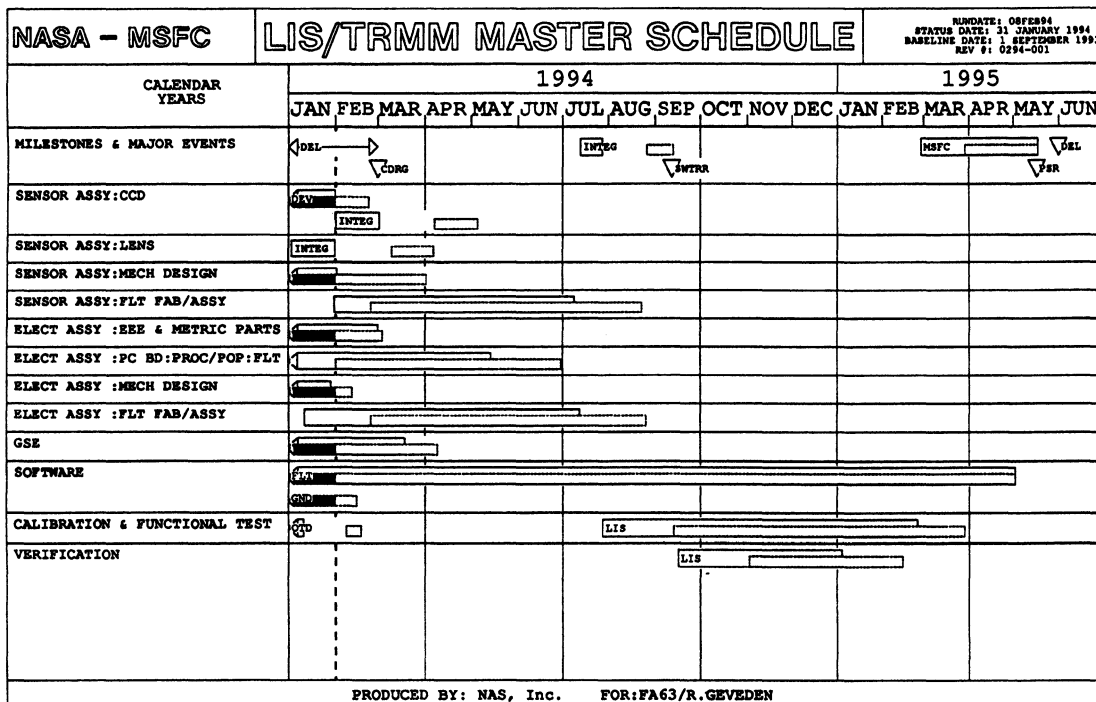
LIS

Status

- **Engineering Model (OTD) Delivery: March 6**
- **Ring - Lens - Strap Design in Release Cycle**
 - Titanium stock received
- **Flight Cameras (CCD System)**
 - Completed life testing
 - Printed Circuit Boards procured
- **Lens System**
 - Two of Three units delivered to MSFC
 - Third unit to be delivered upon completion of filter
- **Printed Circuit Boards**
 - Five boards in release cycle
 - Four boards awaiting final design changes
- **EEE Parts All Delivered to MSFC**
- **Fasteners**
 - Ring - Lens - Strap fasteners delivered
 - Balance on order

CDR
March 1, 1994

LIS



CDR
March 1, 1994

LIS