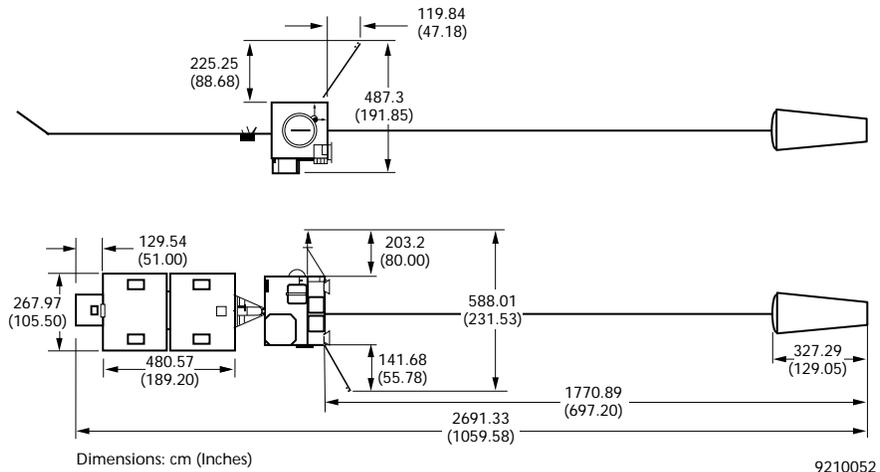


The GOES Spacecraft Configuration

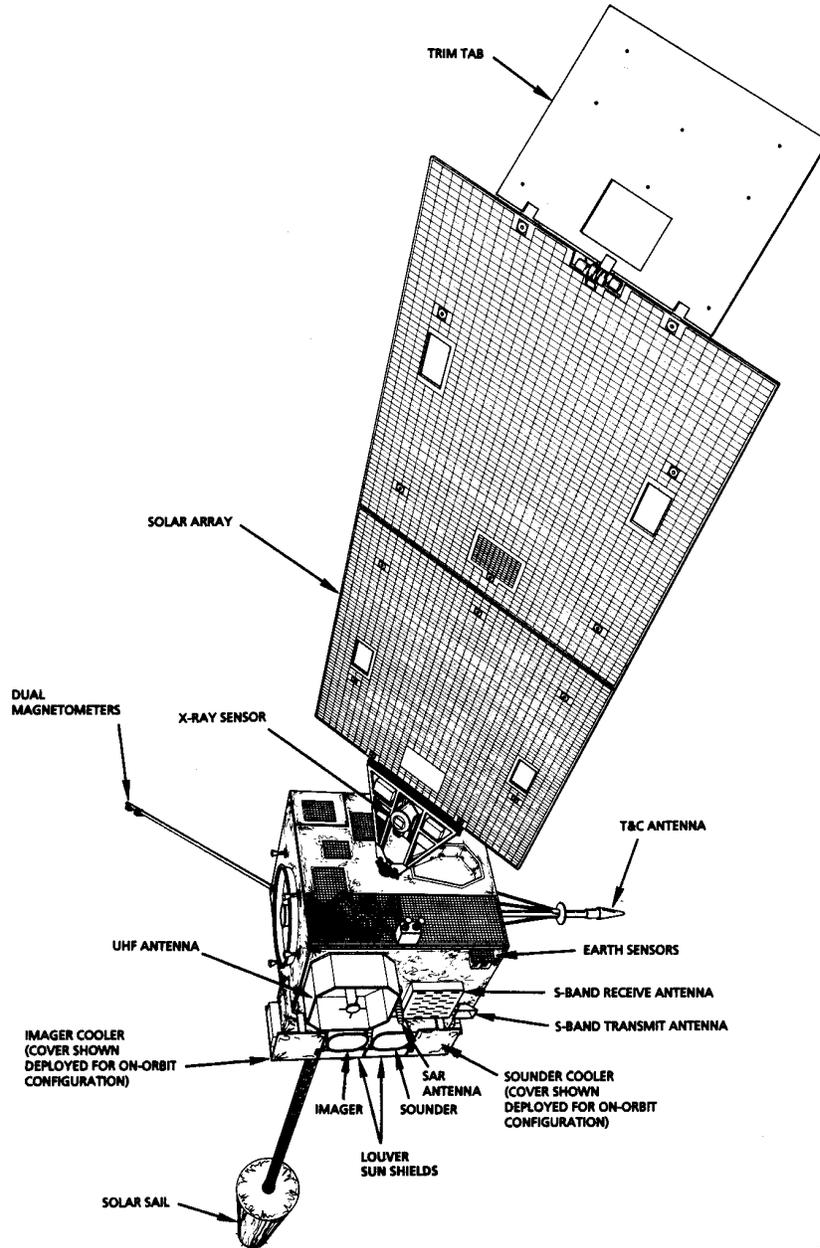
The GOES I-M spacecraft is a three-axis, body-stabilized design capable of continuously pointing the optical line of sight of the imaging and sounding radiometers to the earth. The spacecraft body contains all of the propulsion and electronic equipment and provides the stable platform on which the payload instruments are mounted. A single-wing, two-panel solar array on the south-facing side continuously rotates about the spacecraft pitch axis to track the sun during orbital motion. The use of a single-wing solar array mounted on the south-facing side of the spacecraft allows the passive north-facing radiation coolers of the Imager and Sounder to view cold space.

A conical-shaped solar sail mounted on a 17-meter (58-foot) boom on the north side balances the torque caused by solar radiation pressure. A trim tab panel at the end of the solar array provides the necessary fine balance control for the solar radiation pressure. All communications antennas, with the exception of telemetry and command, are hard mounted on the earth-facing panel for unobstructed earth coverage and maximum alignment stability. To provide near-omnidirectional coverage, the telemetry and command antenna is mounted on a fixed 2-meter (6.6-foot) boom on the east side of the spacecraft. Redundant three-axis magnetometers are mounted on a deployable 3-meter (9.8-foot) boom, attached to the anti-earth face, to minimize interference from the spacecraft.

Deployed Spacecraft Outline/Dimensions



Spacecraft On-Orbit Configuration



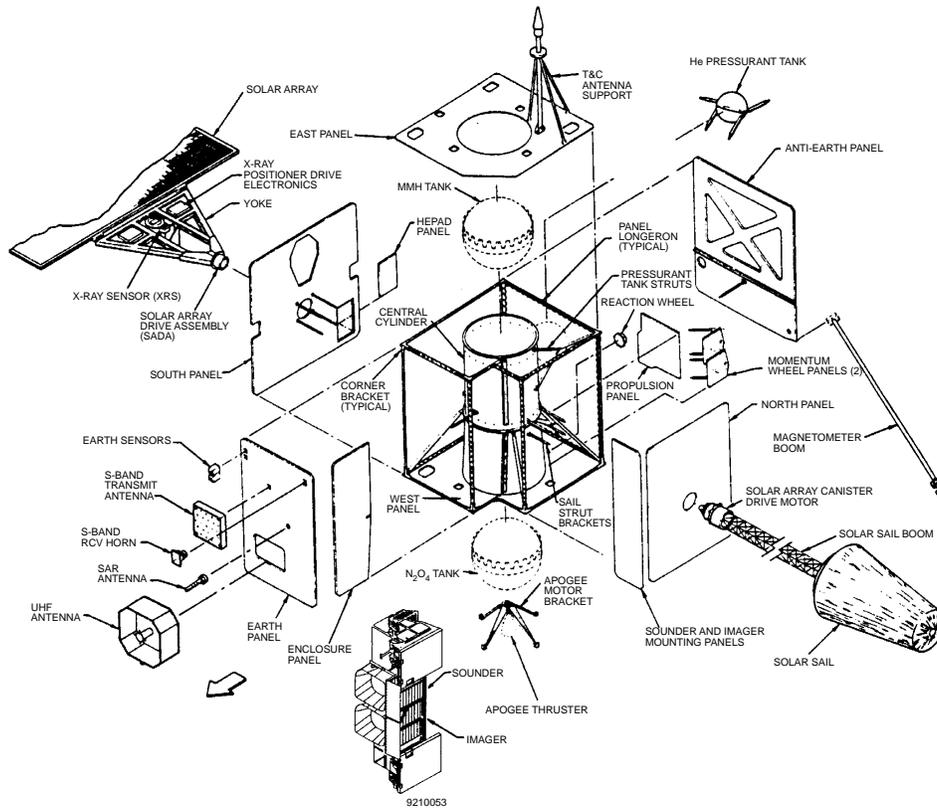
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Revision 1

The Spacecraft is modular in design, allowing for assembly and test accessibility. It is made up of the propulsion module, electronics module, four major panels (earth, north, south, and anti-earth facing), the solar array and drive, the solar sail and boom, and Imager, Sounder, and space environment sensors. In its on-orbit operational configuration, the spacecraft is about 26.9 meters (88.3 feet) in overall length (solar sail to trim tab), about 5.9 meters (19.3 feet) in overall height (telemetry and command antenna to the dual magnetometers), and 4.9 meters (16.0 feet) in overall width (dual magnetometer to UHF antenna).

The spacecraft is designed for the Atlas I or Atlas II launch vehicle (adaptable to Space Transportation System). The on-orbit operational life is 5 years with the capability to maintain stationkeeping at $\pm 0.5^\circ$ in longitude and $\pm 0.5^\circ$ in latitude. The spacecraft provides for simultaneous and independent operation of the Imager and Sounder instruments over its lifetime and is capable of generating signals based on the image motion compensation (spacecraft orbit and attitude) and mirror motion compensation adjustments (spacecraft internal dynamics), with the capability to reprogram the on-board computer after launch.

Spacecraft Expanded Configuration



In contrast to the current GOES spacecraft, the GOES I-M design features three-axis stabilization, rather than spin stabilization, enabling the Imager and Sounder to continuously observe the earth, and thus monitor, track, and acquire extensive data on dynamic, short-lived weather events. The Imager and Sounder are now independent instruments that also can be operated simultaneously. The Imager has 5 imaging channels and the Sounder 19 sounding channels. In addition, the space environment monitor is provided with two more energetic particles sensor channels, broadening the range of particle energies that can be detected. The transmission of weather facsimile data, which was time-shared in the earlier GOES, is now independent of the Imager and Sounder instruments.

GOES with Imager and Sounder Installed

