

S2393 SAT-A/O-20000119-00007  
INTELSAT LLC  
INTELSAT 511 (incl)



September 3, 2003

David B. Meltzer  
General Counsel &  
Senior Vice President for  
Regulatory Affairs

*Satellite Division*  
~~Ms. Marlene H. Dortch~~  
Secretary  
Federal Communications Commission  
236 Massachusetts Avenue, N.E., Suite 110  
Washington, D.C. 20002

RECEIVED

SEP - 3 2003

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Re: De-Commissioning of INTELSAT 511  
Call Sign: S2393

Int'l Bureau

SEP 04 2003

Front Office

Dear Ms. Dortch:

This letter follows up on a telephone call that Intelsat staff made yesterday, September 2, 2003, to International Bureau staff to report that the eighteen-year-old INTELSAT 511 satellite had been de-commissioned on August 30, 2003 due to a severe in-orbit anomaly described below. This emergency de-commissioning occurred several months prior to the planned end-of-life maneuver for the satellite. Intelsat staff relocated the communication traffic on INTELSAT 511's two active transponders to other Intelsat satellites in the orbital vicinity immediately upon detection of the anomaly.

Launched in June 1985, INTELSAT 511 was the last of the Intelsat V series of satellites in operation. It had been operated in inclined orbit since January 1993. The satellite was East/West station-kept at 29.5° W.L. (330.5° E.L.) with an orbital inclination of 7.8° at the time of the anomaly.

At 23:06 UTC (07:06 p.m. EDT) on August 29, 2003, un-commanded status changes occurred in the Attitude Determination and Control Electronics (ADCE) that caused seven thrusters on INTELSAT 511 to fire continuously. The high disturbance torque quickly drove the spacecraft off from the Earth pointing attitude. The satellite's on-board control safety system, which was designed to terminate thruster firings under this circumstance, apparently malfunctioned as a result of the same event, which is believed to be Electro Static Discharge (ESD).

The ground system immediately detected the abnormal satellite state. When Intelsat staff re-established commanding capability 48 minutes later, the satellite's thrusters were disabled immediately. By that time, however, the propellant reserved for de-orbiting the satellite had been completely depleted and the satellite was tumbling with high angular rates.

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The angular rates were too high to restore nominal pointing control. To maintain telemetry and commanding in a predictable pattern, Intelsat staff stabilized the satellite's angular motion by using the residual propellant and helium gas. The satellite's solar arrays were then rotated to charge the batteries and power the house-keeping units. Once the situation was stabilized, track and range data were collected to determine INTELSAT 511's orbit.

Several hours later, Intelsat staff determined that the satellite's orbit was 80x10 km above the geosynchronous altitude. Without propellant, the only option was to place the satellite in a safe state.

At 16:00 UTC (12:00 p.m. EDT) on August 30, 2003, Intelsat staff depleted the INTELSAT 511's remaining helium gas to further reduce the pressure in the propellant tanks. A set of thrusters was selected such that the expelled gas increased the perigee altitude. This was followed by firing the remaining pyrotechnics, discharging the battery cells, and turning the telemetry transmitter off. The satellite was completely decommissioned by 19:07 UTC (03:07 p.m. EDT).

MIT Lincoln Laboratories determined that the final orbit of INTELSAT 511 is 80x12 km above the geosynchronous altitude with 230° in the argument of perigee. With this altitude, the satellite drifts at an averaged rate of 0.6° per day westward and crosses the equatorial plane at 24 km (descending node) and 65 km (ascending node) above the geosynchronous altitude. By comparison, the standard maximum altitude for station-kept satellites within the  $\pm 0.05^\circ$  orbital control box is approximately 14 km above the geosynchronous altitude. The long term evolution of INTELSAT 511's orbit is currently under assessment and we will advise the FCC on the results of this assessment.

Sincerely,

A handwritten signature in black ink, appearing to be "David B. Meltzer", written over a horizontal line.

David B. Meltzer  
General Counsel and  
Senior Vice President, Regulatory Affairs