caused yaw and roll rates that the flight control system could not correct. As a result, attitude control was lost and the thrusting sustainer pivoted the missile to a retrofire attitude before the vehicle could be stabilized. After the booster package was jettisoned, the missile was stabilized and decelerating in the retrofire mode by 148 seconds. The sustainer continued thrusting in this attitude until 282.9 seconds when reentry heating apparently caused sustainer shutdown and vehicle breakup.

464. 5039D AC-59 (FLTSATCOM), 6 Aug 81, Response Mode NA, Flight Phase 1 and 5: The basic mission was accomplished although three increasingly severe shock events were recorded at 56.2, 70,7, and 120.8 seconds. The structural damage sustained by the spacecraft severely limited on-orbit operations.

466. 76E (NAVSTAR VII), 18 Dec 81: Response Mode 2, Flight Phase 1: Shortly after clearing the launch tower at an altitude of about two tower heights, the thrust performance of the B1 engine began to decay. The engine was shut down completely by 7.4 seconds. The unbalanced thrust caused the missile to pitch over to the right, and travel horizontally for about one second. It then pitched toward the ground. A small explosion occurred about one-third of the way down, followed by a larger explosion when the missile impacted the ground directly behind the launch pad about 19 seconds after liftoff. Cause of the engine failure was plugging of the gas-generator fuel-cooling parts that resulted in a gas-generator burn-through.

477. 5042G AC-62 (Intelsat V), 9 Jun 84, Response Mode 4T, Flight Phase 4: Performance was normal until an abnormal shock event occurred at Atlas/Centaur separation. Subsequent data indicated that a Centaur oxygen tank leak resulted in a loss of 1483 pounds of LOX during Centaur first burn. The leak resulted in the LOX tank pressure falling below the LH2 tank pressure, which led to collapse of the intermediate bulkhead during the coast phase. Bulkhead collapse caused unexpected tumbling forces during coast. The Centaur engines restarted after coast, but burned for only 6 or 7 seconds of a planned 90-second burn.

489. 5048G AC-67 (FLTSATCOM F-6), 26 Mar 87, Response Mode 4T, Flight Phase 1: Vehicle performance was normal till 48.4 seconds, when the vehicle was struck by lightning. As a result, the guidance computer commanded a hard right turn which caused vehicle breakup due to inertial and aerodynamic loads. RSO sent destruct at 70.7 seconds.

498. 5050 AC-70 (BS-3H COMSAT), 18 Apr 91, Response Mode 4T, Flight Phase 3: Atlas performance was normal. Although both Centaur main engines began the start sequence properly, the C-1 turbo-machinery decelerated and stopped, leaving the C-1 engine thrust at the ignition level. Air entering through the stuck-open check valve liquefied and froze in the LH2 pump and gear box of the C-1