D.2.2 Atlas Failure Narratives

The following narratives provide the available details about each Atlas failure since the beginning of the Atlas program. The narratives are numbered to match the flight-sequence numbers in Section D.2.1.

1. 4A, 11 June 57, Response Mode 4T, Flight Phase 1: Flight appeared normal for 24.7 seconds when drop in fuel supply to B2 engine produced a drop in performance and shutdown. Both engines moved to hardover in pitch to compensate for thrust asymmetry. The B1 engine failed at 27 seconds. A fuel fire was observed in aft end after thrust was lost. The missile continued to rise, reaching an altitude of 9,800 feet at 38 seconds. Missile was destroyed by safety officer 50.1 seconds after liftoff. Thrust unit and other hardware impacted about 1/4 mile south of launch pad (105° flight azimuth).

2. 6A, 25 Sep 57, Response Mode 4, Flight Phase 1: Flight appeared normal until about 32.5 seconds after liftoff, when performance level of both engines dropped to 35% of normal. Both engines shut down at 37 seconds. Missile was destroyed at 63 seconds. Loss of thrust was due to loss of LOX regulator in the booster gas generator. Major components impacted about 8000 feet downrange and 1000 feet right of flight line.

5. 13A, 7 Feb 58, Response Mode 4, Flight Phase 1: The B2 turbopump and engine stopped operating about 118 seconds due either to loss of LO_2 regulator reference pressure or a control-system failure. The B1 engine ceased to operate 0.3 second later. Failure was attributed to shorting of a vernier engine feedback transducer due to aerodynamic heating. Propellant sloshing that began building up at about 100 seconds led to missile instability. Vehicle broke up at 167 seconds. Impact occurred about 280 miles downrange and about 3 miles crossrange.

6. 11A, 20 Feb 58, Response Mode 4T, Flight Phase 1: Vernier engine was hardover from 51.9 seconds to 89.4 seconds, then returned to null until 104 seconds, then went hardover again. Other systems appeared normal until 109.6 seconds, when divergent oscillations began in rate-gyro outputs and engine positions. All engines reached stops by 114.3 seconds and continued thereafter to oscillate between stops until loss of thrust at 124.8 seconds. Vehicle breakup occurred one second later. Probable cause of oscillation was a component failure in flight control system. Vehicle impacted about 105 miles downrange and 8 miles right of flight line.

7. 15A, 5 Apr 58, Response Mode 4, Flight Phase 1: Booster engines shut down prematurely at 105.3 seconds (instead of planned 127 seconds) due to B1 turbopump failure. Since B1 chamber pressure drives the gas generator, the B2 turbopump and engine also stopped. Impact was 180 miles downrange and slightly left of flight line.