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USAF Manned Aircraft Combat Losses 1990-2002

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Abstract: Weak air defenses in Afghanistan during Operation ENDURING FREEDOM in 2001 and 2002 failed to down a single U.S. Air Force (USAF) aircraft. In operations between 1990 and 2000, however, the USAF lost 17 airplanes in combat, including 14 over Iraq and 3 over the former Yugoslavia. Thirteen USAF airplanes fell to Soviet-designed surface-to-air missiles (SAMs): 7 to heat-seekers (infrared) and 6 to missiles guided by radar. Antiaircraft artillery (AAA) downed 3 airplanes. One other aircraft maneuvered out of control after falsely perceiving enemy aircraft fire. Allied air superiority assured that no USAF airplanes were lost to enemy aircraft, either in aerial combat or because of enemy raids on friendly airfields. Given the number of sorties flown, the number of aircraft lost is minuscule. For example, during Operation DESERT STORM against Iraq in 1991, the USAF lost a total of 14 aircraft after flying more than 29,300 combat sorties, or .048 percent. This was against an enemy with 16, 000 SAMs, 7,000 antiaircraft guns, and 750 combat aircraft. During Operation ALLIED FORCE against Serbia in 1999, the USAF lost one F-16 after more than 4, 500 F-16 sorties, or .02 percent. Analysis of the aircraft losses suggests effective countermeasures. Superior fighters and destruction of enemy airfields suppresses the threat of interceptors. Stealth technology provides protection against both radar-guided and heat-seeking SAMs. Flying high, fast, and at night reduces the risk of destruction by relatively small heat-seeking SAMs or AAA. For aircraft that fly slow and low during daylight, flares and armor provide some protection against heat-seekers and AAA. High-speed anti-radiation missiles (HARMs), electronic jamming, destruction of enemy command and control centers, dispensing **chaff**, and launching decoys counter larger radar-guided SAMs. Flying unpredictably and using standoff weapons, unmanned aircraft, and cruise missiles also reduce manned aircraft losses.

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