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USAF Attributes $300 Million B-2 Bomber Crash to Hydraulic Coupling Failure

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A recent U.S. Air Force investigation has concluded that a critical hydraulic coupling failure caused the December 2022 crash of a B-2A Spirit stealth bomber at Whiteman Air Force Base, Missouri, resulting in damages exceeding $300 million. The Accident Investigation Board, in a recently disclosed report, pinpointed a malfunction in the truck position

sequence valve's CryoFit hydraulic coupling as the primary cause of the incident.

The aircraft, tail number 90-0041, was conducting a routine mission to Joint Base Pearl Harbor-Hickam, Hawaii, when trouble arose during its return landing. While approaching Runway 01, the crew received alerts from both the primary and backup hydraulic systems, indicating leaks. During the landing gear deployment, the left and nose gears extended normally, but the right main landing gear failed to deploy fully.

The crew initiated emergency procedures, successfully lowering all three landing gears into a locked position. However, upon touchdown, the left main landing gear collapsed, forcing the left wing to drag along the runway for several thousand feet. This caused the rupture of the left fuel surge tank, sparking a fire that spread to the left outboard fuel tank. Firefighters responded promptly and extinguished the blaze after several hours, with damage to the airfield itself estimated at around $27,500. Fortunately, the crew escaped without injury.

Further analysis by the investigation board identified additional factors contributing to the accident. The main landing gear's design showed vulnerabilities, specifically with the lock link assembly moving out of the necessary locked position during emergency gear extension. This mechanical flaw played a role in the gear collapse. Moreover, a delay in applying Aqueous Film Forming Foam (AFFF) fire suppressant allowed the fire to spread and increase external damage. Importantly, investigators found no evidence of crew error contributing to the mishap.

This incident represents the second loss of a B-2 bomber in the history of the program. The first crash occurred in 2008 at Andersen Air Force

Base, Guam, where a faulty sensor provided incorrect airspeed data, causing a stall during takeoff. In both crashes, the aircrews ejected safely. Following these events, the Air Force's B-2 fleet stands at 18 operational aircraft, with a 19th unit reserved for testing and training.

The crash highlights the critical importance of maintaining and inspecting hydraulic components on sophisticated military aircraft. The B-2's stealth capabilities and strategic role demand stringent upkeep of all systems to ensure operational readiness and safety. In response, the Air Force has implemented measures aimed at addressing the identified mechanical vulnerabilities and improving the reliability of the remaining B-2 bombers.

The loss of this advanced stealth bomber underscores the challenges inherent in operating cutting-edge aviation technology. It also serves as a reminder of the continuous need for rigorous safety protocols and prompt maintenance actions to mitigate risks.

To sum up, the investigation into the Whiteman Air Force Base crash reveals how a single hydraulic coupling failure, combined with design issues and delayed fire suppression, culminated in a costly accident. The Air Force's efforts to rectify these problems aim to safeguard the fleet and preserve the mission-critical capabilities the B-2 Spirit provides in national defense.