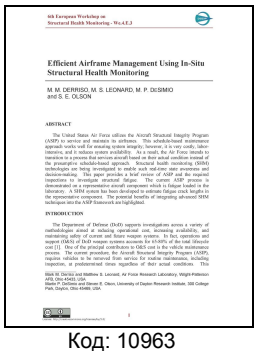

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# Efficient Airframe Management Using In-Situ Structural Health Monitoring

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The United States Air Force utilizes the Aircraft Structural Integrity Program (ASIP) to service and maintain its airframes. This schedule-based maintenance approach works well for ensuring system integrity; however, it is very costly, labor-intensive, and it reduces system availability. As a result, the Air Force intends to transition to a process that services aircraft based on their actual condition instead of the presumptive schedule-based approach. Structural health monitoring (SHM) technologies are being investigated to enable such real-time state awareness and decision-making. This paper provides a brief review of ASIP and the required inspections to investigate structural fatigue. The current ASIP process is demonstrated on a representative aircraft component which is fatigue loaded in the laboratory. A SHM system has been developed to estimate fatigue crack lengths in the representative component. The potential benefits of integrating advanced SHM techniques into the ASIP framework are highlighted.

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**Ключевые слова:**

## Содержание