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TECHNICAL
R E P O R T

Challenges and Issues with
the Further Aging of
U.S. Air Force Aircraft

Policy Options for Effective Life-
Cycle Management of Resources

Jean R. Gebman

Prepared for the United States Air Force

Approved for public release; distribution unlimited



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Summary

Over the next 20 years (2008–2028), further aging of already-old aircraft will introduce additional challenges and issues for aircraft operators, including the U.S. Air Force. This report identifies those challenges and issues (see pp. 23–40) and explores policy options (see pp. 41–43) for addressing them in ways that can contribute to effective life-cycle management of resources. The report draws on over a decade of Air Force–sponsored research at RAND, including RAND’s analysis of alternatives for KC-135 recapitalization. Although much of the report addresses the Air Force’s experiences with its aircraft, other operators of already-old aircraft face similar challenges and issues. This report aims to familiarize a broad range of managers and policymakers with the issues that must be addressed to best inform future resource-allocation decisions.

The technical challenges relate to structures, propulsion, and systems. The institutional challenges include limitations on independent verification of fleet status and future condition, limitations on information needed for engineering analyses including risk assessment, and an overall scarcity of resources. Example issues include (1) whether to develop sustainment master plans, (2) sufficiency of the level and composition of investments in remaining-life activities related to sustainment, and (3) the adequacy of methods used to establish service-life goals. The report uses a systems-engineering paradigm that breaks the set of challenges and issues down into their major elements and then analyzes how each element relates to values that are important to the customer. Such a value structure can help decisionmakers set resource-allocation policies and priorities.