

CH-53K Heavy-Lift Helicopter Program Acquisition Case History



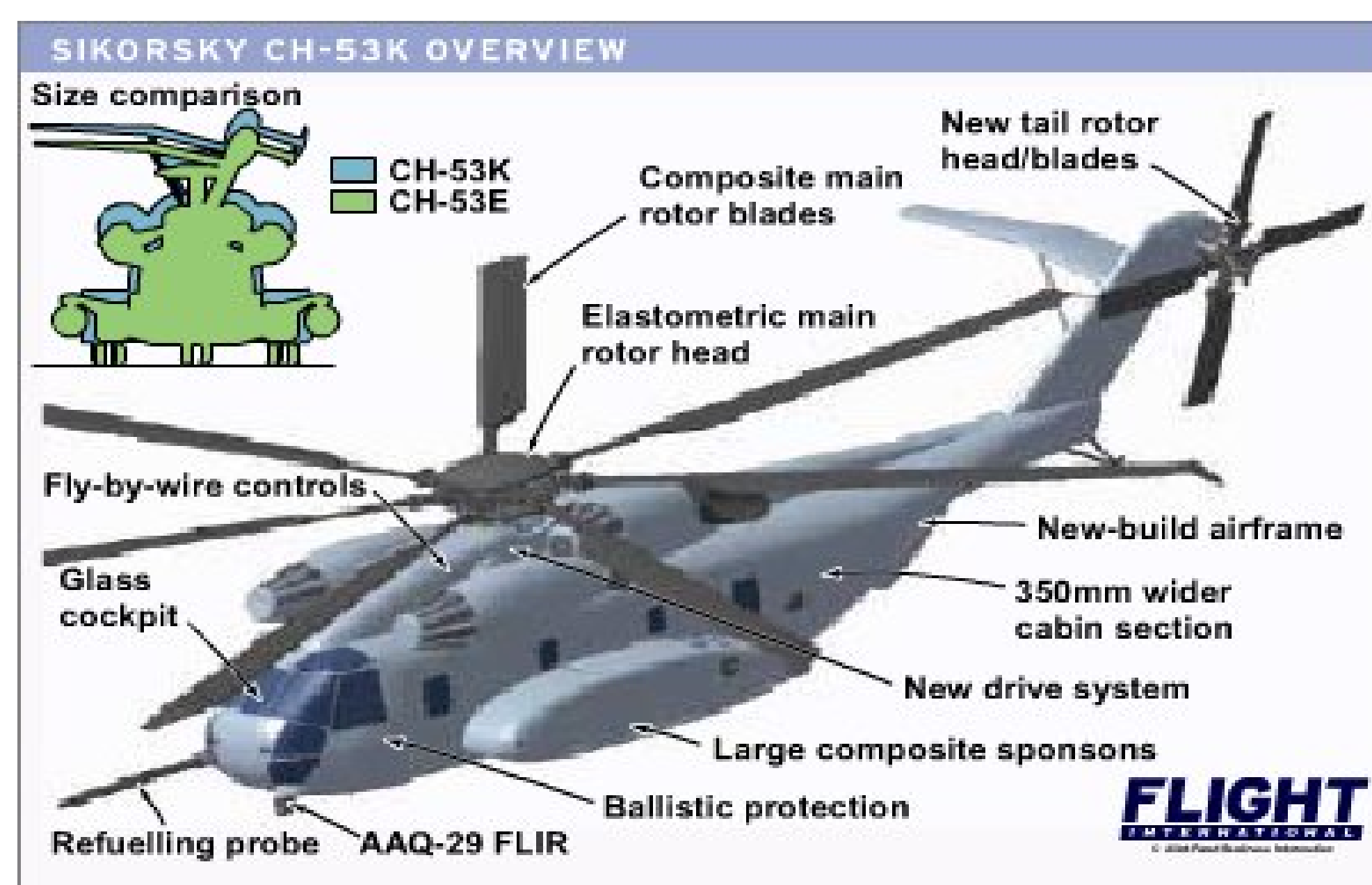
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Abstract

The purpose of this research is to analyze the acquisition process of the U.S. Marine Corps (USMC) CH-53K King Stallion heavy-lift helicopter. With the ability to carry 27,000 lbs over 110 nm in hot temperatures and within the same shipboard logistic footprint as its predecessor, the CH-53K will be the backbone of the USMC's ship-to-shore aviation operations. However, numerous performance setbacks have incurred significant cost growth for the USMC and delayed the aircraft's deployment to 2023–2024, two decades after the program was initiated in 2003. This research examines the program, in the format of a case history, to better understand the decisions and scenarios that led to increased cost growth and delayed schedules. The case history is intended to educate readers on the numerous complex considerations found within any acquisition process in the hopes of applying this program's lessons learned to future programs to provide the best solution for the warfighter.



CH-53K King Stallion lifts a JLTV during testing demonstration in Patuxent River, MD.



Upgraded features of CH-53K within equivalent shipboard logistical footprint as CH-53E.

CH-53K Lessons Learned

- The root causes for cost and schedule delays within the CH-53K program are an overly aggressive schedule, performance setbacks from development of immature technologies, production of an unstable design, the addition of cybersecurity requirements after the production decision, contractor staffing challenges, and a change in facilities mid-production.
- The USMC should justify procurement quantity with operational availability requirements and system maintenance cycles instead of personnel end strength to better support the system throughout its lifecycle and mitigate lifecycle cost growth.
- Foreign military sales is not a reliable method to reduce average per unit costs.

Conclusions

Performance setbacks, although costly, should be expected when pushing the boundaries of technological maturity. Lessons from the CH-53K case history that can be applied to all major defense acquisition programs are:

- The trade space between cost, schedule, and performance within the defense acquisition process must be understood to provide the warfighter with the best capability given fiscal constraints.
- Complex systems and immature technologies will likely undergo several rounds of testing to achieve its desired performance. Therefore, cost growth and schedule delays from performance setbacks should be anticipated for complex systems.
- Procuring a sufficient number of systems prevents significant life-cycle cost growth.
- Well-defined requirements are essential to meet warfighter needs and maintain program baselines.



Colored oil smoke test identifies cause of engine gas re-ingestion issue on CH-53K.

Further Research Areas

- Research on how to best deploy the CH-53K in conjunction with current systems, especially the MV-22 with its similar mission sets, would benefit the USMC as they continue to adapt their warfighting strategy.
- An analysis on the cost growth of immature technologies and predictable performance setbacks from previous major defense acquisition systems could improve current cost estimating methodologies.