

# CH-53K® King Stallion®



In May 2024, DOT&E approved a tailored update to the CH-53K TEMP Revision C. DOT&E directed the Navy to develop and route for DOT&E approval a full TEMP revision (Revision D), which should include an update to the LFT&E Strategy, prior to the start of FOT&E events in FY25. The Navy is working on the revision, with an estimated submission for approval in 2QFY25. In FY24, the Navy conducted operational cyber survivability testing of the Digital Interoperability Medium system, and a developmental cyber test assessment of updated aircraft survivability equipment. Data analyses from these tests are ongoing and will be reported in a DOT&E FOT&E report in FY25. FOT&E tests have been delayed in the last two years and are now scheduled for the first half of FY25.

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## SYSTEM DESCRIPTION

The CH-53K is a three-engine, dual-piloted, heavy lift helicopter intended to replace the aging CH-53E helicopter. The CH-53K mission payload external load transport is more than twice the CH-53E capability. The triple hook system is designed to transport independent external loads, which allows for three different location drops per sortie. Other major improvements are the replacement of mechanically actuated flight controls with a fly-by-wire system, and a digital interoperability communications system. CH-53K is equipped with aircraft survivability equipment, which consists of the Department of Navy Large Aircraft Infrared Countermeasures system with advanced threat warning sensors, radar warning receiver, and countermeasure dispensing system.

The Marine Corps will support CH-53K Organizational-Level (O-level), Intermediate-Level (I-level), and Depot-Level (D-level) maintenance concepts. The number of personnel per squadron required to maintain the CH-53K is expected to remain the same as for the CH-53E.

## MISSION

Units equipped with the CH-53K aircraft provide the Marine Air-Ground Task Force with assault support to include maritime special



*CH-53K Secondary Missions Testing*

operations, by transporting heavy equipment, armored vehicles, combat troops, and supplies from ships to inland locations under all weather conditions. Secondary CH-53K missions include tactical recovery of aircraft and personnel, helicopter air-to-air refueling, air evacuation, aerial delivered ground refueling, forward arming and refueling point operations, air delivery, and rapid insertion and extraction operations.

## PROGRAM

The CH-53K is an Acquisition Category IC program. The program of record stipulates the procurement of 200 aircraft. The program completed IOT&E in 3QFY22 in accordance with a DOT&E-approved test plan. DOT&E provided a combined IOT&E

and LFT&E report in December 2022, in support of the full-rate production decision, which the Navy approved later that month.

The Navy submitted a tailored update to CH-53K TEMP Revision C for DOT&E approval, to support execution of integrated tests (IT) and the first period of FOT&E events to determine operational effectiveness, suitability, and cyber survivability of the CH-53K configured with Data Transfer Unit and Defensive Electronic Countermeasures System Replacement (DDSR) and Digital Interoperability (DI) Medium communications systems. DOT&E approved this tailored update in May 2024. DOT&E directed the Navy to develop and route for DOT&E approval a full TEMP revision (Revision D) which should include an update to the LFT&E



Strategy. DOT&E stipulated that Revision D should be completed prior to the start of FOT&E events in FY25. TEMP Revision D scope should include the verification of corrections to deficiencies identified in IOT&E that DOT&E addressed in previous reports.

The Navy conducted two IT periods in FY23 to collect data for secondary missions and aircraft survivability equipment, and one IT for DI Medium in 2QFY24. Moreover, the Navy conducted a cooperative vulnerability investigation and adversarial cybersecurity developmental T&E for DDSR, and a cooperative vulnerability and penetration assessment (CVPA) and an adversarial assessment (AA) for DI Medium in FY24. The CVPA and AA were conducted in accordance with a DOT&E-approved operational test plan and observed by DOT&E. The CVPA and AA did not include assessing DDSR in an operationally relevant environment.

Assessment of test data from this FOT&E will inform the CH-53K fleet prior to the first Marine Expeditionary Unit deployment. DOT&E will publish an FOT&E report after testing is complete.

Phase II LFT&E has not yet been resourced, planned, and scheduled. DOT&E has been reporting since FY17 that the Navy has yet to fund the Phase II LFT&E in accordance with the DOT&E-approved TEMP. The DoD Office of Inspector General opened an audit into the Phase II effort in September 2023 and released a report on

their findings in November 2024. In June 2024, DOT&E proposed to the CH-53K Program Office a re-scoped Phase II LFT&E, addressing adequate T&E of updated operationally representative threats to complete the survivability assessment. DOT&E has also proposed a new threat working group to evaluate the survivability of the aircraft in the modern, peer-competitor environment expected at deployment plus 10 years. The program office provided feedback on DOT&E's proposal but a new threat working group to evaluate the modern threat environment has not yet been agreed to or convened.

## » MAJOR CONTRACTOR

- Sikorsky Aircraft Corporation, a subsidiary of Lockheed Martin Corporation – Stratford, Connecticut

## TEST ADEQUACY

Operational cyber survivability testing and IT of the DI Medium system were conducted in FY24, in accordance with DOT&E-approved operational test plans. DOT&E observed the testing. The FOT&E, previously planned for FY24, is now scheduled for FY25 due to delays in test article aircraft modifications. Following the completion of FOT&E, DOT&E will publish an FOT&E report, to include results from the operational cyber survivability testing and IT, in FY25.

## PERFORMANCE

### » EFFECTIVENESS AND SUITABILITY

Data analyses for the FOT&E completed thus far are ongoing, precluding an assessment of operational effectiveness or



*CH-53K helicopter transports an F-35C between test sites in Maryland and New Jersey, April 2024*

suitability in this article. DOT&E will publish the results in an FOT&E report, expected in FY25.

## » **SURVIVABILITY**

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Data analyses for the cyber survivability testing completed in FY24 are ongoing, precluding an assessment in this article. DOT&E will publish the results in an FOT&E report, expected in FY25.

As noted in the December 2022 combined IOT&E and LFT&E report, the aircraft survivability assessment for CH-53K will not be complete without the data that would be provided on operationally representative threats during Phase II LFT&E.

## **RECOMMENDATIONS**

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The Navy should:

1. Continue to address recommendations found in the December 2022 combined IOT&E and LFT&E report, to include the survivability recommendations from the classified annex, as recommended in the FY23 Annual Report.
2. Conduct a CVPA and an AA to characterize DDSR cyber survivability in an operationally relevant environment.
3. Coordinate with DOT&E to develop a new Phase II LFT&E program to assess CH-53K vulnerability against operationally relevant threats, and fully fund that LFT&E program.
4. Establish a threat working group to evaluate the expected threat environment for the first 10 years of deployment and develop an approach with DOT&E to evaluate the survivability of the aircraft in the modern threat environment.
5. Develop and route for DOT&E approval a full TEMP revision (Revision D).