

# Powerful Recorder Solution Meets New Rotorcraft Regulations

**CURTISS-  
WRIGHT****DEFENSE SOLUTIONS**

## Challenge

- Large flight data recorder (FDR) storage capacity
- Current and anticipated regulation requirements including image recording
- Space constrained environment

## Solution

- Modern FDR with sufficient capacity and a high speed interface
- ED-112a compliant FDR with image recording capability
- Compact single box solution

## Results

- 200x the storage of the existing solution
- Rotorcraft meets all jurisdictional recording regulations
- SWaP optimized solution with reduced operational overhead

## Challenge

A rotorcraft manufacturer wanted to upgrade its existing flight data recorder (FDR) to provide its customers with more information to ease maintenance and to ensure upcoming aircraft regulations could be met. As the amount of information on-board modern aircraft increases, so do recording capacity and bandwidth requirements. FDRs are optimized to meet extreme environmental challenges and to record a small, by today's standard, number of mandatory parameters. Thus they typically have limited storage and may not be able to process large amounts of data.

As well, the regulations that aircraft and their FDRs are required to meet, change over time in order to enhance safety. For example, the aircraft manufacturer had customers who would need to operate their rotorcraft in

one jurisdiction that was introducing new image recording requirements in January 2020 that followed an accident involving a police helicopter in 2013. This resulted in the requirement to install crashworthy image recording equipment on helicopters conducting state operations, such as police and search and rescue (SAR) operations. These requirements included the introduction of cockpit image recording as well as meeting EUROCAE Minimum Operating Performance Specification (MOPS) ED-112A, ED-155 or equivalent standards.

The solution needed to be as compact as possible as space is at a premium on the rotorcraft. A single box solution, as opposed to using a separate flight data acquisition unit, would reduce system SWaP while also lowering installation and operational complexity.



Fortress - Flight Data Recorder

## Solution

The solution the aircraft manufacturer chose was the [Fortress](#) flight data, voice, datalink, and image recorder. Curtiss-Wright has been a leading designer of proven cockpit voice and flight data recorders for over 60 years. Fortress is the most modern FDR on the market and features a large storage capacity (200x times larger than the FDR it is replacing) and a high-speed interface fully capable of delivering vast amounts of mandatory/additional maintenance, voice, and image data to the crash protected memory.

The Fortress product line meets all current and anticipated regulations. They surpass the requirements of the upcoming 2021 EASA minimum 25-hour cockpit voice recording mandate and include a provision for image recording. Believed to be the industry's first to meet the demanding requirements of EUROCAE ED-112A, Fortress enables the aircraft data to be used for more efficient operations, allowing for additional predictive maintenance and real-time playback of data and voice communications. The EASA certifications include ETSO-C123c, ETSO-C124c, ETSO-C176a and ETSO-C177a.

Fortress was designed to be compact and lightweight and have a highly functional and modular interface. This allows it to be quickly adapted to unique requirements, such as those needed by the aircraft manufacturer. The supporting replay software from Curtiss-Wright was also upgraded to allow it to collect and replay the additional parametric flight data, cockpit audio and image data.

## Results

The result of choosing the Fortress solution was that the aircraft manufacturer could now provide a rotorcraft to its customers with the capacity to store operational and maintenance data. This data can be downloaded via an Ethernet connection (via a built in webserver) and even wirelessly by connecting the FDR to such a system. This means the hardware is already installed to perform tasks such as health and usage monitoring (HUMS), condition based monitoring (CBM), and flight data monitoring (FDM).

The ED112A certified recorder with image recording future proofs the aircraft against anticipated regulations. This includes the United Kingdom's Civil Aviation Authority (CAA) specification No. 23 – an additional requirement the aircraft manufacturer was targeting.

By choosing the compact, multi-function FDR, the manufacturer is able to free up valuable space for other equipment, as a separate recording devices are not required. Additionally, IP image data recording functionality enables the manufacturer to accommodate IP cameras in the future, further future proofing the system.