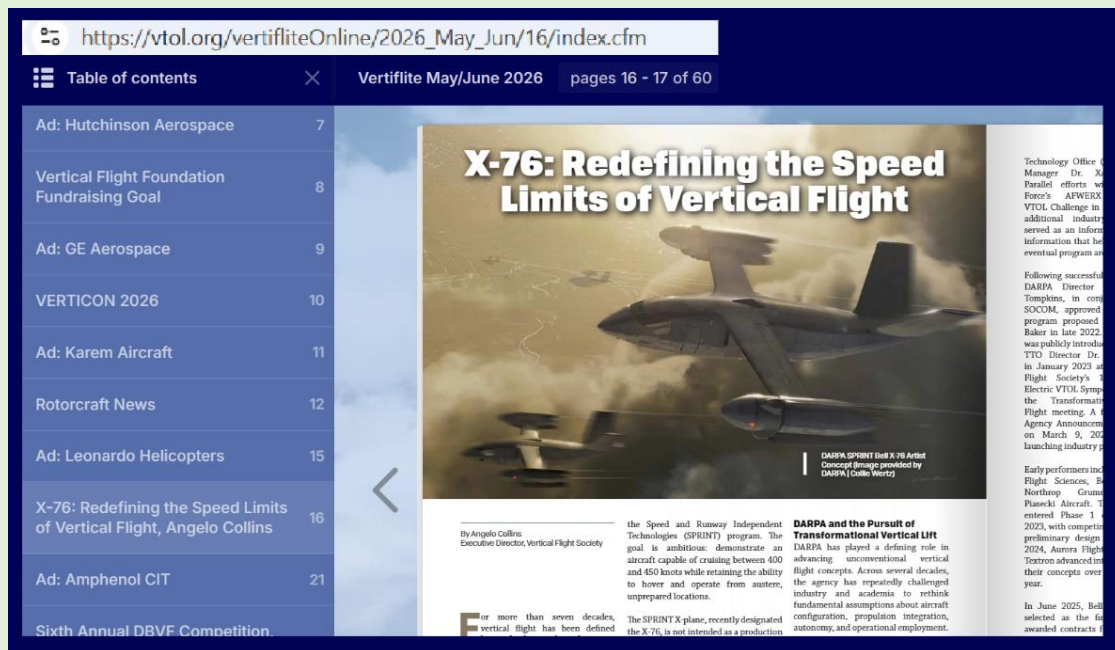


# Reflections On The DARPA X-76 Report

As a tiltrotor fan I greatly enjoyed the report about the futuristic DARPA X-76 experimental X-plane, written by Angelo Collins, in the [last issue](#) of the Vertiflite magazine.



The focus of the report is more personal than technical, but still correctly mentions that the X-76 "is not intended as a production aircraft but rather as a proof-of-concept technology demonstrator". My present post aims to shortly elaborate on the question WHY the X-76 is not intended as a production aircraft.

From a strictly technical point of view the reason is quite straightforward. The X-76 has a double propulsion system, parts of which complement each other - without the capability to also substitute one another. The aircraft operates either in high speed mode, or in low speed/hover mode. Transition is technically solvable but is still extremely complex. (Happens through the so called "stop-fold" process.) Except of the process of transition, one of the propulsion systems is idle, always.

We see, this duplicate system has nothing to do with the nowadays fashionable engineering directive of "redundancy". It does in no way improve reliability. Also, (especially) when you are a military aircraft, you can't afford the luxury of always carrying around a second propulsion system, which is no more than just cargo.

Recognizing the fact that the only purpose of the application of a double propulsion system is the effort to expand the (safe) operational speed range of the tiltrotor, I will - theoretically, at least - propose to Bell Textron to accept my alternative solution for the same purpose. The adaptive rotor/propeller solution described in the US 11,975,816 B2 patent (and also extensively supported by the [www.stallfreepropellers.com](http://www.stallfreepropellers.com) website) offers a fundamentally simpler implementation within the framework of the X-76 aircraft.

In the attached "[one-pager](#)" PDF there is a theoretical comparison of two versions of the same X-76, one built with the known architecture published by the DARPA group, and another one built using the proposed adaptive proprotor solution. The table has originally been generated by AI (Grok), and subsequently corrected by me. The only major correction is intentionally made in an evident form.