

HELICOPTER/SHIP SECURING TEST & ANALYTIC OPTIONS

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ABSTRACT

Helicopter/ship analysis, testing, and operations represent difficult tasks due to the many related mission components, the complexity associated with each component, and the interaction between the components.

The helicopter flight characteristics in the shipboard environment are primarily a function of the rotor systems, flight control systems, power plants, landing gear, and component interaction. The shipboard environment includes wind over the deck speed, direction, and turbulence, plus ship motion and a variety of visual environmental conditions. The ship configuration and flight deck can also have an impact on helicopter/ship applications.

Aircraft, ship, and environment not only affect helicopter/ship landing, but also affect the ability of the helicopter to be secured to the ship deck and/or traversed into the hangar. Helicopter/ship securing testing is normally conducted in conjunction with flight testing to develop launch/recovery envelopes using standard techniques developed by NAVAIR. Ambient environmental conditions like available ship motion and true wind speed may dictate the limits achieved during testing.

Technology has improved over the past several years, and analytic models have the potential to support helicopter/ship securing and traversing testing. Analytic models used to support helicopter/ship securing testing tend to emphasize the securing gear part of the problem or the helicopter part of the problem, but not both parts of the problem needed to support test requirements.

Specifications related to aircraft/ship securing and traversing exist but date back to the 1990s, and may be improved with enhanced helicopter/ship securing and positioning analytic options. It is important to develop improved aircraft/ship securing and traversing analytic modules and improved specifications to enhance the available support for upcoming new ship test programs and to improve future aircraft/ship operations.