



# Catapult Capacity Selector Valve Calculator

ONR Program Code 031

February 2011

## *At a Glance*

### What is it?

■ The Catapult Capacity Selector Valve (CSV) Calculator is a handheld electronic device with custom software that allows flight deck officers to accurately and quickly compute the proper CSV setting for an aircraft carrier steam catapult.

### How does it work?

- Automated, ruggedized personal digital assistant (PDA) calculates the CSV setting
- Setting based on parameters input by the catapult officers and electronic versions of the paper reference tables that reside on the PDA
- Calculator confirms that input data falls within the valid range and flags data that exceeds thresholds
- Software automatically loads reference table updates

### What it will achieve

- Improve catapult officers' safety aboard the flight deck
- Minimize catapult stress by ensuring the accuracy of settings

### Point of Contact

ONR TechSolutions  
(703) 696-0616  
techsolutions@onr.navy.mil

The CSV is a critical component of an aircraft carrier's catapult system because it controls the catapult's energy output. The current CSV procedure requires catapult officers to calculate the proper CSV setting by performing a series of



manual lookups in paper reference tables. Each manual lookup considers parameters such as aircraft type, weight, loading symmetry, power setting, flaps, density, altitude, cylinder elongation and head wind, which the catapult officer uses to page through reference tables. These reference tables are now stored on the PDA calculator. The PDA has a touch screen operable with gloved hands, a tethered stylus and a large navigation button. It is readable in the sunlight, is weather tolerant and has a battery life of approximately 14 hours.

The Catapult CSV Calculator was developed in response to a request submitted by a lieutenant commander from Naval Air Station, Whidbey Island. TechSolutions developed the calculator in conjunction with the Naval Air Systems Command and Specialty Systems, Inc. Final assessment and warfighter feedback was completed in January 2011 aboard USS Harry S. Truman.

**ONR TechSolutions:** TechSolutions is a rapid-response technology development program that funds government laboratories to produce prototype solutions to problems identified by fleet/force members. Warfighter input and feedback throughout the development process ensures prototypes meet fleet/force needs. Sailors and Marines can submit requests via <https://www.onr.navy.mil/techsolutions> (no account needed).

To receive calls for solution ideas, government researchers should register for an account at <https://www.onr.navy.mil/techsolutions>.

### People to People, People to Problems, People to Knowledge

*"The PDA will take out the ambiguity of the CSV setting and allow us to get one answer, as opposed to the information overload that the charts provide....It is absolutely easier to use."*

— Lt. Dan Decicco, USS Harry S. Truman Catapult Officer

[www.onr.navy.mil](http://www.onr.navy.mil)