Northrop Grumman is developing the Common Boost Segment (CBS) rocket motors in response to the company’s development of the OmegA launch system. These new CASTOR® rocket motors, the C300, C600 and C1200 are being developed from the ground up, using cutting-edge, innovative technology.

The CBS motors have roots in the strong heritage of Northrop Grumman’s large-diameter solid rocket booster and composite technology. This 12-foot-diameter composite case solid rocket motor uses materials and processes common to other Northrop Grumman programs, leading to efficiencies, modularity and affordability in launch vehicle design. The CBS is a critical component in developing the OmegA system as part of a new commercial launch service meeting the full complement of Evolved Expendable Launch Vehicle (EELV) mission requirements.

CBS yields both the first- and second-stage rocket motors for OmegA, including the aft skirt for each stage. All CBS manufacturing is performed at the Propulsion Systems division, Promontory, Utah site. The OmegA launch system is being developed by Launch Vehicles division in Chandler, Arizona.

Northrop Grumman has made substantial investments in the CBS program over the last three years, including significant additions of tooling and facilities, and the company plans to continue this level of effort.

**Facts At A Glance**
- CBS leverages design commonalities to reduce costs
- CBS motors are approximately 12 feet in diameter
- CBS program yields both first- and second-stage rocket motors for OmegA
- The C300 rocket motor contains more than 300,000 pounds of propellant
- The C600 rocket motor contains more than 600,000 pounds of propellant
- The C600 rocket motor’s thrust is more than two million pounds force
CBS Program
To date, the CBS program team has successfully achieved the following critical milestones:

- Preliminary Design Review
- Incremental Critical Design Reviews for insulated case, igniter, nozzle, thrust vector control, loaded motor, rocket motor assembly, aft skirts and a delta review for changes
- Booster Separation System development and Critical Design Review (ChemRing)
- Completed qualification testing on thrust vector control (Moog)
- Case Manufacturing Readiness Review for the build and Test Readiness Review for acceptance testing of the first four units
- Propellant development (numerous subscale and two full-scale 600-gallon mixes) and testing
- Manufacturing and testing of two 36-inch cases to validate structural margins and develop processing parameters
- Manufacture of five full-scale case segments followed by a successful completion of the first hydro-proof/structural load test in October 2017
- Structural acceptance testing of CBS cases—two aft segments and three forward
- Filament wound five cases
- The company has cast propellant into an inert aft motor segment and an inert forward segment
- One live aft motor segment has been cast with propellant
- One case burst test was successfully conducted

By the end of 2018, two more live motor segments will be cast in preparation for two static tests in April and August of 2019.

The first flight of the OmegA rocket, scheduled for 2021, will employ a C600 first stage and a C300 second stage rocket motor. The second flight of OmegA will also utilize the C600 and C300 configuration, with the addition of two GEM63XLT strap-on rocket motors.

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