

Thorski Design, LLC, 2/05 - Present

President/Principal Engineer

As founder of Thorski Design, LLC, an engineering company offering technical services to government and commercial customers in the aerospace industry, performed contracts including:

- *Mechanical, electrical, and I&T engineering for Orbital ATK and NASA GSFC on the TESS mission.* Lead development of twist capsule implementation including detailed design of mechanical components, harness, and SADA modifications. Developed test procedures, designed GSE, and conducted solar array deployments. Wrote integration procedures for solar array, SADA, and battery relay unit. Developed test scripts for battery, EPS components, SADA, and release mechanisms. Wrote lubricated mechanism life test plan covering SADAs, reaction wheels, solar arrays, and release mechanisms. Prepared and presented slides at CDR, TRR, and other milestone reviews.
- *Systems engineering and conceptual development for NASA GSFC Systems Engineering Directorate.* Developed multiple payload deployment concept to accommodate independent deployment of two spacecraft from a single launch vehicle. Designed release actuator mechanism with an adjustable tip-off, cam-operated cup/cone retention mechanism. Awarded US patent in 2017 for work on this project.
- *Systems, mechanical, and I&T engineering for NASA GSFC on the Magnetospheric Multiscale (MMS) mission.* Lead development of a shock isolation system for the ACS accelerometer system. Developed hardware, sensors, and custom software application for high-resolution measurement of the Magnetometer Boom hinge performance, deployment and impact energy analyses, and characterization of release actuator performance. Developed procedures, designed GSE, and conducted integration of the Axial Double Probe payloads to the spacecraft.
- *Mechanical engineering and I&T support for Orbital Sciences and NASA GSFC on the Glory spacecraft program.* Conducted extensive solar array hinge qualification testing, including development of custom data acquisition hardware and software. Implemented solar array deployment test program, designed GSE, and developed software for preloading the array during installation. Received a letter of commendation from NASA for efforts on the solar array test program. Developed procedures, designed GSE, and conducted integration of the TIM instrument to the spacecraft. Developed procedures and performed test and integration of GPS receivers, mains power control units, and nickel-hydrogen battery.

Additional independent projects include development of a software application for aerospace vehicle mass properties tracking, analysis, and prediction; development of microcontroller firmware for digital communication, sensor monitoring, and actuator control; and design and fabrication of data acquisition and controller hardware interface boards.

Professional Summary

- Over twenty years of experience in mechanical engineering and other disciplines supporting a variety of aerospace development contracts
- Twelve years of experience acting as mechanical system lead for three spacecraft missions

Areas of Expertise

- Spacecraft mechanical design
- Mechanisms and deployables
- Integration and test
- Mass properties
- Structural analysis
- Instrumentation
- Data acquisition systems
- Test software development

Spacecraft Missions

- TESS
- MMS
- Glory
- ACRIMSAT
- Formosat-3
- QuikTOMS

Orbital Sciences Corporation, 10/96 – 1/05

Senior Engineer/Principal Engineer

Provided mechanical engineering leadership for the ACRIMSAT, QuikTOMS, and Formosat-3 programs. Ensured that designs met mechanical system requirements, and that requirements were verified with a thorough test program. Performed analyses, wrote procedures, and conducted the following tests: random vibration, sine burst, sine sweep, acoustic, separation and array release, array deployment, alignment, and mass properties. Directed assembly of the flight structure, including build-up of primary and secondary structure components, installation of solar arrays, and installation of payloads. Specified the design of numerous GSE test items, mass simulators, hinge and array panel test fixtures, vibe/acoustic test adapters, and static load test adapters. Developed finite element models and performed quasi-static, normal modes, and random vibration analyses. Prepared and presented mechanical systems material at all major milestone reviews.

CTA, Incorporated, 10/92 – 10/96

Senior Engineer

Supported NASA Langley's Microgravity Program Support Office, providing detailed technical analysis of Space Station components and experiments. Performed static structural, normal modes, frequency response, transient response, and thermal analyses on Space Station experiments and experiment racks. Supported the I&T effort for NASA's Sensor Data Processing Facility at GSFC. Developed test plans and procedures covering various mission operations and day-in-the-life scenarios.

EER Systems, 5/91 - 10/92

Quality Assurance Engineer

Supported the installation of the APS-137 radar system in a fleet of U.S. Coast Guard C130s. Designed an automated radome lift mechanism to avoid potential damage to the new radar or radome.

Grumman Space Station Program Support Division, 8/90 - 2/91

Systems Engineer

Supported NASA's Space Station Freedom Program Office. Performed technical analyses on the Space Station thermal control system, electrical power system and solar arrays, and ESA's Man-Tended Free Flyer.

Education

BS, Mechanical Engineering, University of Virginia, 1990

