Michael D. Commons

Sr. Thermal Engineer

mcommons@vertexaerospace.com

EDUCATION

2012 **B.S. Mechanical Engineering**
University of Maryland, College Park, MD

EXPERIENCE

1/18 – Present **Joint Polar Satellite System-2 (JPSS-2)**
NASA/Goddard Space Flight Center

- Providing thermal analysis and support to Ball Aerospace for the OMPS instrument
- Working with Northrop Grumman on developing a GSE configuration for full system TVAC
- Sink temperature calculations for instrument and electronic radiators and other critical surfaces
- Developing a TVAC model along with sink panel size, placement, etc.

- Developed test support documentation (GSE TV/TB settings, test prediction results)
- Lead NASA Thermal Analyst when supporting shifts during TVAC testing.
- Responsible for correlating thermal model to test data post-TVAC.
- Responsible for the integration of the satellite thermal model with the test configuration
- Responsible for performing the satellite level Thermal Desktop model test analysis and presenting the thermal analysis results at engineering peer reviews
- Supported thermal and spacecraft subsystem engineering meetings, trade studies and development tests
- Knowledge of thermal coatings, thermal control system (TCS) hardware and thermal design techniques

5/20 – Present **Interstellar Mapping and Acceleration Probe (IMAP)**
Southwest Research Institute (SwRI)

- Lead thermal analyst for the CoDICE instrument
- Created thermal model of CoDICE instrument from the ground up including modeling PWBs
- Thermally designed CoDICE instrument to meet all thermal requirements
- Successfully completed PDR
- Working towards CDR

10/18 – 9/19 **Robotic Tool Stowage (RiTS)**
NASA/Goddard Space Flight Center

- Developed reduced Thermal Desktop and TRASYS models to go along with the detailed model delivered to JSC

Michael D. Commons
Sr. Thermal Engineer
mcommons@vertexaerospace.com

- Created a detailed thermal model of the Light Bar that was integrated with the full detailed RiTS model
- Ran a variety of analyses with the thermal model to show compliance with all listed thermal requirements
- Experience working with the ISS thermal model and complying with ISS specific thermal requirements
- Developing GSE configurations for both component and full system level TVAC tests

12/17 - 9/18 **Global Ecosystem Dynamics Investigation (GEDI)**
NASA/Goddard Space Flight Center

- Developed thermal design for the Bench Checkout Equipment (BCE) GSE
- Performed thermal analysis for BCE to predict TVAC performance and results
- Created TVAC test documentation and WOA's for all thermal integration work (thermocouples, heaters and MLI)
- Aided in integration of thermocouples, heaters and MLI in TVAC chamber
- Worked on all electrical connections of thermal hardware and verified connections and heater performance at the thermal monitoring station
- Generated necessary displays and temperature plots at the thermal monitoring station for use during TVAC test
- Supported shifts during BCE stand-alone and full system GEDI TVAC tests

7/15 – 12/17 **James Webb Space Telescope (JWST)**
NASA/Goddard Space Flight Center

- Supported and led integration tasks of flight-like GSE needed for successful TVAC testing
- Supported manufacturing and installation of MLI, temperature sensors, heaters and other thermal control equipment
- Developed thermal design to cool Auto-collimating Mirrors down to 32.8K +/- 0.5K and stabilize by day 35 of TVAC test in time to be used with the telescope
- Used Thermal Desktop create detailed and reduced GSE sub-models, correlated to test data and presented results at engineering peer reviews
- Used Thermal Desktop to develop and run analysis cases needed for successful TVAC test campaigns
- Supported 3 different, multi-month long TVAC test campaigns as lead GSE thermal engineer on console
- Wrote multiple technical reports detailing model correlations, GSE performance during test, etc.

6/12 - 7/15 **Magnetospheric Multi-Scale (MMS) Mission**
NASA/Goddard Space Flight Center

Michael D. Commons
Sr. Thermal Engineer
mcommons@vertexaerospace.com

- Supported the observatory Thermal Vacuum and Thermal Balance test thermal analysis
- Provided observatory Thermal Vacuum and Thermal Balance test support
- Developed Thermal Desktop models of the spacecraft test configuration
- Developed test support documentation (GSE TV/TB settings, test prediction results)
- Responsible for the integration of the observatory thermal model with the test configuration
- Responsible for performing the observatory level Thermal Desktop model test analysis and presenting the thermal analysis results at engineering peer reviews

- Supported thermal and spacecraft subsystem engineering meetings, trade studies and development tests
- Knowledge of thermal coatings, thermal control system (TCS) hardware and thermal design techniques
- Supported TV and TB tests at NASA/GSFC and NRL
- Performed thermal model correlation from Thermal Balance test data
- Performed STOP analysis for all critical spacecraft and instrument structures
- Supported launch operations at GSFC by monitoring thermal performance of spacecraft on console and running flight model on-orbit case sets

SKILLS

- Proficient in Thermal DesktopTM and SINDA/FLUINT
- Proficient in Microsoft Office
- Visual Basic/Excel Macros
- FEMAP experience
- CREO experience
- MatLab and Labview experience
- Data analysis

OTHER WORK

05/11 – 08/11 **Field Engineer Intern**
Clark Construction, Bethesda, MD

- Prepared and managed construction documents and records
- Monitored subcontractor performance
- Interpreted construction drawings and conducted field calculations/tests