

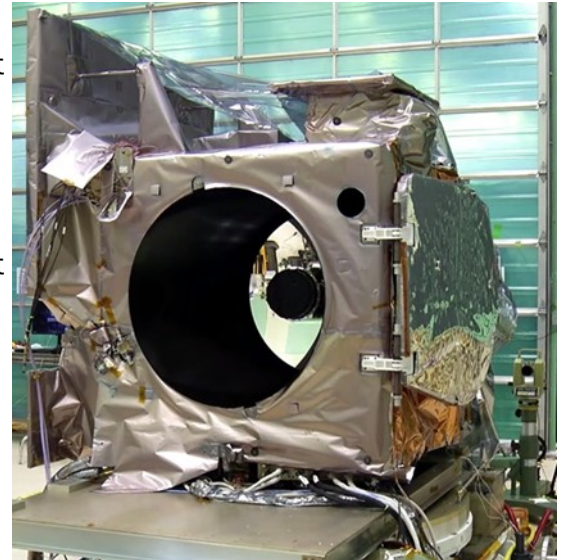


Projects

Advanced Topographic Laser Altimeter System (ATLAS)

The Advanced Topographic Laser Altimeter System (ATLAS) will be the sole instrument flown aboard the Ice, Cloud and Land Elevation Satellite-2 (ICESat-2) that is currently set to launch in 2018. Once in space, ATLAS will emit visible, green laser pulses and count the number of the laser's emitted photons that return from the Earth's surface to instrument. This raw data will then be processed and analyzed by on-orbit and ground-based tools. As a result, ATLAS will measure changes in ice sheet volume and thickness over polar land areas, changes in sea ice thickness, and changes in vegetation canopy height over non-polar areas. The ATLAS instrument will provide greater measurement precision and accuracy in comparison to the original ICESat design.

Jackson and Tull (J&T) engineers and technicians have played critical roles in the component- and subsystem-level integration and testing of ATLAS, a highly sophisticated photon-counting instrument. With J&T support, ATLAS reached a major developmental milestone in early Spring 2016: the fully integrated ATLAS began its environmental test campaign to demonstrate that the instrument can survive in the harsh conditions of launch and the space environment.



View of ATLAS looking into the telescope.

Unmanned Aircraft Systems Inspection

Jackson and Tull is providing engineering and inspection services for various clients using Unmanned Aircraft Systems (UAS) technology. The initial use of the "drones" is outlined below.

Industry Inspections - UAS pilot engineers can conduct inspections of power transmission lines, cranes, cell phone towers, wind turbines, solar PV systems, bridges, dams, levees, high-rise structures, storm water culverts, and substations. UAS systems are designed to take the role of inspectors in high risk situations.

Construction Inspection - UAS pilot engineers can assist developers and general contractors to efficiently gather real-time progress at construction sites. UAS systems can gather aerial images and video of the entire construction site.

Forward Looking InfraRed (FLIR) Inspections - Thermographic systems enable UAS pilot engineers to conduct hot spot inspections at any level of a structure using high-resolution thermal imaging. Images and recordings are used to determine critical failures and functions. All images can be examined in real-time or at the leisure of the client.

3-D Image Mapping - Using precision tools such as LiDAR (Light Detection and Ranging) and 3-D imaging software, engineers can compare plans with point-cloud data to determine accuracy.



Phantom 3

Projects

Traditional Civil Infrastructure Engineering Services

Jackson and Tull (J&T) continues to provide a broad range of civil infrastructure engineering services, which include: civil engineering, transportation, utility design, program management, construction management, construction inspection, water and wastewater pipeline design, process design, storm water management and drainage.

For example, J&T has provided these services on a continuous basis for over thirty-six (36) years at the two (2) major water and wastewater utilities that serve the Washington, DC region. For DC Water and its Blue Plains Wastewater Treatment Plant, which is one of the largest in the US, J&T is currently involved in the management of over \$250 million in construction projects. J&T's engineering management activities include review of contractor submittals, troubleshooting, providing solutions to unanticipated construction issues and equipment testing.

The Washington Suburban Sanitary Commission (WSSC) is the nation's 8th largest water and wastewater utility. J&T's engineering services have included process and pipeline design. J&T currently provides field inspectors who perform sewer inspection as well as contract managers who are responsible for managing water and sewer pipeline construction. The sewer pipeline construction is a part of WSSC's \$1 billion consent decree program.

Manufacturing Facility Upgrade

With the actuation of the new 13-stage reflow oven, Jackson and Tull will be able to manufacture space flight hardware for years to come.

This expanded manufacturing capability allow us to manufacture even the most complex assemblies that will be required by our customers such as column and ball grid arrays.

The heating and cooling zones across the 13 stages provide precise control of the soldering process. This, combined with the ability to solder in a nitrogen filled atmosphere, will ensure the highest quality product.



Projects

JWST S-Band Omni Antenna

Jackson and Tull recently delivered the S-Band Omni Antenna that will be flown on NASA's James Webb Space Telescope (JWST), set to launch in 2018.

The JWST S-Band Low Gain Antenna (also known as Omni Antenna) provides a telecommunications link between the spacecraft and the Earth ground network during all stages of the mission. The S-Band Omni Antenna is defined as the antenna that provides a ground-to-space command path and a space-to-ground telemetry capability in a low power, low weight and low voltage system. The antennas emit the radio frequency (RF) power that will provide mission data and telemetry communication for the mission, particularly, but not limited to, cruise and emergency modes. The antennas feed into a matching network, which connects to the S-band Telemetry Tracking and Command Unit (TT&C).

Jackson and Tull has produced flight antennas for numerous NASA programs for over 20 years. These antennas continue to operate on observatories such as Tropical Rainfall Measuring Mission (TRMM) (launched in 1997), Earth Observing System (EOS) Aura (2004), and Solar Dynamics Observatory (SDO) (2010).

The S-Band Omni Antenna is one of a variety of satellite components that are manufactured by J&T.



J&T Spotlight

Willie Davies Receives Langley Center Group Award For Work on Asteroid Redirect Robotic Mission “Option B”

As part of a small team at Goddard Space Flight Center (GSFC), Jackson and Tull’s Willie Davies was a recipient of a Langley Center Group Award for their work on Asteroid Redirect Robotic Mission “Option B”. Willie and the team provided crucial mechanical design expertise that aided the team of GSFC and Langley Research Center (LRC) win the Asteroid Redirect Robotic Mission (ARRM) proposal effort. On March 25, 2016, NASA selected “Option B”, a joint effort between GSFC/LRC. “Option B” is where a robotic spacecraft will grab a boulder from the surface of a larger asteroid. NASA selected the robotic element of ARM in large part because it offered more choices in what object to bring back to lunar orbit to be visited by astronauts. Under “Option B”, a robotic spacecraft will travel to an asteroid several hundred meters in diameter and grab a boulder up to four meters across from its surface. The robotic spacecraft would then return the asteroid into a distant retrograde lunar orbit. An Orion spacecraft, with two astronauts on board, would then fly to the asteroid to collect samples for return to Earth. This was an extremely, small but talented team that won a national competition. For Willie to be a part of that team is a testament to his superior design talent, and mechanical expertise.

Comments? Contact Us!



The Manhattan Bridge spans the East River in New York City and connects the boroughs of Brooklyn and Manhattan. From 1982 to 2012, Jackson and Tull provided construction inspection services for the comprehensive rehabilitation of the bridge.

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