



Ongoing Projects

Consolidated Hubble Associated Mission Products (CHAMP)



Butterfly Emerges from Stellar Demise in Planetary Nebula NGC 6302. What resembles dainty butterfly wings are actually rolling cauldrons of gas heated to more than 36,000 degrees Fahrenheit.

The CHAMP contract provides engineering and programmatic support to the Hubble Space Telescope (HST) Project at Goddard Space Flight Center (GSFC), under which J&T supported each of the five servicing missions (SM).

J&T played an integral role in the successful

SM4. This mission vastly improved HST's scientific capabilities by installing two new scientific instruments—the Cosmic Origins Spectrograph and the Wide Field Camera 3. SM4 repaired two failed instruments—the Space Telescope Imaging Spectrograph and the Advanced Camera for Surveys. J&T's hardware engineers performed extensive integration and testing for the science instruments

and new support hardware—including new batteries, new gyroscopes, a new science computer, and a refurbished guidance sensor—which will prolong HST's life.

J&T's systems engineers also

provided SM4 preparation and execution support to the Mission Operations Team. Activities included on-console support for the electrical power subsystem (EPS), on-console and off-line support of the Anomaly Response Management Team, mission timeline and command plan development, HST Simulator development and maintenance (used to train SM4 support personnel), and ground database maintenance.



Barred Spiral Galaxy NGC 6217. The galaxy lies 6 million light-years away in the north circumpolar constellation Ursa Major.

Air Force Space Test Program, Multi-spacecraft S-26

On the J&T University Nanosat Program contract, J&T staff performed environmental testing on the FASTRAC satellite designed and integrated by the University of Texas. In August 2010, J&T engineers shipped the spacecraft to Kodiak, Alaska for launch on the STP-S26 mission. J&T staff performed launch based Compatibility Testing and final software load on site. The FASTRAC spacecraft is comprised of two separate spacecraft designed for proximity operations in order to evaluate the effectiveness of GPS to support on-orbit operations and to detect and characterize GPS anomalous behavior.

The J&T Team supported final preparations for the STP-S26 mission to be launched from the Kodiak Launch Complex on November 19, 2010. J&T supported this mission from the beginning with mission design, team integration, spacecraft

development and spacecraft testing. The launch vehicle is a Minotaur IV; an Inter-Continental Ballistic Missile converted to a launch vehicle. The STP-S26 mission is comprised of eight payloads and sixteen experiments placing objects into two separate orbits. As a research and development program, there were many firsts on this mission including the use of a multi-payload adapter on the Minotaur IV and three separation systems. The Hydrazine Auxiliary Propulsion System on the STP-S26 mission will demonstrate dual orbit capability for the Minotaur IV. This mission represents the greatest number of experiments ever attempted by the Department of Defense Space Test Program (STP). J&T currently has an engineer at Kodiak monitoring spacecraft developer final testing and mating operations with the space vehicle.

Ongoing Projects, Continued

Systems Engineering for In-Space Servicing (SEISS): STS-135

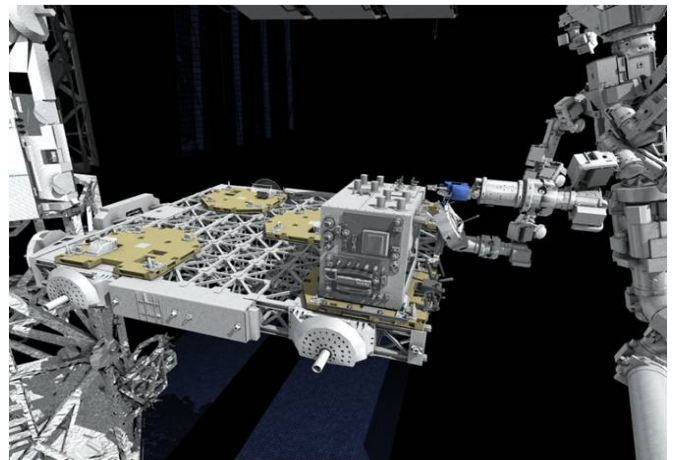
The SEISS contract was first initiated to provide systems engineering support to develop and execute demonstrations to test and verify new robotic servicing capabilities using the Dextre robot aboard the International Space Station.

J&T's engineers provided robotic fabrication support to the final STS-135 Atlantis Shuttle launch in June, 2011 at Kennedy Space Center, FL. This Robotic Refueling Mission (RRM) was critical in NASA's efforts to demonstrate the series of refueling and repairing exercises for in-orbit satellites and spacecrafts as these exercises are expected to expand considerably in the future.

J&T's team assembled the critical RRM components to perform the robotic servicing to the Space Station on the final space shuttle flight. J&T's team assisted with remotely operating the Dextre robot and the transfer of the RRM on to the in-orbit Space Station.

J&T is continuing to support the ongoing on-orbit

operations management of the RRM and Dextre robot. Starting in March of 2012 after the new software and scripts into the Space Station computer were complete, they began operating and monitoring the tools and the cameras originally interfaced by the J&T team and performing updates to functionality such as releasing launch locks cutting wire.



RRM on ELC-4 with the SPDM on the right

Air Force Research Lab, Space Shuttle Endeavour (STS-134)

At the Air Force Research Laboratory (AFRL), J&T engineers integrated two thermal experiments onto the Space Shuttle Endeavour (STS -134) that successfully launched on May 16, 2011. This was the second-to-last launch of a United States Shuttle mission. The two laboratory experiments included: MHTEX (Massive Heat Transfer Experiment) and VADER (Variable emissivity device Aerogel insulation blanket, Dual zone thermal control, Experiment suite for Responsive space). Astronauts attached the experiments to the International Space Station (ISS) and J&T monitored their status and collected data daily from a ground station located in our Albuquerque offices.



STS-134 Launch

These experiments were intended to demonstrate the effectiveness of spacecraft thermal control technologies transferring or shielding heat energy that is critical to spacecraft life while on orbit. At the end of the experiment in March 2012, the experiment was jettisoned from the ISS and burned into the atmosphere. Data analysis continues to determine the effectiveness of these new technologies in terms of durability, reduced weight and reduced cost.

Ongoing Projects, Continued

Advanced Research Engineering Support (ARES) II

Under the ARES II Contract, J&T provides on-site performance-based engineering services to the US Air Force Research Laboratory (AFRL) Propulsion Directorate, Edwards Air Force Base, California. These high quality, efficient and effective engineering services lend themselves directly to the advanced research and development of state of the art space vehicle propulsion and new technologies.

The AFRL Propulsion Directorate provides a complete spectrum of advanced propulsion technologies nationally and internationally. They demonstrate these technologies through on-site fundamental engineering research in collaboration with Small Business Innovative Research (SBIR) contracts and industry partnerships. In addition to providing propulsion technologies for rockets and space vehicles, the Directorate conducts leading edge research and development in turbo-machinery, aerospace fuels, propellants and power-generating systems.

Jackson and Tull supports continuous AFRL efforts to maintain our nation's leadership in space, from space system component and subcomponent design to sustainment. Our advanced propulsion engineering research efforts cover all aspects of propulsion technology, and includes all mission phases of launch operations through on-orbit maneuvers and the associated technologies of solid, liquid and hybrid fueled engines.

Jackson and Tull continues to perform as a key contributor to the AFRL in fostering diversity through collaborations with Historically Black Colleges and Universities (HBCU) and Minority Institutions (MI) Science, Technology, Engineering and Math (STEM) symposiums. Our long term strategic partnerships with minority serving institutions and businesses have been determined to be a driving force in innovation and thought. We will continue to facilitate an enduring relationship between the government laboratories and HBCUs/MIs as they are a fundamental part of creating this diversity under the ARES II Contract.

Environmental Test and Integration Services (ETIS) II

J&T provides critical services for all spacecraft, subsystems, and instruments built, integrated, or tested at GSFC through the ETIS II contract. J&T's engineers and technicians manufacture flight, non-flight, and test hardware, fixtures, and piece parts through advanced fabrication techniques technologies and equipment (e.g., high-precision 5 axis milling machines, Electrical Discharge Machining, 3D printers, rapid prototyping, and composite milling).

J&T's employees provide work in numerous fields. They fabricate and assemble complex spacecraft mockups, harness fixtures, and proof-of-concept products. J&T designs and manufactures composite

structures (including developing new layouts, techniques), electrical cable harness and thermal control, and prototypes to support GSFC's existing and future space missions. J&T also performs research into new materials and techniques to meet specialized thermal requirements.

In the past four years, J&T is proud to have supported over 35 missions and instruments including: James Webb Space Telescope; Hubble Space Telescope; Global Precipitation Measuring Mission (GPM); Lunar Atmosphere and Dust Environment Explorer (LADEE); Ice, Cloud, and land Elevation Satellite-2 (ICESat-2); Thermal Infrared Sensor (TIRS) instrument, ASTRO-H (International X-ray astronomy mission) and many more.

Ongoing Projects, Continued

Manhattan Bridge

The Manhattan Bridge, open to traffic in 1909, is a suspension bridge that connects the boroughs of Brooklyn and Manhattan in New York City. The bridge carries two levels of Roadway. The lower Roadway has four lanes for subway and three lanes for vehicles. The upper Roadway has four lanes for vehicles. The four Main Cables are shown in the picture at the top portion of the bridge. The Roadway is connected to the Main Cables by a series of 636 vertical Suspender Cables.

Beginning in 1982, the City and State of New York embarked on a comprehensive and ongoing rehabilitation project for the Manhattan Bridge. This is being accomplished through a series of construction contracts. Since 1982, J&T has continued to be a member of the Construction Inspection team for these contracts. The bridge has remained open to subway and vehicle traffic

during this process. The current Contract No. 14 began in early 2010 and will run through 2013. It involves: replacing the Suspender Cables; unwrapping, cleaning, and re-wrapping the Main Cables; replacing the necklace lighting on the two outside Main Cables; and replacing street lighting on a portion of the Roadway. This continues to be an existing and challenging project.



Manhattan Bridge

Solar Dynamics Observatory (SDO)



SDO Launch

The Solar Dynamics Observatory was successfully launched from Kennedy Space Center on February 11, 2010, 10:23 am EST on an Atlas V rocket. The Observatory has completed on orbit checkout as is currently operating in science mode. Significant observations and revelations about our Sun have already been made and the science community is excited about the discoveries yet to be made.

Jackson and Tull staff played a significant role throughout the program and especially in preparing the Observatory for launch. J&T experts directed the integration and testing activities as well as providing thermal blanket support and closeouts.

SDO is designed to help us understand the Sun's influence on Earth and Near-Earth space by studying the solar atmosphere on small scales of space and time and in many wavelengths simultaneously. Learn more at <http://sdo.gsfc.nasa.gov/>.

Internal News

Dates to Remember

August 4, 2012

SUN	MO	TUE	WE	THU	FRI	SAT
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

ANNUAL J&T PICNIC

Location:

Smokey Glen Farm
Gaithersburg, MD

<http://www.smokeyglenfarm.com/>

December 14, 2012

SUN	MO	TUE	WE	TH	FRI	SAT
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

ANNUAL J&T HOLIDAY PARTY

Location:

Greenbelt Marriott Hotel
Greenbelt, MD

<http://www.marriott.com/hotels/travel/wasgb-greenbelt-marriott/>

Comments? Contact Us!

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Manhattan Bridge at Night

