National Aeronautics and Space Administration

Johnson Space Center

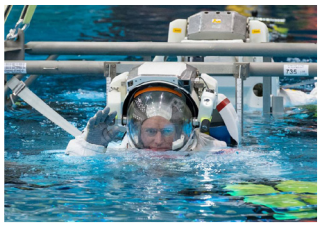
Houston, Texas

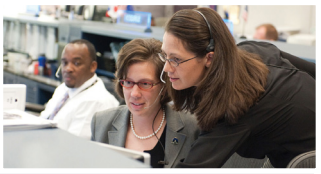
Economic Impact Report FY 2014

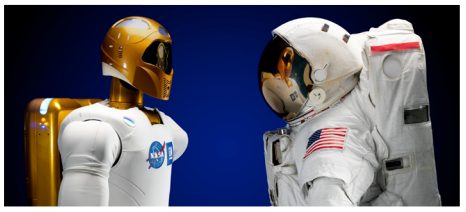
Recognized around the world as the "Home of Human Space Flight," Houston's Johnson Space Center is taking critical steps today to expand human exploration into deep space. From the early days of Gemini and Apollo and then Space Shuttle, to the International Space Station today and the new Orion program, JSC has the key leadership role to manage, develop and operate America's major human space programs.

Today, as JSC flight controllers staff Mission Control 24/7/365 for the Space Station while its crew members perform key research for future long-term missions, JSC leads development of Orion, the first deep space human-rated vehicle, which completed its first test mission in 2014. To go further with available resources, JSC is reinventing many technical and managerial processes to expand capabilities to safely take humans to new destinations, perhaps to an asteroid and ultimately to Mars.

It's often said that space budgets aren't spent in space, that the money is spent right here on the ground. Space exploration benefits include advanced research, technology, education, business and high-tech jobs here on Earth in addition to exploring new worlds with new, advanced spacecraft. This document is just a glimpse of the resources and benefits that NASA brings to Texas and Houston where JSC is a powerful force creating and sharing America's future in human spaceflight.







Total JSC Budget for FY 2014

4.4 Billion

Approximately 25% of NASA's overall budget of $17.5B across 11 NASA sites.

JSC Budget Spent in Texas in FY 2014

3 Billion

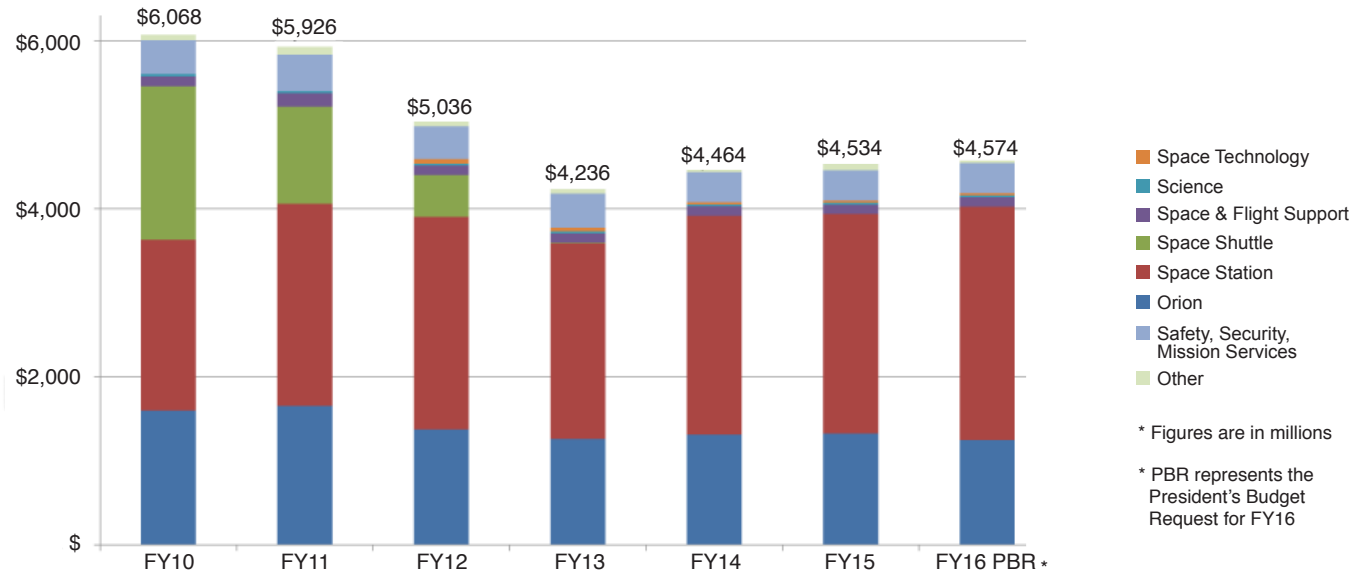
JSC spent $2.97B on contracts and federal salaries in Texas.

To reach new heights and reveal the unknown to benefit all humankind

www.nasa.gov

JSC's Budget from FY10 – FY15 and proposed for FY16

Stable & growing budget in a new era of space exploration



Select JSC Programs Advancing Human Spaceflight in FY14

International Space Station

ISS

#ISS

The station is a blueprint for global cooperation and scientific advancements, a destination for growing a commercial marketplace in low-Earth orbit and a test bed for new deep space exploration technologies, including commercial cargo.

Orion Multi-purpose Crew Vehicle

Orion

#Orion

JSC manages development and operations of NASA's new exploration spacecraft, designed to carry astronauts to destinations in deep space, including an asteroid and Mars.

Commercial Spaceflight Activities

CCP

#LaunchAmerica

NASA's Commercial Spaceflight activities provide cargo services for ISS and facilitate development of U.S. commercial crew space transportation for safe, reliable, cost-effective access to low-Earth orbit.

Human Research Program

HRP

#ISS1Year

JSC is the hub of human spaceflight research, coordinating R&D projects in space radiation, exploration, medical capability, microgravity, human factors, habitability, and behavioral health by technical experts.

Advanced Exploration Systems

AES + Technology

#JourneyToMars

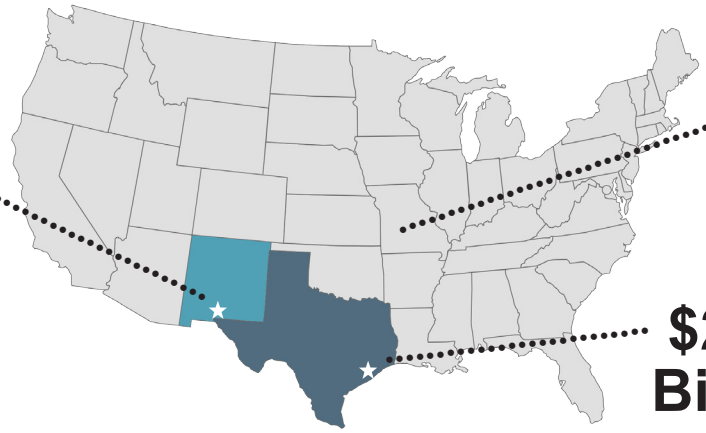
JSC is pioneering rapidly developing prototype systems and technologies, demonstrating key capabilities, and validating operational concepts for human missions beyond Earth orbit.

www.nasa.gov/station

JSC FY 2014 Budget within and outside of Texas

White Sands Test Facility

$63.4 Million **on contracts** plus government staff +10.7M in reimbursable work



Outside of Texas **$1.56 Billion** **on contracts**

$2.47 Billion Within Texas **on contracts** with Texas as place of performance

NASA / JSC Workforce in FY 2014

Texas and Beyond

Total Estimated Workforce

11,667

Contractors **8,617**

Federal Employees **3,050**

Texas Only

Total Estimated Workforce

10,433

Contractors **7,431**

Federal Employees **3,002**

Estimated Salaries in US Economy

$1.84B

Estimated Salaries in Texas Economy

$1.7B

Select FY 2014 NASA Expenditures in Texas

$91M

Small Businesses

$90.6M of NASA funding went to 205 small businesses in Texas for space-related contracts

$33M

Small Disadvantaged Businesses

$33.1M of NASA funding went to 56 small disadvantaged business direct contracts

$52M

Woman-owned Businesses

NASA spent $51.6M purchasing space-related work by woman -owned businesses in Texas

$10M

SBIR

Awarded $10M to the Small Business Innovation Research and Technology Transfer

$26M

8(a) Contracts

35 formal U.S. Small Business Administration contracts for small disadvantaged businesses.

$4M+

NASA Research Announcements

1/3 of Research Opportunities in Space and Earth Science (ROSES) in Texas totaled $4M

$47M

Universities

NASA had 44 universities and related organizations with contracts totaling $46.7M

$58M

Non-profit Awards

NASA had 22 non-profit awards totaling $57.6M in the state of Texas

High-Tech, Diverse JSC Federal Workforce

65% are engineers or scientists

90% hold a Bachelor's degree

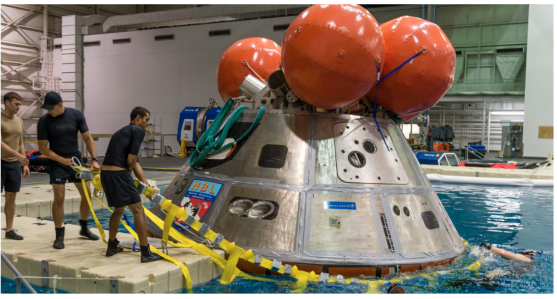
40% hold a graduate degree

74% perform scientific, technical aerospace work

27% of JSC workforce are minorities

2,313 hold science, engineering or technical degrees

1/3 of JSC employees are female



Education Leadership in FY14

$47M for contracts with 44 universities, education and training organizations in Texas

Texas High School Aerospace Scholars online course and summer experience at JSC in FY14 engaged students from:

113 High Schools

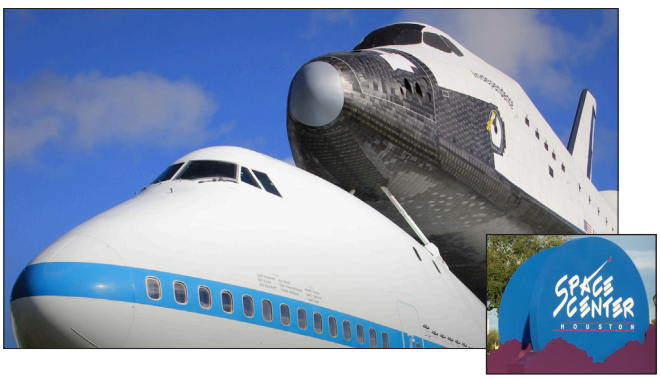
5 Homeschools

91 Texas Cities

"100% of Texas legislative districts have participated with nominations in six years."

Space Center Houston in FY14

JSC's official visitor center (non-profit)



800K+ visitors

Over 17M visitors since opening in 1992

$18.7M local expenditures

$20.4M FY14 revenue

100K+ students and teachers in FY14

$7.6M total salaries

http://solarsystem.nasa.gov

To accelerate technology development and strengthen commercialization of federally-funded research, JSC partners with public agencies, private companies and academia to develop broadly applicable technologies.

JSC Strategic Partnership Examples

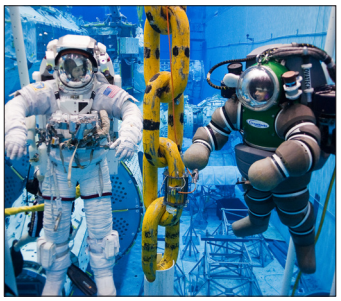
www.nasa.gov/jscpartnerships

Robotics Technology

JSC researchers apply their expertise to solve problems for automotive, oil and gas, aerospace, and other industries in Texas and beyond.

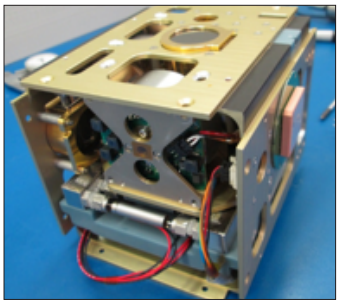
Oil & Gas Partnerships

JSC has developed and tested monitoring and inspection tools for deepwater drilling systems and provides access to the Neutral Buoyancy Laboratory for underwater testing and training.



Commercial Space

Austin-based Satellite Design's miniature pico-satellite was launched to the Space Station where it will demonstrate attitude control while orbiting Earth.



Medical

GRoK Technologies LLC, located in League City, Texas, has licensed several JSC patents they use to develop devices for medical research.

JSC Technology Sharing Examples

http://technology.jsc.nasa.gov

Solar Refrigerators Store Life-Saving Vaccines

A former JSC engineer used his experience on the Advanced Refrigeration Technology Team and started SunDanzer Refrigeration Inc., which specializes in solar-powered refrigerators that provide safe storage for vaccines in rural areas around the world.

Thermal Materials Protect Property from Fires

A NASA astronaut worked with Houston-based DreamSaver Enterprises LLC to use concepts from the shuttle thermal protection system at JSC to develop an enclosure that withstands 98 percent of residential fires.

Critical Neonatal Transportation - *Texas-Funded Space Alliance Technology Outreach Program (SATOP)*

JSC and technical partners offer free technical assistance for small business challenges such as the Neonatal Transport project for low-birth weight at-risk infants by JSC and Texas Children's Hospital to reduce patient risk for critical neonatal transportation. The SATOP program has created over 2,000 jobs with $193M total economic impact.

www.spacetechsolutions.com

On the Horizon...

Everyday at JSC thousands work to reach Mars in technical programs, adopting innovative strategies to maximize our reach and go farther with each taxpayer dollar, making the most of every resource to reach the space frontier. The ***Journey to Mars*** image on the back cover, shows the way from the current ***Earth Reliant*** Space Station and commercial access to space missions, to a ***Proving Ground*** mission to an asteroid aboard Orion and the world's largest rocket, and then reaching ***Earth Independent*** for multiple year missions to explore Mars, its moons and other deep space destinations.

www.nasa.gov/exploration

HUMAN EXPLORATION

NASA's Journey to Mars

EARTH RELIANT

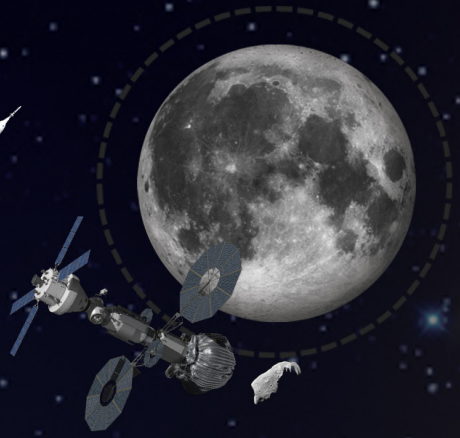
MISSION: 6 TO 12 MONTHS
RETURN TO EARTH: HOURS

Mastering fundamentals aboard the International Space Station

U.S. companies provide access to low-Earth orbit

PROVING GROUND

MISSION: 1 TO 12 MONTHS
RETURN TO EARTH: DAYS

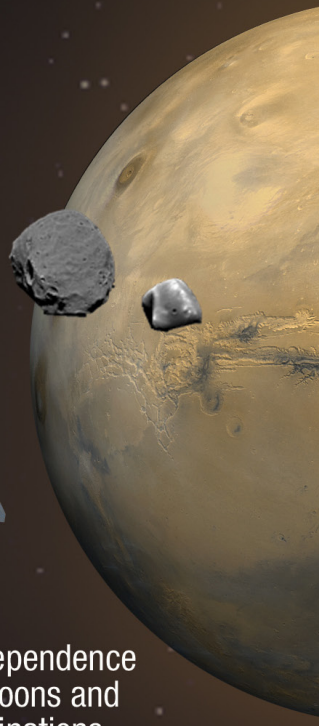


Expanding capabilities by visiting an asteroid redirected to a lunar distant retrograde orbit

The next step: traveling beyond low-Earth orbit with the Space Launch System rocket and Orion spacecraft

EARTH INDEPENDENT

MISSION: 2 TO 3 YEARS
RETURN TO EARTH: MONTHS



Developing planetary independence by exploring Mars, its moons and other deep space destinations

To reach new heights and reveal the unknown to benefit all humankind

www.nasa.gov/exploration
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