



**The concepts suggested in this presentation  
are those of Carolynn Conley. They do not  
represent those of her employer or the  
Department of Defense Space Test Program.**

# DoD Space Test Program - Houston



Human Spaceflight  
Payloads Division  
Johnson Space Center,  
Houston TX  
(SMC/AD, OL-S)

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DoD Space Test Program  
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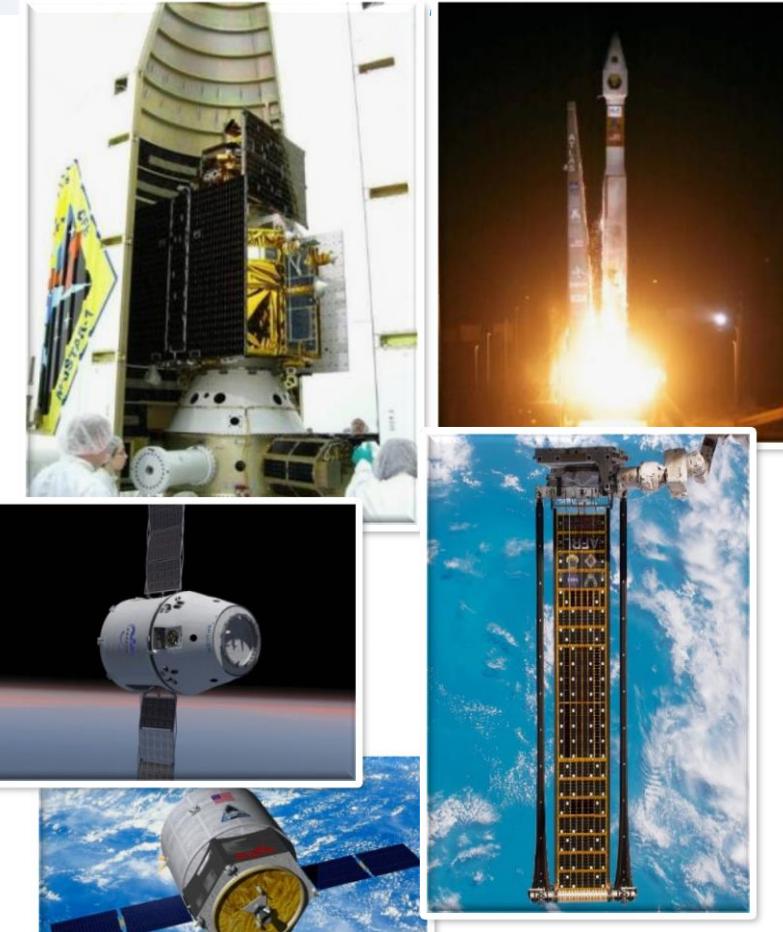


# The Space Test Program Mission

“...provide mission design, spacecraft acquisition, integration, launch, and on-orbit operations for the maximum number of DoD... experiments, consistent with priority, opportunity, and available funding.” – STP Management and Funding Policy

“The STP has been designated as the “front door” for all DoD auxiliary payloads (APLs) on DoD, civil and commercial launches, and for all non-DoD APLs seeking launch opportunities on DoD Missions.” – STP AFI 10-1202; AR 70-43; OPNAVINST 3913.1B

“Single manager for all DoD payloads on the ISS, future manned and unmanned NASA launch vehicles...” – STP AFI 10-1202; AR 70-43; OPNAVINST 3913.1B

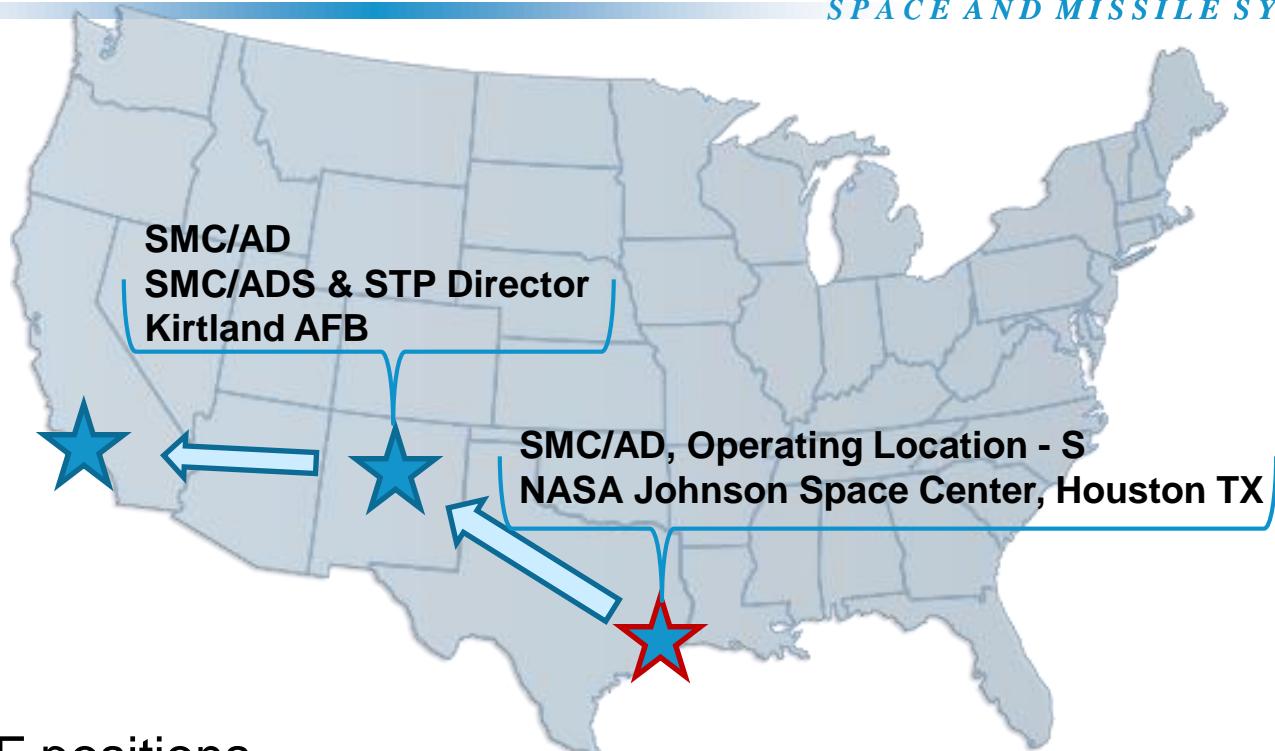


**52 Years Experience, 255 Missions, 578 Experiments  
And Counting...**



# STP-Houston

SPACE AND MISSILE SYSTEMS CENTER

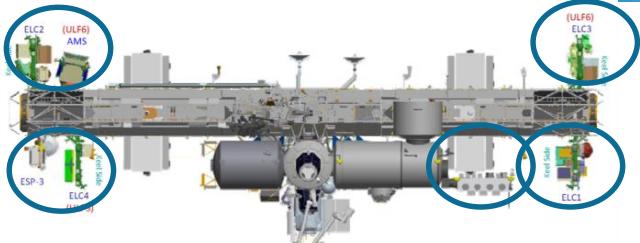


- Ten USAF positions
  - 3 Aerospace Corp, ~18 MEI Technologies small business support contract
- Since 1982, flown ~ half of all STP missions: 133 missions, 295 experiments
  - Close partnership with NASA's Shuttle and ISS programs



# STP-Houston Capabilities

## SPACE AND MISSILE SYSTEMS CENTER



### External Mounted Payloads

Externally mounted to the ISS which supplies power and communications. Launches in unpressurized ISS Resupply vehicle – SpaceX Dragon Trunk, future Sierra Nevada



### Pressurized Payloads

Internally operated in crew compartment. Includes but not limited to combustion lab, racks, man in loop, and live tests. Payload return possible.



### Free-Flyer Deployment

Deployment from ISS via Cyclops, Nanoracks, other commercial launchers. Future concepts include trunk / arm deployment. Over 200 cubesats deployed from ISS to date.



### Risk Reduction Flights

Available NASA Resources to reduce flight risk include WB-57 high altitude and commercial microgravity flights.



# Recent STP-Houston Missions

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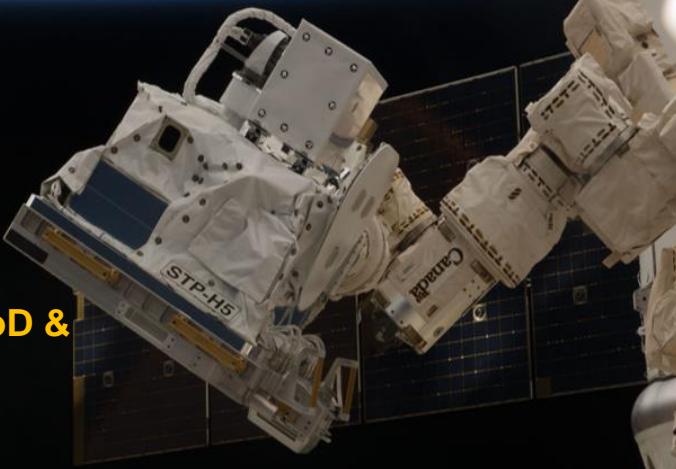
## Wound Healing – US Army

- Series of experiments targeting bone and tissue damage
- New cancer-free bone healing pharmaceuticals for faster healing



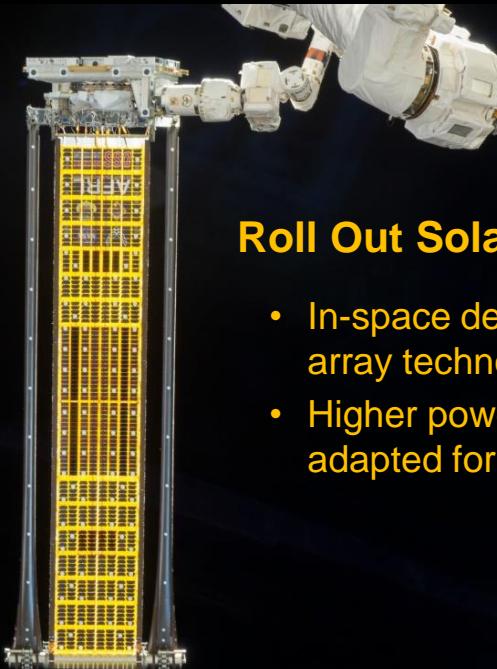
## STP-H5 – Multiple DoD & NASA

- 13 Space demos/ experiments
- In 3<sup>rd</sup> year of operations



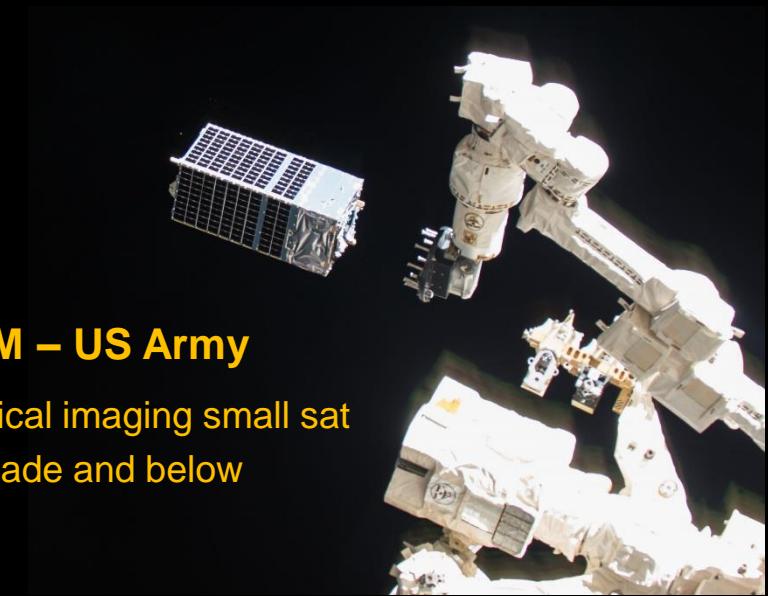
## Roll Out Solar Array – AFRL

- In-space demo of new solar array technology
- Higher power density – to be adapted for ISS application



## Kestrel-Eye-IIM – US Army

- SMDC JCTD of tactical imaging small sat
- ~1m resolution, Brigade and below





# Upcoming STP-Houston Missions

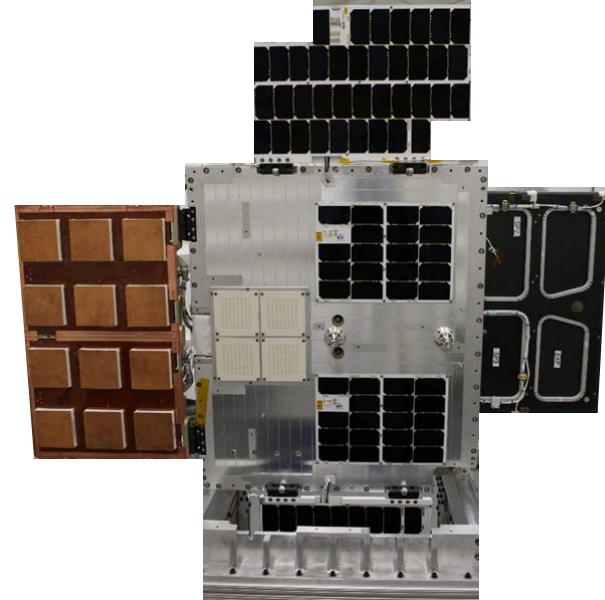
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## STP-H6 – Launch 25 Apr 19

### SpaceX-17 Dragon Trunk

- 7 DoD Space demonstrations
- 6<sup>th</sup> in series of ISS external payloads – highly cost effective



## COWVR – Launch Jan 2021, Dragon Trunk

- Compact Ocean Wind Vector Radiometer, originally on ORS-6
- SMC demo of lower cost/complexity microwave wind radiometer
- Re-package and fly on ISS

## STPSat-4 – Launch Oct/Dec 2019 on ISS Resupply mission

- “200 U” Small Sat w/5 Experiments
- Optimized for ISS deployment
- In-house built

# STP on the ISS

## Pressurized Payloads:

- **Cell Science-02 (8 Jul 19)**
- **Wound Healing (late 2020)**
- **Immunization**
- **Reducing Oxidative Damage during Spaceflight**
- **RSAT**
- **Astrobaotics**
- **Lectenna**

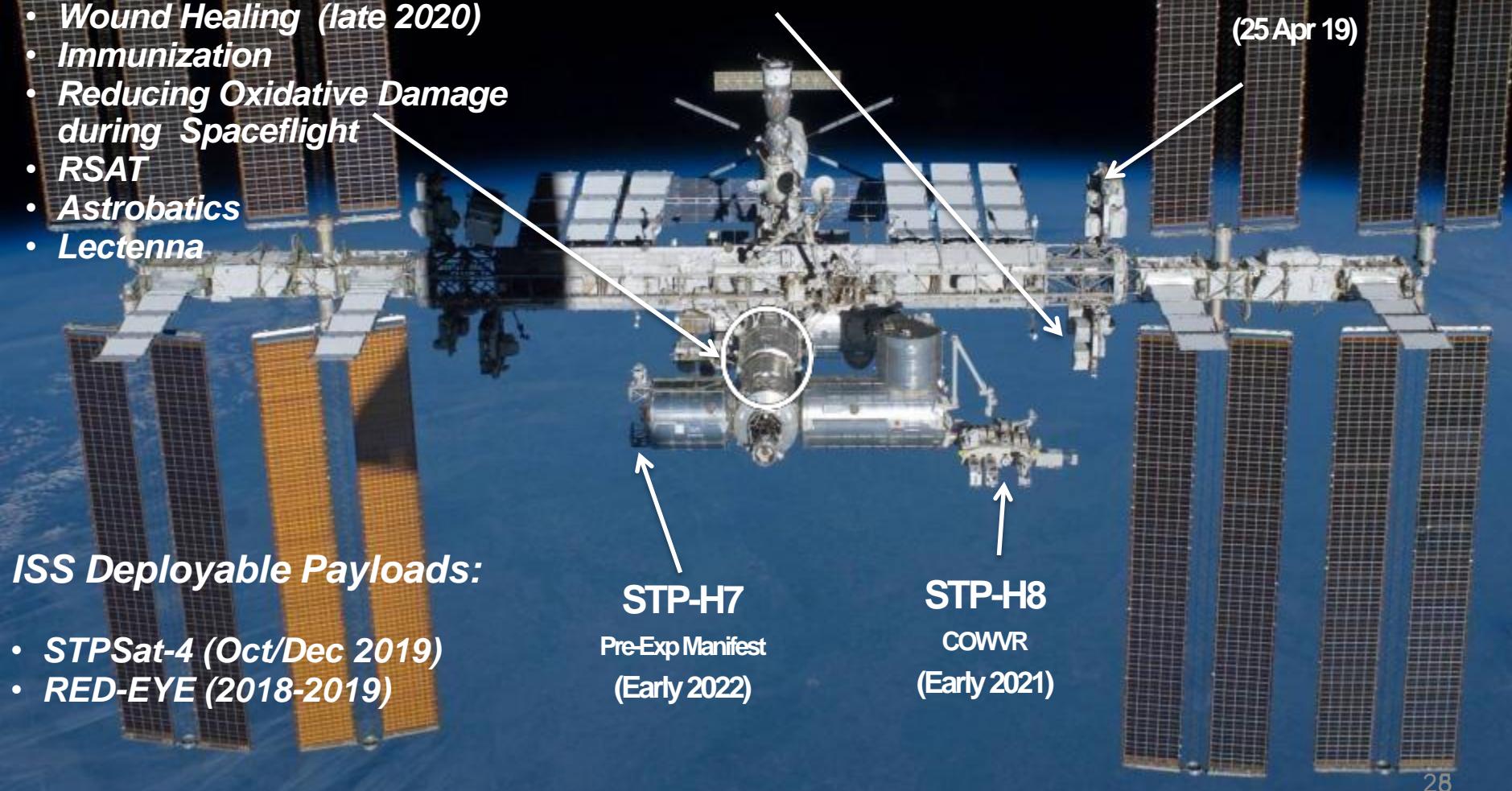
**STP-H5**  
RHEME, APS, iMESA, GROUP-C, LITES, SHM  
(7 NASA Rideshare Exp'ts)

ELC-1  
Launched Feb 17

**STP-H6**

ACES Red, iMESA-R, LASSO, NIRAC  
NISTEx, SPADE, SSIVP, XCOM,

ELC-3  
(25 Apr 19)



## ISS Deployable Payloads:

- **STPSat-4 (Oct/Dec 2019)**
- **RED-EYE (2018-2019)**

**STP-H7**  
Pre-Exp Manifest  
(Early 2022)

**STP-H8**  
COWVR  
(Early 2021)

# Acronyms List

## Including Experiments with Annotations



### SPACE AND MISSILE SYSTEMS CENTER

200 U	Small satellite size about 0.2 cubic meters, up to 500 kg
ADS	Space Demonstration Division executes the DoD Space Test Program, started in 1965
AFRL	Air Force Research Laboratory
APL	Auxiliary Payloads launched through STP Rideshare program
COWVR	Compact Ocean Wind Vector Radiometer developed by the ORS Office and SMC/RS Program Directorate
ELC	ExPRESS logistics carrier is an unpressurized attached payload platform for the ISS that provides mechanical mounting surfaces, electrical power, and command and data handling services for science experiments and ISS spare parts
ExPRESS	Expedite the Processing of Experiments to the Space Station
ISS	International Space Station
NRL	United States Naval Research Laboratory

# Acronyms List

## Including Experiments with Annotations



### SPACE AND MISSILE SYSTEMS CENTER

OL-S      Operating Location – S (Houston, Texas)

ORS      Operationally Responsive Space Office is a joint initiative of several agencies within DoD. ORS-6 is the sixth in a series of technology demonstration: ocean vector wind measurement using COWVR

RED-EYE      Rapidly deployable low earth orbit (LEO) sensor and inter satellite communication

ROSA      Roll Out Solar Array

RSAT      Robotic Satellite to prove the feasibility of using manipulable robotic arms to assemble and provide diagnostic information on larger structures on orbit.

SMC/AD      Space and Missiles Center/Advanced Systems and Planning Directorate

SMC/RS      Space and Missile Systems Center/Remote Sensing Systems Directorate

STP-H      Space Test Program - Houston

WB-57      High-altitude research aircraft in the NASA Airborne Science Program