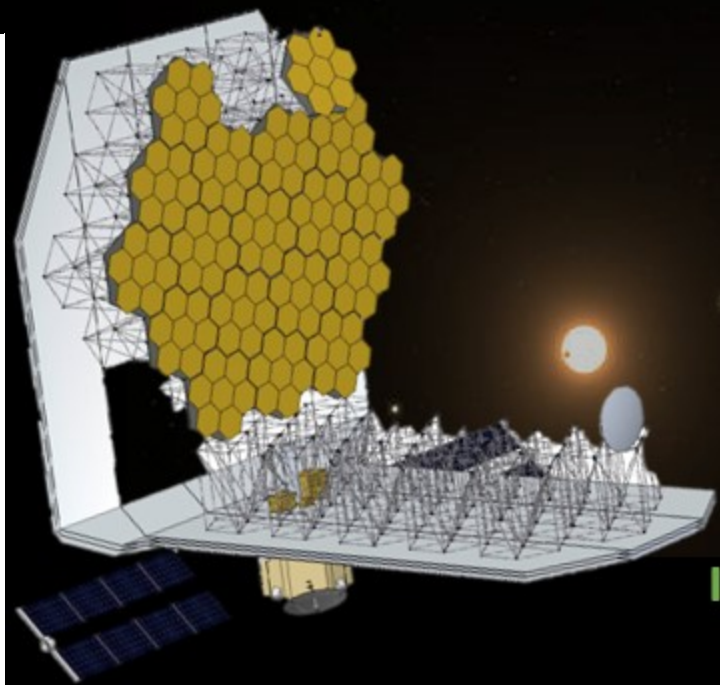


# WELCOME TO iSAT Study F2F Meeting II: Assembly and Infrastructure

NASA Langley Research Center  
October 2-4, 2018



Study Leads:  
Nick Siegler, NASA ExEP  
Harley Thronson, NASA GSFC  
Rudra Mukherjee, JPL-Caltech

**Investigating the benefits of large telescope assembly  
in space, for the search for life in the Galaxy.**

# Background

Large-aperture telescopes benefit all astrophysics, as well as planetary and Earth science. They provide unprecedented spatial resolution, spectral resolution, and sensitivity to faint objects thus advancing all of these science areas. Envisioning the need for future large segmented telescopes to one day exceed the fairing size of existing or even planned launch vehicles, NASA will need to begin considering the in-space assembly (iSA) of these future assets.

In addition, robotically assembling space telescopes in space rather than deploying them from single launch vehicles offers the possibility of reduced cost and risk for even smaller telescopes. This possibility, however, has not been proven. Therefore, following discussions within NASA's Science Mission Directorate (SMD) and Astrophysics Division (APD), the SMD Chief Technologist and APD Division Director commissioned a study in the spring 2018 to assess the cost and risk benefits, if any, of the iSA of space telescopes. This study is called the in-Space Assembled Telescope or iSAT Study.

In particular, this study must answer the question: ***“When is it advantageous assembling space telescopes in space rather than building them on the Earth and deploying them autonomously from individual launch vehicles?”*** The goal for completion of the study is May 2019 culminating in a submitted whitepaper to the National Academies' 2020 Astronomy & Astrophysics Decadal Survey.

[https://exoplanets.nasa.gov/exep/technology/in-space-assembly/iSAT\\_study/](https://exoplanets.nasa.gov/exep/technology/in-space-assembly/iSAT_study/)

# F2F Meeting Objectives and Agenda

**This is a key face-to-face meeting for Activity 1b of the NASA-chartered in-Space Assembled Telescope (iSAT) Study.**

**Activity 1b takes the modularized 20-meter space telescope developed in Activity 1a (reference telescope) and will examine concepts to assess:**

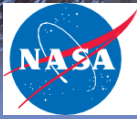
- a) which robotics will assemble the telescope modules,
- b) which assembly platform will host the robotics,
- c) which orbit will the assembly platform travel in, and
- d) which launch vehicles will be required to transport the modules.

**During this meeting we will:**

1. advance and generate concepts to assemble the reference telescope and define its needed infrastructure,
2. advance the selection criteria in which we will prioritize these concepts.

Current agenda on iSAT website- [https://exoplanets.nasa.gov/internal\\_resources/933](https://exoplanets.nasa.gov/internal_resources/933)





# Langley Research Center Logistics Guide

## In-Space Assembled Telescope Study F2F Meeting II

October 2-4, 2018

**Local Points of Contact:**  
**Lynn Bowman**  
**Christina Williams**

# Langley Research Center Facilitator Contacts and Safety Notes

## LaRC Meeting Facilitator Contact Information

Lynn Bowman, Portfolio Manager  
Office: 757-864-5426 / Cell: 757-504-6627  
Email: [lynn.m.bowman@nasa.gov](mailto:lynn.m.bowman@nasa.gov)

Christina Williams, STED Project Coordinator  
Office: 757-864-3811 / Cell: 757-880-3388  
Email: [christina.c.williams@nasa.gov](mailto:christina.c.williams@nasa.gov)

Please email or call if questions arise while traveling to or during the iSAT F2F Meeting.

## Weather Inclement

Weather may impact the Center's normal working hours. To obtain information about the Center's status as a result of inclement weather conditions, call 757-864-2111 or 1-888-664-2111.

## In Case of Emergency

Cell Phone: 757-864-2222 or Phone: 911

## Fire Alarms in Building 2102

In case of a fire, alarms will sound and fire curtains and doors will drop down over stairwells and other open spaces on the second floor. Elevators will remain operational and can be used to exit the 2nd floor. Please exit the building in a timely manner and congregate in the open area away from the building in accordance with your location within the building.

# Directions to Langley Research Center

Directions to Langley Research Center may be viewed: <http://www.nasa.gov/centers/langley/about/directions.html>

## From Newport News/Williamsburg

- Take I-64 East toward Norfolk / Hampton
- At exit 261B, take ramp on right and follow signs for Hampton Roads Center Pkwy (1.2 miles)
- Take ramp on right and follow signs for Magruder Blvd / SR-134 (0.2 miles)
- Turn left onto SR-134 North / Magruder Blvd (1.3 miles)
- Take ramp right for SR-172 North / Commander Shepard Blvd toward NASA / LAFB (1.1 miles)
- Turn right onto Langley Blvd
- Arrive at NASA Langley Badge & Pass Office

## From Norfolk Area

- Take I-64 West / Hampton Roads Beltway toward Richmond / Hampton
- At exit 262B, take ramp right for SR-134 North / Magruder Blvd toward Poquoson / NASA (2.1 miles)
- Take ramp on right for SR-172 North / Commander Shepard Blvd toward NASA / LAFB (1.1 miles)
- Turn right onto Langley Blvd
- Arrive at NASA Langley Badge & Pass Office


## Local Airports


- Newport News/Williamsburg International Airport (PHF)
- Norfolk International Airport (ORF)

## Local Amtrak Train Station

- Newport News  
<https://www.amtrak.com/stations/npn>
- Williamsburg  
<https://www.amtrak.com/stations/wbg>

# Lodging

 **Hampton Inn (4.5 miles)**  
3101 Coliseum Dr., Hampton, VA 23666  
(757) 838-1400  
<http://hamptoninn3.hilton.com/en/hotels/virginia/hampton-inn-hampton-newport-news-ORFHAX/accommodations/index.html>

 **Embassy Suites (5.2 miles)**  
1700 Coliseum Dr., Hampton, VA 23666  
(757) 827-8200  
<http://embassysuites3.hilton.com/en/hotels/virginia/embassy-suites-by-hilton-hampton-hotel-convention-center-and-spa-PHFCCES/index.html>


**Courtyard by Marriott (4.8 miles)**  
1917 Coliseum Dr., Hampton, VA 23666  
(727) 838-3300  
<https://www.marriott.com/hotels/travel/phfch-courtyard-hampton-coliseum-central/>

**Courtyard by Marriott (5.4 miles)**  
105 Cybernetics Way, Yorktown, VA  
(757) 874-9000  
<https://www.marriott.com/hotels/travel/phfyt-courtyard-newport-news-yorktown>

**Candlewood Suites (6.1 miles)**  
329 Commonwealth Dr., Yorktown, VA  
(757) 952-1120  
<https://www.ihg.com/candlewood/hotels/us/en/yorktown/phfcw/hoteldetail>

**Marriott Newport News at City Center (4.3 miles)**  
740 Town Center Dr., Newport News, VA 23606  
(757) 873-9299  
<https://www.marriott.com/hotels/travel/phfoy-newport-news-marriott-at-city-center/>

**Comfort Inn & Suites (4.5 miles)**  
12570 Jefferson Ave., Newport News, VA  
(757) 947-1333  
<https://www.choicehotels.com/virginia/newport-news/comfort-inn-hotels/va445>

 Breakfast included



# Badge and Pass Information

NASA Langley Badge and Pass Office: 2 Langley Blvd., Hampton, VA 23681

## Obtaining a Visitor Badge

If you are not a NASA employee, upon arrival at NASA LaRC you must stop at the Badge and Pass Office located at the main entrance to obtain a visitor badge. Once you receive your badge, you must have it displayed above the waist at all times while on Center and take out of the holder while going through the main gate.

## Permanent or Temporary Employees

Permanent or temporary employees (working under contract) must be processed through “IdMAX”.

## Required Federal / State Government Issued Photo

All Visitors are required to present a Federal or State Government issued photo (e.g. Drivers license, state ID card, Government ID card).

The Badge and Pass Office will no longer accept state-issued driver’s licenses or identity cards that fail to meet Department of Homeland Security (DHS) standards. Currently, those states/territories include Alaska, American Samoa, Arizona, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Montana, New York, Oklahoma, and Washington. Three of the above states (Minnesota, New York, and Washington) offer an Enhanced Driver’s License (EDL), which will be acceptable. EDLs are identifiable by the American Flag on the face of the card. If you possess a license from one of the above listed states, please ensure you have an alternate form of identification with a photograph such as a passport, military ID, or federal employee badge.



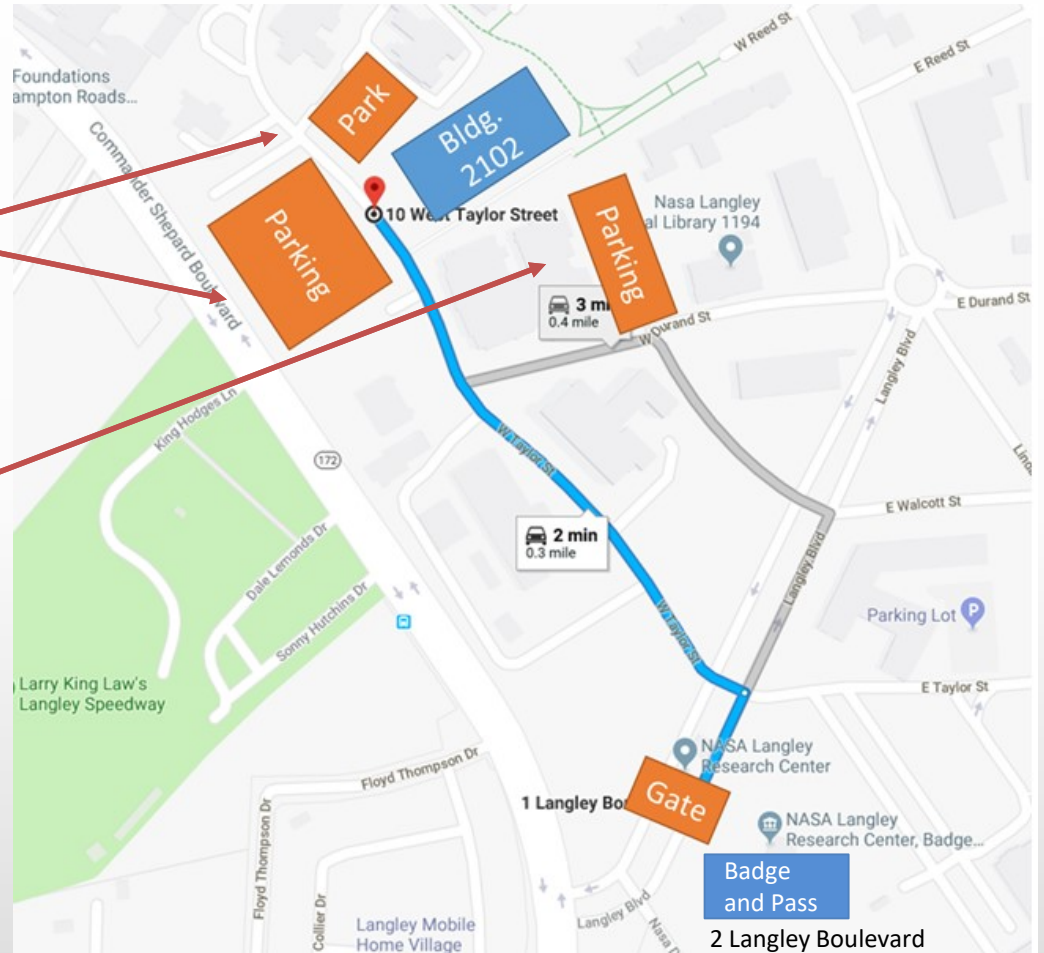
# Langley Research Center Map and Parking

Building 2102 (IESB): 10 West Taylor Street, Hampton, VA 23681

## Parking Options

Once you receive your temporary badge proceed through the main gate and immediately turn left on to W. Taylor St. and proceed 0.3 miles until you see building 2102. There is parking across the street and on the right of building 2102.

Additional parking is located prior to building 2102. Take a right turn off of W. Taylor St. onto W. Durand St. and turn left into the parking lot.











# Integrated Engineering Services Building (IESB) (Building 2102)

10 West Taylor Street, Hampton, VA 23681, Second Floor



## Second Floor Amenities

- |  |   |   |
|--|---|---|
|  Elevators  |  Restrooms           |  Workspace for Guests          |
|  Stairwells |  iSAT Breakout Rooms |  Vending Machine / Pantry Area |

# Building 2102 (IESB) Key Areas

## Langley Cafeteria

Langley's cafeteria offers a variety of menu choices daily, including hot entrees and vegetables, fresh made soup and deli sandwiches, grilled items, pit-cooked barbecue, pizza, fresh baked subs, specialty salads, a salad bar, and a variety of desserts.

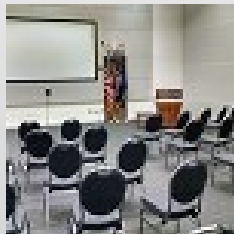


## Afterburner Social Lounge

The Afterburner Social Lounge is located in Room 171 and is open weekdays from 4:00 – 8:00 p.m. Come and relax at the end of your day with friends! Enjoy your favorite ice cold beverage and complimentary munchies. Catch upon the latest news, sports, and weather on our big screen TV, special events, and much more.

## Reid Conference Center (iSAT F2F Meeting Rooms)

Reid Conference Center is located in Rooms 100A, 100B and 100C and it spans the height of two floors. It has the flexibility to be divided into three rooms for smaller event needs and able to accommodate various seating options (auditorium-style, classroom style and conference/group table style) depending on your needs.



## Splashdown Café

The Splashdown Cafe is located in Room 110 at the NW 1st Floor Lobby area and is open 24 hours. This Cafe offers fresh food items selected to contribute to employee well-ness and dietary needs, such as all natural, low fat, and gluten free snacks. The menu also offers salads, sandwiches, dairy products, frozen entrees, and hot, cold and frozen beverages.

## Exchange Shop

The Exchange Shop located in Room 165 and sells NASA memorabilia and products. Merchandise such as jackets, polo's, T-shirts, sweat shirts, cups, tumblers, pins, umbrellas, badge lanyards and holders are just a few of the items available.



## Pearl Young Theatre

Pearl Young Theater is located in Room 108 and it accommodates up to 200.





## **Quick Bites (close to Langley)**

**NASA Langley Cafeteria** Located in IESB  
(Building 2102)

**NASA Langley Splashdown Café**  
Located in IESB (Building 2102)

**McDonald's**  
9 Semple Farm Rd., Hampton  
(757) 865-0643

**Bojangle's Famous Chicken 'n Biscuits**  
3351 Commander Shepard Blvd., Hampton  
(757) 325-8256

**Hardee's**  
3360 Commander Shepard Blvd., Hampton  
(757) 865-1473

**Taco Bell**  
3375 Commander Shepard Blvd., Hampton  
(757) 865-2000

**Tropical Smoothie Café**  
477 Wythe Creek Road, Poquoson  
(757) 659-0297

**Wendy's**  
301 Floyd Thompson Blvd., Hampton  
(757) 865-6841

**Sonic**  
200 Floyd Thompson Blvd., Hampton  
(757) 865-9111

**Panera Bread**  
2170 Coliseum Drive, Hampton  
(757) 825-2670

**Chic-fil-A**  
2140 Coliseum Drive, Hampton  
(757) 826-1277

**Jason's Deli**  
39 Coliseum Crossing #15, Hampton  
(757) 825-1501



## **Full Service Dining**

**Surf Rider/Poquoson**  
105 Rens Road, Poquoson  
(757) 868-0080  
<http://www.surfriderrestaurant.com/home>

**Park Lane Tavern**  
4200 Kilgore Ave., Hampton  
Peninsula Town Center  
(757) 838-2748  
<http://parklanetavern.com/>

**The Van Guard Brew Pub & Distillery**  
504 North King Street, Hampton  
(757) 224-1216  
<https://www.thevanguard757.com/>

**Plaza Azteca**  
50 Town Center Way, Hampton  
Hampton Roads Center  
(757) 826-3403  
<http://www.plazaazteca.com/>

**Buffet Star**  
2303 W. Mercury Blvd., Hampton  
Todd Center  
(757) 827-8888  
<http://www.buffetstarhampton.com/>

**County Grill/Yorktown**  
1215A George Washington Memorial Hwy,  
Yorktown  
(757) 591-0600  
<https://countygrill.com/>

**Harpoon Larry's Fish House  
& Oyster Bar**  
621 J Clyde Morris Blvd., Newport News  
(757) 827-0600  
<https://harpoonlarrys.com/>

**Al Fresco Italian Restaurant**  
11710 Jefferson Ave., Newport News  
Oyster Point Square Shopping Center  
(757) 873-0644  
<http://www.alfrescoitalianrestaurant.com/>

**Salsas**  
704 Mariner Row, Ste. 110, Newport News  
City Center at Oyster Point  
(757) 596-6080  
<http://www.salsasmexicangrill.net>

**Tucanos Brazilian Grill**  
11820 Fountain Way, Newport News  
City Center at Oyster Point  
(757) 597-9500  
<http://www.tucanos.com/newport-news.html>

**Hayashi Sushi & Grill**  
11820 Merchants Walk, Newport News  
City Center at Oyster Point  
(757) 223-5783  
<http://www.hayashisushigrill.com>

**Mellow Mushroom**  
The Marketplace at Tech Center  
12090 Jefferson Ave., Newport News  
(757) 931-1700  
<https://mellowmushroom.com/>

## Shopping

### **City Center at Oyster Point**

701 Town Center Drive  
Newport News  
(757) 873-2020

### **Patrick Henry Mall**

12300 Jefferson Avenue, Suite 777  
Newport News  
(757) 249-4305

### **Peninsula Town Center**

1800 West Mercury Blvd., Hampton  
(757) 826-8386

### **The Marketplace at Tech Center**

12090 Jefferson Ave., Newport News  
(757) 249-4139

### **Prime Outlets at Williamsburg**

5715 Richmond Rd #62a, Williamsburg  
(757) 565-0702

## Movie Theatres

### **AMC Hampton Towne Center 24**

1 Town Center Way, Hampton  
(757) 896-2330

### **Kiln Creek Stadium 20 (Regal)**

100 Regal Way, Newport News  
(757) 989-5298

### **Cinema Café**

1044 Von Schilling Dr., Hampton  
(757) 825-5823

### **CinéBistro**

Peninsula Town Center  
4401 West Claiborne Sq., Hampton  
(757) 325-8896

### **Paragon**

11810 Fountain Way  
City Center at Oyster Point  
Newport News  
(757) 525-9898

## Coffee Shops

### **Aromas**

706 Town Center Dr.  
City Center at Oyster Point  
Newport News  
(757) 240-4650

### **Starbucks**

762 J. Clyde Morris Blvd.  
Newport News  
(757) 595-4621

### **Starbucks**

108 Coliseum Drive, Hampton  
Coliseum Crossing Shopping Center  
(757) 838-6977

### **Starbucks**

12103 Jefferson Ave., Newport News  
Marketplace at Tech Center  
(757) 249-4005

### **Dunkin' Donuts**

3370 Commander Shepard Blvd.,  
Hampton  
(757) 766-4109  
(located near Raceway gas station)

### **Dunkin' Donuts**

11702 Jefferson Ave., Hampton  
(located in Speedway gas station)  
(757) 595-7140

### **Dunkin' Donuts**

2129 W. Mercury Blvd., Hampton  
(located in Miller Mart gas station)  
(757) 262-1121

## Golf Courses

### **The Hamptons**

320 Butler Farm Road, Hampton  
(757) 766-9148

### **Riverfront Golf Club**

5200 River Club Dr., Suffolk  
(757) 484-2200

### **Kiln Creek Golf and Country Club**

1003 Brick Kiln Blvd.  
Newport News  
(757) 988-3220