Florida Institute of Oceanography
Deep Sea Remotely Operated Vehicle
&
Ocean STEAM Workforce Development Program

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Deep Submergence Science Committee & New Users Meetings

Florida Institute of Oceanography

- 32-member consortium
- 3 vessels, Keys Marine Lab, research grant office
- Mission to support marine research & education

R/V *Western Flyer*

LOA 117’
Beam 53’
Draft 12’
Speed 8.5-9 kts

Work Spaces & Capacity

- 11 Crew
- Inc. Marine Tech
- 15 Science team (ROV Team: 4 per 12-hours)

- FIO contracted PRS to build a 4000-meter ROV system integrated to the R/V Western Flyer based on the Odysseus 6K ROV System

- PRS will operate, maintain the Odysseus 4K ROV System and provide subsea navigational support for FIO in support of their science and educational goals utilizing this subsea asset

"At the core of the PRS/FIO relationship is a collaboration between a public entity and private (commercial) company – focused on achieving the vision and specific mission objectives... like the Peerside program!"

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INSTITUTE OF OCEANOGRAPHY
FIO

ODYSSEUS 4K

KNOWN SPECS

GENERAL

Depth Capability: 4000 Meters

Size: (with basic science skid)

Length:	93.125" (2365 mm)
Width:	55" (1400 mm)
Height:	84" (2134 mm) (TBD)

Weight (in air): 3,500 to 4,200lbs (TBD)

Payload: 150 to 250lbs (TBD)

Through Frame Lift

(Ratings are for the "in air" weight of the package being deployed or recovered.)

- Vehicle rated for 1500lbs
- 2 load releases, rated for 750lbs each
- Vehicle frame designed to accommodate customizable project specific work and science skids

PROPULSION

Seven hydraulic thrusters powered by 18.6Kw (25HP), 2,000 PSI hydraulic system

Fore/Aft/Lateral	Four Axial Mounted, 10-inch ducted thrusters, each providing 590N (133LBF)
Vertical	Three, 10-inch ducted thrusters, each providing 590N (133LBF)

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INSTRUMENTS/TOOLING

Manipulators
Vehicle designed to accommodate 2 Schilling Orion 7P manipulators (1 now, 1 future)
- 1 Schilling Orion 7P Manipulator mounted on starboard side
- 1 5-function, rate-controlled manipulator on port side

Hydraulic
- 2000 PSI system
- 1ea 6-position auxiliary valve-pack at 700 PSI
- 1ea spare bidirectional port at 2000 PSI
- Connection points for additional valve pack (future)

Video
- 4K Insite Pacific Mini Zeus on dedicated fiber
- 2 Imenco Dusky Shark parallel green lasers (10cm spacing)
- 4 Analog Deep Sea Power & Light (DSPL) Cameras
  These utilize 4 of the 6 total available analog video channels
- 2 IP HD DSPL Multi SeaCams

Lighting
- 5 DSPL LED 90CRI High Output SeaLites(9600 Lumens each)
- 3 DSPL LED 70CRI High Output SeaLites(13000 Lumens each)
- Vehicle wiring allocated for 10 lights, but only 8 lights and receptacles included

Heading and Attitude
- TBD – Vehicle designed to accommodate an INS

Pressure Sensor
- Paroscientific Digiquartz pressure transducer

Altitude
- Tritech PA200/20

Doppler Velocity Log
- Vehicle designed to accommodate a future DVL (connected to an INS)

Sonar
- Tritech Super SeaKing DST sonar, dual frequency (325 and 675kHz), range 0.4 – 300 M

Data
- 4 spare RS232 channels at J-boxes
- 2 spare RS485 channels at J-boxes
- 2 GB Ethernet connections at Main Bottle

Power
- 24VDC at junction boxes for spare RS232 and RS485 channels

Unused
- 23 unused wires from Main Bottle to Port J-box
- 4 blanked Port J-box connectors
- 18 unused wires from Main Bottle to Stbd J-box
- 3 blanked Stbd J-box connectors

SCIENCE SKID

Usable Width: 48" (1219 mm)
Usable Length: 30.25" (768 mm)
Usable Height: 18" (457 mm)

Outfitted with hydraulic tray to accommodate various science kit including push cores, bio boxes, etc. Basic design feature is for the skid tray to retract so video field in front of the ROV is free and unobstructed.

Configurable science skid

ROV Timeline

December ‘23: Frame delivered
May ‘24:ROV delivery & integration
June ‘24: Engineering trials
July ‘24: Science missions

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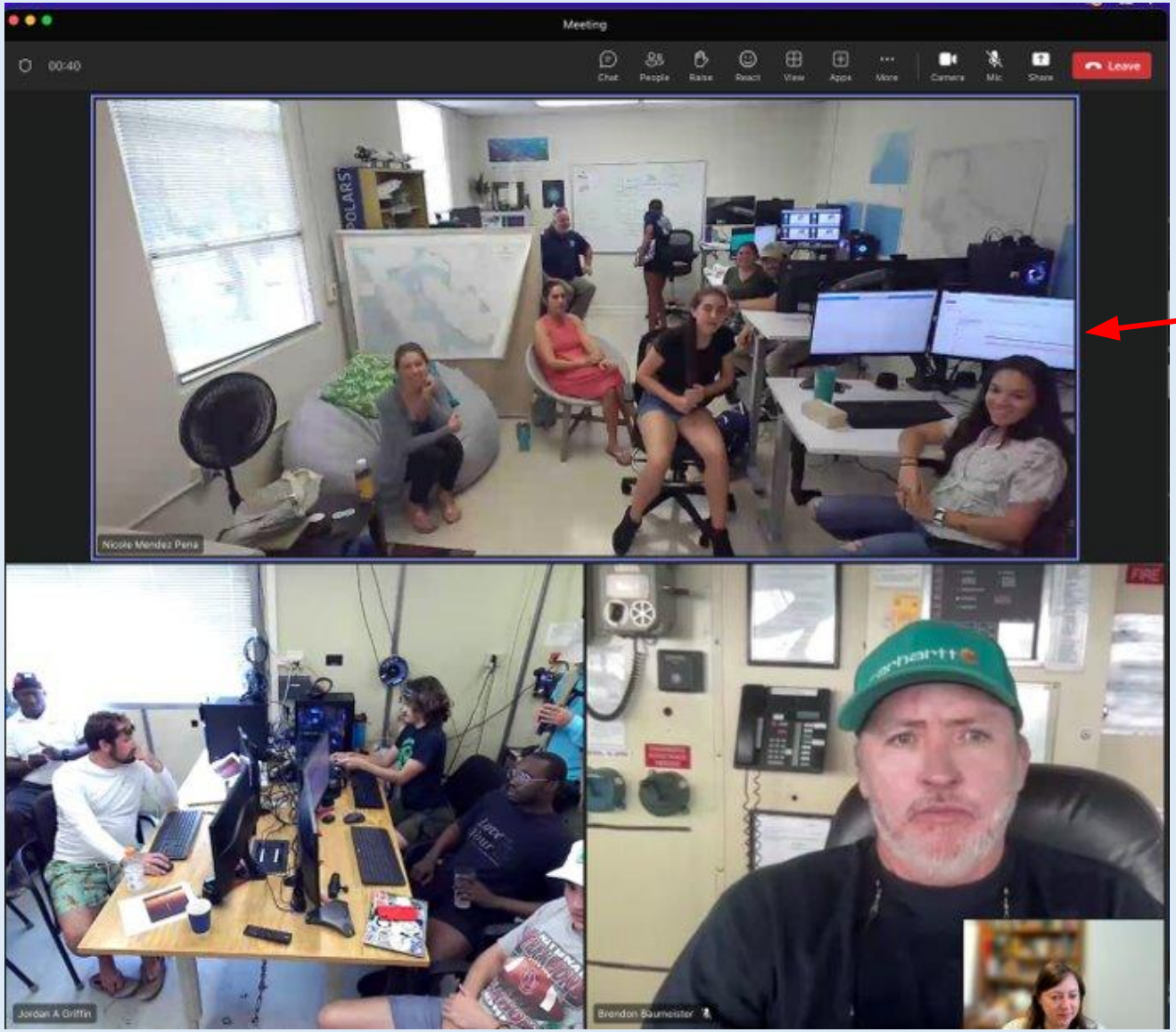
PEERSIDE℠: developing the new blue economy workforce



15 “scientists”

Shore-based persons:
- Researchers
- Classrooms
- Operators
- Public

PEERSIDE℠

2024 Peerside Program


Peerside Expedition Planning Workshop Nov 2023

Jasmin Graham	• Minorities in Shark Sciences (MISS)
Jay Haigler	• Diving with a Purpose (DWP)
Bekka Larson	• Scientist at Sea (SAS) Eckerd College
Andrea Balbas	• California State University Long Beach (CSULB)
Tara Willis	• Long Beach City College (LBCC)
Lauren Simonitis	• Florida Atlantic University (FAU)
Mercer Brugler	• University of South Carolina Beaufort (USCB)
Erik Cordes	• Deepsea Biology Society (DBS)

"Geology & shipwrecks" Expedition July
"Sharks & corals" Expedition August

8 mentors & 23 students

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Questions?

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