

R/V Falkor UAV Science



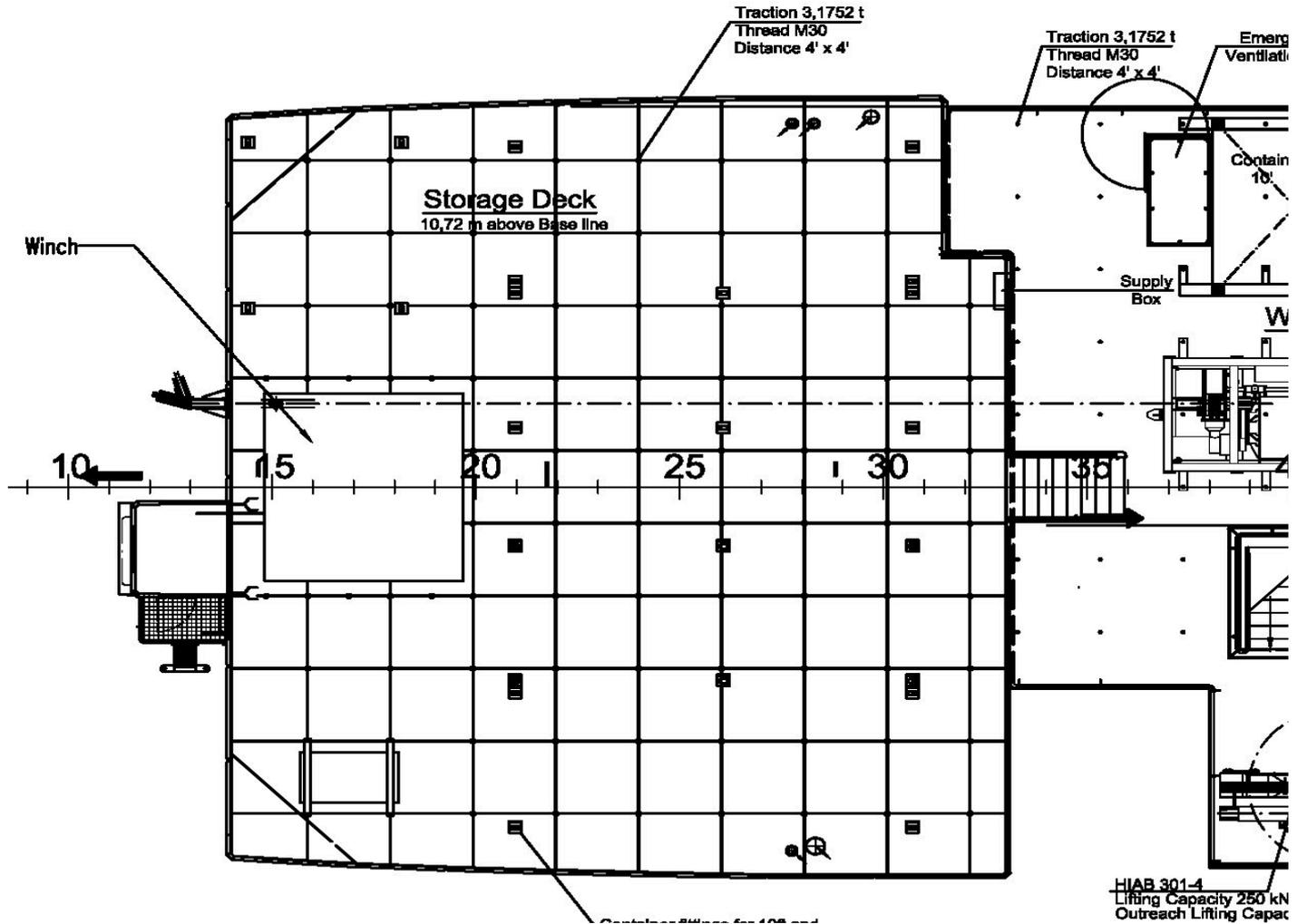
Schmidt Ocean Institute Strategic Areas of Strategic Focus

1. Commitment to excellence in oceanographic research operations
2. Infrastructure, platform and technology development for marine sciences
3. Collaborative scientific research aboard Falkor
4. Communications, education and outreach
5. Open sharing of information, data and research outcomes
6. (Supporting projects deemed high risk by other institutions and funding agencies)



**SCHMIDT OCEAN INSTITUTE 2016
UAV USE**

Falkor Flight Deck



HQ-60



HQ-60

IN PRODUCTION

Designed for long endurance, 12 to 24 hours, and an 8 to 12 pound payload capacity. This aircraft is intended to demonstrate the excellent endurance achievable with Hybrid Quadrator™ technology.

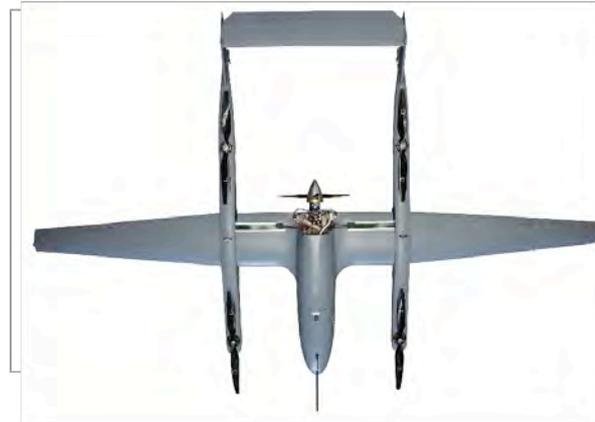
HQ-60



HQ-60B PERFORMANCE

PARAMETER	PERFORMANCE
Glide Slope	10:1
VTOL Endurance	5 minutes
Fixed Wing Endurance	15 hours
Loiter Speed	33kts
Cruise Speed	40kts
Dash Speed	60kts
Useful Load	42lbs
Payload	12lbs
Empty Weight	45lbs
Max Gross	95lbs

96 in
[243.8 cm]



150 in [381 cm]

HQ-60 Payload



HQ-60 Assembly



HQ-60 Landing





**SCHMIDT OCEAN INSTITUTE
UPCOMING UAV USE**

2018 UAV Cruises – Tasso

- FK180528
- Ship-based Integrated Networked Vehicle Systems (SINVS)
 - Sampling physical, chemical and biological features
 - NetOS development and high degree of autonomy and inter-asset communication

Tasso (cont.)

- AUVs, ASVs and UAVs
 - Two types of fixed wing UAVs (six in total, 120" flight)
 - Two types of multi-copter VTOL UAVs (90" flight)
 - Two Wavegliders
 - Seven small (one person portable) AUVs
 - One larger AUV
 - Aerially deployed Drifters

Tasso (cont.) UAVs



Based on the X8 RC model airframe <http://www.lsts.pt/vehicles/x8> fully integrated with the LSTS software toolchain <http://www.lsts.pt/toolchain>

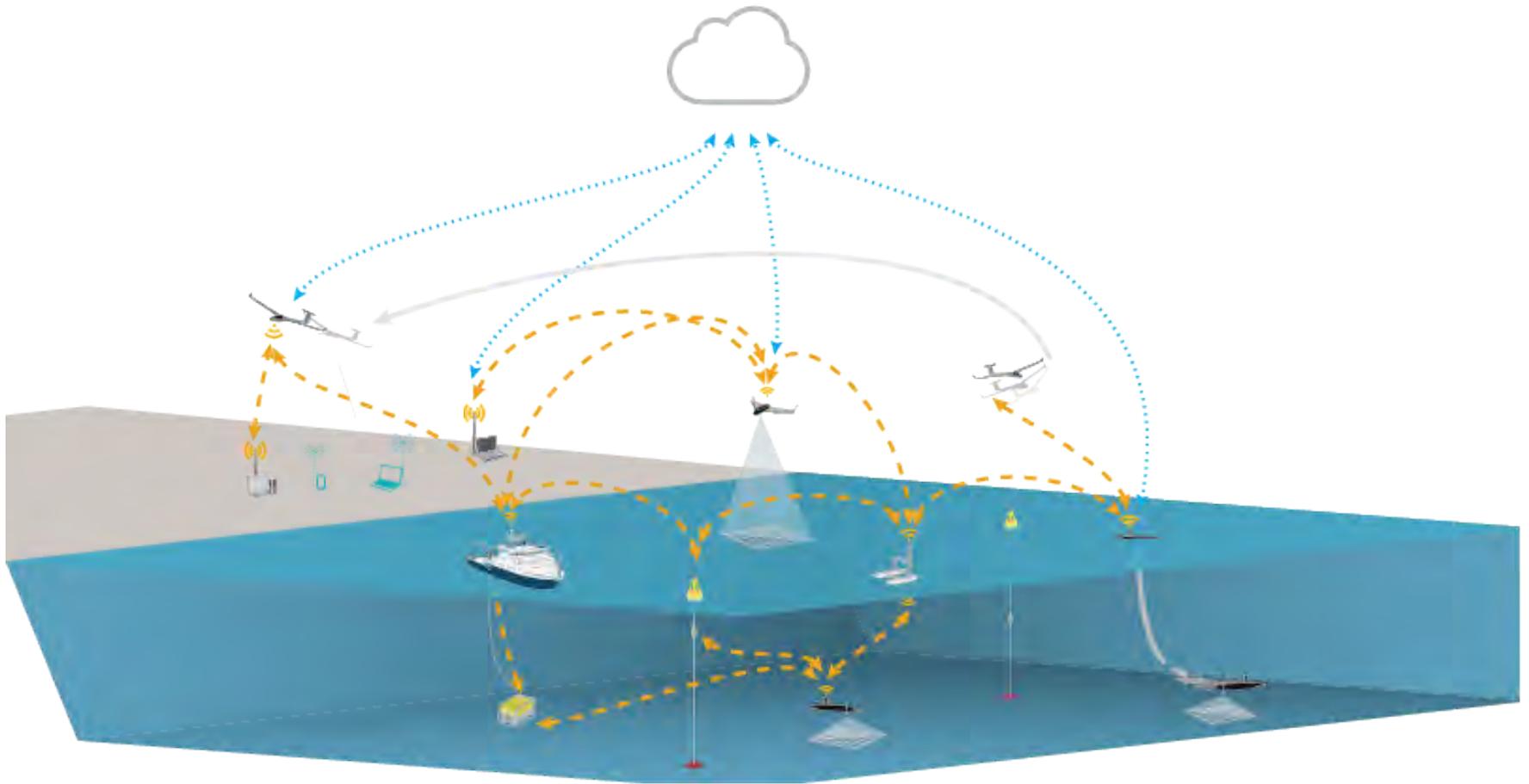
Wingspan	212 cm
Length	60 cm
Weight	Starting at 1.5 up to 3.5 Kg
Endurance	Up to 60 min
Maximum Altitude	600 m
Wind tolerance	Mean 14 Kts Max 18 Kts
Camera	HD 720p on-board recording and streaming / IR
Communication	Wi-Fi 2.4Ghz

Cruiser Mini



- 18 m/s cruise speed
- 9 kg MTOW
- Catapult launch
- Belly or net landing
- Electric, 1-2 hr endurance
- Flexible payload bay
- 1-2 kg payload capacity
- Flexible avionics and payload system integration with ArduPilot open source autopilot and mission planning SW
- Telemetry on 433 MHz or 5.8 GHz radio
- BLOS >20km

Tasso (cont.)



2019 UAV Cruise Proposals

- 2019 proposals are still in the evaluation stage
- Two proposals in review requesting UAV use

2019 UAV Proposed Project #1

- Project 1:
 - Instrumentation requirements similar in scope to 2016 UAV cruise
 - Mission scope similar to 2016 project
 - Would strongly consider using Latitude HQ-60B again

2019 UAV Proposed Project #2

- Project 2:
 - Use of two small VTOL UAVs to detect derelict fishing gear

Schmidt Ocean Institute – The Future

- Continuing to expand upon areas of strategic focus (5-10 year time frame)
 - Technology development for researching marine science
 - Interest in exploring the transition from ship based research to information gathering using autonomous vehicles
 - UAVs may play an important role in data movement and atmospheric and sea surface and data collection