WHO AM I?

MARINE TECHNICIAN SUPERINTENDENT - OSU MTG

iRobot, Texas A&M, BIOS

RVTEC **SCOAR** rep – *future* RVTEC Chair
What we’ve done

- **Procured** UAS’s to support science objectives on the R/V Oceanus
- **Hosted** a UAS training event at the OSU MTG facility
- **Obtained** Part 107 certifications via the FAA for all OSU MarTech’s
- **Utilized** UAS’s to support public outreach
- **Developed** OSU MTG specific US documentation (JSA/SOP)
Training

Part 107 training with General Pacific. A 2-day “cram” course with a guaranteed Part 107 test pass.

Continued pilot training and system familiarization within team
Task to Be Accomplished: Deployment and Recovery of Drone in Flight

Potential Hazards:
- Projectile from broken propeller
- Entanglement of drone in ship's equipment
- Loss of sight of drone
- Wave and swell action enhance potential for hazards
- Wind effects within proximity of the ship
- Personal injury when performing hand launch / landing
- Battery failure
- Experiencing external distractions or interruptions may enhance potential hazards
- Lack of adequate communication may enhance potential hazards
- Line or cable in water being caught in the propulsion system
- Deploying or recovering before everyone is notified and ready, particularly the bridge officer
- Personnel falling overboard while working near deck edge

Environmental Concerns:
- Loss of Drone at sea
- Loss of Li Batteries

Environmental Controls:
- Maintaining adequate battery levels for flight and return
- Maintaining visual on drone when in flight
- Ensure positive control of all components as they are brought on board.

Personal Protective Equipment: (Note: Some items may or may not be required depending on the situation, company policy, etc.)
- Eye Protection
- Hard Hat
- PFD
- Safety shoes
- Work clothing appropriate for outside deck work
SOP (standard operating procedure) & vehicle specific user manual

Includes:
- Flight planning
- How to submit a NOTOM (notice to airmen, which is required if operating in controlled airspace)
- Piloting instructions specific to each vehicle
- How to operate the vehicle's controls
- Tips and techniques for piloting
- Account usernames and passwords
- Video editing instructions
- Where to find help if needed
Drone resources at OSU

- Drone Group (on campus)
- COA *(OSU moved away from this and is pushing for all OSU UAS pilots to just get their own part 107’s)*
- Drone Compiler app *(A great resource to logging flight data, and used to be required when OSU provided the COA)*
- UAS training at University for students and employees
- OSU has its own UAS policies depending on how they’re being used
- OSU will register our drones with the FAA for us *(and make sure we stay current)*
Satellite Domes - Grey whale Thermal
Photo Finish Friday (not a thing; we just made it up): great aerial view of Ship Ops, NOAA MOC-P, Yaquina Bay Bridge, and beyond, taken with the OSU Marine Technician Group's aerial drone.
OSU MTG drone science uses on Oceanus

UAS utilized to video whales
Tracy Crew’s 2019
*OSU MarTech served as pilot in command b/c scientist’s Part 107 expired*

View an R&D vehicle being towed off the starboard side as well as to look at waves over the horizon
Jim Moum – two cruises 2018 & 2019
*Footage utilized in ONR conferences*

Credit: Leigh Torres
Seaglider Deployment/Recoveries
Sarah Webster 2021
Footage significantly utilized in UW APL documentary
Oceanus's NSF/JMS inspection
OSU Ship Operations facility
First drone flight - R/V Oceanus
Vehicle = *Splash Pro* w/Herō GoPro
Last drone flight - R/V OCEANS
Vehicle = Mavic 2 Enterprise Dual
OSU MTG public outreach with drones

Marine Technician Kristin Beem presenting at a public outreach event hosted by the Oregon State CEOAS Marine Technician Group in their Corvallis workshop. Photo by Andrew Woogen

Send Announcements (and photos!)
OSU MTG Pilot Training – how to land a UAS on a moving ship (catch it?)
Future of UAS’s with the OSU MTG

• Anticipate more use cases identified by the science community
• Continued training on UAS piloting and operating off a moving ship
• Explore new payloads (sensors?)
• Invest in spare equipment and innovation
• Renew part 107 certs every 24 months for all OSU MarTech’s
• Establish clear expectations of UAS services MarTechs will provide to the ship-using science community
R/V Armstrong
RVTEC Community

• Guidance on ‘hobbyist’ drone use on ARF vessels
• Requested recommendations of vehicle type (R/V Langseth seismic)
• Create list of new technology possibilities & technical support needed
• Seeing an increase use in fleet and anticipate more
• Overall lots of interest by the RVTEC community, but also hesitation
Future of UAS’s in RVTEC – potential

• Consider a center for excellence – one MarTech Group could spearhead this innovation to provide a service to the science community as needed. Potentially funding as a specialize service.

• Consider group training for UNOLS MarTechs, to economically and efficiently train MarTechs in UAS’s and get them part 107 certified

• Consider establishing a fleet-wide COA for UAS operations in the MarTech community. Which could include a set of requirements (ex. Training/vehicle registration/flight data recoding/mission ops pre-approval…)

• Establish clear expectations of UAS services MarTechs will provide to the ship-using science community
OSU MTG’s UAS Mavic2 Enterprise Dual

4K video gimbal
FLIR thermal camera
Daylight readable display/controller
Strobe light for dusk/dawn flights
Speaker
Spot light
Floats
Protective case and spare batteries/parts