DACUM VALIDATION CHART:
UAS Remote Sensing Technician

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DACUM Validation Chart for UAS Remote Sensing Technician

Occupational Definition: A UAS Remote Sensing Technician assists in the collection, processing, distribution and preliminary analysis of remote sensing data collected by UASs by supporting the efforts of UAS pilots and senior data analysts in planning, operations and data processing to produce accurate and precise spatial data deliverables in a timely manner for use in geographic information systems (GIS) or other data visualization platforms.

Duties	Tasks					
A Provide Pre-Flight UAS Support	A1 Coordinate pre-flight site visit logistics	A2 Prepare required FAA waivers (if necessary)	A3 Plan flight route	A4 Calculate duration of flight	A5 Prepare UAV for flight	A6 Charge UAS batteries
	A7 Identify mission accuracy requirements	A8 Implement ground control	A9 Generate pre-flight map and documentation assets for pilots	A10 Check weather forecast	A11 Identify obstacles and/or terrain hazards	A12 Conduct pre-flight safety inspection
B Provide In-Flight UAS Support	B1 Evaluate current environment (airspace and ground) conditions	B2 Collect physical/ environmental samples	B3 Assess current weather conditions	B4 Support PIC as needed during flight	B5 Exchange charged/ uncharged UAS batteries	
C Provide Post-Flight UAS Support	C1 Provide post-flight pilot support	C2 Evaluate data quality	C3 Report sensor validation status	C4 Create back-up of flight data	C5 Inventory UAS equipment	C6 Perform post-flight UAS inspection and maintenance
	C7 Disassemble and pack UAS and equipment	C8 Record flight logs and paperwork	C9 Transfer data to GIS database	C10 Execute post-flight data processing		
D Manage Spatial Data	D1 Clean remote sensing data	D2 Extract spatial information	D3 Conduct spatial/non-spatial analysis (raster and vector)	D4 Store files in established structure	D5 Classify data into appropriate category (photogrammetry, lidar)	D6 Update spatial meta data
E Process Spatial Data /Develop Deliverables	E1 Perform QA/QC of data sets	E2 Execute pre-developed test scripts	E3 Generate spatial statistics	E4 Perform heads-up digitizing	E5 Create image data	E6 Create maps and figures
	E7 Create point clouds	E8 Classify point clouds	E9 Develop mesh data sets			
F Perform Administrative Tasks	F1 Maintain flight credentials	F2 Distribute digital products	F3 Document hardware maintenance	F4 Finalize flight logs		

Occupational Profile: UAS Remote Sensing Technician

Knowledge & Skills

- Application specific knowledge (forestry, public safety, agriculture, constructions, etc.)
- Basic programming (VBA, SQL)
- Basic statistics
- Basic trigonometry
- Business communication
- Cartography
- Data manipulation techniques
- Datum transformations
- FAA regulations
- GPS principles
- Histograms
- Knowledge of pre-flight conditions
- Knowledge of spatial data structures
- Land surveying basics
- Managing large data sets
- Map projections
- Photogrammetry basics
- Photogrammetry techniques
- Raster data analysis
- Software and hardware management
- Spatial thinking
- Spectral signatures (reflectance)
- Understanding needs of pilot-in-command

Tools & Equipment

Hardware

- Laptop
- PC
- Tablet
- UAV
- UAV controller

Software and Apps

- B4UFly
- Drone Deploy
- FAA resources
- Firmware for specific UAV
- GIS software
- Office Applications
- Windows Operating System

Data Sources

- Esri.com
- Industry-specific sites
- State and local GIS data clearinghouse
- Aerial photographs
- Digital Elevation Models (DEMs)

Licenses/Certifications

- Part 107 Preferred

Traits & Behaviors

- Ability to follow checklists
- Accept constructive criticism
- Attention to detail
- Common sense
- Cooperative
- Ethical
- Multi-tasking
- Mutual respect
- Prints legibly
- Self-disciplined
- Self-quality control
- Spatial awareness
- Spatial aptitude
- Teachable
- Team player
- Tech savvy
- Troubleshooter
- Visual interpretation
- Willingness to learn
- Work independently

Physical Attributes

In order to perform the necessary functions of the job, the worker must be able to:

- Sit for 6 hrs (with breaks and lunch)
- Lift up to 15 lbs. without help
- Hear, or use appropriate accommodation to communicate with people via phone/in-person
- Read information on computer screen - legally blind is OK, must be able to use computer screen
- Use hands to type (need enough dexterity and mobility to perform this function)
- Use hands to change batteries and perform UAV maintenance
- Able to see and distinguish colors

Acronyms Used

- DEM : Digital Elevation Model
- GIS : Geographic Information System
- GPS : Global Positioning System
- Lidar : Light Detection and Ranging
- RS : Remote Sensing
- SOP : Standard Operating Procedure
- SQL : Structured Query Language
- UAS : Unmanned Aerial System
- UAV : Unmanned Aerial Vehicle
- VBA : Visual Basic

Future Trends

- Cloud computing
- Software as Services (SAS)
- Remote work
- Augmented reality
- BIM—building information modeling
- Crowd sourcing
- Freeware/Open source software
- Beyond visual line of sight
- Inspections using UAS
- Operations over people

Please note: This DACUM panel was convened virtually during the global COVID-19 pandemic in 2-hour Zoom meetings held on three days in November of 2020. The use of a virtual DACUM panel was necessary because many people (including the industry panelists) were having to work remotely. Social distancing requirements were also in place, making an in-person DACUM session unsafe and impossible.

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