



VALKYRIE UAS SOLUTIONS

MHA Nation DoT SMART Grant Debrief

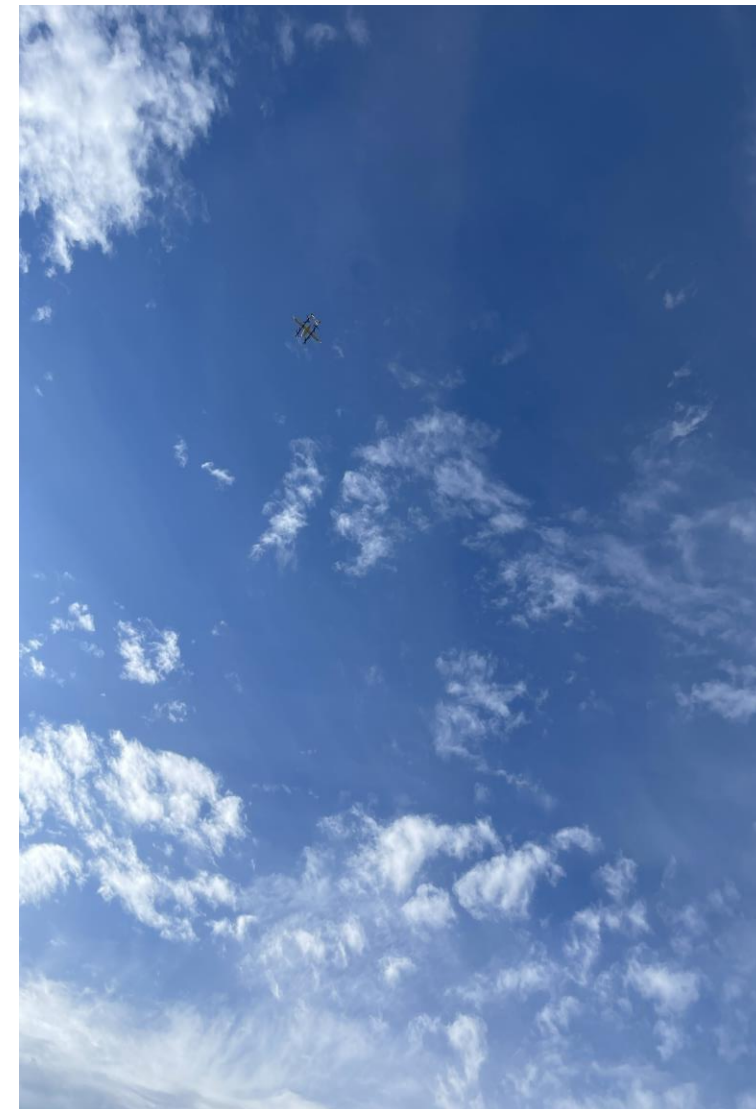
October 11, 2024



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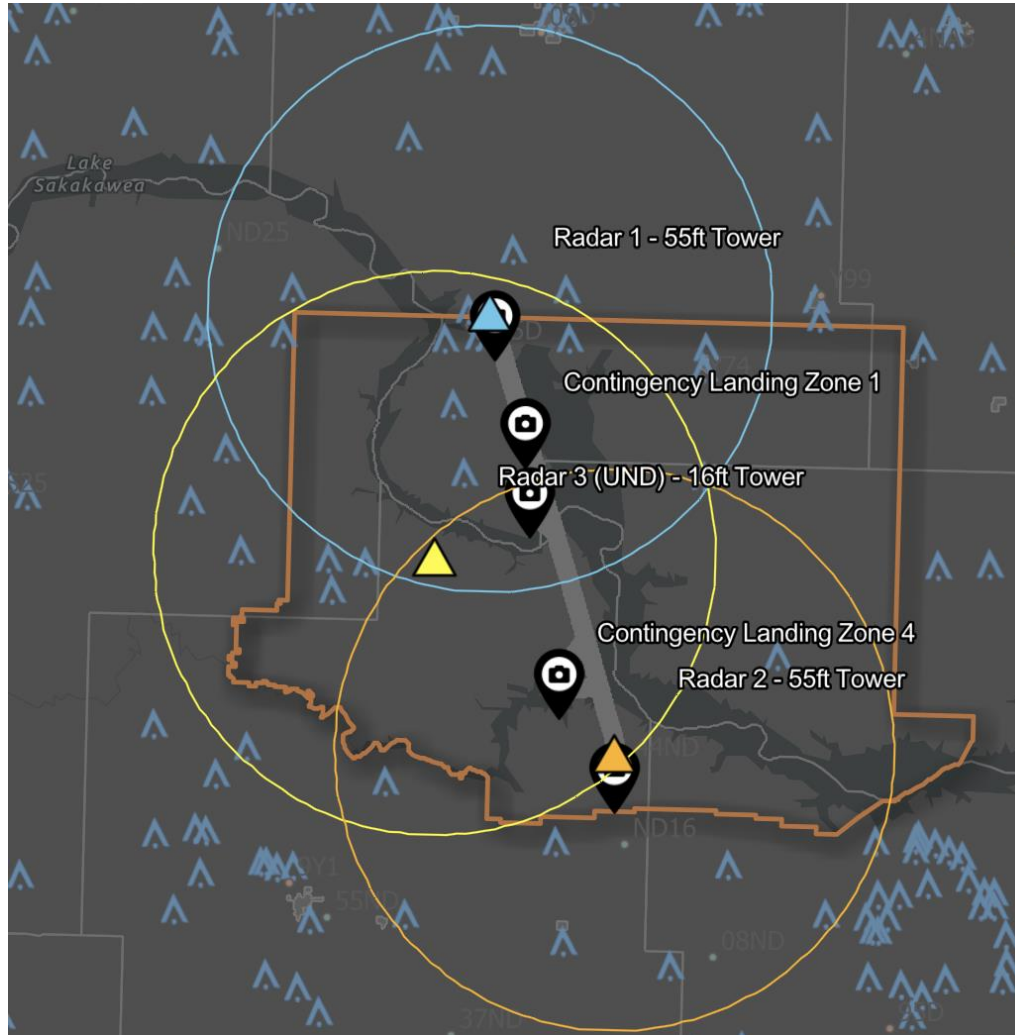
MHA Nation Debrief

- Background
- Service Area
- Platform
- Preparation
- Check Flights
- Protocol Flight



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MHA Nation Protocol Flight Operations



DoT SMART Grant 2022

- Critical Medication Transportation*
- Rural Clinic Resupply Operations*
- Beyond Visual Line of Sight (BVLOS) UAS Operations*

Swoop Aero: Kite UAS Platform



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Max range: 105 miles

Max payload: 5.5 lbs*

Cruise speed: 76 mph

Flight Operations Preparation



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- Site Survey
- Pre-coordination – 27 Agencies
 - NOTAM
 - *New Town Municipal Airport (05D)*
 - *Dunn County Weydahl Field Airport (9Y1)*
 - *Pete's Port Airport (55ND)*
 - *Beulah Airport (95D)*
 - *Mercer County Regional Airport (KHZE)*
 - *Washburn Municipal Airport (5C8)*
 - *Lorentzen Airport (3NA2)*
 - *Garrison Municipal Airport (D05)*
 - *Parshall-Hankins Airport (Y74)*
 - *Watford City Airport (S25)*
 - *Dickson/Theodore Roosevelt Regional Airport (KDIK)*
 - *Stanley Municipal Airport (08D)*
 - *Williston Basin International Airport (KXWA)*
 - *Fredricks Ranch (44ND)*
 - *Spotters Aerial AG LLC*
 - *MASTER OF NONE LLC*
 - *AERO SPRAYING SERVICE INC*
 - *DEKALB AVIATION LLC*
 - *WILLIAMS CO VECTOR CONTROL DIST 1*
 - *Dakota Helicopters*
 - *HBK Engineering*
 - *Marathon Oil*
 - *Synergy Oilfield Services*
 - *XTO Energy*
 - *Dakota Gasification Company*
 - *Petro Hunt*
- Visual Observer Training – 9/13
- Hub Training – 9/15
- Check-out Flight – 9/16
- Safety Briefings – 9/15-9/18
- Coordination Calls via Teams Meetings – 9/17-9/18

Hub Training & Flight Operations Check Flights



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Designated Launch & Recovery Areas

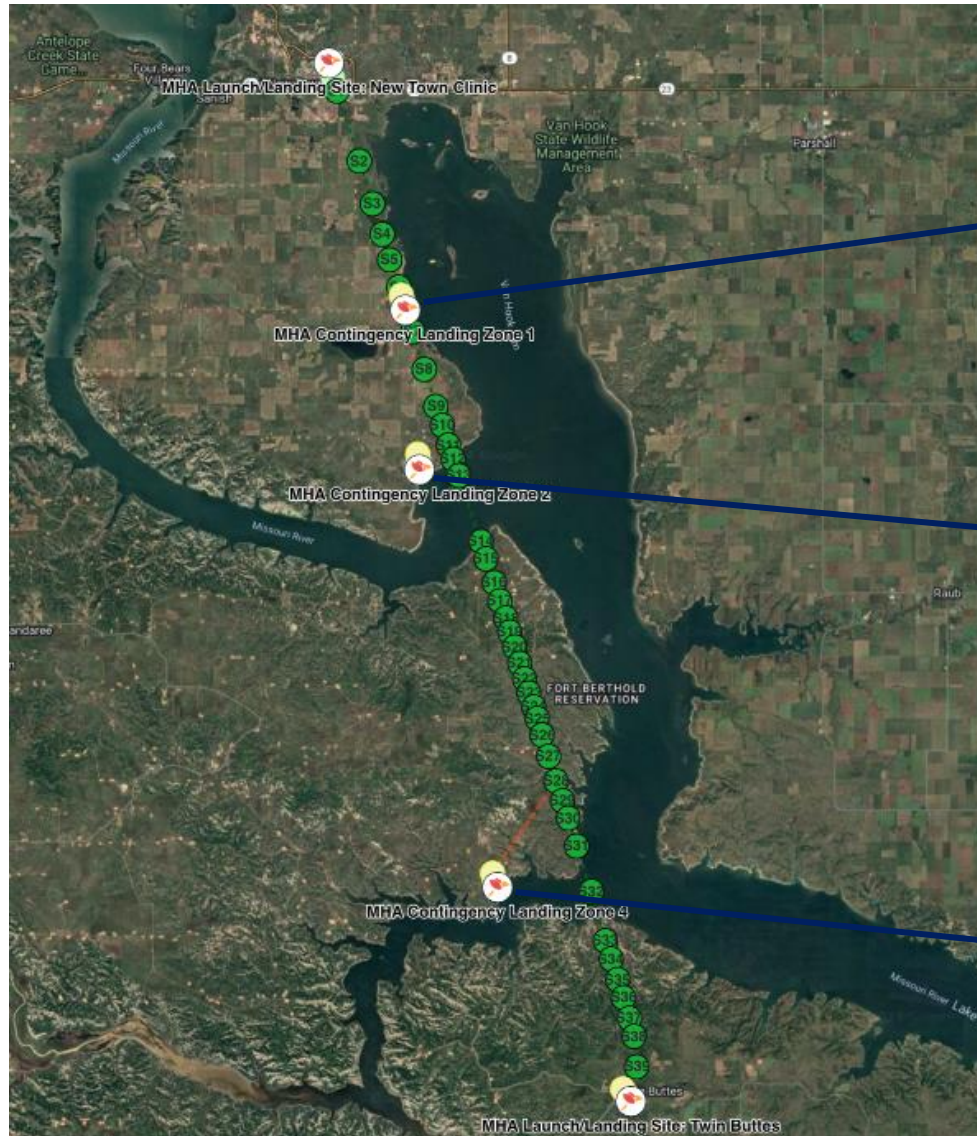
New Town Launch / Recovery Area



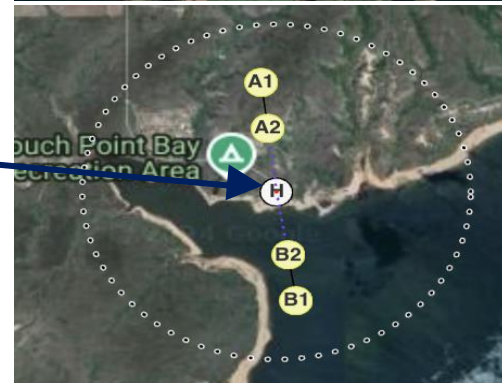
Twin Buttes Pavilion Launch / Recovery Area



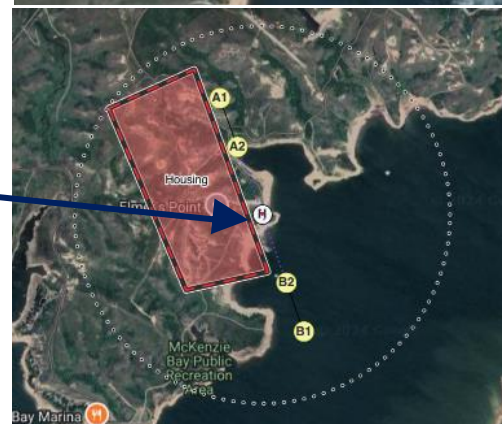
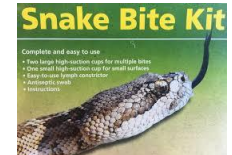
Planned Flight Operating Area



Contingency Landing Location 1
47.876557/-102.4150621



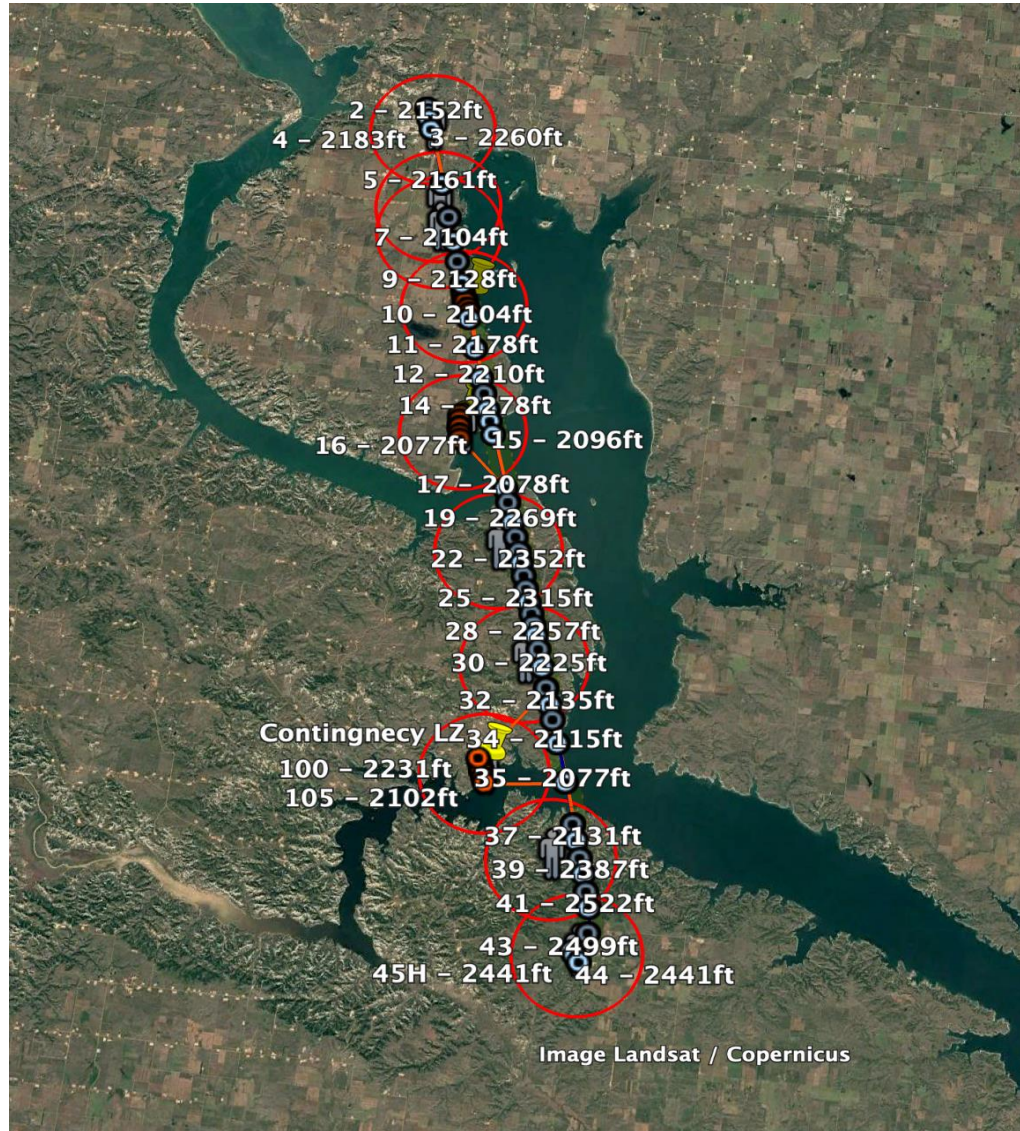
Contingency Landing Location 2
47.8018528, -102.4053649



Contingency Landing Location 4
47.6104809/-102.351824



Visual Observer Locations



Erin/Greg: New Town Road

V01) Greta: 47.934498°, -102.450114°

V02) Ian: 47.919953°, -102.446487°

V03) Jeff: 47.876987°, -102.418888°

V04) Sean: 47.802336°, -102.404893°

V05) Steven: 47.737049°, -102.364850°

V06) Shawn: 47.674424°, -102.333032°

V07) Kyle: 47.610296°, -102.352012°

V08) Hunter: 47.566961°, -102.293282°

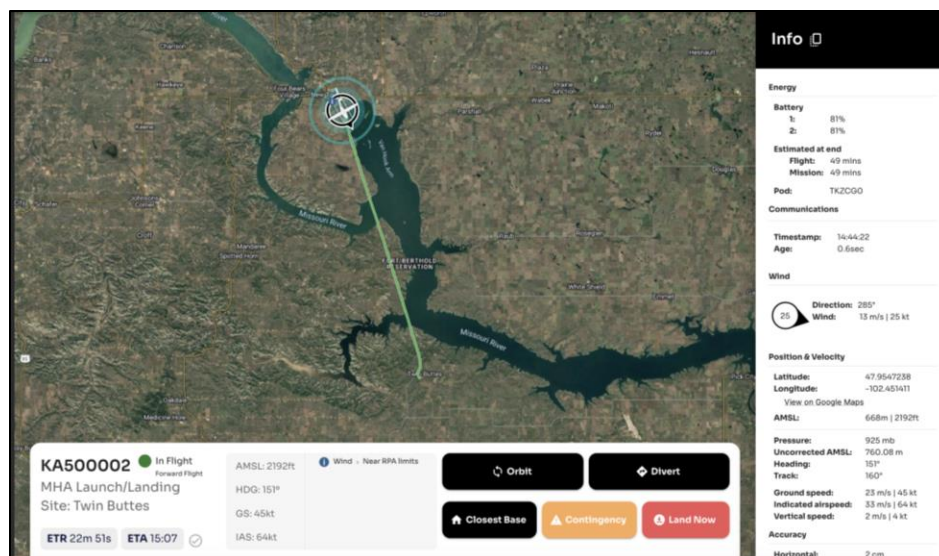
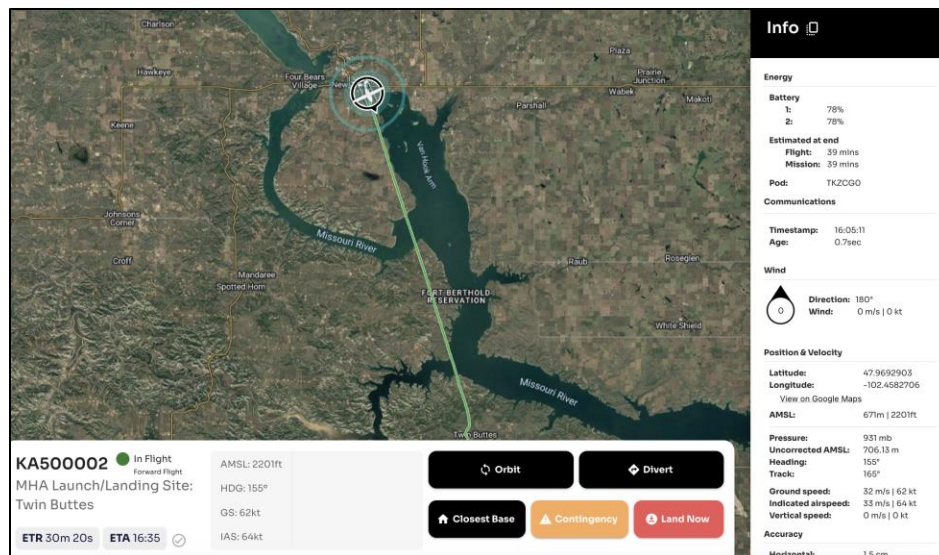
Scott: Twin Buttes Road



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34-Mile Beyond Visual Line of Sight (BVLOS) Waiver

Flight Operations



Mission	Travel Distance	Travel Time	Speed
1. New Town to Twin Buttes	34.8 Miles	30 Mins	62 kts
2. New Town to Twin Buttes	34.8 Miles	39 Mins	45 kts
Speed			
Average	34.8 Miles	34.5 Mins	53.5 kts
Total	69.6 Miles	69 Mins	

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S W O O P A E R O

Lessons Learned

- Site Survey/Geo Location Adjustments
 - *Modified New Town launch location to VA from Elbowoods clinic >100' up a hill as road construction that was to be completed the week prior had been delayed due to weather*
- Communication
 - *Flight Operations Team was not notified that the ND UAS Test Site would require 8 VOs until 9/13*
 - The risk assessment was updated by the Flight Operations Team and accepted the introduction of the VOs with safety mitigations
 - *Aircraft was on cellular coverage throughout flight operations*
 - 9/17 experienced a 20-second delay 1 time that resolved itself, otherwise, a millisecond to second delay was observed throughout the flight;
 - 9/18 experienced milliseconds to seconds delay throughout the flight
 - *Teams Meeting worked well coordinating across participants*
- Equipment/Shipping
 - *Multiple shipments from different locations resulted in challenges with getting the aircraft assembled and operational*
 - *Worked through a few unexpected challenges*
- Facilities
 - *Earth Lodge Village proved to be a perfect location for aircraft assembly, calibration, training, and preparation*
 - *The Facilities Team was wonderful to work with and was very accommodating*

Lessons Learned

- Check Flight – All systems performed nominally
- 1st Flight – 9/17
 - *Waited for the fog to lift resulting in delay of launch*
 - *Landed 30 meters from intended landing target*
 - Spectators were undercover and well away from where aircraft landed
 - Root cause analysis showed update to landing location did not take
 - Remediation: adjusted landing location in system for future flights
 - Remediation: adjusted process for future planning/authorizations
- 2nd Flight – 9/18
 - *Fight was at wind limit resulting in longer flight time*
 - *Aircraft operated nominally*
 - *Landed on intended target*



Twin Buttes Landing Location – Off Target



Twin Buttes Landing Location – On Target



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Community Outreach

Community Impact



MHA Nation's drone project takes to skies

Drones to make medical deliveries

NATIVE AMERICAN HERITAGE MONTH

Native American Series: MHA Drone Project test flight takes off

by: Corbin Warnock
Posted: Sep 24, 2024 / 07:09 PM CDT
Updated: Sep 25, 2024 / 07:55 AM CDT



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