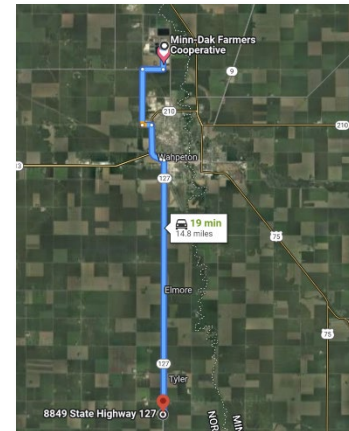
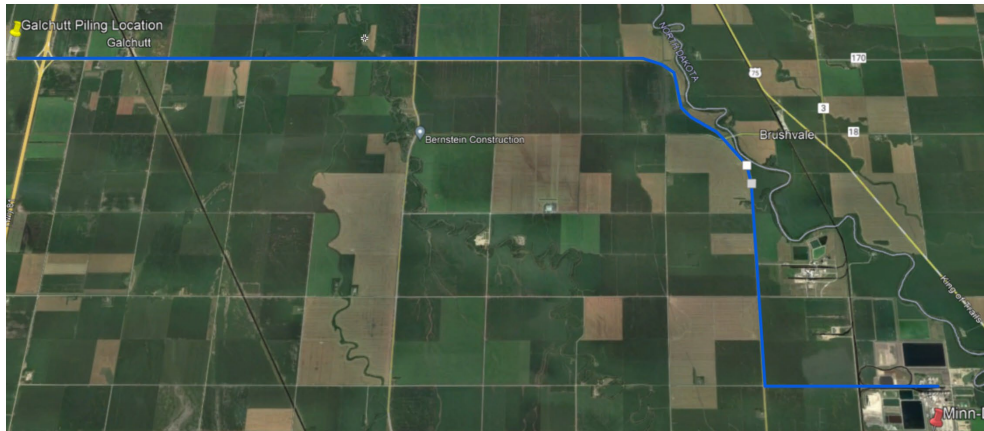


2022



MDFC Deployment Overview

Deployment Plan



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Deployment Pilot Plan

The MDFC/Kratos test plan is to operate the Leader/Follower Platoon in a multi-phased 1-year pilot program.

Pre-ND Truck Delivery	6 months		6 months	Next Phase
Pre-Pilot Deployment Phase	North Dakota Pilot – Phase 1 w/ on-board Safety Rider	North Dakota Pilot – Phase 2 w/o on-board Safety Rider	Scaled Deployment	
Florida System Validation <ul style="list-style-type: none"> • Preliminary Test/Tune • 0 – 20 mph operation • 20 – 45 mph operation • 45 – 75 mph operation 	Route 1 – Galchutt <ul style="list-style-type: none"> • Operate in Platoon • Document performance Route 2 - Tyler <ul style="list-style-type: none"> • Operate in Platoon • Document performance 	Route 1 - Galchutt <ul style="list-style-type: none"> • Operate in Platoon • Document performance Route 2 - Tyler <ul style="list-style-type: none"> • Operate in Platoon • Document performance 	New Deployments <ul style="list-style-type: none"> • Add routes 	
<i>System validation prior to North Dakota Delivery</i>	<i>System validation in North Dakota operational scenario with on-board safety rider</i>	<i>Pilot deployment without on-board safety rider</i>	<i>Designated routes for expanded deployment opportunities</i>	

Primary Objective

The overall objective of the program is to establish a path forward for scaled deployment to address issues negatively impacting the agriculture supply chain.

- Address truck driver shortage issues
- Increasing safety through:
 - Reduced risk of driver fatigue
 - Reduced risk of over-weighting trucks
 - Reduced risk of speeding and other traffic violations
 - Reduced stress of all involved because a driverless option is now available

Our goal is NOT to eliminate the driver, but rather to offer an option when qualified drivers are not available



Pre-Pilot Deployment

Kratos and MDFC have implemented a Crawl-Walk-Run plan for validation of system performance prior to North Dakota delivery and deployment

Crawl-Walk-Run Plan

- Preliminary Test/Tune: Once the system is integrated in the trucks the overall system functionality will be tested and calibration/tuning will be conducted
- 0 – 20 mph Operation: Closed and low-volume traffic locations will be used to validate system performance at slow speed. This testing includes various formalized test cases being performed and normal vehicle driving operations
- 20 – 45 mph Operation: Mostly low-volume traffic locations where normal vehicle driving operations can be conducted on actual roadways
- 45 – 75 mph Operation: Includes deployment on Interstate I-10 and US-90 in normal operations and in coordination with Florida Department of Transportation (FDOT) and Florida Highway Patrol (FHP)

Data Collection and Analysis – Data will be collected during each stage of the Pre-Pilot Deployment that will be shared with North Dakota Highway Patrol and DOT. Data will include:

- Raw data
- Test results
- Video

ND Pilot Phase 1 – With On-Board Safety Rider

Routes in the Southern North Dakota have been identified for operational deployment validation transporting Sugarbeets from piling locations to MDFC

Phase 1 – This will be a 6-month validation period operating the Leader/Follower Platoon on continuous routes between the MDFC Processing Plant and the Galchutt and Tyler piling locations with on-board Safety Rider.

- All deployment plans will be coordinated with ND Highway Patrol and DOT
- Safety Rider will be on-board at all times
- System performance will be documented
- Key Performance Indicators will be established (such as documenting how many times manual take-over is required)
- Deployments will be conducted in Fair and Inclement weather aligned to normal/standard human-operating conditions
- All Phase 1 deployment results will be shared with ND Highway Patrol and DOT.
- The program will not transition to Phase 2 without ND Highway Patrol and DOT approval

ND Pilot Phase 2 – Without On-Board Safety Rider

Following the successful 6-Month pilot deployment in the actual operational environments and pending approvals, the pilot progresses to Phase 2

Phase 2 – This will be a 6-month validation period operating the Leader/Follower Platoon on continuous routes between the MDFC Processing Plant and the Galchutt and Tyler piling locations with the driverless follower for the first time

- All deployment plans will be coordinated with ND Highway Patrol and DOT
- System performance will be documented
- Key Performance Indicators will be established
- Deployments will be conducted in Fair and Inclement weather aligned to normal/standard human-operating conditions
- All Phase 2 deployment results will be shared with ND Highway Patrol and DOT.
- The program will not transition to the Next Phase without ND Highway Patrol and DOT approval

Next Phase

The objective of the Phase 1 and Phase 2 pilot deployments is to evaluate the Leader/Follower Platoon within the operational environment and establish a plan for wider-spread scale deployments

Next Phase – The overall objective of the program is to establish a path forward for scaled deployment addressing labor shortage issues negatively impacting the agriculture supply chain

- Identify additional routes supporting North Dakota statewide Sugarbeet harvest operations
- Pilot deploy with safety rider as needed in new locations
- Key Performance Indicators will be established
- Continue to share all deployment results will be shared with ND Highway Patrol and DOT.
- ND Highway Patrol and DOT will be a continued teaming partner throughout deployment plan development efforts