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BULLETIN
BUL-066

Operational Considerations: Tow Targets

There are several operational factors that must be considered when recording a path for use with tow targets and playing back paths with tow targets.

There are several tow target limitations. The best way to account for some of these limitations is to record the path with the tow target attached.

Standard Tow Trailer Cautions

All standard tow trailer cautions apply, whether the vehicle is being manually or remotely operated. For more information, refer to the National Highway Traffic Safety Administration's "Towing a Trailer" brochure (http://www.nhtsa.gov/cars/problems/Equipment/towing/Towing.pdf).

When a Pronto4 vehicle is being remotely operated, all factors in normal tow trailer operations apply. In addition, there is no in-cab operator to note anomalies so it is even more important to proactively avoid undesirable operating conditions.

Turning Radius

The Pronto4's Steering Ring is limited to 1.5 rotations in each direction. While recording a path, do not turn the steering wheel more than 1.5 rotations in either direction. This applies to all recordings, whether there is a tow target or not.

Most tow targets also have a turning radius limitation. If the path cannot be recorded with the tow target, the operator recording the path should estimate expected turning radius limits.

Stopping speeds

Targets can be attached in a variety of ways, including hitches, cables, and chains. The attachment method impacts allowable stopping speeds and turning radii. When recording paths, vehicles should be stopped at speeds that will prevent the tow target from jack-knifing or rear-ending the vehicle.

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Soft Terrain

Pronto4 systems may behave differently based on terrain conditions. Most Pronto4 systems are optimized for paved or hard-packed terrain. If operating in soft terrain, such as loose soil, deep sand, or soft mud, and the vehicle is equipped with 4-wheel drive then switch to 4x4 mode. If the vehicle continues to respond sluggishly then there are specific DKS settings that may increase operational efficiency.

1. From the Mobius toolbar, select "Windows" then "DKS" (see figure on next page).
2. In the DKS Window, click on the "+" mark next to "VcoreConfig".

CAUTION
In conjunction with other Mobius settings, the maxVelocityXMPS sets the maximum allowable forward speed in meters per second. A setting of 80 is equivalent to 178.96 miles per hour. All operators should be aware of the possible speeds and operate accordingly. Failure to do so can result in death, bodily injury, or extensive damage.

3. Click to place a checkmark next to the corresponding variable/s listed in the table.
4. Ensure the setting for each variable matches the corresponding value listed in the table.

DKS Variable	Default	Mod
VcoreConfig.dimensions .maxVelocityXMPS	18	80
ThrottlePid.pGain	10.5	45
ThrottlePid.iGain	11.5	16.5
ThrettlePid.dGain	3.75	20.5

5. Press the "Enter" key on the keyboard.
6. Repeat steps 2 - 4 with each of the listed "ThrottlePid" values.
7. When all four DKS settings have been edited and the "Enter" key pressed for each, scroll to the top of the DKS variables tree. Right-click on the top-most node (i.e. the Vehicle's Name) and choose "Persist Changes".

NOTE
Failure to press the "Enter" key after changing each value or failure to "Persist Changes" after changing all the values will cause the variables to revert to their previous values.

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