CDE Hump Sort Assets

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A tutorial explaining how to configure the CDE Trainz Hump Sort assets. Used for automating railyard hump sorting with the Trainz Railroad Simulator. The images in this tutorial shown are for TRS19 and TRS22 S1.0, but the tutorial works the same for TANE and TMR17 as well.

Requirements, one of the following:

- TANE SP1 or above
- TMR17 all versions
- TRS19 all versions
- TRS22 all versions

Key Assets:

- <kuid:647907:100948> CDE AA Trigger Multi Function
- <kuid:647907:100949> CDE Decouple DLX
- <kuid:647907:100950> CDE Directional Speed Retarder
- <kuid:647907:100953> CDE Manage Wagon Tags
- <kuid:647907:100954> CDE Wagon Tags Display Rule
- <kuid2:131986:1012:1> InputTable

Optional Assets

- <kuid:647907:100675> CDE RockyRR
- <kuid:647907:100951> CDE DSR Remote Control
- <kuid:647907:100952> CDE GlobalList

How To Get Them:

Trainz CM, DLS, or CDETrainz.com

Basic Hump Sort

You will need to configure the assets on both the Route Level and the Session Level. It is very important that you keep these levels distinct and separate and understand the differences.

Route Level

On this level will be your track, junctions, triggers, retarders, trackmarks and optionally consists.

Once in the Route Surveyor, the first step is to make your sorting yard. You will need a descending grade track that leads in to a string of switches or junctions that will be the destination of the sorting process. Optionally rename the junctions with something that makes them easy to find in a list. For example, if the original name was Junction 1204, it would not be easy to remember, so a naming convention like 'A' for sorting area A, then wagon tag group in numbers, like 'A1' for wagon tags 100 through 199, 'A2' for wagon tags 200 through 299, etc.

In front of each junction, place one of these triggers.

- <kuid:647907:100948> CDE AA Trigger Multi Function

Name each trigger to match each junction. In our example Trigger A1 operates Junction A1. Set the trigger to Hump Sort mode 2, a numeric range, and desired junction action as shown in the figure below. The Channel number is used if you have more than one sorting area. Each sorting area should be on its own channel.

Place a Trackmark where you wish to have the wagons decouple from the consist. It should be near the top of your declining grade. Name it something easy to find for the group, like 'Trackmark A'.

On each sorting spur, place speed retarders. The speed settings of these can be set during the final testing of your route, it is only important that they are in place. You can also add a retarder at the bottom of the decline to regulate that speed also.

- • <kuid:647907:100950> CDE Directional Speed Retarder
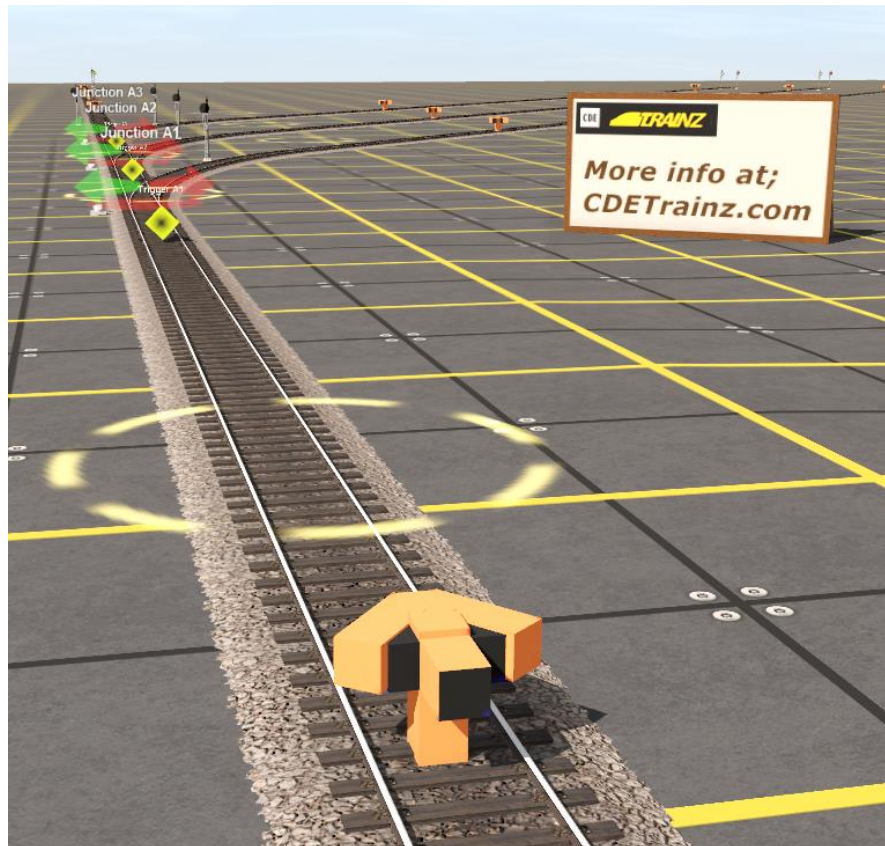
Optional - Make a consist you want to sort. You can have multiple consists, but in our example, we will only have one. This step should be done under Create or Edit Session, especially if you plan to have multiple sessions.

After your track, junctions, triggers, retarders, trackmark and optionally consists are in place, you can Save Route and Exit Surveyor.

Session Level

Choose View Sessions and then choose Create Session or Edit Session. Do not use the Default Session. Once in the Session Surveyor, if you have not already set up your consist(s), add them now. You do not need to rename any of the locos or wagons.

Choose Edit Session and give your Session a name and optionally enter the description information.

You will also need to Add rules. Look for these two rules and add them;
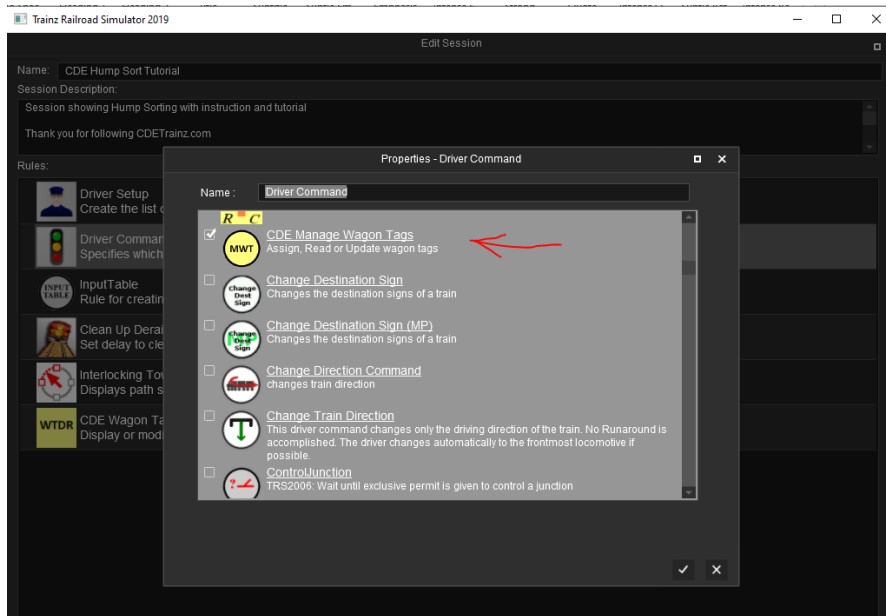
- <kuid:647907:100954> CDE Wagon Tags Display Rule
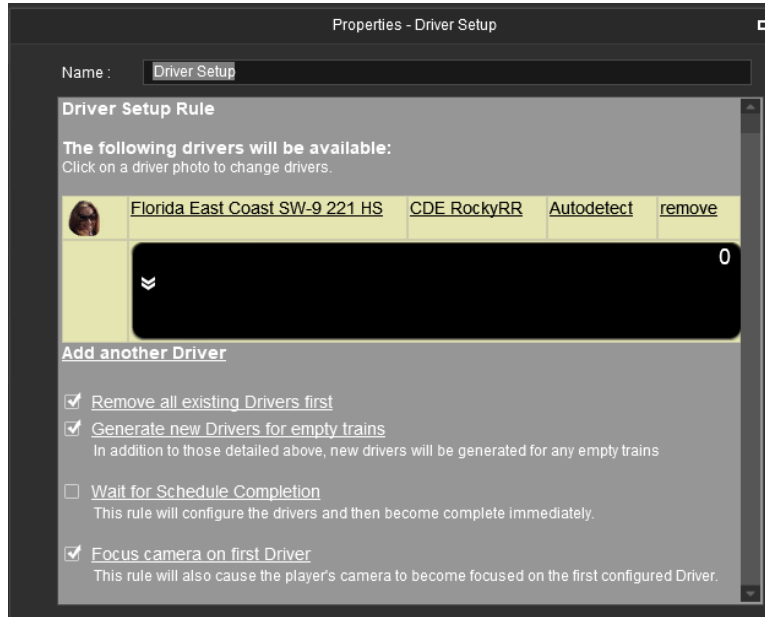- <kuid2:131986:1012:1> InputTable
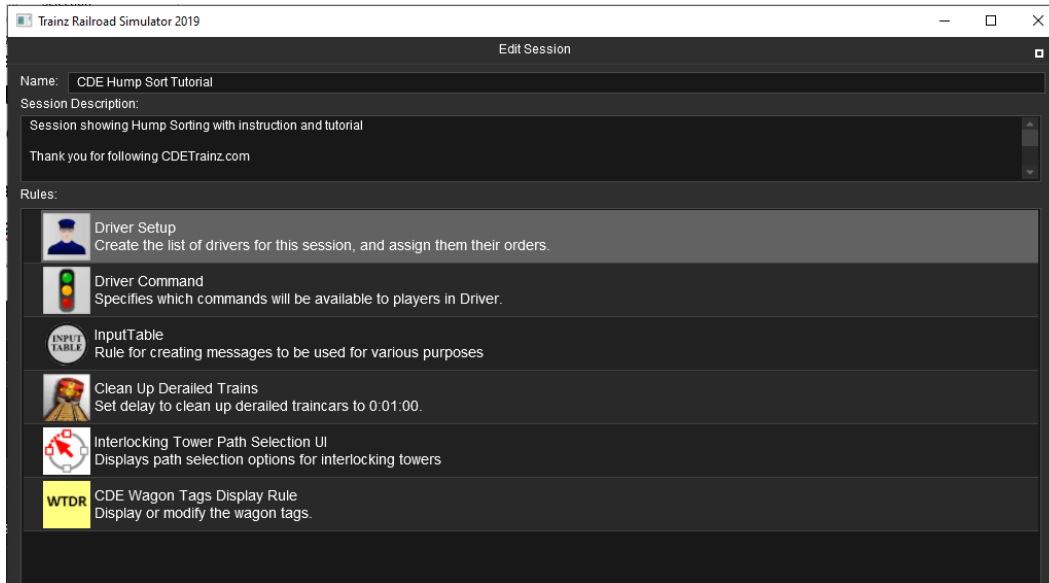
The CDE Wagon Tags Display Rule should be after the inputTable rule as shown.

Next select Driver Command from the list and then click Edit. Find this Command from the popup and check the box, then Save;

- <kuid:647907:100953> CDE Manage Wagon Tags

Select Driver Setup from the list and then Edit. Assign a Driver to each of the consist(s). The driver name will be used in the inputTable as a way of assigning wagon tags to them. For our example we are using <kuid:647907:100675> CDE RockyRR as our driver.

Now we can assign wagon tags to our consist. Select inputTable and then Edit. In the dialog, click the 'add' link. In the Short message box type in your wagon tag string.
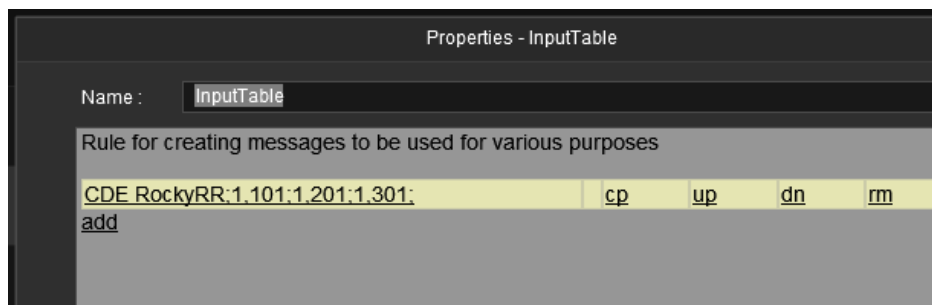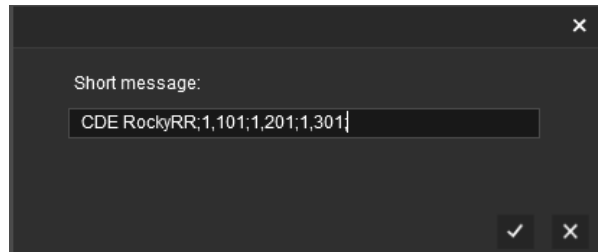
Each message is entered into the inputTable Rule in segments, each separated by a semi-colon and sub segments are separated by commas. Each complete message must contain at least 2 semi-colons and end with a semi-colon.

Example Syntax;

- **Single destination:** DRIVER NAME;NUMBER OF WAGONS,DESTINATION;
- **Multiple Destinations:** DRIVER NAME;NUMBER OF WAGONS,DESTINATION 1; NUMBER OF WAGONS,DESTINATION 2; NUMBER OF WAGONS,DESTINATION 3; [repeat as needed]

Where DRIVER NAME is the name of your driver. NUMBER OF WAGONS is the number of wagons to tag. As each wagon is tagged, when the next destination is set it will start at the first untagged wagon. So if you set NUMBER OF WAGONS to 2 in the first tag, the second tag will apply starting at the 3rd wagon. DESTINATION will be a number within the range of the lower and upper number set for the trigger you want to select. This is the tag we are using;

- CDE RockyRR;1,101;1,201;1,301;

When the Drive Session starts, it will now assign tags to the wagons when instructed.

The only thing left is to instruct the driver to perform the tasks. Select Driver Setup from the list and then Edit. In the task box start adding your commands for your selected driver. Start with a Wait For and set it to 5 seconds or more. This is to ensure the other scripts execute. Then select CDE Manage Wagon Tags and Add tags to this train. The system will read the inputTable and assign the tags. If all went well, your consist is now 'tagged'.
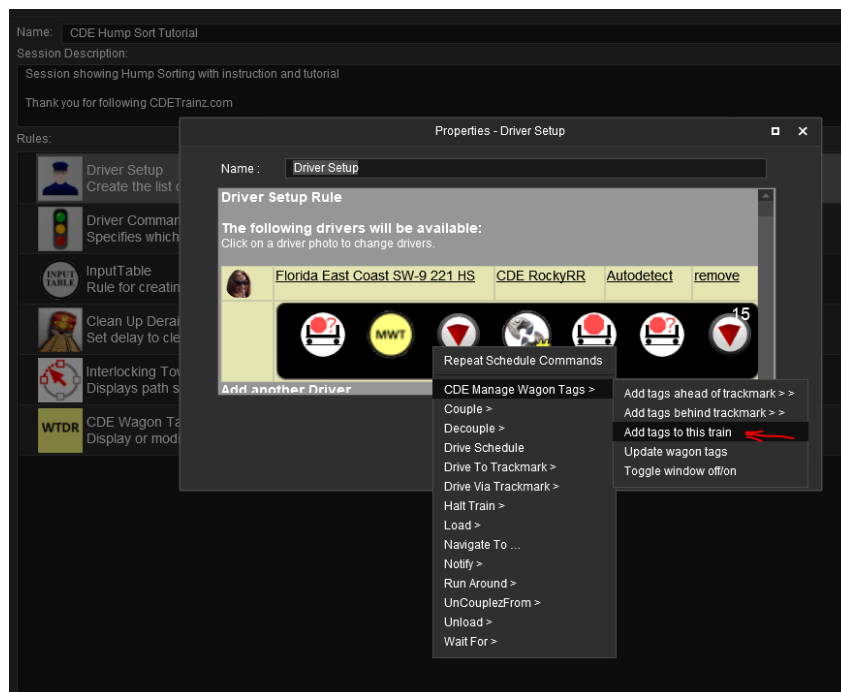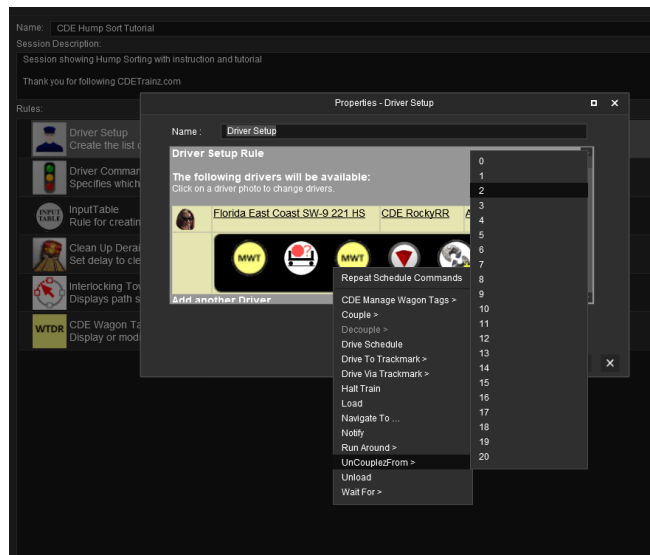
You will need to instruct the consist to move to the trackmark. The next command will instruct the consist to go to the hump yard. Choose Drive To Trackmark and select your trackmark near the top of your declining grade.
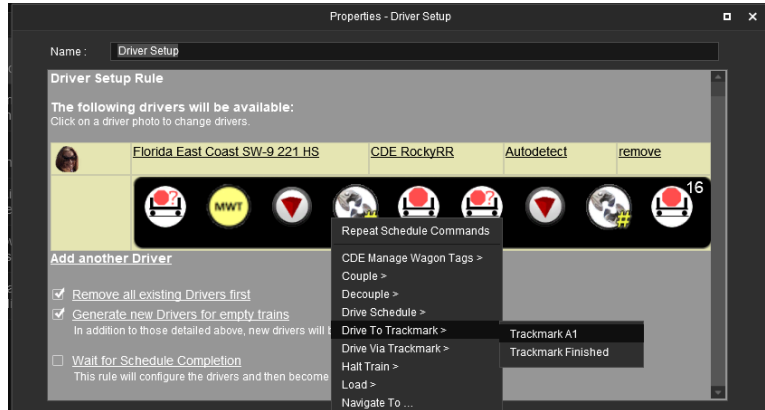
Next Uncouple…

<kuid:647907:100949> CDE Decouple DLX
Select the first or last wagon depending on your loco direction, usually 0 (zero) for CDE Decouple DLX

Next add a Halt Command and then a Wait Command for 5 seconds. The wait command can be adjusted for the desired effect. Then repeat the pattern starting with Drive To Trackmark A1, changing the CDE Decouple DLX number from the top number or using 0 every time, based on the consist, until all of the consist is accounted for. For our 3 wagons and a loco, we will Decouple 0 three times and our command sequence looks like this;
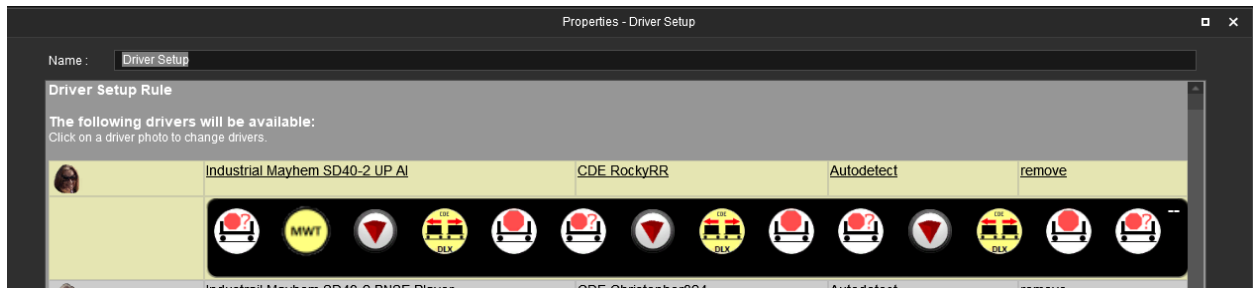
Save your session and Drive it. If adjustments are needed go back to Edit Session to make changes with the Rules and Edit Route to adjust the speed retarders and as needed.

Asset Descriptions

CDE AA Trigger Multi Function <kuid:647907:100948>

Switch the junction ahead according on code read from the vehicle triggering the asset. Supports 3-way junctions and flat or hump sorting.

MODES:

- **0 = Off**
- **1 = Path Seeker**
- **2 = HUMP / Flat sort multiple vehicles**
- **3 = Control Passing Loop**
- **4 = Reserved for future use**

Modes greater than 4 are for Hump / Flat sorting but with different ranges specified. When several triggers are in use for flat sorting, all triggers operate in the same mode and must be set to the same unique channel number. When flat sorting, the locomotive remains coupled to the train. Special commands and assets are needed to stop the train under AI, decouple and return to the starting point. These have not yet been perfected. You may also refresh the name of the junction if it is not correct.

CDE Decouple DLX <kuid:647907:100949>

A Driver command which can uncouple any wagon in a consist by name or number up to 99 wagons. The selected vehicle will be detached from the train. See the config.txt for physics_disable tag.

NEW FEATURE: The vehicle to be uncoupled can be read from a session variable named 'consist_count_'. This value of 'consist_count_' can be stored by driver command 'Special Instructions' <kuid2:160293:101021:10> as a result of measuring the number of vehicles in a train. Because the variable name ends in an underscore, this command will append the name of its locomotive to the variable name so that only the train that made the measurement can access the value of the vehicle count. An option is also provided to select a vehicle at random.

CDE Directional Speed Retarder <kuid:647907:100950>

Directional Speed Retarder updated to TRS19 from original by trev999 <kuid:160293:100124>

Adjusts the speed of a vehicle moving in the direction of the arrow. Used when fly shunting and in hump yards. Measurement is in meters per second. The exit speed of the vehicles can be adjusted in Surveyor to a very fine degree. Settings can be changed in-session by using <kuid:647907:100951> - CDE DSR Remote Control driver command.

REMOTE CONTROL: Groups of retarders that have the same base name are controlled simultaneously. A group is formed by naming the retarders with a common base name and an extension separated by a space. The base name must begin with DSR_

Example:

- **DSR_A 1**
- **DSR_A 2**
- Or
- **DSR_1 1**
- **DSR_1 2**
- **etc.**

Options for changing speed settings range from -1 to +8 meters/sec and 50% increase or 25% decrease. Setting parameters beyond the specifications may cause undesired results.

The current setting of retarders in the group can also be viewed in the message overlay and Dev Log file. Trev999 quote, '*Made from boat's Directional Trigger, inspired by Lars hump yard Kit.*'

CDE DSR Remote Control <kuid:647907:100951>

A driver command for changing the settings of a Directional Speed Retarder V2 group while in driver mode. Groups of retarders having the same name are controlled simultaneously.

Retarder naming convention:

- **DSR_Retarder_Group_Name**
- **Retarder_Instance_Name**

Example: 'DSR_A 1' *note only one space between the names

When a command is issued, all Instances within the DSR's Group will be affected.

Features: Enable or Disable group and in-session setting of the speed of vehicles leaving the retarders. When the exit speed is set to zero the vehicle brakes are applied.

CDE GlobalList <kuid:647907:100952>

Generates linked lists of trackside object names which are initialized at session start, relieving other scripts of the need to resolve the object names. Returns a sorted list of the names of the specified object type. Access to the linked list elements is public. Each object is embedded in the linked list.

If you are using <kuid:647907:100951> CDE DSR Remote Control, then you will need this asset

CDE Manage Wagon Tags <kuid:647907:100953>

A set of driver commands to assign or update wagon tags. Uses standard session variable library.

Options:

- **Add information tags to wagons ahead of a trackmark**
- **Add information tags to wagons behind a trackmark**
- **Add information tags to wagons coupled to a locomotive**
- **Add information tags to a locomotive only.**
- **Delete the first line of information carried by all wagons (update tags)**
- **Turn the display window off or on**

The text carried in these tags is displayed in the game window when a 'Wagon Tags Display Rule' is added to the session. A number of lines of text can be added to a wagon tag. Each subsequent use of 'Add tags' appends the tag info below existing lines. Locomotive and tenders do not carry tags unless specified. (see below)

Tag information to be assigned in Surveyor is initially entered into the InputTable Rule in segments, each separated by a semi-colon and sub segments are separated by commas. Each complete tag must contain at least 2 semi-colons and end with a semi-colon. Some examples of the syntax;

To assign a driver instruction for wagons destinations:

To assign the Tag 'Log Dump' to the first 10 wagons of the consist drawn by Adair
[DRIVER NAME] ; [NUMBER OF WAGONS] , [DESTINATION TEXT1] ; = **Adair;10,Log Dump;**

If your consist has 15 wagons, append the next 5 wagons like this = Adair;10,Log Dump;**5,Coal Mine;**

If you are using the AA Trigger Multi Function for Hump Sorting, the destination text will be just a number that is within range of the lower and upper number set in the trigger you want to select:

[DRIVER NAME] ; [NUMBER OF WAGONS] , [DESTINATION TEXT1] ; = **Adair;1,203;1,148;1,391**

To assign a driver instruction with a number of wagons that have multiple destinations:

[DRIVER NAME] ; [NUMBER OF WAGONS] , [DESTINATION TEXT1] , [DESTINATION TEXT2] ; = Andrew;5,Dry Sort Yard,Coal Mine;

To assign a driver with multiple pickups:

[DRIVER NAME] ; [NUMBER OF WAGONS] , [DESTINATION TEXT1] , [DESTINATION TEXT2] ; [NUMBER OF WAGONS] , [DESTINATION TEXT] ; = Joe D;6,Power Station,Coal Mine;3,Coal loader;

Notice that this example has 3 semi-colons, this creates a sub-index within the syntax. It works because the NUMBER OF WAGONS in a number, if you enter something that starts with a letter, it will not work as expected.

Andrew;7,Forrestry, Pulp Mill; (On train drawn by Andrew, assign to 5 wagons a two-lined tag and to 7 more wagons another 2-lined tag)

Andrew;5,Dry sort yard, Coal Mine; 7,Forrestry, Pulp Mill; (On train drawn by Andrew, assign to 5 wagons a two-lined tag and to 7 more wagons another 2-lined tag)

1. trackmark/driver name;
2. number indicating how many wagons are to receive the text, and followed by a comma.
3. Enter plain text of the user's choosing. If terminated by a comma, another tag line is commenced for the same wagon set.

Example tag entries:

Adair;10,Log dump; (Assign the tag 'Log dump' to the first 10 wagons of the consist drawn by Adair)

Trackmark 1;6,Power station, Coal Mine; 3, Coal loader; (Assign tags to the consist that Trackmark 1 is pointing to)

Ami;L,14AX57   (Assign the tag 14AX57 to the locomotive driven by Ami)

Once the tags have served their purpose then they can be updated. This option deletes the first line of tag info from each wagon so as to bring the next tag line into use. A locomotive must be attached to the consist to allow updating of tags.

CDE Wagon Tags Display Rule <kuid:647907:100954>

A rule to display and manage wagon tags in Driver mode. Multiple lines of text can be added to individual wagons or locomotives; this text is displayed at the top of the screen. Click on the traincar link to toggle the window background between transparent and opaque. An added tag is placed below the selected one. To add a tag above the top line, first duplicate the top tag by adding it, click OK and then edit the top tag to the required text. You can also toggle the display with CDE Manage Wagon Tags Rule.