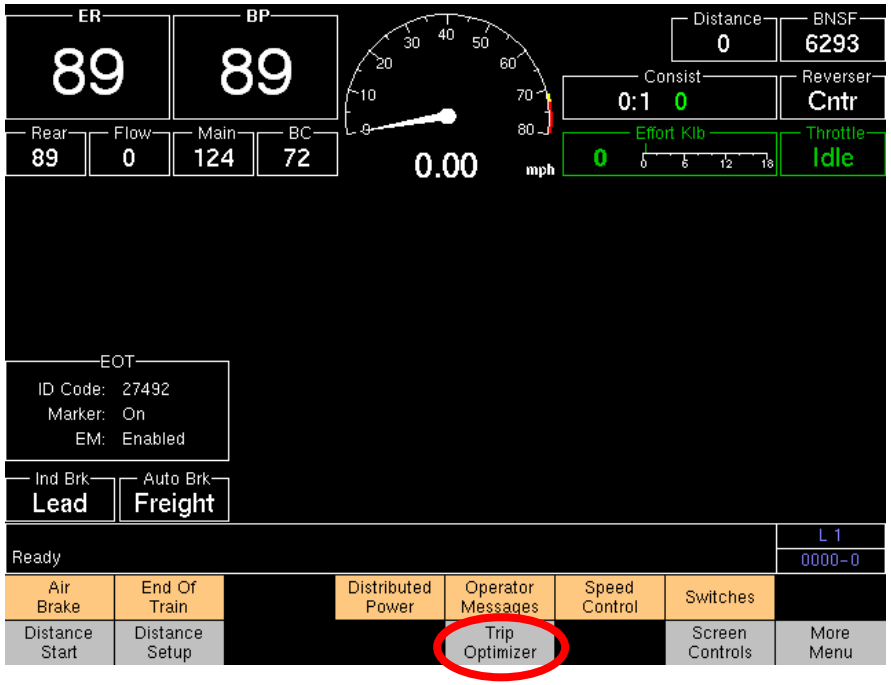
Trip Optimizer

In conjunction with BNSF Railway's ongoing commitment to conserve fuel, over 3100 locomotives in the BNSF fleet have been equipped with Trip Optimizer. Currently, we operate in excess of 2,400,000 miles per month in TO. BNSF will continue to enhance our Energy Management Systems to leverage even more miles by widening the operating conditions and supported train symbols for which TO will function. This job briefing provides an overview of the features in Trip Optimizer. Please direct any questions to the MOP-Fuel for your Division.

SAFETY ALERT

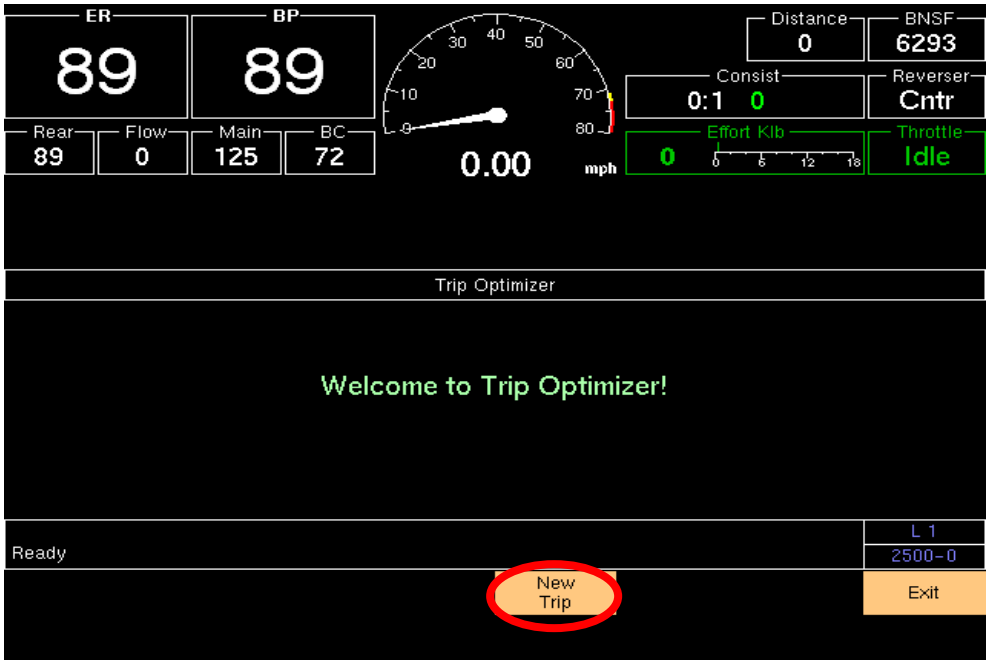
Trip Optimizer is not a substitute for the engineers experience and good judgment. Safe operation of the train, and compliance with rules and special instructions, remains the engineer's first responsibility.

Trip Optimizer - Initialization



To use the system, first press the **Trip Optimizer** key.

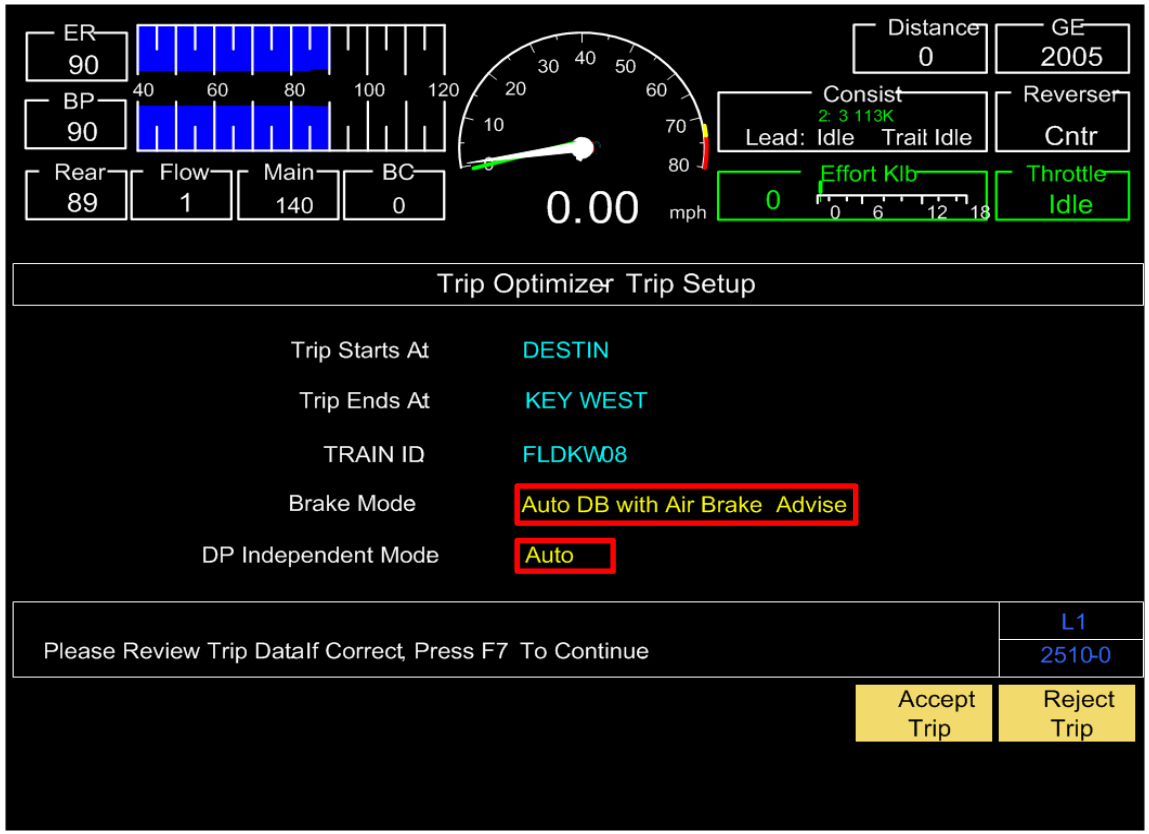
Then press the **New Trip** key.



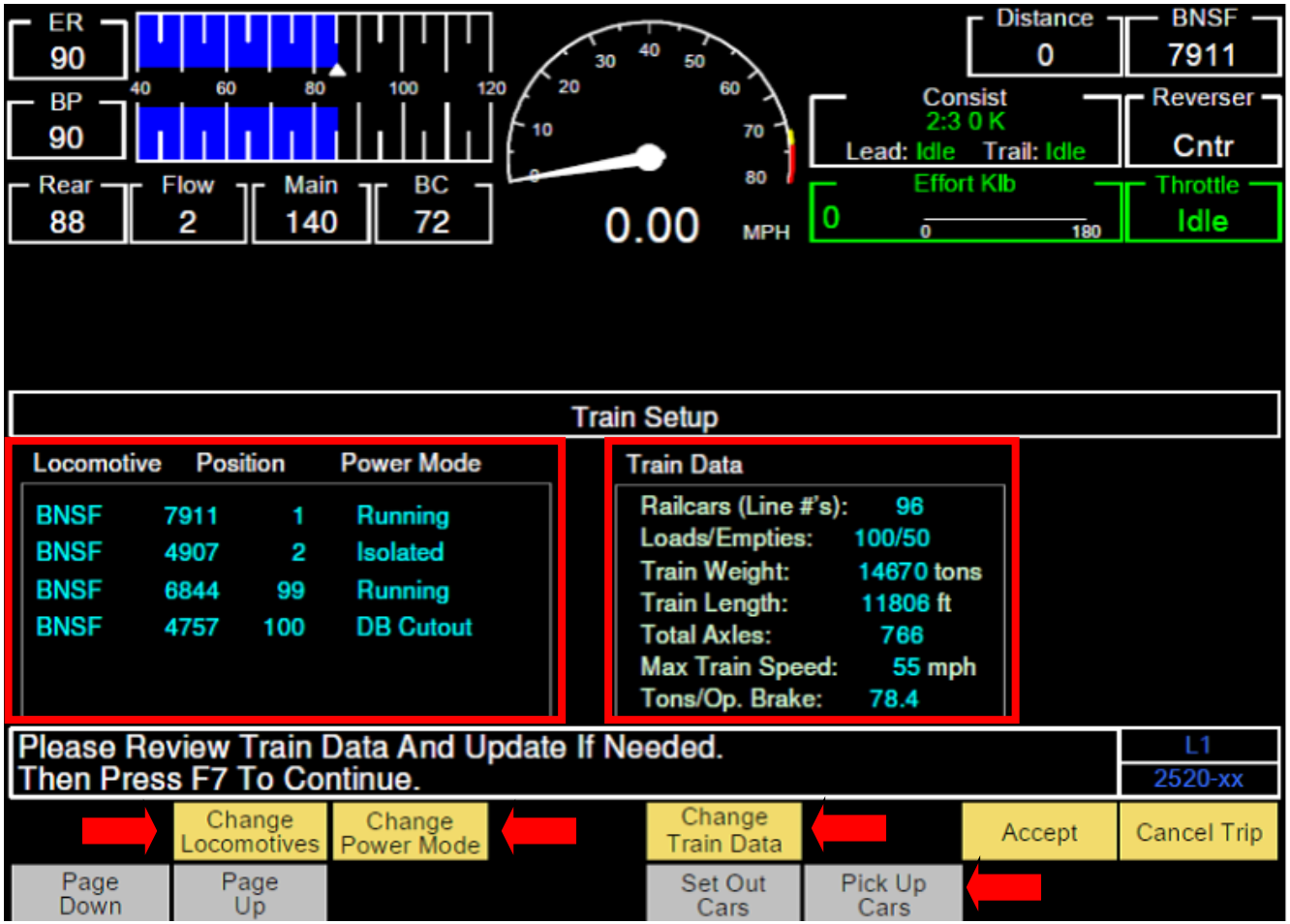
Trip Optimizer – Active Features

What features are active?

- During initialization, you can determine active features by the features listed on the Trip Setup screen.
- Brake Mode: “Auto DB with Air Brake Advise” indicates that air brake advise is active.
- DP Independent Mode: will show “Auto” when this feature is active.



Train Setup



Change Locomotives allows a locomotive to be added, removed, or repositioned.

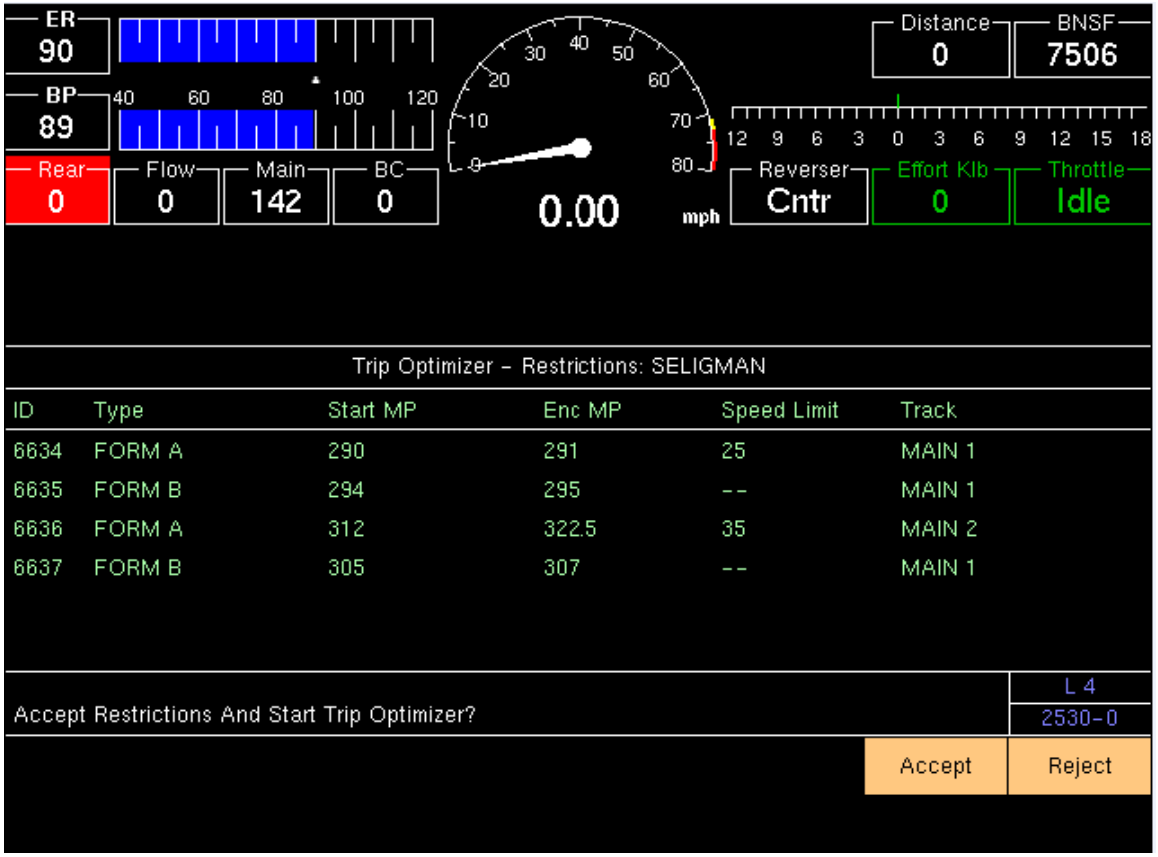
Change Power Mode key is used to modify power mode: **Running**, **Isolated**, **DB Cutout or DB only**

Note: Trailing tonnage does not require editing for Isolated, DB only, or DIC locomotives.

Change Train Data key is used to edit Train Data information.

Pick Up Cars and **Set Out Cars** used to edit information during en route work events.

Form A & B Restriction Validation

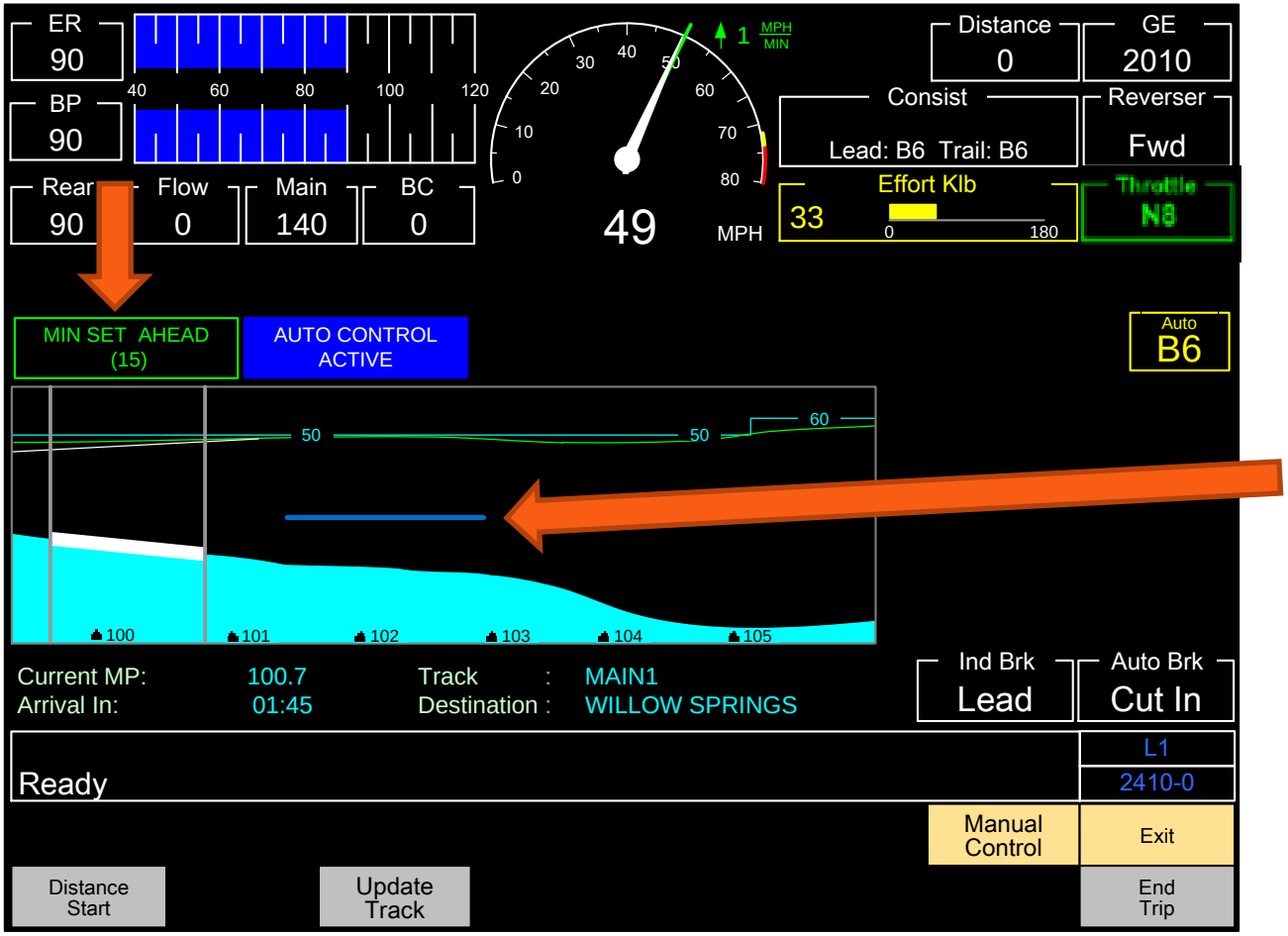


Form A & B restriction information will be displayed after the train setup has been accepted. Compare the restrictions displayed with the train documents received. If there is more than 1 page of restrictions use the soft key under **Page Down** and the soft key under **Page Up** to navigate through them.

Trip Optimizer – Functions

1. **Airbrake prompting**
   - TO will prompt for brake applications – min set to 15 psi max
   - TO will prompt for brake releases
   - TO will allow auto control with up to a 10 psi unplanned application (min set + one split reduction)
2. **Auto independent mode for DP trains**
   - TO will always operate “fence up” while in auto
   - TO will always return control to manual with the fence up
3. **Auto through divergence – ATD**
   - TO will maintain auto control thru main-main divergences (X/O’s)
   - Siding and other than main track turnouts remain MANUAL CONTROL ONLY
4. **Recoverability Re-plan**
   - TO will re-plan from current speed to the desired planned speed

Air Brake Advisement – Application

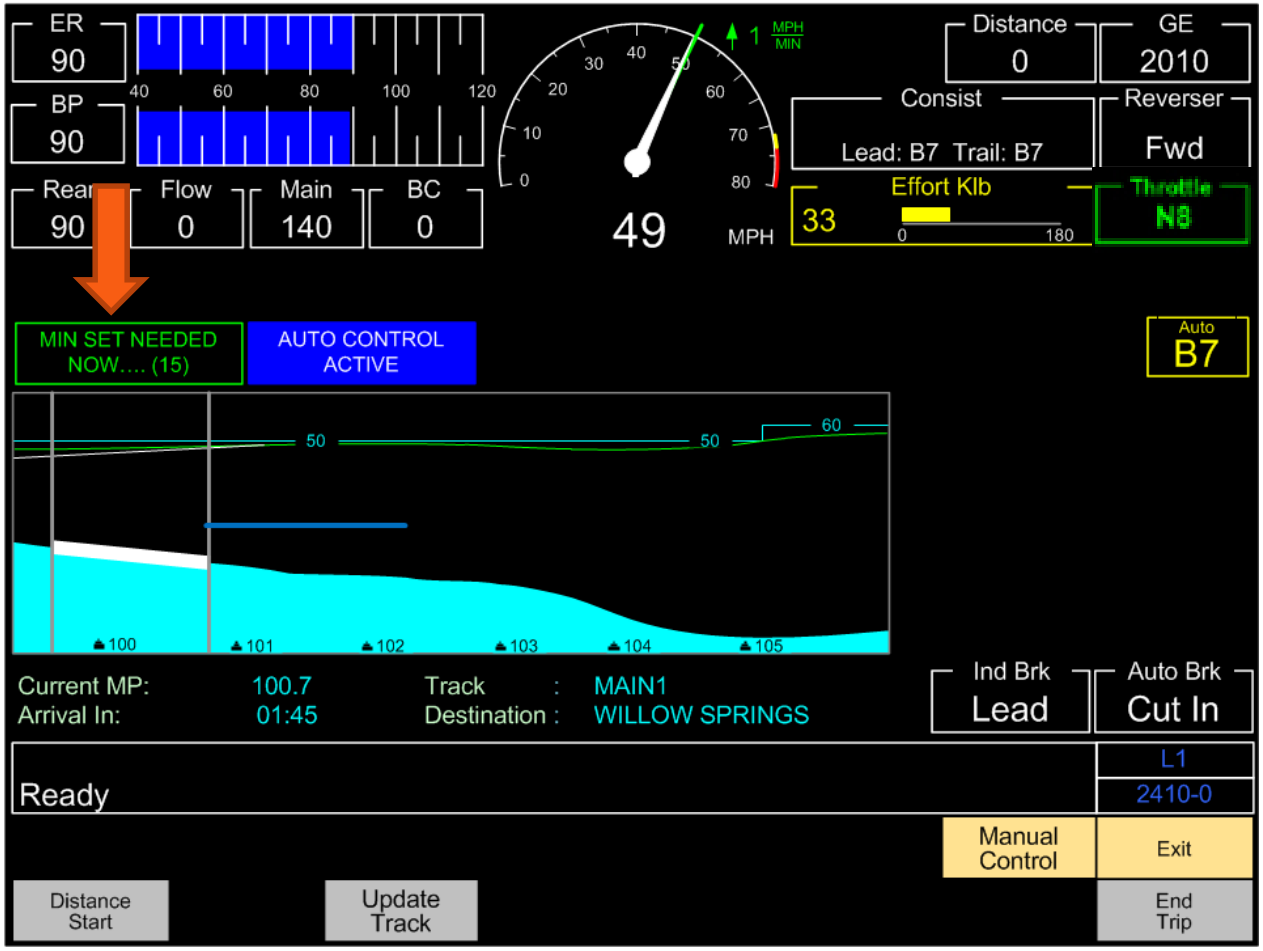


TO will prompt **MIN SET AHEAD** with a *15 sec* countdown timer. At the end of the countdown, an audible alert signals the ideal time for the application.

Notice the blue “breaking” line.

If an application greater than a min set is needed, the prompt will display **TARGET ER…**

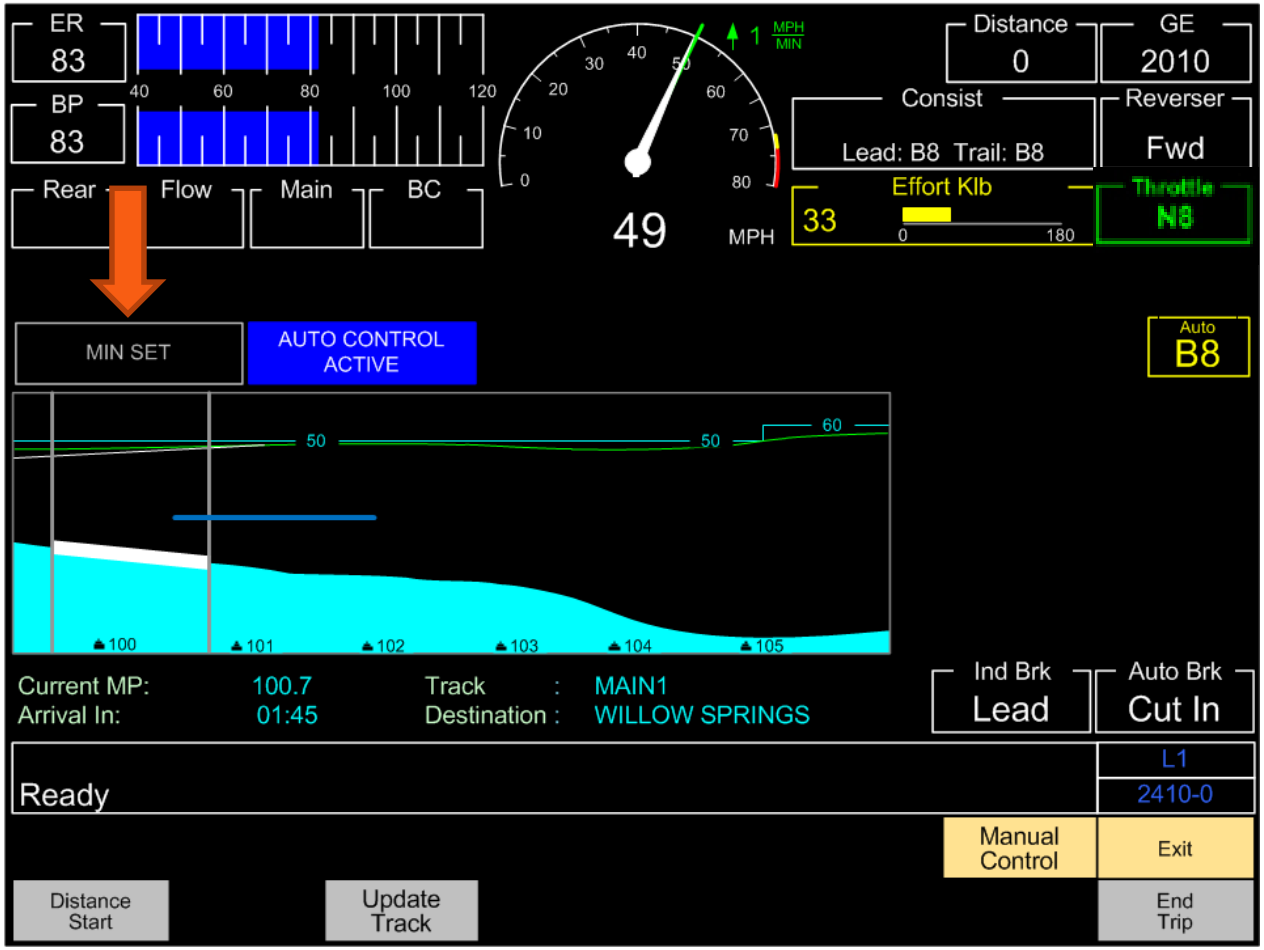
Air Brake Advisement – Application



If the requested application was not performed within the *15 sec* countdown, the prompt will begin to flash and indicate **MIN SET NEEDED NOW** with an *additional 15 sec* countdown.

The requested application should be performed as soon as possible during the flashing countdown.

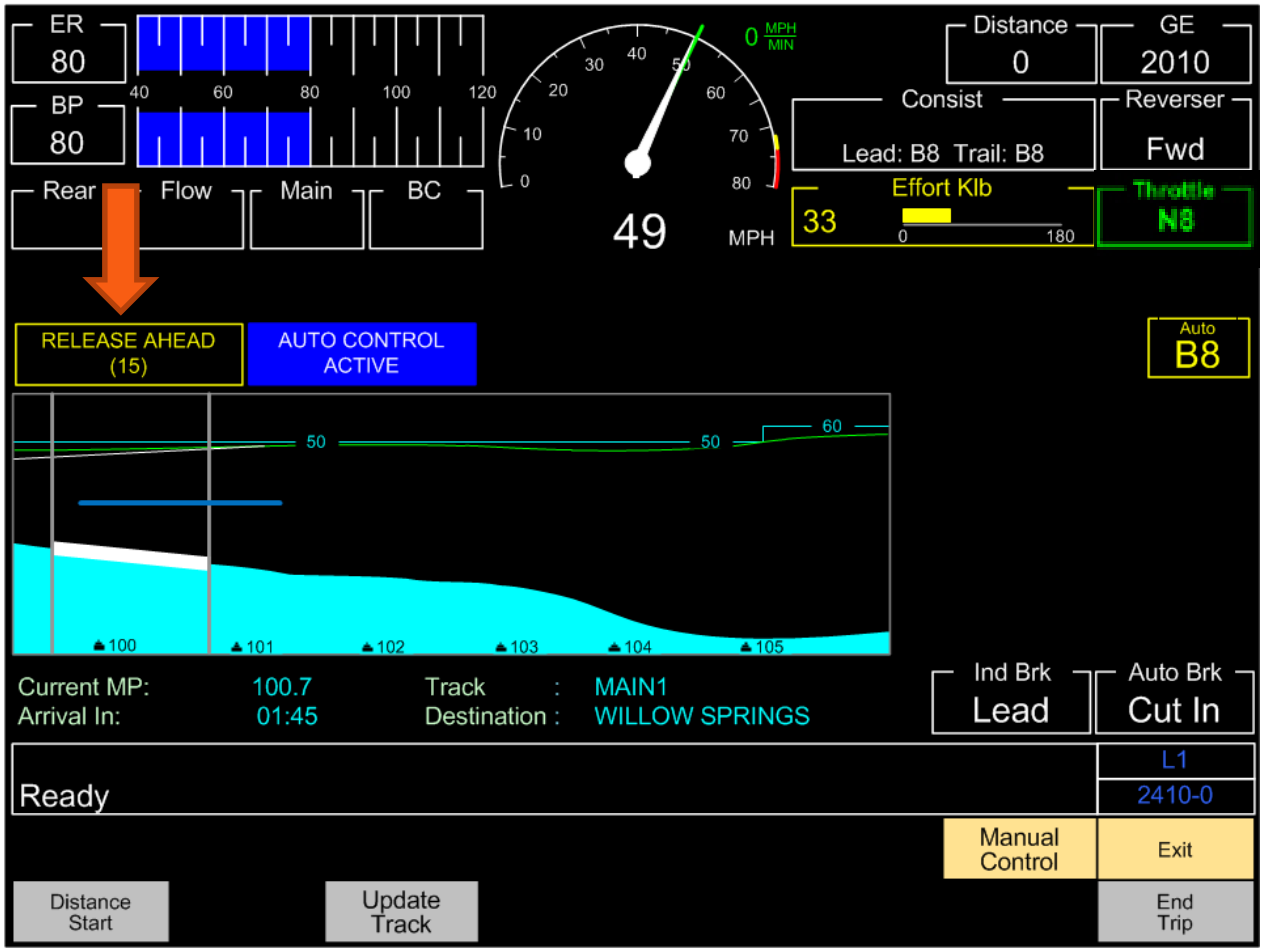
Air Brake Advisement – Application



When the requested application is performed, the prompt will gray out.

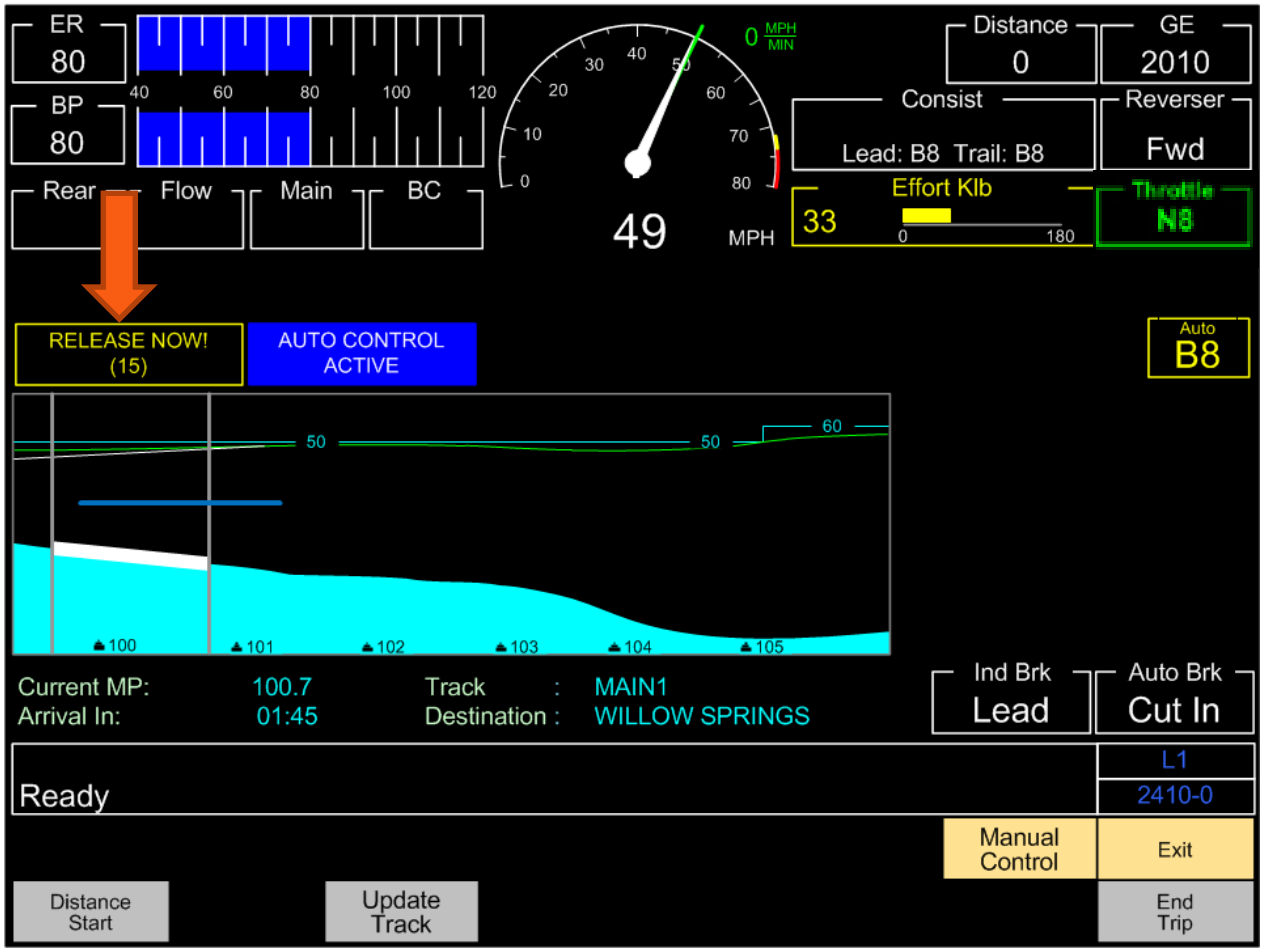
If the requested application is not performed before the flashing 15 sec times out, the prompt will display **MANUAL CONTROL NEEDED NOW** and remove the air prompt from the screen.

Air Brake Advisement - Release



TO will prompt **RELEASE AHEAD** with a *15 sec* countdown timer. At the end of the countdown, an audible alert signals the ideal time for the release.

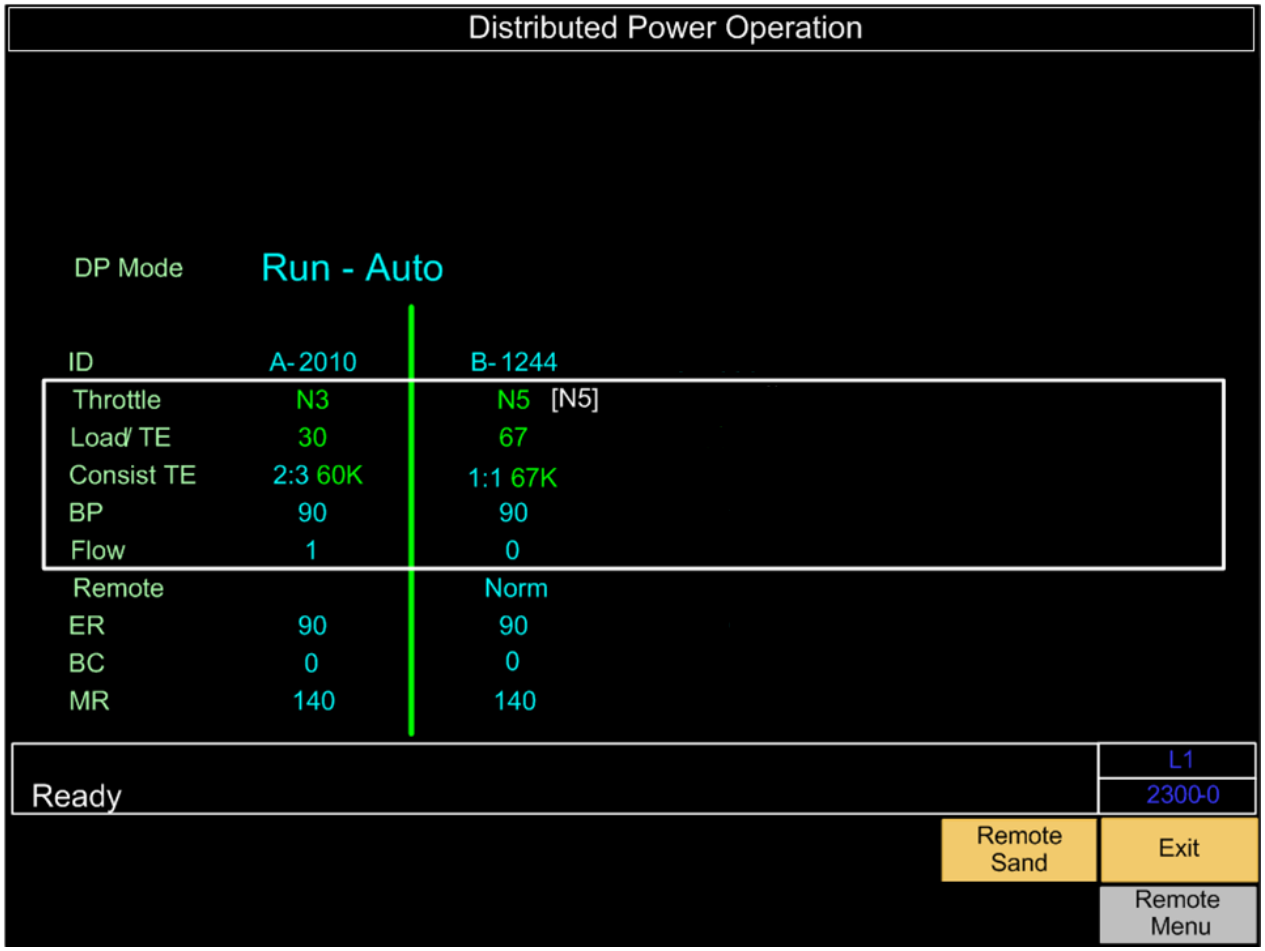
Air Brake Advisement - Release



If the release is not performed during the *15 sec* countdown, prompt will flash **RELEASE NOW** with an additional *15 sec* countdown.

The release should be performed as soon as possible during the flashing countdown.

Distributed Power



DP Trains while in Auto:

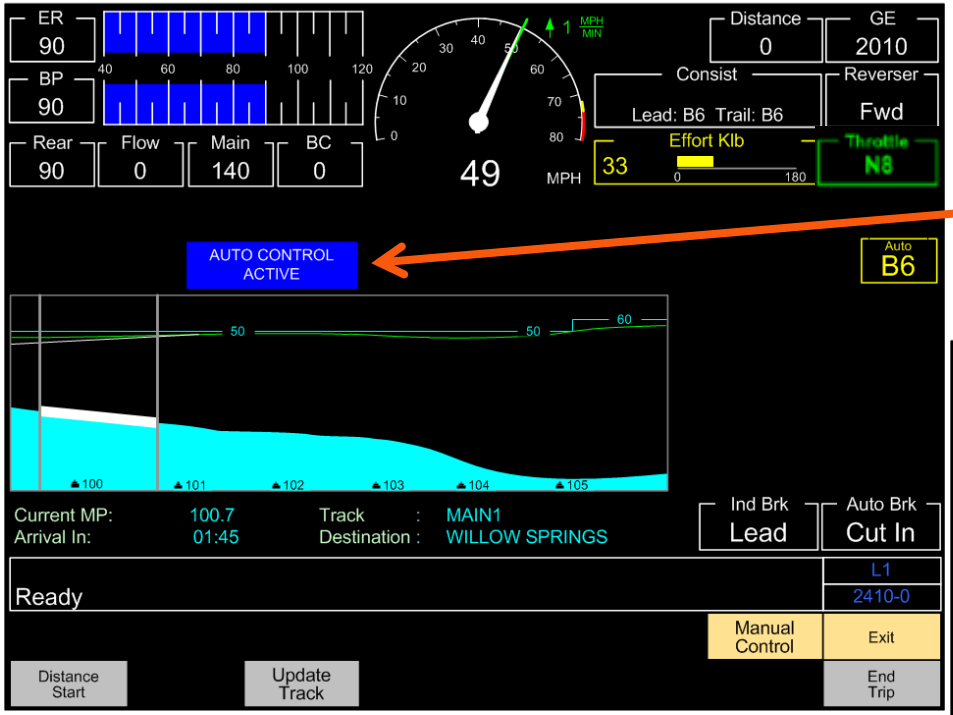
- TO will operate the DP consist independent of the lead consist (Fence Up).

DP trains transitioning from auto to manual:

- **TO will ALWAYS return to manual control with the FENCE UP.**

Note TO notch command in brackets. [ ]

AUTO Through Divergence



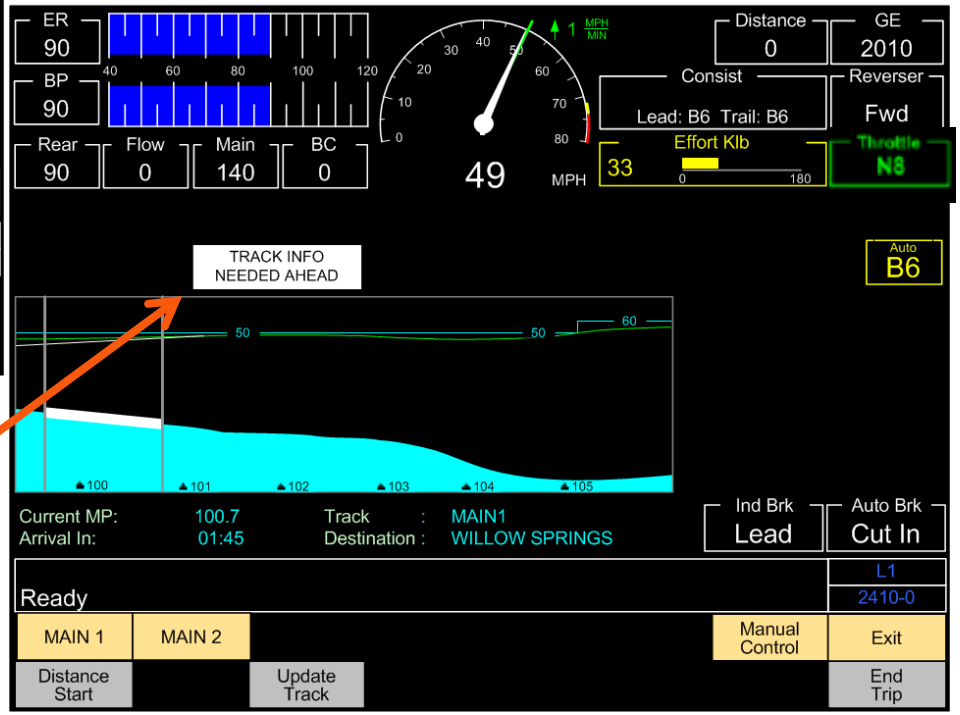
When approaching a crossover, the SVP will transition from

AUTO CONTROL ACTIVE

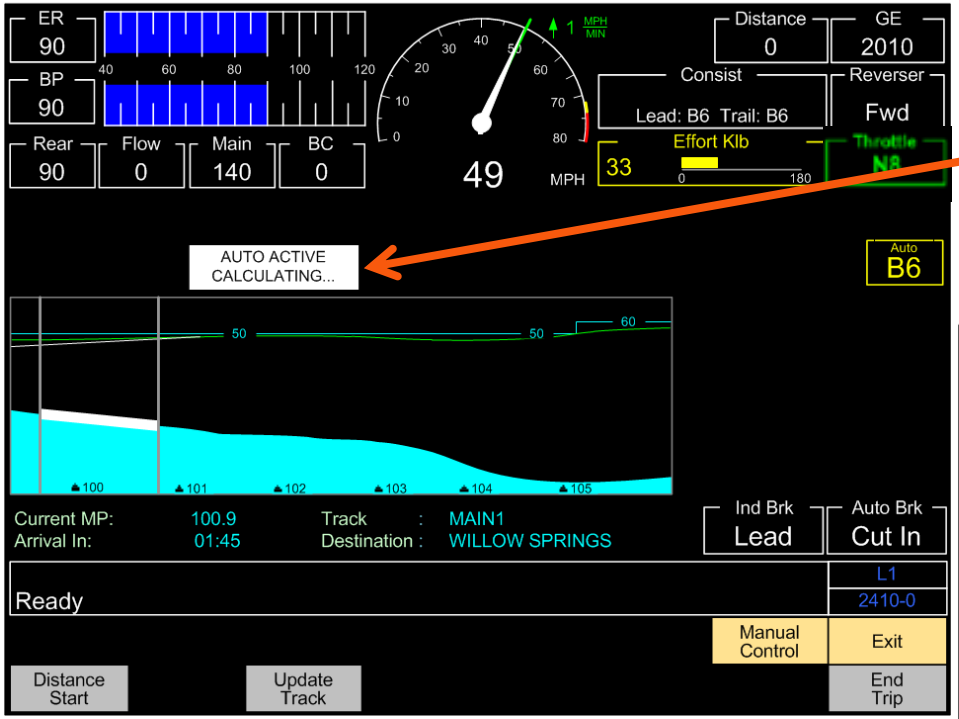
to

TRACK INFO NEEDED AHEAD

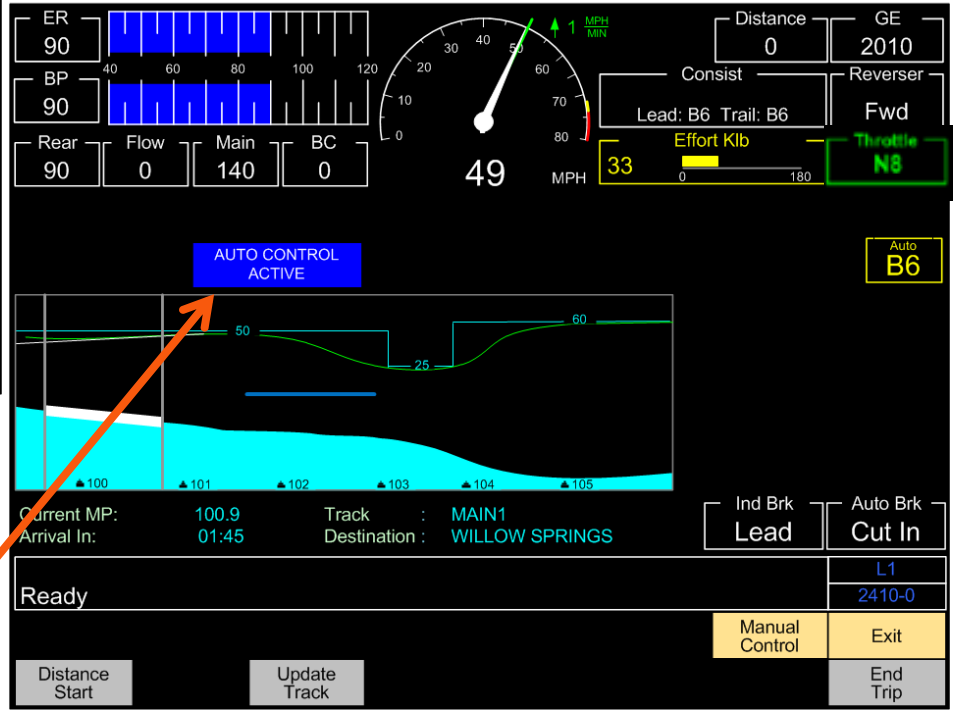
approximately 1500ft before the approach signal.



AUTO Through Divergence



If a crossover movement is selected, the SVP will transition to **AUTO ACTIVE CALCULATING**….

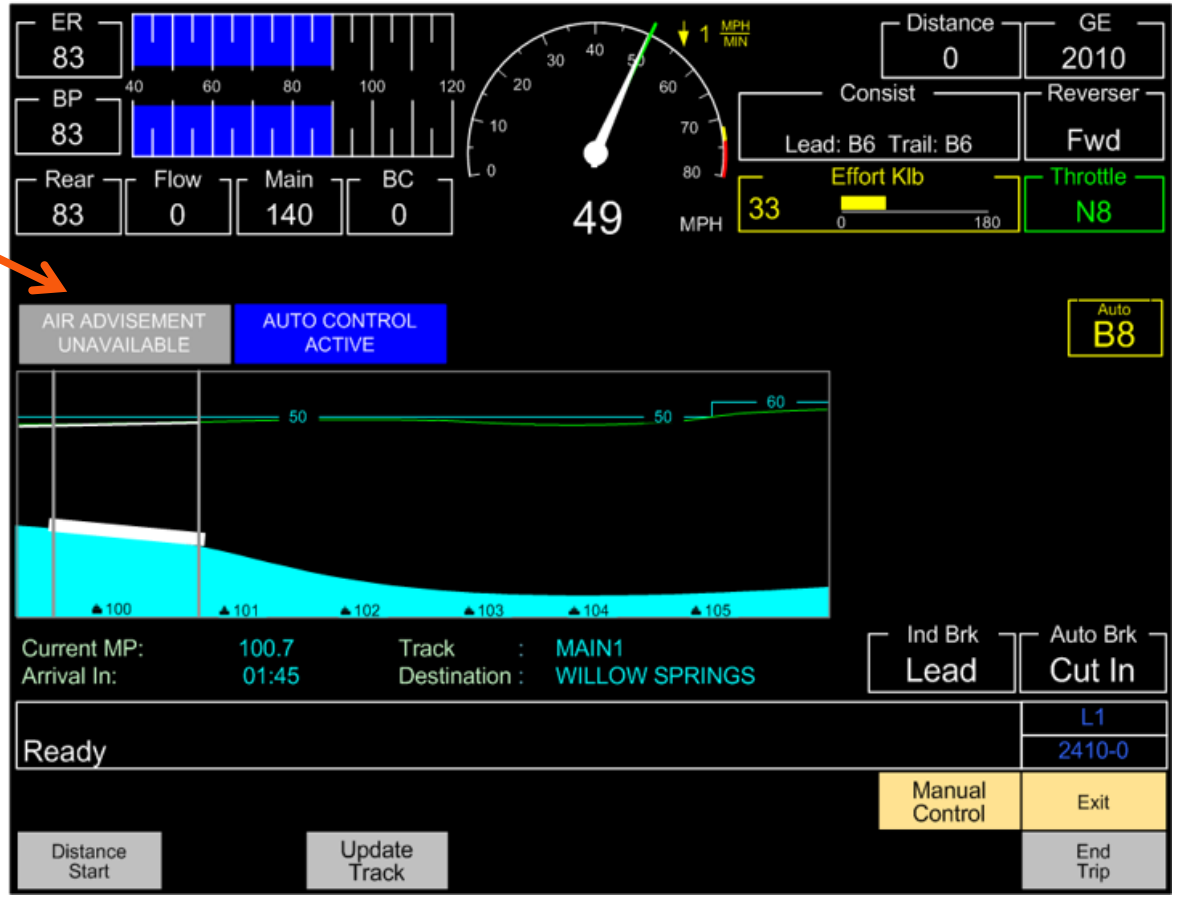


When calculations are complete, the rolling map and plan will update, the SVP will transition back to **AUTO CONTROL ACTIVE** and TO will regulate to the new plan

Trip Optimizer – AIR ADVISEMENT UNAVAILABLE

AIR ADVISEMENT UNAVAILABLE

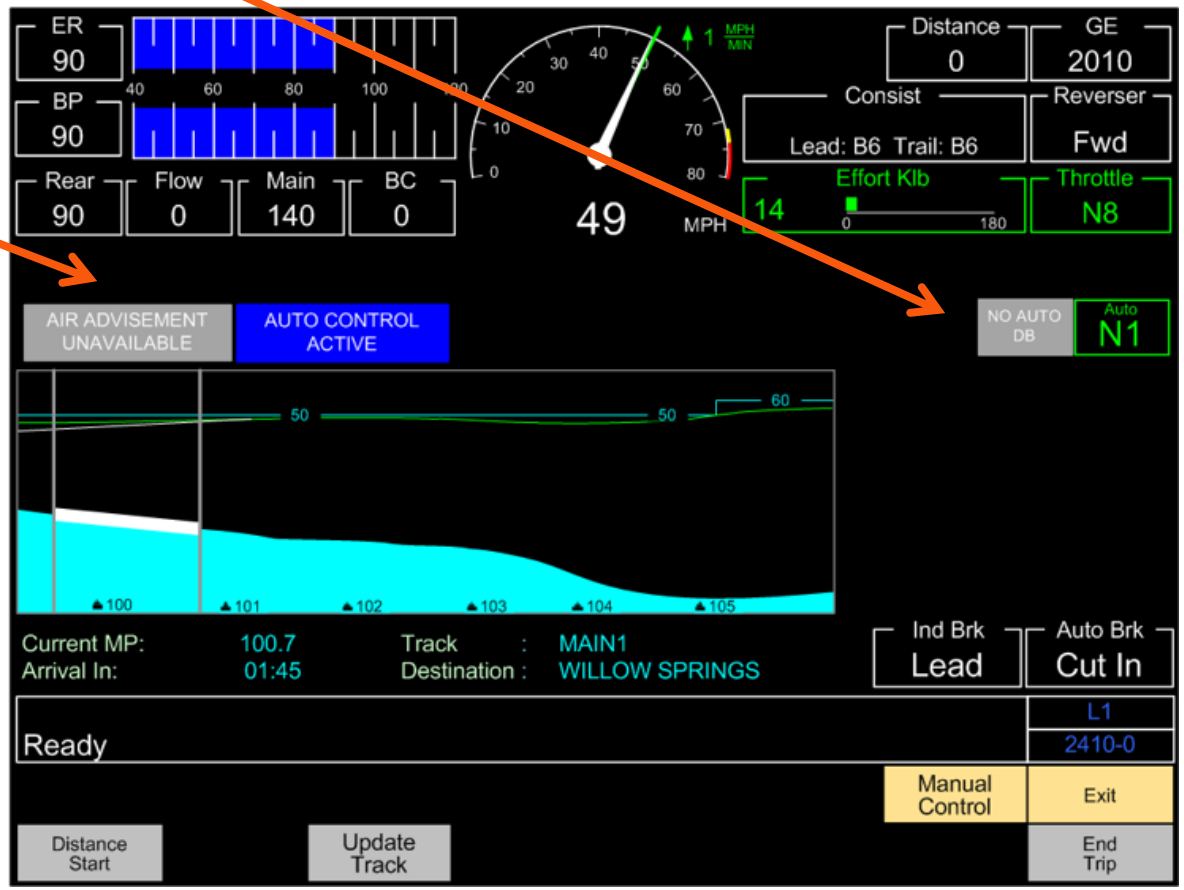
When this is displayed, TO will not provide air brake prompting.



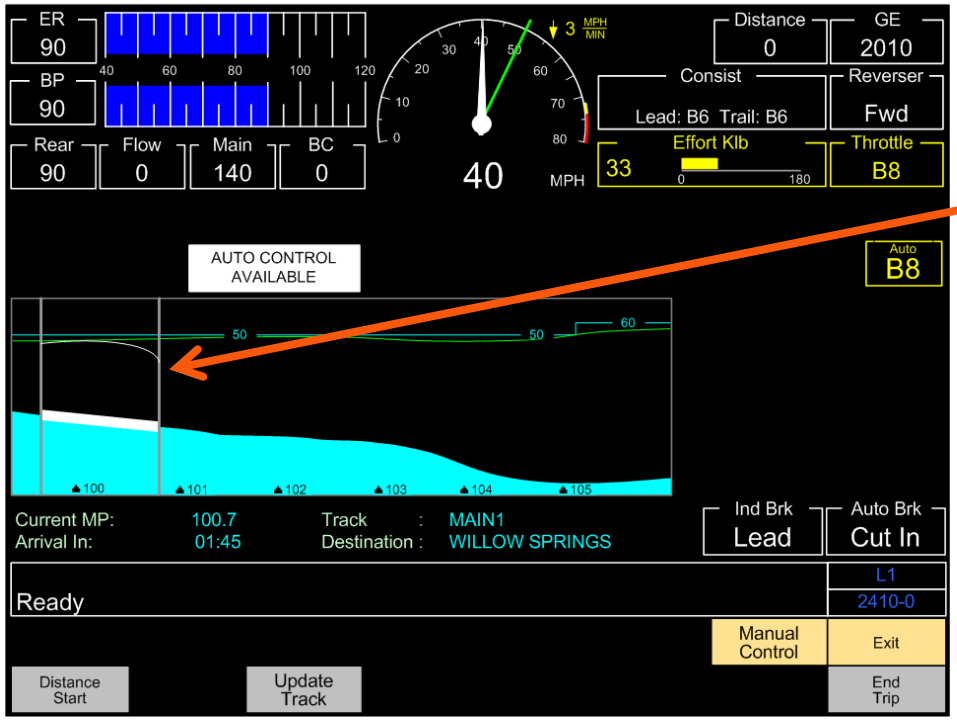
Trip Optimizer – NO AUTO DB

When NO AUTO DB is displayed:

- TO will not use Dynamic Braking in Auto Control
- AIR ADVISEMENT UNAVAILABLE will also display.
- If DB or air is needed to control train speed, then Manual Control MUST be taken immediately to slow train.

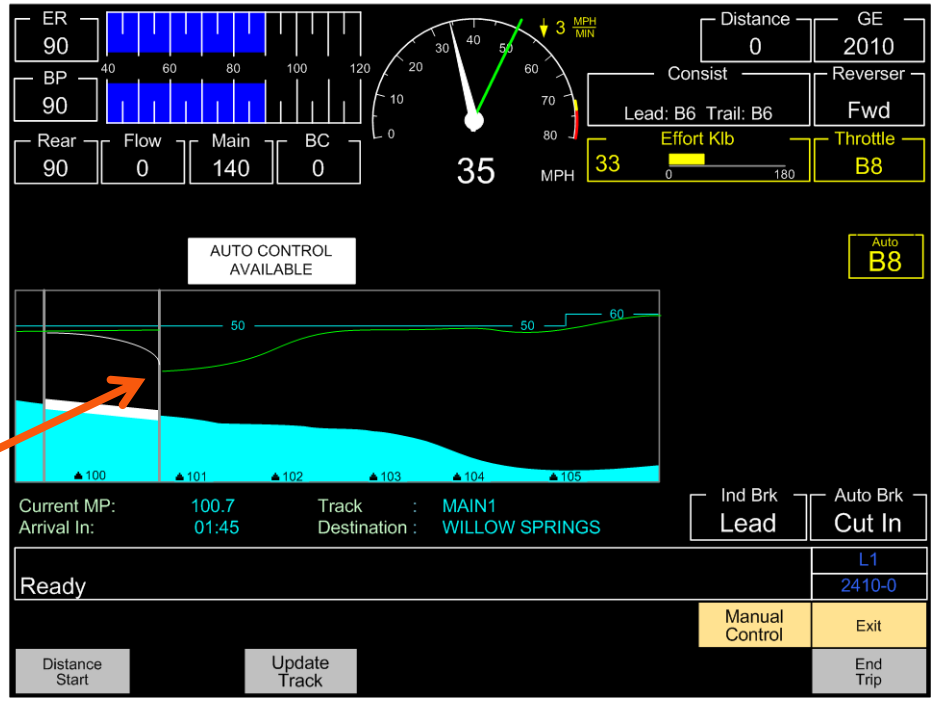


Recoverability Re-plan

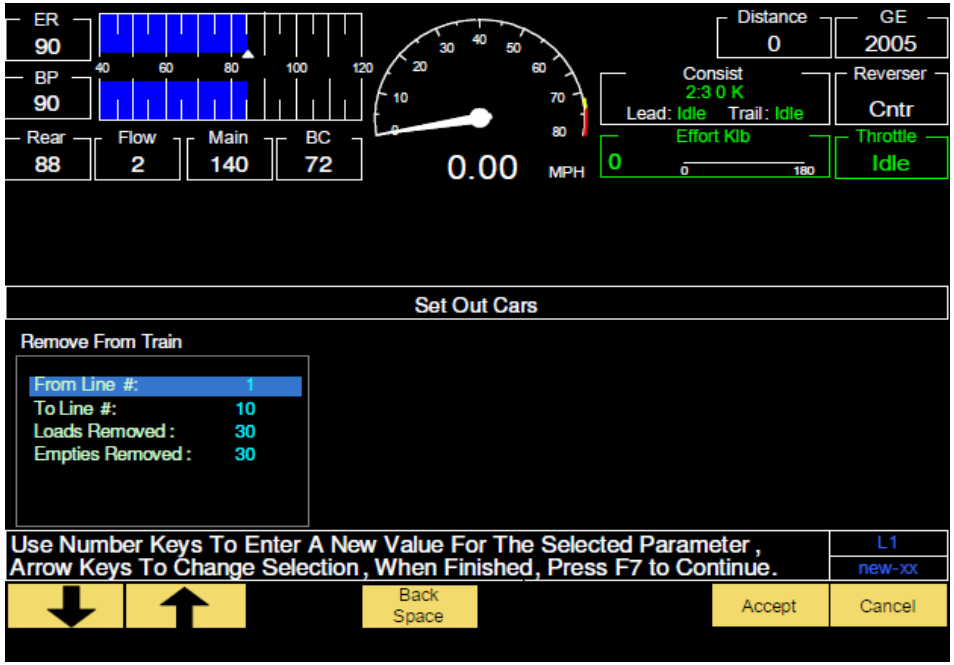


Train is being operated in manual and has dropped below the planned speed for that location.

TO will calculate recovery plan from current speed back to the planned speed.

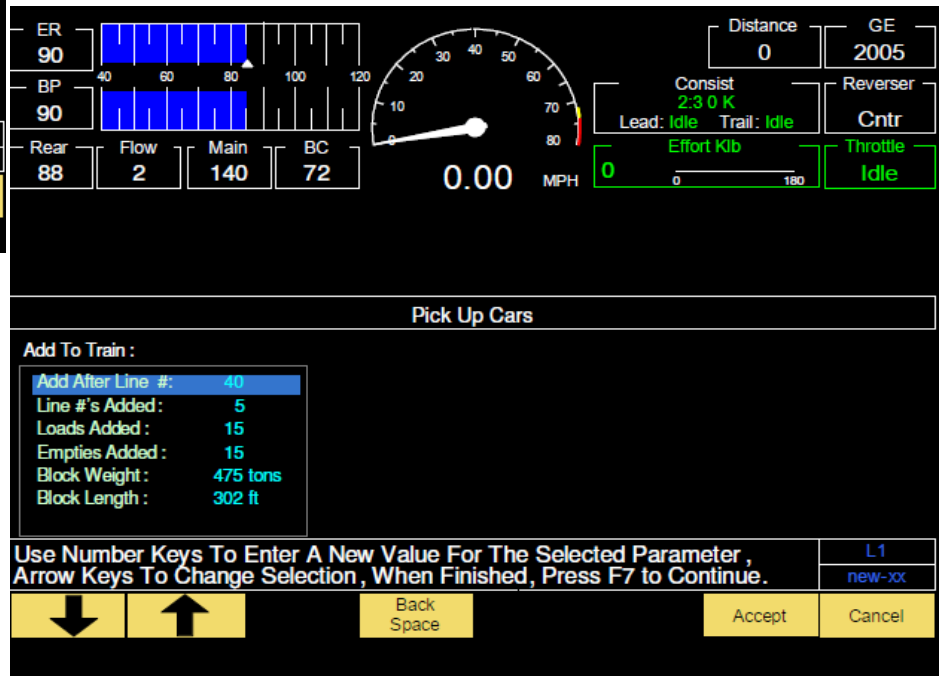


In Route Work Events



Set Out:

1. **From Line** #: Enter line number of the first car of the set out.
2. **To Line** #: Enter line number of the last car of the set out.
3. **Load+Empty Removed**: Enter the total number of loads/empties set out.
4. **Accept** changes.



Pick Up:

1. **Add After Line** #: Enter line number of the car (currently in your train) that the pickup will follow.
2. **Line #'s Added**: Enter number of cars added (line numbers).
3. **Lds/Mty Added**: Enter loads and empties added.
4. **Axles Added**: Enter total axles added.
5. **Block Weight**: Enter total tons added.
6. **Block Length**: Enter total feet added.
7. **Accept** changes.