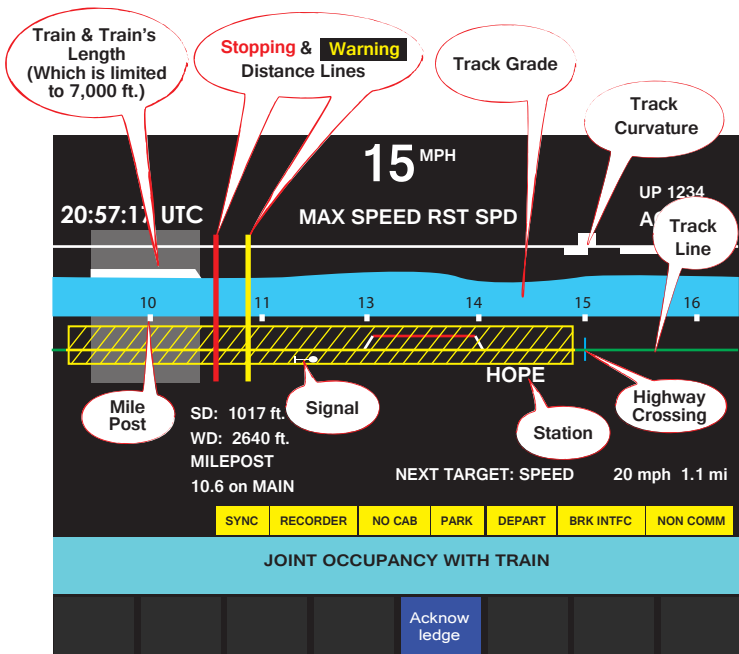


Table of Contents

System Overview	2
Screen Elements	3
Legends	6
Initialization	10
New Software Version	14
Crew Log-On	15
Consist Summary/Modification	17
En-Route Consist Update	19
Train Type Modification	21
Locomotive Information/Modification	21
Departure Test	22
Audible Test	23
Manual Selection of Direction of Movement	24
Communication and Office Synchronization	25
Known Route Under Train	26
Track Selection At Speed	27
Track selection or Transition to ACTIVE at Speed	27
"Undersired" State Change	28
Conditional Authority Prompt Distance	28
Crew Prompts and Responses	29
Switch Prompting/Blinking Trackline	31
Soft Cut Out	32
Restricted State	37
Hard Cut Out	38
Crew Log Off	40
Park Brake	41
Conductor's Information	43
Speed Enforcements	45
Braking Enforcement Recovery	46
PTC Rules (Chapt. 18 & 19)	47
Glossary	49
PTC Breaker location	58
Observations from the field	64
Feedback	70

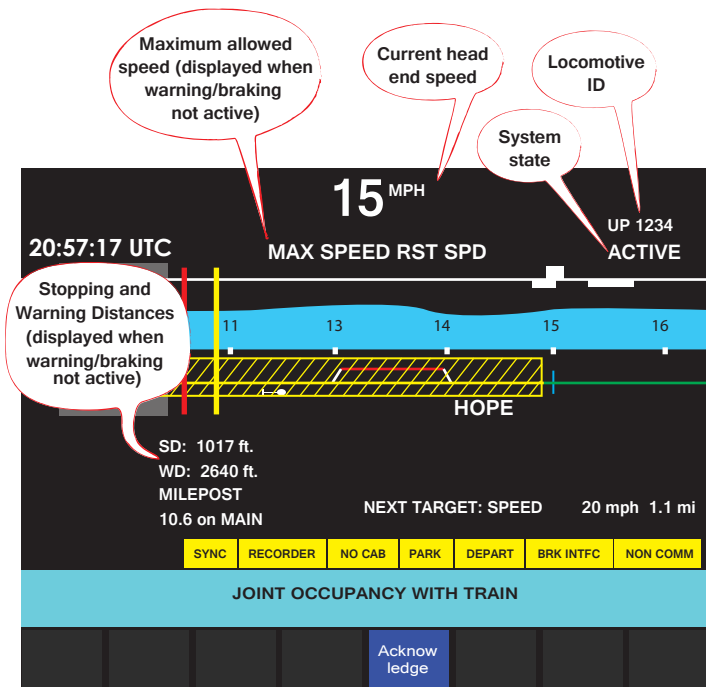
Textual Elements Primary I-ETMS Display Screen

Graphical Elements



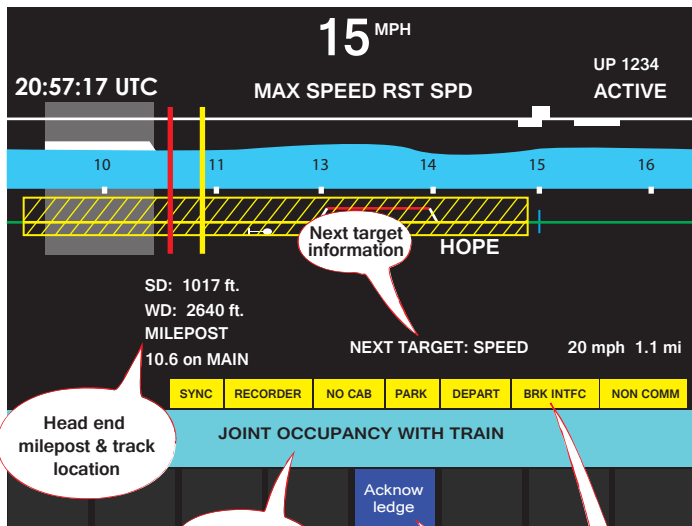
Primary I-ETMS Display Screen

Textual Elements



Primary I-ETMS Display Screen

Textual Elements



Head end milepost & track location








Next target information

Crew prompt (displayed only when active)



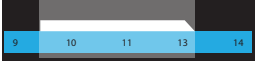
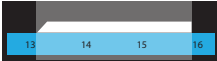
Soft key label area





Indicators

Primary I-ETMS Display Screen

TRACK LINE LEGENDS		
Color	Symbol	Signifies
Red		PTC track covered by a zero (0) mph target (Stop).
Yellow		PTC track covered by a speed reduction due to a mandatory directive, signal indication or restricted speed target.
Grey		Non-PTC track or PTC entry track or the governing signal in advance of the train, where the indication has not been determined, or status is unknown.
Green		Authorized PTC track on train's route. No speed reduction target due to a mandatory directive or a signal indication target.
TRACK LINE OVERLAY LEGENDS		
Color	Symbol	Signifies
Red Hash		Stop required (e.g. end of authority, signal requiring stop, unacknowledged Work Zone).
Yellow Hash		Restricted speed
Blue Hash		Work Zone

Primary I-ETMS Display Screen

TRAIN LEGENDS		
Color	Symbol	Signifies
White		Front locomotive orientation Short hood forward Train length is limited to 7,000 ft. on the screen
Blue		Front locomotive orientation Long hood forward Train length is limited to 7,000 ft. on the screen
Train Orientation Display		
Forward		Reverse
		

BANNER LEGENDS	
Name or Color	Example/Signifies
Braking	 Braking Recoverable by placing the Automatic Brake into suppression. Bringing train to a complete Stop. Notify the Dispatcher.
Predictive Warning	 Warning for impending braking based on time or estimated time to braking
Reactive Warning	 Warning for speed inside a target
Non Enforceable Warning	 Warning for authority violation

Primary I-ETMS Display Screen

ENGINEER PROMPTS

Name or Color

Examples/Signifies

Prompts are to be acknowledged only by the Engineer

Mandatory Directives

Access to function or response to crew prompt

Examples

Received

Confirmed

Yes

No

Menu 1

Access to other menus

Accept/Reject

Crew acceptance/rejection is required

Target Prompt

Pending prompt requiring crew interaction or indicating the arrival of trains for conditional authority

PTC SYSTEM STATES

(Appears in upper left hand corner of PTC screen)

Display

Signifies

ACTIVE

System is within, or approaching, PTC territory

DISENGAGED

System is synchronizing with BOS, but has started evaluating targets.

INITIALIZING

Displayed during initialization

FAILED

Initialization has failed

CUT OUT

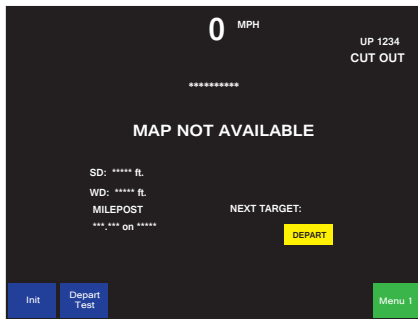
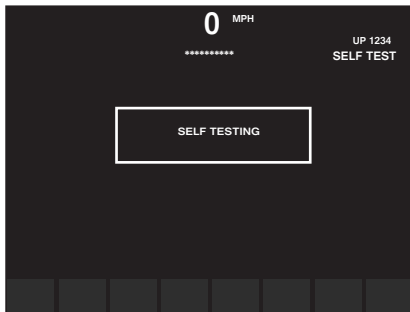
Permission from dispatcher must be obtained prior to cut out.

Primary I-ETMS Display Screen

ON SCREEN FLAGS LEGENDS		
Flag	Example	Signifies
Brake Interface	BRK INTFC	The I-ETMS penalty brake cut out switch is in the "cut out" position or the air brake system state is "cut out".
Cab Signal	NO CAB	The cab signal system is cut out or partially cut out.
Departure Test	DEPART	Departure test is required in order for the on-board segment state to become ACTIVE.
Network Communication	NON COMM	The on-board segment is out of communication with the office.
Park	PARK	The parking function is enabled.
Recorder	RECORDER	The on-board segment does not have a connection to the crash hardened memory unit.
Synchronizing	SYN	The onboard data sets are out of sync with the office for a subdivision/district that the train is approaching or occupies.

SYSTEM START UP AND SELF TEST FROM THE ENGINEERS SCREEN

After a successful self-test, the system will pass to the CUT OUT state and will display the following screen:



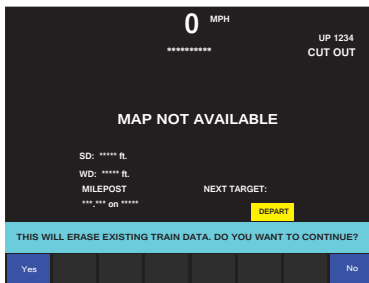
INITIALIZATION *(To be done only by the Engineer)*

Begin initialization *(DPU units must be linked and test performed before initializing PTC)*

Initialization is a mandatory step to activate and use PTC / I-ETMS. The INITIALIZING state may be initiated from ACTIVE, DISENGAGED or CUT OUT states. The **Init** soft-key is provided in **Menu 1**.

Menu 1 may be called from **Main** menu.

SYSTEM START UP AND SELF TEST FROM THE ENGINEER'S SCREEN



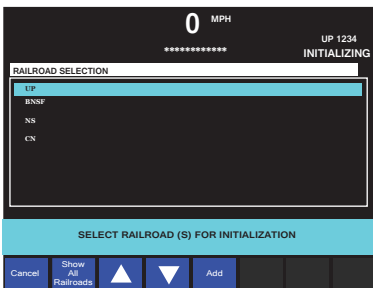
The Init soft-key is available only if all the following conditions are satisfied:

- The system is in ACTIVE, DISENGAGED or CUT OUT state
- The locomotive air brake system status is "lead"
- The locomotive is stopped

If locomotive starts to move, the Init key will be removed.

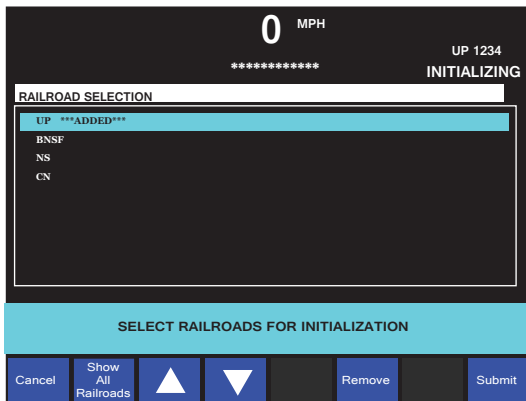
When the Init key is pressed, the above screen will be displayed (example is given starting from CUTOUT state)

If operator presses **No** or train starts to move, the prompt is removed. If operator presses **Yes** the system transits to INITIALIZING state, with SELECT RAILROADS... prompt. The summary consist data (if previously read by the model), will be erased.

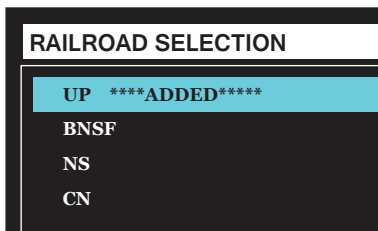


SYSTEM START UP AND SELF TEST FROM THE ENGINEER'S SCREEN

When the Engineer replies **Yes** to the prompt about starting initialization, the following screen is displayed:

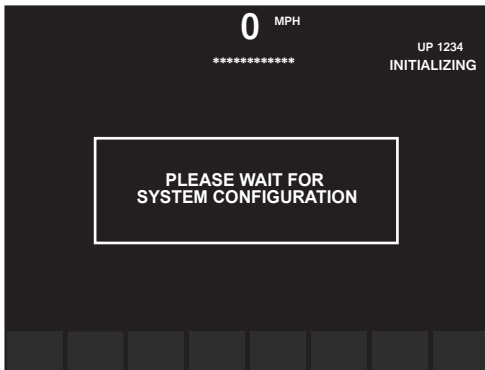


The railroad list could contain two or more railroads as on the picture above. The Engineer will have to highlight the needed railroads (*each railroad that could be operated on by the Engineer during their tour of duty*) using the arrow keys, add the railroad to selection and to remove from selection. When a railroad is added, it is displayed with *****ADDED***** label:

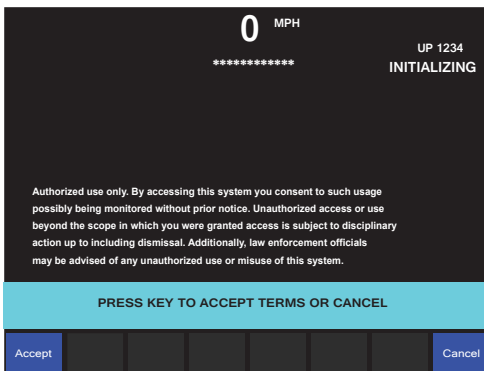


SYSTEM START UP AND SELF TEST FROM THE ENGINEER'S SCREEN

The **Submit** key appears when at least one railroad has been added. If the **Submit** key is pressed, the **PLEASE WAIT FOR SYSTEM CONFIGURATION** message is displayed.

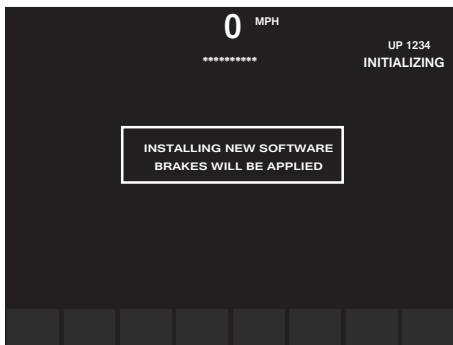
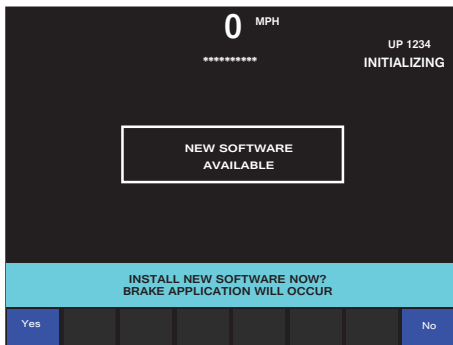


The usage policy screen will be displayed first:



If “NEW SOFTWARE (is) AVAILABLE”

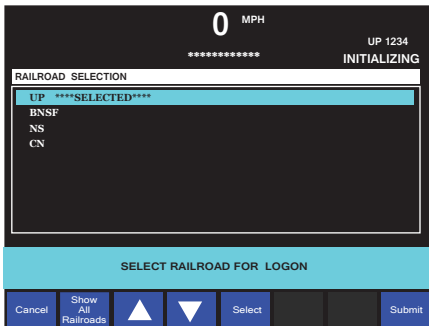
In the days prior to planned update, software is downloaded to all locomotives and staged for activation. After activation, software will automatically install on locomotive if brakes are cutout, e.g. in trail, etc. If software has not been “auto-installed” at time of next PTC initialization, prompt will be displayed to engineer for manual installation. Installation process takes 6-8 minutes and will invoke a brake application caused by a re-boot on the onboard computer. The engineer may answer “No” to the prompt and use the prior version of onboard software if still compatible, but not forever; upgrade is strongly encouraged.



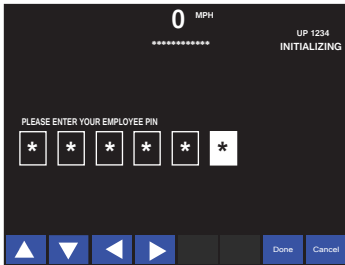
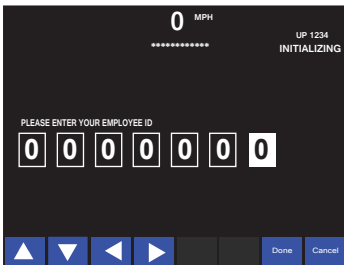
Note: Do not attempt to recover the brake application and begin initialization, until the system is in Cut Out status.

CREW LOG-ON

After **Accepting the Terms**, you must select the Railroad which employs you.



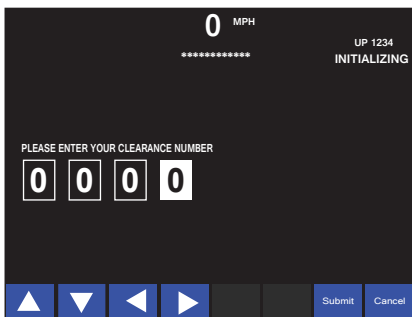
Once the Railroad is selected, enter your 7 digit Employee ID . The up and down arrow keys are used to select the correct number. The left and right arrows allow entering of the next digit. When the **Done** key at the Employee ID Entry screen is pressed, the on-board segment will discard any previously stored employee ID and PIN, and store the new employee ID. The Employee PIN Entry screen is displayed.



Enter of your AVR PIN number. Entered digits are not displayed but hidden with *****. You may have to lead your pin number with zero(es) to fill all seven boxes. When the **Done** key at the PIN Entry screen is pressed, the on-board segment will display **PLEASE WAIT FOR VERIFICATION**.

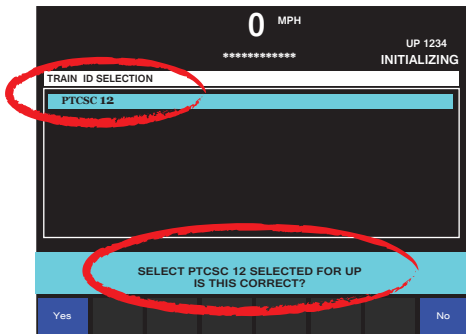
CREW LOG-ON

After the Employee ID and AVR PIN number verification screen, the Clearance (Track Warrant for Bulletins) number entry screen is displayed.



Use leading 0 if in possession of a 3 digit Clearance Number.

If the correct clearance (track warrant) number is entered, then the message **PLEASE WAIT FOR TRAIN ID FROM UP** message will appear, the system will ask "SELECT TRAIN SYMBOL" (This will list your train actual symbol, SELECTED FOR UP IS THIS CORRECT? You will answer **YES**.



NOTE: Failure to invoke the initialization process, or failure of the initialization process itself prevents the Locomotive Segment from activating PTC functions.

Obtaining Consist Summary /Consist Modification

The **PLEASE WAIT FOR TRAIN ID CONFIRMATION FROM UP** message is displayed first for 5 Seconds. Then the system will display **PLEASE WAIT FOR CONSIST SUMMARY**.

0 MPH UP 1234
INITIALIZING
20:57:17 UTC

TRAIN TYPE: FREIGHT
LEAD LOCOMOTIVE ORIENTATION: FRONT
LOCOMOTIVE COUNT: 2 (NO DP)
TRAILING TONNAGE: 7000 TONS (CARS ONLY)
OPERATIVE BRAKE COUNT: 70
AXLE COUNT: 286 (CARS AND LOCOS)
TOTAL LENGTH: 4985 FT
LOADED CAR COUNT: 70 (CARS ONLY)
EMPTY CAR COUNT: 0
EQUIPMENT SPEED RESTRICTION: 50 MPH
TOTAL BRAKING FORCES: CALCULATED ONBOARD

PRESS KEY TO MODIFY OR ACCEPT CONSIST DATA OR REQUEST NEW CONSIST DATA

Modify Request New Consist Accept

When **Consist** key is pressed, the main summary consist screen is displayed.

All crew members must compare the electronic copy with their paper copies.

The following **MUST** be edited if **NOT** Correct:

- Train Type (see page 21)
- Number of locomotive(s) in the train
- Trailing tonnage: the full weight of all cars (loads and empties)
- Operative brake count: to be determined by the type of cars
- Axle count: physical count of axels per car
- Total length: the length of train as defined in the train's paperwork (including the locomotives)
- Loaded and empty car count
- Equipment speed restriction

0 MPH UP 1234
INITIALIZING
20:57:17 UTC

TRAIN TYPE: FREIGHT
LEAD LOCOMOTIVE ORIENTATION: FRONT
LOCOMOTIVE COUNT: 2 (NO DP)
TRAILING TONNAGE: 7000 TONS (CARS ONLY)
OPERATIVE BRAKE COUNT: 70
AXLE COUNT: 286 (CARS AND LOCOS)
TOTAL LENGTH: 4985 FT
LOADED CAR COUNT: 70 (CARS ONLY)
EMPTY CAR COUNT: 0
EQUIPMENT SPEED RESTRICTION: 50 MPH
TOTAL BRAKING FORCES: CALCULATED ONBOARD

PRESS ACCEPT KEY TO MAKE CHANGES EFFECTIVE

Train Type Locos Weight Operative Brakes Length Car /Axle Counts Equip-Spd Restrict Accept

Consist Modification

Consist Modification will need to be made after a set-out or a pick-up, the Conductor will need to provide the Engineer with the new consist information.

0 MPH		UP 1234	
20:57:17 UTC	*****	INITIALIZING	
TRAIN TYPE:	FREIGHT		
LEAD LOCOMOTIVE ORIENTATION:	FRONT		
LOCOMOTIVE COUNT:	2 (NO DP)		
TRAILING TONNAGE:	7000 TONS (CARS ONLY)		
OPERATIVE BRAKE COUNT:	70		
AXLE COUNT:	286 (CARS AND LOCOS)		
TOTAL LENGTH:	4985 FT		
LOADED CAR COUNT:	70 (CARS ONLY)		
EMPTY CAR COUNT:	0		
EQUIPMENT SPEED RESTRICTION:	79 MPH		
TOTAL BRAKING FORCES:	CALCULATED ONBOARD		
PRESS KEY TO MODIFY OR ACCEPT CONSIST DATA OR REQUEST NEW CONSIST DATA			
Modify		Request New Consist	Accept

To make changes, select the **Modify** soft key. The system will then allow the operator to use the soft keys to make changes to:

Train Type	Locos	Weight	Operative Brakes	Length	Car/Axle Counts	Eqp-Spd Restrict
---------------	-------	--------	---------------------	--------	--------------------	---------------------

Consist Modification

0 MPH

UP 1234
INITIALIZING

20:57:17 UTC

TRAIN TYPE: FREIGHT
LEAD LOCOMOTIVE ORIENTATION: FRONT
LOCOMOTIVE COUNT: 2 (NO DP)
TRAILING TONNAGE: 7000 TONS (CARS ONLY)
OPERATIVE BRAKE COUNT: 70
AXLE COUNT: 286 (CARS AND LOCOS)
TOTAL LENGTH: 4985 FT
LOADED CAR COUNT: 70 (CARS ONLY)
EMPTY CAR COUNT: 0
EQUIPMENT SPEED RESTRICTION: 79 MPH
TOTAL BRAKING FORCES: CALCULATED ONBOARD

PRESS ACCEPT KEY TO MAKE CHANGES EFFECTIVE

Train Type	Locos	Weight	Operative Brakes	Length	Car / Axle Counts	Eqp-Spd Restrict	Accept
------------	-------	--------	------------------	--------	-------------------	------------------	--------

Select the item to be modified.

0 MPH

UP 1234
INITIALIZING

20:57:17 UTC

TRAIN TYPE: FREIGHT
LEAD LOCOMOTIVE ORIENTATION: FRONT
LOCOMOTIVE COUNT: 2 (NO DP)
TRAILING TONNAGE: 7000 TONS (CARS ONLY)
OPERATIVE BRAKE COUNT: 70
AXLE COUNT: 286 (CARS AND LOCOS)
TOTAL LENGTH: 4985 FT
LOADED CAR COUNT: 70 (CARS ONLY)
EMPTY CAR COUNT: 0
EQUIPMENT SPEED RESTRICTION: 79 MPH
TOTAL BRAKING FORCES: CALCULATED ONBOARD

TOTAL LENGTH

0	4	9	8	5
---	---	---	---	---

Cancel Enter [Up] [Up] [Up] [Up] [Up]

Use the up arrows until the required information is entered, then press **Enter**.

Consist Modification

0 MPH

20:57:17 UTC ***** UP 1234
INITIALIZING

TRAIN TYPE: FREIGHT
LEAD LOCOMOTIVE ORIENTATION: FRONT
LOCOMOTIVE COUNT: 2 (NO DP)
TRAILING TONNAGE: 7000 TONS (CARS ONLY)
OPERATIVE BRAKE COUNT: 70
AXLE COUNT: 286 (CARS AND LOCOS)
TOTAL LENGTH: 4985 FT
LOADED CAR COUNT: 70 (CARS ONLY)
EMPTY CAR COUNT: 0
EQUIPMENT SPEED RESTRICTION: 79 MPH
TOTAL BRAKING FORCES: CALCULATED ONBOARD

PRESS ACCEPT KEY TO MAKE CHANGES EFFECTIVE

Train Type	Locos	Weight	Operative Brakes	Length	Car/Axle Counts	Eqp-Spd Restrict	Accept
------------	-------	--------	------------------	--------	-----------------	------------------	--------



Once all changes have been made, press **Accept** to proceed.

Train Type Modification

5 MPH
UP 1234
ACTIVE

20:57:17 UTC MAX SPEED RST SPD

TRAINTYPE: FREIGHT

LEAD LOCOMOTIVE ORIENTATION: FRONT
LOCOMOTIVE COUNT: 2 (NO DP)
TRAILING TONNAGE: 7000 TONS (CARS ONLY)
OPERATIVE BRAKE COUNT: 70
AXLE COUNT: 286 (CARS AND LOCOS)
TOTAL LENGTH: 4985 FT
LOADED CAR COUNT: 70 (CARS ONLY)
EMPTY CAR COUNT: 0

EQUIPMENT SPEED RESTRICTION: - MPH

TOTAL BRAKING FORCES: CALCULATED ONBOARD

Default train type is Freight. Trains that are made up of 5 percent or greater of Intermodal and/or Multi Platform Auto Racks, need to have Intermodal selected for the train type.

Field is blank by default. The maximum authorized speed for train as specified on the train list must be entered in this field.

SS1 MAXIMUM SPEED (UNLESS OTHERWISE RESTRICTED) IS AS FOLLOWS:

MAXIMUM SPEED * 70 * MPH BETWEEN CX767 AND LB128 LOWEST CAR SPEED

NOTE: PTC does not recognize Heat/Cold Restrictions. During initialization, if practical based on the time the restriction goes into effect, adjust the speed to reflect the restriction. When the restriction goes into effect while en route, if the train is required to stop for any reason, adjust the speed in the EQUIPMENT SPEED RESTRICTION field. However, if the train is not required to stop and the speed has not been adjusted, the engineer is required to comply with the restriction.

LOCOMOTIVE INFORMATION/MODIFICATION

From the following menus you can make changes, add locomotives, change the placement in the consist, and place the locomotive in isolate or run mode.

0 MPH
UP 1234
INITIALIZING

LOCOMOTIVE	POSITION	STATUS	ORIENTATION
UP 1234	1	RUN	FRONT

Cancel Enter [Up] [Down] **Modify Loco** Add Loco Delete Loco

This example shows the UP 1234 facing front, in run and is first in the consist. (RUN or ISOLATE are the only choices for status. Isolate is to be used for any offline locomotive)

POSITION

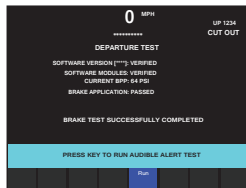
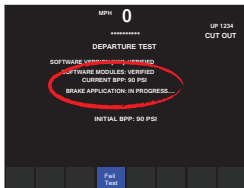
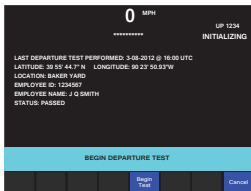
FRONT RUN 0 0 1

Cancel Enter [Up] [Up] [Up] [Up] [Up]

DEPARTURE TEST

When a Departure test is required, it must be initiated by the Engineer when the train is stopped. The Departure test can be performed when the system is in **ACTIVE, DISENGAGED** or **CUT OUT** state, or, by the system in the **INITIALIZING** state.

When the **Depart Test** key is pressed and the on-board segment has stored an employee ID and AVR PIN, the on-board segment will display the **Begin Departure Test** prompt screen.



As the system verifies the **SOFTWARE VERSION** and **SOFTWARE MODULES**, **it will make a full service brake application**. The initial and current brake pipe pressures are displayed as measured at the head end locomotive. When head end brake pipe pressure is reduced by **26 psi** or more, the **Fail Test** key will no longer be displayed, because the brake application is no longer required. An audible alert will sound, and the screen to the left will be displayed.

To recover from a Full Service Brake application during the Departure Test, complete the follow steps

- 1. Move Automatic Brake to Suppression.**
- 2. After PCS light extinguishes, release the Automatic Brake if safe to do so.**

The information about a previous departure test is displayed (if previously done). The information is as follows: date, time, latitude, longitude and the location of the test. The Employee ID and the status will be indicated. If the test is done for the first time, all fields will have the value **UNKNOWN**. When the **Begin Test** key at the **Begin Departure Test** prompt screen is pressed, the on-board segment will display the departure test status screen.

The Departure Test will be required at the train's initial terminal, when a locomotive is added as a new lead unit, or when changing operating ends.

AUDIBLE TEST

When the **Run Audible Test** prompt is displayed, the Engineer must press the **Run Audible Test** key to run audible test. The on-board segment will sound an audible alert (6 beeps). **VERIFY WHETHER YOU HEARD THE AUDIBLE ALERT** by pressing the **Pass Test** key. The Departure Test is now complete. To continue, use the soft keys and press **Exit**.



Manual Selection of Direction of Movement

Manual selection of direction of movement will allow the PTC system to become ACTIVE prior to initiating movement if on mapped track.

- You Can avoid enforcement braking events resulting after initialization close to signal or switch ahead

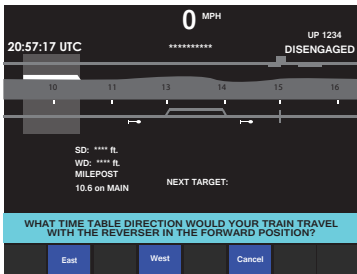
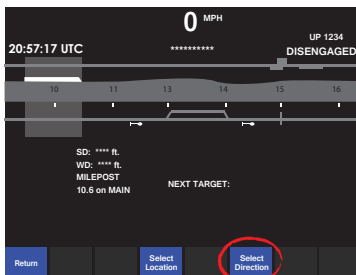
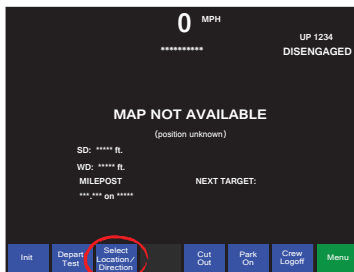
The "Select Location" key is replaced with a "Select Location/Direction" key

After selecting track, the "Select Direction" key can be used to establish intended timetable direction of movement

After pressing "Select Location", the timetable direction for movement with the reverser in the forward position can be selected. Status of signals and switches ahead will then be acquired, prior to initiating movement.

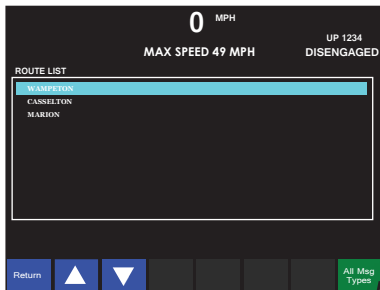
Note: If the engineer selects the wrong direction:

- PTC recognizes this after moving 200 feet in the opposite direction.
- PTC sets the direction to unknown.
- The engineer cannot answer the prompt again until the train is stopped.



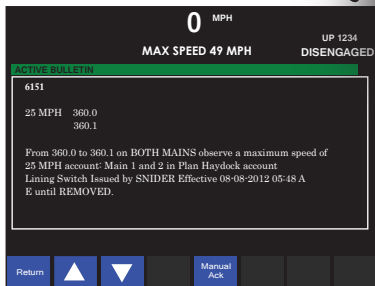
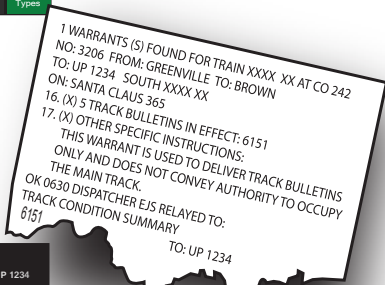
COMMUNICATIONS AND OFFICE SYNCHRONIZATION

After the consist is accepted, track authority and bulletins are relayed to the Lead Unit.



When **View bulletin** is pressed, the list of bulletins is shown.

When **View Item** is pressed, the system displays the selected bulletin content. The electronic version must be compared to the paper copies.



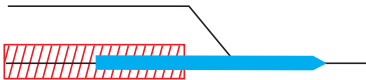
Known Route Under Train

The PTC system will not become ACTIVE until there is no switch with unknown position under the train.

- Can eliminate enforcement brake events caused by a “bad guess” by the system of where the rear of the train is located

Onboard system will accept wayside status communicated from any device along the route

- This makes it possible to update the status of a monitored switch under the train
If a switch under the train is unmonitored, the crew will have to move the train far enough to have a known route under the entire train before the on-board segment will become Active (i.e. off of the unknown switch)



Previous version put train on the main with no authority



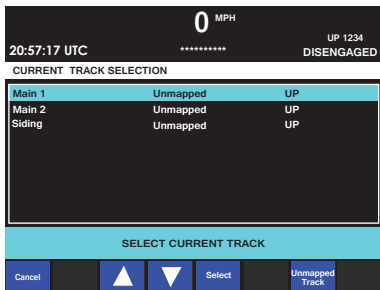
Current version does not go ACTIVE until switch is no longer under the train

Track Selection At Speed

Track selection can be made at any speed

- In the previous software version, track selection could be made only at speeds of 19MPH or less

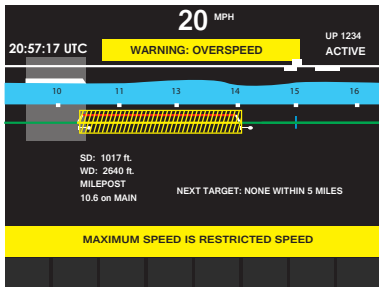
This prevented certain Restricted Speed overspeed enforcements after selecting track in signaled PTC territory, but it also prevented proper track selection at track speed on mainline entry tracks



Track Selection or Transition to ACTIVE at Speed

When track is selected or in other cases where the PTC system transitions to the ACTIVE state, enforcement is forestalled for 120 seconds for the following conditions:

- Entire train zero (0) mph unknown switch position
- Entire train zero (0) mph joint movement authority
- Head-end only zero (0) mph work zone
- Entire train zero (0) mph work zone
- Head-end only crossing false activation
- Head-end only restricted speed signal
- Entire train zero (0) mph conditional authority target

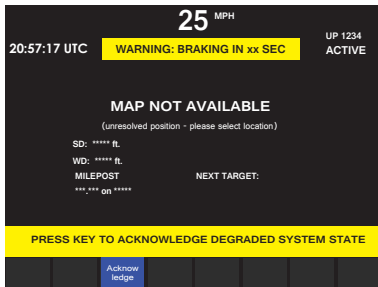


Train speed must be in compliance with restrictions within 120 seconds.

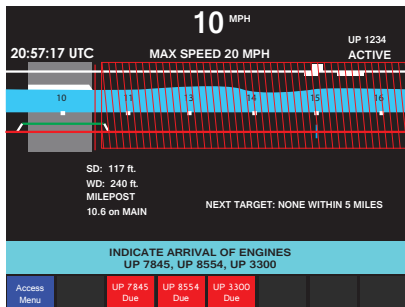
“Undesired” State Change

When the PTC system makes an undesired transition out of the ACTIVE state, the engineer must acknowledge the transition with 120 seconds, else a penalty brake application will occur. The typical reasons for failure to undesired state transition are:

- Failure of engineer to respond to switch prompt
- Failure of engineer to acknowledge position error
- The air brake is cutout
- A PTC system fault occurs



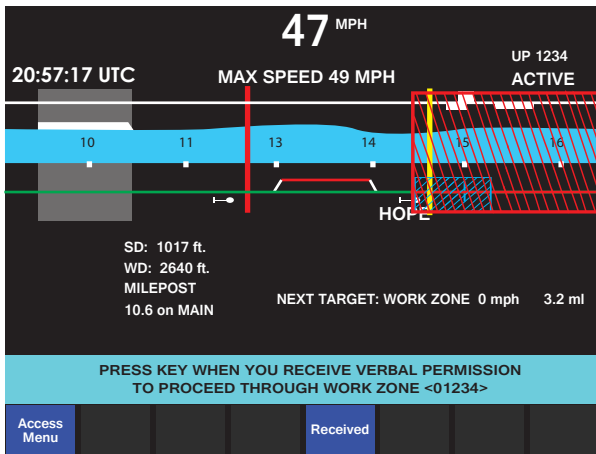
Conditional Authority Prompt Distance



The threshold distance for the display of the prompts to acknowledge trains identified in Track Warrant Box 2 (Not In Effect Until After Arrival Of) increased from 500 to 1500 feet.

Crew Prompts and Responses

Work Zone (Form B)



The system will alert the crew within 3 miles of an active **Work Zone** (form B). The blue banner will remind the crew that verbal permission from the Employee in Charge needs to be obtained prior to entry into the work zone. A red hash box and red track line provides protection at the Red Flag for Work Zone.

After permission has been received from the Employee in Charge, the Engineer will press the **Received** soft key.

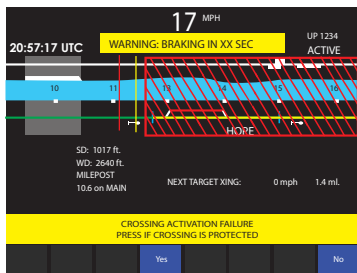
NOTE: The RECEIVED key is not to be pressed until permission for the Employee in Charge is received.



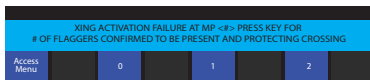
After permission has been received from the Employee in Charge, and the Engineer has pressed the **Received** key, the Engineer will then press the **Confirmed** soft key to complete the process. The red hash box and red track line is then removed. However, if movement is stopped prior to clearing the limits, the same protection described above is given again.

Crew Prompts and Responses

Bulletined Crossing Warning Notifications



If in position, or upon receiving a mandatory directive that there is a bulletined crossing malfunction. The system will alert the crew prior to arrival at the indicated crossing, by displaying a **Red Hash Box**. Notification banners and Yes and No prompt keys.



When complying with a bulletined automatic warning device malfunction follow these procedures:

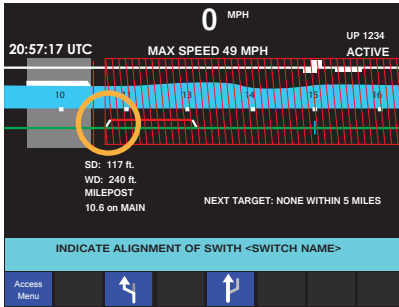
When notified of a crossing device malfunction that requires handling under rule 6.32.2 (Automatic Warning Devices and Crossings That Require Additional Precautions) refer to the chart below for soft key presses required to indicate to the PTC system that the required warning is being provided to motorists.

Procedure	Allowable Speed per Rule 6.32.2	PTC Soft Key to Select (Number of Flaggers)
XH	Stop and Warn	0
	15 MPH	1
	Maximum Authorized Speed	2
XC or XI	15 MPH	1

After the correct number of flaggers is chosen the Red Hash box will go away and allow movement at the required speed. Gates are considered flaggers within the PTC system.

Switch Prompting/Blinking Trackline

The switch for which prompt is displayed will flash to help engineer better identify its location. This applies to both facing point and trailing switches.



Here are the possible switch prompt icons you could encounter depending on Train Orientation, Locomotive Orientation, Switch Turnout Leg (direction of turnout), and Switch Orientation. You receive these switch prompt icons only during facing point switch movements. For example, the Left Label Normal Route and Right Label Reverse prompts appear while traveling in forward direction and the switch turnout is on the right hand side of the track. You would select the icon according to the route to be taken. You receive the Left Label Normal Route, Left Label Reverse Route, Right Label Reverse Route, and Right Label Normal Route switch prompt icons during reverse movements to indicate switch alignments. For example, the Left Label Reverse Route and Right Label Normal Route prompts appear when making a reverse movement and the switch turnout is on the left hand side of the track. You would select the prompt icon according to the route to be taken.



Left Label
Normal Route



Left Label
Reverse Route



Right Label
Reverse Route



Right Label
Normal Route



Left Label
Normal Route



Left Label
Reverse Route



Right Label
Reverse Route



Right Label
Normal Route

Soft Cut Out

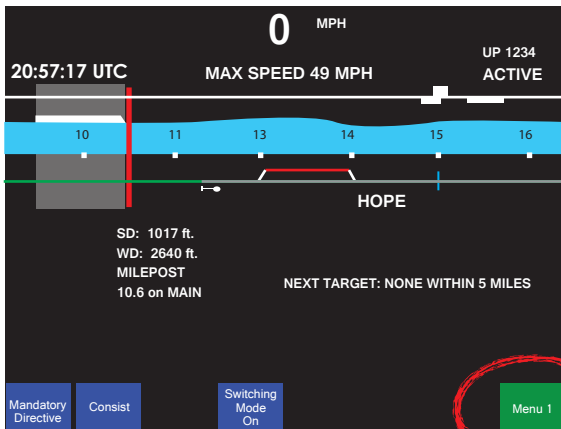
If it is determined that the I-ETMS system is inoperable, the crew must contact the train dispatcher.

Procedure for Soft Cut Out due to Signal Suspension, Track out of Service etc.

When authorized, a track bulletin may suspend the block system or sections of it.

The following procedure will be used to complete a soft cut-out prior to entry, and a soft cut-in prior to exiting the bulletined area:

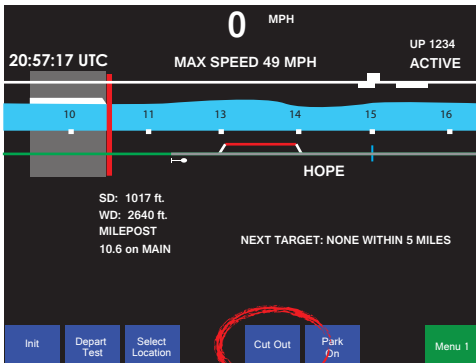
1. After stopping the train. Use the Menu1 button to access the Cut-Out button



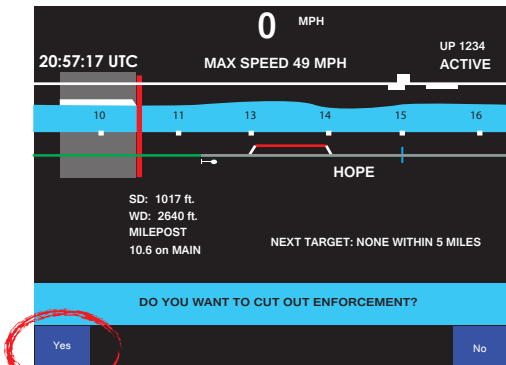
Soft Cut Out

Procedure for Soft Cut Out due to Signal Suspension, Track out of Service etc.

2. Press the Cut Out button



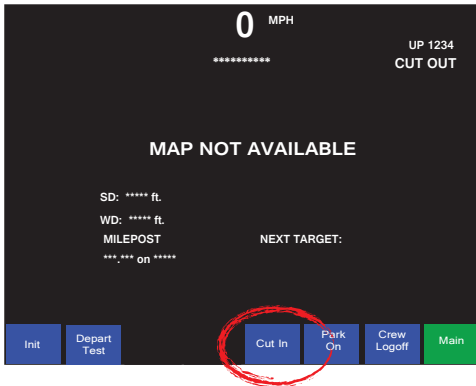
3. Press Yes to confirm



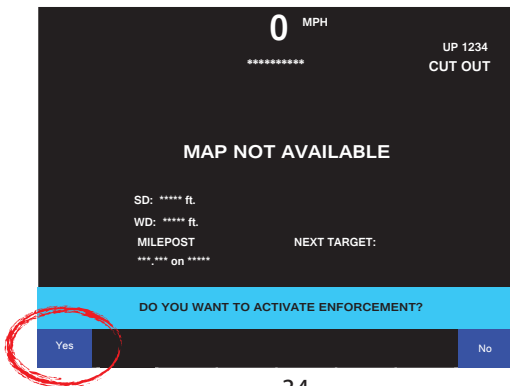
Soft Cut In

Procedure for Soft Cut In from a Soft Cut Out

1. Press the Cut In button



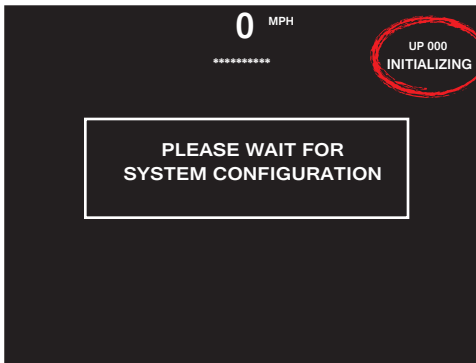
2. Confirm by pressing Yes button



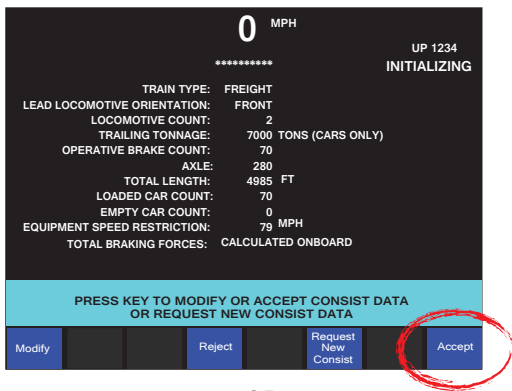
Soft Cut In

Procedure for Soft In from a Soft Cut Out

3. The system begins to initialize



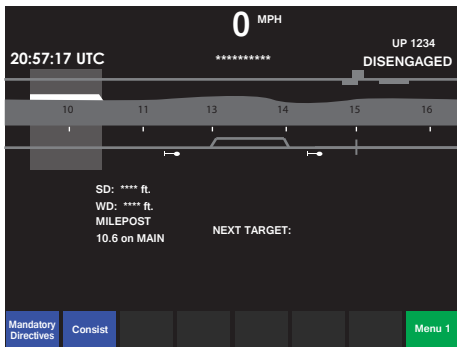
4. Press Accept button if correct



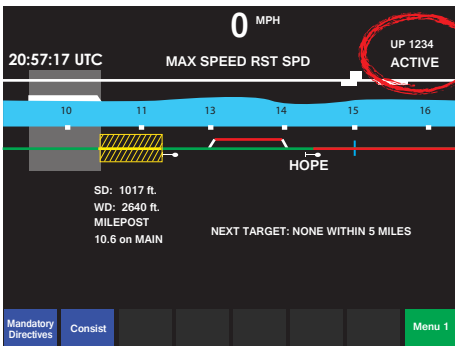
Soft Cut In

Procedure for Soft Cut Out due to Signal Suspension, Track out of Service etc.

5. The map is now visible



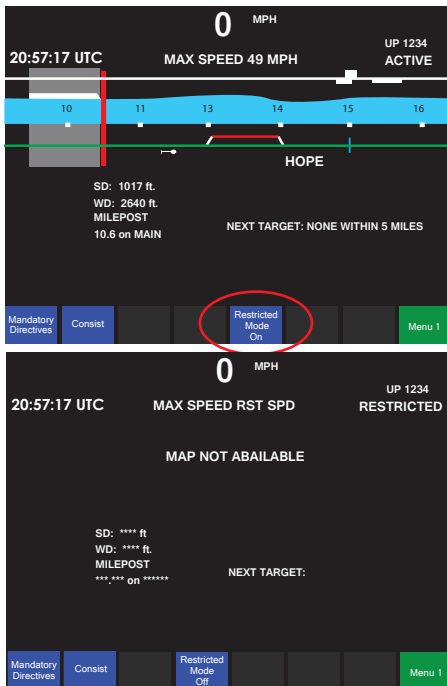
6. The map will become active after moving 30 feet. The train will be required to move at Restricted Speed, until the leading wheels pass the next signal



RESTRICTED MODE

RESTRICTED MODE to be used to perform switching or other moves on a controlled track

- Onboard system stays “in communication” with back office systems
- No map or location displayed
- Always enforces restricted speed ceiling speed
- No option to select track location or direction of movement
- Can CUTOUT from Restricted state
- Can view, request, modify, approve consist
- Can view, acknowledge, accept/reject mandatory directives
- Can view, acknowledge, accept/reject mandatory directives
- Can engage Park mode
- Can perform Crew Logoff
- RESTRICTED Mode is to be used in lieu of “soft” CUTOUT, except for failure scenarios

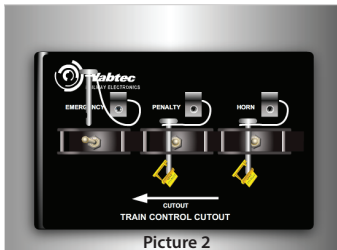
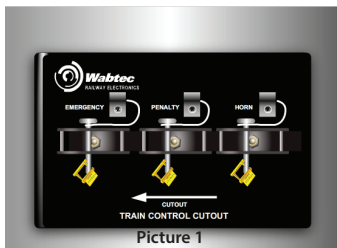


Hard Cut Out

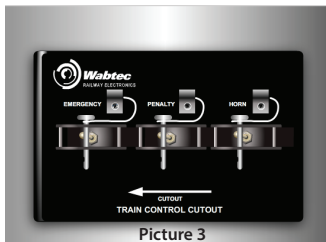
If it is determined that the I-ETMS system is inoperable, the crew must contact the train dispatcher. The dispatcher will instruct the crew to cut out I-ETMS system, or components thereof (i.e. horn failure).

Process for Hard Cut Out

1. Locate **TRAIN CONTROL CUTOUT** switches in the nose of the lead locomotive (Picture 1).
2. Remove the door seal to access the switches.



3. Remove the seal on the **EMERGENCY** switch, lift the retainer pin, move the switch to the **CUT OUT** position (Picture 2).
4. Replace the retainer pin and repeat all 3 steps with **PENALTY** and **HORN** switches (Picture 3).



**Note: There will be four (4) UPRR seals associated with the Cut-out process, (1) one on the outside of the box. Three (3) on each switch.*

Hard Cut Out Continued

The cut out switches on some UP locomotives do not have a seal cable case but are located in a closed compartment that houses all the PTC equipment.



PTC System Failure Procedures

The following procedures apply to Unequipped Yard Units

1. Dispatcher notification of movement of unequipped move
2. Route of locomotive is protected against conflicting operations by PTC system and sufficient operating rules to prevent train to train collisions.
3. 20 mile maximum distance.
4. Speed is limited to restricted speed except if no other unequipped trains in route, and no work events in route.

If Brake test is **NOT** performed:

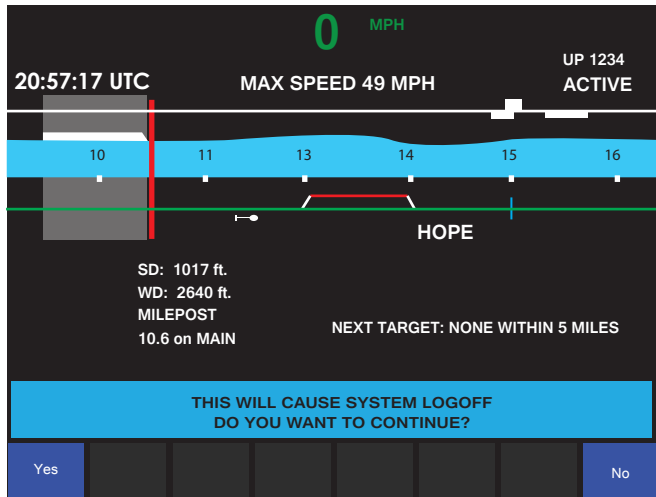
• **20 MPH**

If Brake test is performed:

• **30 MPH**

Crew LOG-OFF

When **Yes** is pressed, the on-board segment will remove the prompt and display the main menu and discard the stored employing railroad, employee ID, AVI PIN , operating railroad(s) selected for initialization, clearance number (track warrant for bulletin), and train ID data it has stored and set the on-board segment state to CUT OUT.



Note: It is mandatory to logoff at the conclusion of one's duty

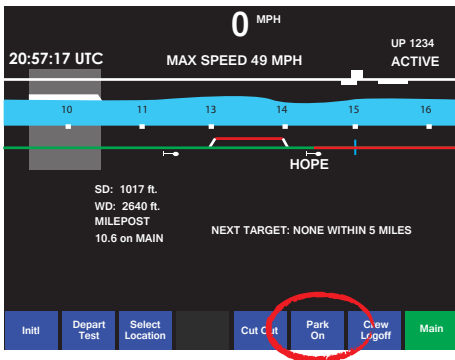
Login Expiration

When the on-board segment state is **CUT OUT** or **FAILED**, and 13 hours have elapsed since the last crew login at initialization, the on-board segment will discard the employing railroad, employee ID, AVI PIN, operating railroad(s) selected for initialization, clearance number, and train ID data it has stored.

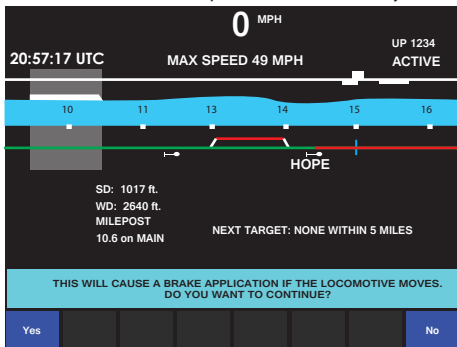
PARK BRAKE FUNCTION

When the on-board segment displays **Menu 1** the locomotive is stopped, and the reverser handle is centered, the on-board segment will display the **Park On** key.

Park On



When the **Park On** key is pressed, the on-board segment will display: **THIS WILL CAUSE A BRAKE APPLICATION IF THE LOCOMOTIVE MOVES. DO YOU WANT TO CONTINUE?** Prompt the **Yes** and **No** keys.



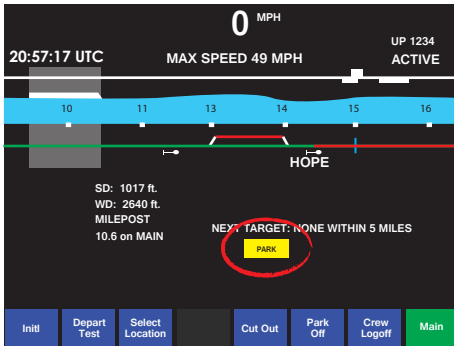
When the parking function is enabled, (see the next page) the on-board segment will display a **Park Off** key.

When the **Park Off** key is pressed, the on-board segment display: **THIS WILL ALLOW TRAIN MOVEMENT. DO YOU WANT TO CONTINUE?** Prompt the **Yes** and **No** keys.

Park Off

THIS WILL ALLOW TRAIN MOVEMENT. DO YOU WANT TO CONTINUE?

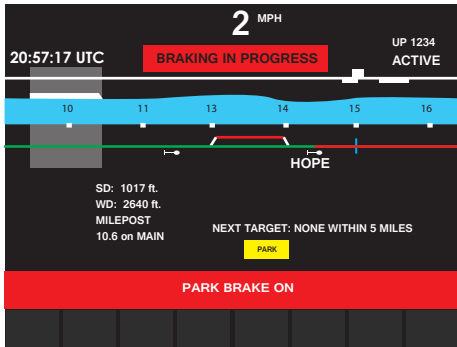
PARK BRAKE FUNCTION



When the parking function is enabled and the segment state is **DISENGAGED**, **ACTIVE** or **RESTRICTED**, the on-board segment shall display the **PARK** flag.

When the on-board segment displays **Menu 1** and the parking function is enabled, the on-board segment will also display a **Park Off** key (pictured above).

*When the parking function is enabled and the locomotive moves for 5 seconds, the on board segment will display the braking banner and a **Parking Brake On** braking message, and initiate a full service brake application. The air must then be recovered. Once the locomotive stops, on-board segment will remove the braking banner and the braking message, and display the main menu buttons.*



Conductor's Information

The Conductor will continue to keep the Conductor's log book (PB 20489) current. **The Conductor's screen is not equipped to make changes to the train's data, respond to prompts or initialize the system. This is to be done only by the engineer.**

However, the Conductor will be required to examine the electronic train summary and compare it to the paper copy. If discrepancies are noticed, the paper copy will supersede the electronic copy. Notify the Dispatcher and edit the on-board system to match the paperwork.

The system will display slow orders, temporary and permanent speed restrictions, and work zones. The Conductor must communicate any required actions or restrictions that affect the safe operation of the train at the appropriate time and location, as prescribed by the rules.

0 MPH
UP 1234
INITIALIZING

TRAIN TYPE: FREIGHT
LEAD LOCOMOTIVE ORIENTATION: FRONT
LOCOMOTIVE COUN : 2
TRAILING TONNAGE: 7000 TONS (CARS ONLY)
OPERATIVE BRAKE COU IT: 70
AXLE: 280
TOTAL LENG H: 4985 FT
LOADED CAR COUN T: 70
EMPTY CAR COUN T: 0
EQUIPMENT SPEED RESTRICTION: 79 MPH
TOTAL BRAKING FORCES: CALCULATED ONBOARD

PRESS KEY TO MODIFY OR ACCEPT CONSIST DATA
OR REQUEST NEW CONSIST DATA

Modify Request New Consist Accept

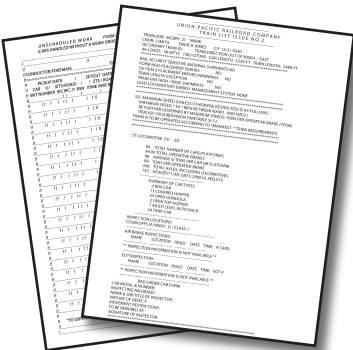
TRAIN LIMITS BETWEEN NX001 AND NZ335
TPA LIMIT IS 500
STANDARD STRENGTH COUPLER LIMIT IS NONE
HIGH STRENGTH COUPLER LIMIT IS NONE
TERRITORY CODE OTHER THAN H
7382 TPA TONNAGE INCLUDES 306
306 TONS PER EQUIPMENT
377 TONS PER EQUIPMENT

BAD ORDER CAR FORM
INSPECTING RAILROAD:
NAME & JOB TITLE OF INSPECTOR:
NATURE OF DEFECT:
MOVEMENT RESTRICTIONS:
TO BE REPAIRED AT:
SIGNATURE OF INSPECTOR:
DATE

CONSIST	CLIFFS IN	NX001	%	12-21-12-1000	LOADS	MTYS	CAR-TONS	TRN-LOTH
46	38	7382	5489					
46	38	7382	5489					
46	38	7382	5489					
46	38	7382	5489					
46	38	7382	5489					
46	38	7382	5489					
46	38	7382	5489					

Conductor's Information

In regards to scheduled and unscheduled work, the Conductor will be responsible for informing the Engineer of changes to the train's weight, length, and number of cars and axles added or removed, and whether they are loads or empties. The Engineer must update the consist data in the system.



Equipped Locomotives

Locomotive Assignment Inquiry (-11) Summary														Pool	NTWK	PTC	EM	V	Train ID	D	Pickup Setout						
Loco ID	Mod - Yr	HP	EPA	Hthb	V	C	A	H	C	D	A	S	D	W	S	D	RIC	VC2									
					C	A	C	S	P	I	X	T	B	M	S	L											
UP_3850 (Freight)	SD70M-04	4000	10.4	Green	Y	Y	Y	B	G	G	G	E	N	Y	S		MTEQ	Y	RE-RED UNIT	RED	R		V	IOACIR 19-0	PX950-01/20 0422 C0486-01/20 1410		
																							V	ICISIR 20-0	C0486-01/20 2359 SI020-01/22 0225		

 ENGINEER'S COPY
 TRAIN LIST ISSUE NO. 2

TRAIN/JOB: IOACIR 08 NAME: C BENNETT C/F 02/08 2200
 CNDR: P POCHING ENGR: C BENNETT C/F 02/08 2200
 SECONDARY TRAIN ID: TRAIN DIRECTION OUT OF RV323 : WEST
 60-LOADS 0-MTYS 2926-GTONS CAR LENGTH: 6808-FT TRAIN LENGTH: 6954-FT

HAZARDOUS MATERIAL IN TRAIN NO TRAIN WGT: 3329-TN
 RAIL SECURITY SENSITIVE MATERIAL SHIPMENTS NONE
 FORM 8620 PLACEMENT ERRORS NO
 SSI ITEM 5 PLACEMENT ERRORS/WARNINGS NO
 TRAIN LENGTH EXCEPTION NO
 TRAIN HAS HIGH / WIDE SHIPMENTS NO
 LEAD LOCOMOTIVES EMS NONE
 LEAD LOCOMOTIVE IS PTC EQUIPPED YES (OPERATIVE)

 SSI MAXIMUM SPEED (UNLESS OTHERWISE RESTRICTED) IS AS FOLLOWS:
 MAXIMUM SPEED * 70 * MPH BETWEEN PX950 AND C0486 LOWEST CAR SPEED
 BE FURTHER GOVERNED BY MAXIMUM SPEEDS: TONS PER OPERATIVE BRAKE (TPOB)
 ITEM #2F OR SUBDIVISION TIMETABLE SI-12
 TRAIN IS TO BE OPERATED ACCORDING TO * TABLE B * TRAIN REQUIREMENTS SSI ITEM 2F

Will display
(OPERATIVE or NON OPERATIVE)

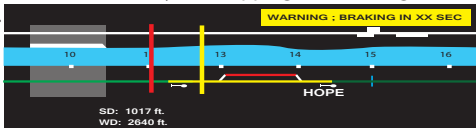
Speed Enforcements

Reactive Speed Enforcement

- Warning occurs if speed reaches **3 MPH** over the maximum authorized speed.
- Enforcement occurs if speed reaches **5 MPH** over the maximum authorized speed.

Predictive Speed Enforcement

- When the locomotive is approaching the speed restriction, and is exceeding the next target speed, a warning will appear on screen with the time until the braking enforcement occurs to prompt the crew to reduce the speed of the train.
- These distances are shown by the stopping and warning distance screen elements.



Restricted Speed

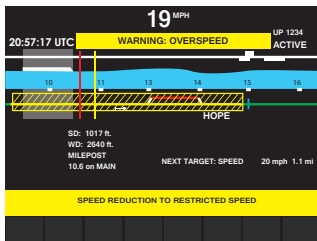
PTC will only enforce the maximum speed of 20 MPH. All other components of rule 6.27 Restricted Speed must also be complied with. These conditions are specific to train operations where PTC is in effect regarding Restricted Speed:

Approaching Location Requiring Restricted Speed

- Reduce speed to 16 MPH or less within 1500 feet of location requiring Restricted Speed.
- PTC will permit movement to enter location requiring Restricted Speed at or below 16 MPH.

Enforcement of Restricted Speed

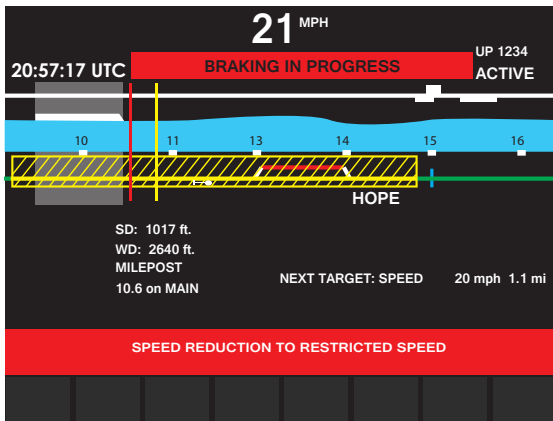
- Braking enforcement warning will occur at 19 MPH.
- Braking enforcement will occur at 21 MPH.
- The system can not determine 1/2 the range of vision.



Brake Enforcements Recovery

To recover from a Full Service Braking Enforcement, do the following:

1. Bring the train to a normal STOP and NOTIFY the Dispatcher.
2. Move throttle to IDLE.
3. Apply Independent Brake.
4. Center Reverser.
5. Move Automatic Brake to Suppression.
6. After PCS light extinguishes, release the Automatic Brake if safe to do so.
7. Proceed with train operations when cleared by the Dispatcher.



If the PTC system has determined a full service brake application is not sufficient, it will apply an Emergency application of the Automatic Brakes.

To recover from a Braking Enforcement with an Emergency application, do the following:

Follow steps 1-4 above, and move Automatic Brake handle to Emergency

- After waiting the required time, release the Automatic Brake if safe to do so.
- Follow step 7 above.

18.0 - RULES APPLICABLE ONLY IN POSITIVE TRAIN CONTROL (PTC) TERRITORY

18.1 - Positive Train Control Territory

PTC territory is specified in special instructions. A train must not be operated in PTC territory if the controlling locomotive is not equipped with an operable PTC system unless otherwise authorized by rule, special instructions, or the train dispatcher.

18.2 - Taking Charge of PTC Equipped Trains

When taking charge of a train in PTC territory, or before entering PTC territory, the train must not depart until the engineer confirms:

1. The PTC circuit breaker and cut out switches are in the on position.
2. The PTC system on the controlling locomotive is initialized.

18.3 - Broken or Missing Seals

Unless authorized, do not break the protective seals on PTC devices. Train crews must report broken or missing PTC seals to the train dispatcher.

18.4 - PTC Cut Out

The PTC system may only be cut out or disabled when authorized by rule or train dispatcher.

18.5 - PTC Trip Completion

At the completion of the trip, the engineer must log out of PTC.

18.6 - Consist Data

The engineer must review consist data in the PTC system and correct if necessary. The PTC consist data must be updated after any setouts or pickups. The engineer must confirm all consist data displayed by the PTC system is accurate.

18.6.1 - Comparison of PTC Display Information

After successful initialization and before departing, crew members on the controlling locomotive must compare information such as track bulletins, restrictions, and authorities displayed on the PTC display with the copies in their possession.

18.0 - RULES APPLICABLE ONLY IN POSITIVE TRAIN CONTROL (PTC) TERRITORY

18.6.1 - Comparison of PTC Display Information (continued)

When the PTC display does not conform with a wayside or cab signal indication, maximum authorized speed, mandatory directive, timetable, or special instruction, be governed by the most restrictive.

Any discrepancies must be reported to the train dispatcher. The train dispatcher will verify that the warrant includes all required track bulletins and will provide any additional restrictions required for the route.

18.7 - PTC System Inputs and Prompts

Inputs and responses to prompts must be accurate and timely to prevent an unnecessary PTC enforcement and/or delay. The engineer must operate the train in response to a PTC warning to prevent a penalty brake application, consistent with good train handling. If improper input or response to a prompt is made, it must not be acted upon until corrected or resolved.

18.8 - Reserved for Future Use

18.9 - Switching

PTC must not be utilized during switching operations. Before performing any switching moves on trains with PTC Cut In, enable Restricted Mode. After all switching moves have been completed, turn off Restricted Mode. If cars were set out or picked up, consist information must be updated in the consist screen of the PTC system before proceeding.

18.0 - RULES APPLICABLE ONLY IN POSITIVE TRAIN CONTROL (PTC) TERRITORY

18.10 - Working with Helper Units

A. Helpers added to head end of the train:

- Perform soft cut out of the PTC system on lead engine of the train after helper unit(s) are added.
- Initialize PTC on the lead helper locomotive prior to movement.
- PTC must be cut in after helpers are removed and prior to movement.

B. No changes are required to the PTC system on the lead engine when helpers are added to the rear end of the train.

19.GL - GENERAL CODE OF OPERATING RULES GLOSSARY (PTC ONLY)

Hard Cut In (PTC) A state of the PTC system when PTC cut out switches are placed in the cut in position.

Hard Cut Out (PTC) A state of the PTC system when PTC cut out switches are placed in the cut out position.

Non-enforcement state (PTC) A state when the PTC system is cut out, failed, degraded, disengaged, or experiencing other unenforceable conditions.

Positive Train Control (PTC) A safety overlay system designed to monitor train movement and designed to prevent train to train collisions, over speed violations, movement into established work zone limits without permission, and movement over an improperly lined main track switch.

19.GL - GENERAL CODE OF OPERATING RULES GLOSSARY (PTC ONLY)

PTC Equipped A locomotive equipped with an operable PTC system.

Restricted Mode(PTC) A mode where the only function provided by PTC is enforcement of Restricted Speed. In Restricted Speed Mode, PTC will not display conditions of the track ahead, targets, warnings or stopping distances.

Soft Cut In (PTC) A state of the PTC system resulting from selection of the cut in key on the PTC display.

Soft Cut Out (PTC) A state of the PTC system resulting from selection of the cut out key on the PTC display.

Item 10-B - Positive Train Control (PTC) Operations

Change Item 10-B to read:

Item 10-B Positive Train Control (PTC) Operations

PTC limits are specified in the timetable under SI-01. Within PTC limits, the PTC system must be utilized unless:

- Required to be cut out as listed in Part 1 below.
or
- When authorized to be cut out by the train dispatcher, bulletin, or rule.

1. Exceptions For Use of PTC

PTC must not be utilized:

- A.** On trains with 15 or less cars/platforms/units/wells. If total number of cars/platforms/units/wells is reduced to 15 or less enroute, disable PTC using the Soft Cut Out and notify the train dispatcher before proceeding.
- B.** On any train when more than 5% of the train air brakes are inoperative. While enroute, if more than 5% of the train air brakes become inoperative, disable PTC using the Soft Cut Out and notify the train dispatcher before proceeding.
- C.** On Work Trains while working under the supervision of a Maintenance of Way Foreman during loading or unloading operations. However, the PTC system must be utilized while enroute to or from work location.

2. PTC Qualification

Engineers must receive a simulator training run using PTC and pass a PTC exam with a minimum passing score of 80%.

Both of these activities must be monitored by a qualified PTC Instructor.

3. Reporting

Promptly contact to the PTC Help Desk and be governed by instructions received from the PTC Help Desk when:

- A.** The PTC circuit breaker is not in the ON position on an operative PTC equipped engine as stated in the Train List.
- B.** Any of the PTC Cut Out switches are in the Cut Out position or the seal is missing on an operative PTC equipped engine as stated in the Train List.
- C.** Any PTC initialization or en-route failure occurs. The assigned engineer (UP Employees Only) must also submit a PTC Feedback Form. To access the feedback form: From the MyUP website, select "Menu", then select "Crew", then select "PTC/Energy Management Feedback".

To contact the PTC Help Desk:

- A.** For trains on line of road, i.e. occupying a main track or siding, will contact the train dispatcher.
- B.** For trains clear of the main track or siding at an originating or intermediate terminal, turn to radio to the correct dispatcher radio channel for the area you are in as identified in timetable subdivision instructions under Radio Display (SI-RD) and dial 987 on the Radio Keypad.

4. Defective PTC

PTC is considered defective and must be reported as noted in Section 3 Reporting, when any one of the following occurs:

- A. System fails to transition to the ACTIVE state prior to entering PTC territory.**
- B. System fails to transition to the ACTIVE state after having been initialized in PTC territory and the engine has moved more than 100 feet.**
- C. System transitions from the ACTIVE state to another state and remains in that state for 30 seconds or more while in PTC territory, other than due to Engineer Logoff or Soft Cut Out.**
- D. One or more display device(s) is not intelligible.**
- E. Fails to sound an audible indication in conjunction with a visual warning.**
- F. Displays track conditions that do not conform at two successive block or interlocking signal locations.**
- G. Displays track conditions that do not conform to an authority, track bulletin, or timetable speed limit.**
- H. The penalty brake switch is Cut Out.**
- I. Any part of the PTC system is damaged.**

If the on board PTC device returns to normal prior to cutting out the PTC system, the screen will display "ACTIVE". If the PTC screen is visible and correct, notify the Train Dispatcher who may then grant permission for the train to proceed.

5. Inoperative PTC

The PTC help desk will solely make the determination that PTC has become Inoperative. When it has been determined that the PTC system is inoperative, promptly notify train dispatcher and comply with the train dispatcher's instructions.

6. PTC Operations

A. CTC, Manual Interlocking, Other Controlled Track (OCT), or Control Point Locations

After receiving verbal authority to enter the main track, enter a controlled siding, or pass a signal displaying Stop,

B. Track Warrant Control

After receiving a Track Warrant for authority, the crew must compare the Track Warrant with what PTC is displaying under the Mandatory Directives, Authority Menu. If the Track Warrant for authority does not match the information in the PTC Mandatory Directives, Authority menu, promptly notify the train dispatcher and do not act upon the authority until the discrepancy is corrected.

When a Track Warrant for authority includes "Not in effect until after the arrival of", and it has been determined that engine(s) have arrived, the engineer must press the "Arrived" soft key corresponding to the lead engine of the train to be met and the "All Arrived" key in order to proceed.

C. Movement with the Current of Traffic – Rule 9.14

After receiving a Track Permit, the crew must compare the Track Permit with what PTC is displaying under the Mandatory Directives, Authority menu. If the Track Permit does not match the information in the PTC Mandatory Directives, Authority menu, promptly notify the train dispatcher and do not act upon the authority until the discrepancy is corrected.

PTC will allow movements against the current of traffic when a bulletin authorizing such moves is in effect. Engineer is responsible to operate train in compliance with all applicable operating rules when moving against the current of traffic. Promptly notify the dispatcher if PTC does not allow train movement against the current of traffic when a bulletin authorizing movement is in effect.

D. Movement within CBS Limits – Rule 9.14.2

After receiving verbal authority to enter CBS limits, the crew must compare the verbally issued main track authority with what PTC is displaying under the Mandatory Directives, Authority menu. If the verbally issued main track authority does not match the information in the PTC Mandatory Directives, Authority menu promptly notify the train dispatcher and do not act upon the authority until the discrepancy is corrected.

E. Non-Controlled Absolute Stop Signal in ABS

When the PTC system shows a Stop target where a non-controlled Stop signal is located in ABS territory:

- Stop train within 1500 feet of the signal displaying stop indication. helper unit(s) are added.
- After stopping, the PTC screen will display "Press key when you are authorized to proceed past the signal" along with a "received" key.
- Press received key after receiving permission to proceed past the signal.
- PTC will remove the stop target and allow train to proceed.

F. System Cut In / Cut Out

A Soft Cut Out or Soft Cut In of the PTC system may be performed when authorized by the Train Dispatcher, track bulletin or rule.

When authorized by the Train Dispatcher or Help Desk to perform a Hard Cut Out of the PTC System, the train must be stopped and the engineer must place all PTC Cut Out switches in the Cut Out position.

7. Train Consist

The Engineer initializing PTC must verify and edit, if necessary, the train consist data displayed on the PTC consist screen. The train must be STOPPED to modify any information on the consist screen of the PTC system including train type.

Note: Pressing "Request New Consist" soft key after making any of the following changes will undo any consist updates made by the train crew.

Select Train Type as follows:

A. Trains consisting of Intermodal or Auto cars must use the following chart to determine train type to be selected in the PTC consist screen:

Number of Multiplatform /Unit/ Well Intermodal or Multi Platform Auto Rack Cars	PTC Train Type to Select
All	Intermodal
5% or Greater	Intermodal

B. Train symbols beginning with P will select Passenger.

C. All other trains will select Freight.

8. PTC, ACS, ATC and ATS Operations

PTC must be the system utilized by the engineer. Upon successful initialization of PTC all subsequent systems (ACS, ATC, and ATS) must be Cut Out. If at any time PTC disengages, is Cut Out under the Train Dispatcher's authority or otherwise fails, the train must be stopped and the secondary system cut back in prior to any further movement.

9. Operating at Restricted Speed

Train crews are responsible for complying with the requirements of Rule 6.27 Restricted Speed. When required to operate at Restricted Speed, PTC will:

- Provide over speed warning at 19 MPH.
- Invoke over-speed enforcement braking at 21 MPH.
- Display switch prompts while on approach to hand operated switches.
- Apply a penalty brake application if a signal overrun is predicted.

10. Crossing Restrictions and Protection

When notified by track bulletin or the train dispatcher of a warning device that is malfunctioning the crew must comply with the following instructions:

10. Crossing Restrictions and Protection (continued)

- A. Once the 'CROSSING ACTIVATION FAILURE PRESS IF CROSSING IS PROTECTED' message is received on the PTC display and after complying with all applicable operating rules press the 'YES' soft key.
- B. When notified of a crossing device malfunction that requires handling under rule 6.32.2 (Automatic Warning Devices and Crossings That Require Additional Precautions) refer to the chart below for soft key presses required to indicate to the PTC system that the required warning is being provided to motorists.

Procedure	Allowable Speed per Rule 6.32.2	PTC Soft Key to Select
XG, XH, XS	Maximum Authorized	2
XG, XH, XS, XC, XI	15 MPH	1
XG,XH,XS	0	0

1. The prompts on the PTC screen will state flaggers. Press the corresponding key as determined by the reference table above regardless of the number of the flaggers physically present at the crossing.
 2. A Flagger may be a crew member or signal employee in charge who are physically providing warning for the restriction. If crossing warning devices are present and providing necessary warning they will be considered Flaggers.
- C. PTC may display and enforce crossing restriction on track occupied by train even though track bulletin or radio-issued restriction indicates restriction is in effect on adjacent track(s) only. After confirming that restriction is not in effect on the track occupied by train:
1. Press the 'Yes' soft key immediately upon receiving the message 'CROSSING ACTIVATION FAILURE PRESS IF CROSSING IS PROTECTED'.
 2. Press the '2' soft key to indicate to the system that warning is being provided at the crossing as required.

11. Use of Energy Management Systems with PTC

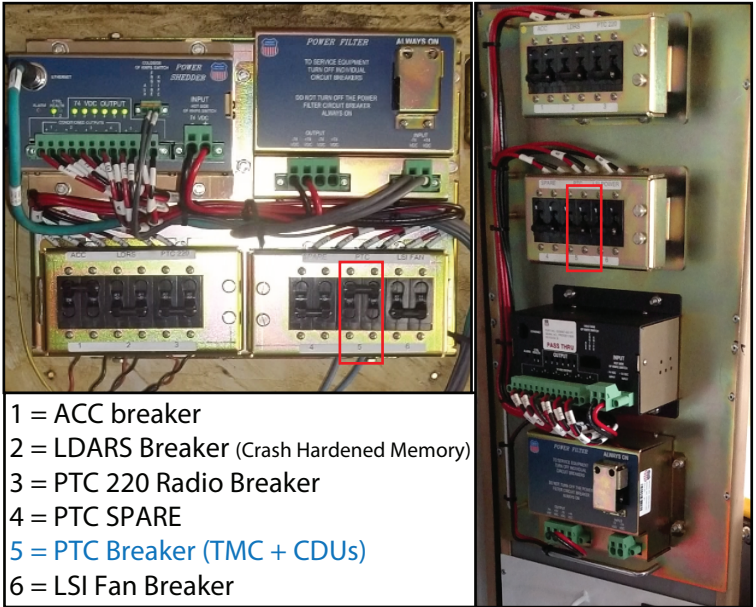
When the PTC screen displays "ENERGY MGMT SETUP REQUIRED", the engineer must initialize Energy Management (PTC-Integrated Trip Optimizer or LEADER) through the PTC display and utilize auto control to the fullest extent possible during the entire trip.

The engineer must not initialize or use Energy Management System through the locomotive control screens if train is to operate in PTC territory.

Any PTC-Integrated Energy Management failure (either initializing or en route) must be reported by the Engineer via EMS Feedback Form at tie-up. This requirement does not apply when Train List shows the EMS on the lead unit non-operative. To access the feedback form: from the MyUP website select "Menu", then select "Crew", then click on "PTC/Energy Management Feedback".

Load Shedder Sub Panel Locations by Locomotive Model

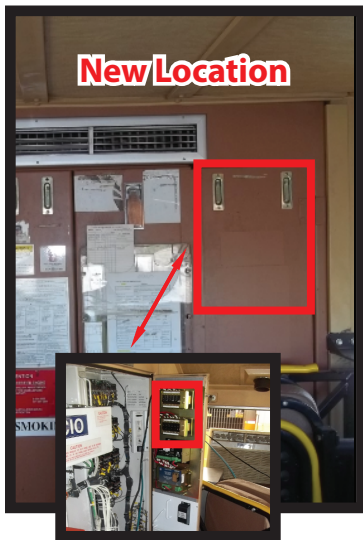
There are (2) physical configurations of the Load Shedder Panel.
They provide a standardized PTC related breaker configuration and locations.



C44AC, C44ACCTE, & C45ACCTE EVO

The old location of PTC and COMM circuit breaker below the engine control panel.

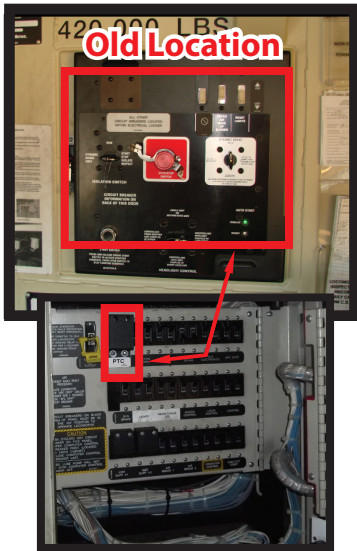
The new location of the standard Load Shedder Sub Panel is behind CA1 right hand door (EVOs behind swing seat).



SD70ACe

The old location of the PTC circuit breaker was BEHIND the Engine Control Panel inside of the locomotive cab.

The new location of the standard Load Shedder Sub Panel is in the electrical locker along with the HVAC, Aux Heaters, Heated Windshield, Comm Devices, TIR breakers, and Ground Reset .



SD70M

The old location of the PTC and COMM circuit breaker was inside the locomotive circuit breaker panel.

The new location of the standard Load Shedder Sub Panel is inside the right hand zone 30 compartment door.



SD60M "No Bump Out" 1988 & 1989

The old PTC breaker, due to major variation in this fleet, will be "somewhere" in the existing breaker panel.

The new location of the standard Load Shedder Sub Panel will be on the center door above the computer screen or on the right door above Smart Start.



GS21B Genset

The old location of PTC Breaker was in the Locomotive Breaker Panel.

The new location of the standard Load Shedder Sub Panel is directly below on the door.



OBSERVATION FROM THE FIELD

1. Improper input of Track Warrant for Bulletins (Clearance Number)
Track Warrant for Bulletins that are entered during the initialization process must be 4 digit number. For example if your a TWB# is 711, you must enter a leading zero (0711). A submit button will not be displayed until all four boxes are filled.
2. Incorrectly reviewing of consist information
Crews were incorrectly reviewing consist information, ensuring correct locomotive listed on track warrant, locomotive orientation and type of train preventing I-ETMS system to initialize.
3. Switch Position
Failure to indicate correct route selection when first prompted by I-ETMS, could result in a no warning Braking Enforcement.
4. Track selection
In instances where several tracks are needed to leave a yard or siding to enter main track, Engineers need to select the track or switch alignment when prompted. The engineer needs to select the tracks that will be occupied in a timely manner, when going from Non-I-ETMS territory to I-EMTS territory.
5. Over speed through turnout
When approaching Turnouts, Engineers have gotten Overspeed Brake Application without warning. Engineers familiar with the territory would release the brakes with the understanding the grade will slow train speed below turnout speed before going thru the turnout. I-ETMS does recognizes the release of the brakes and the train speed is exceeding 3 mph over, thus giving the Engineer Overspeed Braking Warning.
6. System update
When stopped at a signal and the signal changes to a more favorable indication the Engineer needs to ensure the I-ETMS map and the wayside signal both agree before proceeding on signal indication. There may be a delay of up to 10 seconds before correspondence between the wayside signal and I-ETMS Map.

7. Switch Position Failure

Engineers are stopping greater than 500 feet from the switch thus not getting the prompt to indicate switch alignment. Engineers are not using the "Next Target Line" as the indication to get within the 500 feet of a switch.

8. Failed State

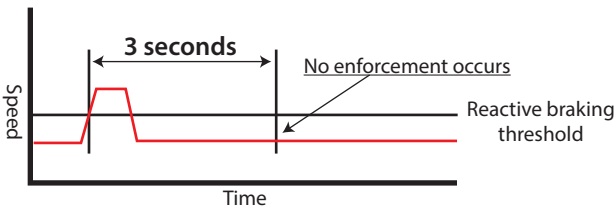
If the PTC screen is displaying the message "Failed state" upon boarding the train, before moving the train, the solution is to cycle PTC Breaker and attempt to complete a PTC initialization before leaving Terminal location.

If the system still displays "Failed State" contact Dispatcher and PTC Help Desk.

9. Wheel Slip Handling

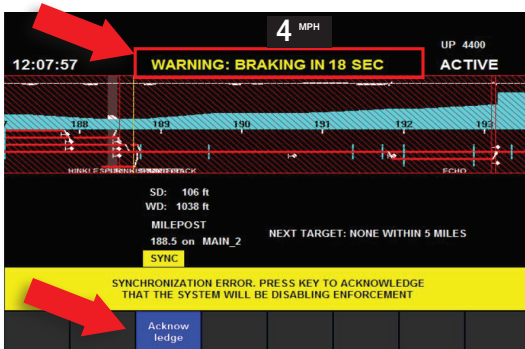
PTC will suppress overspeed enforcement for 3 seconds, to account for most wheel slip situations.

- Can eliminate enforcement braking events due to overspeed simulated by wheel slip

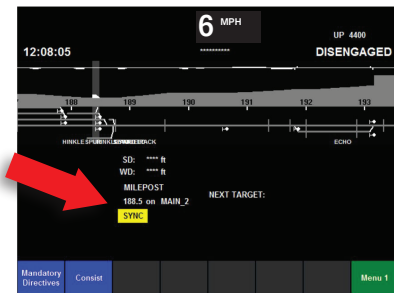


OBSERVATION FROM THE FIELD

Synchronization Error



If the system displays Synchronization Error the system will display SYNC flag along with a banner. The Engineer must select the "Acknowledge" prompt button before the warning count down hits 0.



NOTE:

If the system returns to a synchronized state it will return to "Active" state and begin enforcements again.

Once the "Acknowledge" prompt is answered the PTC system will no longer provide enforcements and remain in disengaged state.

If the system remains disengaged for two consecutive signals, the dispatcher must be notified.

OBSERVATION FROM THE FIELD

Things to Remember- Check List

Any issue with PTC while occupying a mainline contact the DISPATCHER. While occupying other than a mainline (siding, terminal etc.) use dial tone 987 to report PTC issues.

In the crew room

- The engineer must know and have their AVR pin for PTC login.
If AVR pin is unknown it can be looked up on the operating support web page
 - Ensure you have your quick reference guide
- Check your paperwork to determine if your lead Locomotive is PTC equipped

On Train

- Do not Cut CCS/ATC out until you have a successful initialization
- When initializing PTC it is very important to ensure "Train Type" and other consist information is correct on the consist information screen
- Both the Engineers and Conductor need to compare bulletins with the PTC System
 - If there are extra bulletins, it is OK, they were issued after you printed your paperwork, the dispatcher will have you copy them when appropriate
 - If you have the right bulletin # and the speed is different, it is OK, the speed was changed after you printed your paperwork, the dispatcher will give it to you either before you depart or on the approach to the restriction as was done prior to PTC

OBSERVATION FROM THE FIELD

Things to Remember- Check List

On Train (continued)

- While operating in PTC/CCS territory only one of the systems may be active at any given time
 - If running with PTC active, Cab Signals must be cut out via the computer cutout or by cutting them out in the nose (older style locomotives). Always leave the Cab Signal breaker in the Closed/On position on the back panel
- If locomotive is equipped with both PTC and Trip Optimizer, Trip optimizer must also be logged into. Trip Optimizer may then be left in manual mode for the duration of the trip as long as PTC is operative

Initialization Problems

- Only the Dispatcher can give authority to cut out the PTC system
- Unless specifically instructed by the dispatcher never cut the PTC system out using the hard cutout switches in the nose of the locomotive. The primary means to cut out PTC will be through the PTC computer screen using the "Cut Out" or "Crew Logoff" soft keys unless instructed otherwise

Starting Train

- When first initializing, the PTC map may be backwards. Once the train moves a car length the map will flip
- When first initializing PTC, the system will show disengaged. Once the train moves a car length the system will engage
- Watch your screen, when initiating movement after successful initialization you will be at restricted speed (Yellow Hash Box) until you are within 1500ft of the first signal before PTC will pick up the signal

OBSERVATION FROM THE FIELD

Things to Remember- Check List

Enroute Problems

- If PTC fails Cab Signals must be cut back in. If unable to properly test the CCS once cutting back in, it will be necessary to establish an absolute block until the system can be properly tested
- If, while operating with PTC active, the system disengages and stays in the disengaged state for 2 consecutive blocks/signals, the train must be stopped and the dispatcher contacted. Any further movement will be governed by dispatcher instructions. If system reengages before traveling 2 consecutive blocks/signals the train may continue, but must report the locations where the system disengaged and reengaged to the dispatcher
- Unless specifically instructed by the dispatcher never cut the PTC system out using the hard cutout switches in the nose of the locomotive. The primary means to cut out PTC will be through the PTC computer screen using the "Cut Out" or "Crew Logoff" soft keys unless instructed otherwise

End of Trip

- All PTC issues must be reported to the dispatcher, and reported via the web based PTC/EMS feedback located on the MyUP Portal

FEEDBACK

The following is the process designed to be used if a problem or defect is incurred while operating a PTC locomotive on PTC territory.

1. If an engineer experiences:
 - a. A problem during initialization
 - b. An enroute problem with PTC
 - c. An enroute PTC failure

2. The engineer needs to:
 - a. Notify the dispatcher as soon as possible and describe the nature of the problem or defect.

3. The dispatcher will:
 - a. Notify the PTC help desk, so the help desk can contact the engineer to assist in finding a resolution to the problem.
 - b. Make a note of the reported problem or defect in the MDR report

4. The engineer will then:
 - a. Report the problem or defect in the EMS Feedback Web Tool on the MyUP Portal, upon reaching the terminal



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