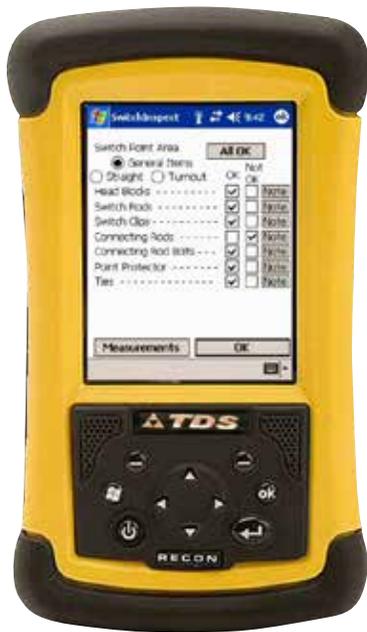


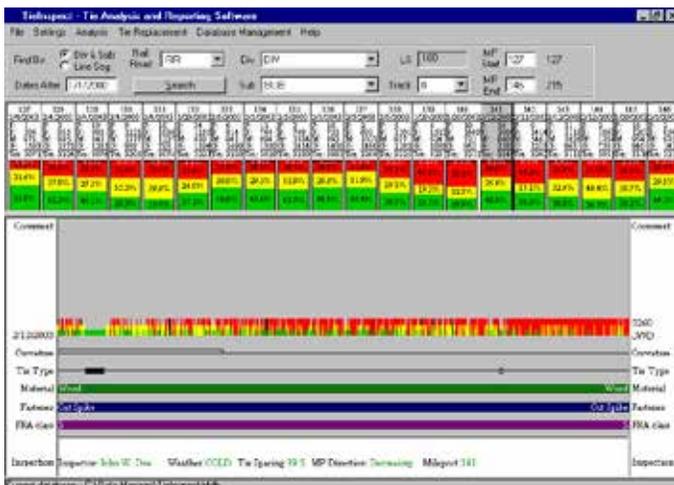
# PROTRAN TECHNOLOGY

A Harsco Rail Company



Suite of Handheld Track Inspection Tools  
Includes: TrackInspect™ SwitchInspect™  
and TiInspect®

## INSPECTION TOOLS



### Rugged handheld computer:

- Use in high and low temperatures (-22 degrees F to +140 degrees F)
- Use in rain or snow
- Battery lasts up to 15 hours per day
- Tag data with GPS coordinates

### Host software:

- Storage and retrieval of all previous inspection data
- Print reports
- Aids in planning, scheduling, maintenance, and asset management

# TRACKINSPECT™

## RUGGED PDA-BASED TRACK INSPECTION SYSTEM



### What is TrackInspect?

TrackInspect is a PDA computer-based field inspection system designed to record FRA track inspections in real time while the inspector is evaluating the track. The system is built around the Federal Railway Administration Track Safety Standards, CFR Title 49, Part 213. The software allows the inspector to input the track locations being inspected, any defects found, and any remedial action taken. The inspections are stored on the PDA and then downloaded to a host computer, where a host database package allows archiving, analysis, and review of all inspections. Historic inspections are also stored on the device and can be viewed at any time. The device is equipped with a GPS receiver to monitor location at all times and to tag defect locations.

### How does TrackInspect work?

The user begins by specifying their name and the location (milepost range) that they will be inspecting. When the user begins the inspection of that location, a screen like the one shown above appears where the user has the ability to add defects as the inspection progresses. When a defect is observed, the inspector notes the track and milepost location of the defect and GPS coordinates are recorded automatically. The specific defect is chosen from dropdown lists containing FRA 213 standards and any railroad specific defect codes. Next, the user indicates the remedial action taken on a screen like the one shown at left. Comments about the defect and action taken can also be entered using the virtual keyboard. The inspection concludes with a full on-screen signature (as shown in the central image above and to the left).

### Features:

- FRA and railroad specific defect codes
- Recording of defect and action taken
- Defect location by milepost and GPS
- Inspector's signature entered on screen

### Benefits:

- Easy to use
- Includes FRA dropdown menu of requirements
- Railroad specific defects can be reported, as well as FRA defects
- Ability to track condition over time
- Report capabilities
- Online inspection history and record keeping
- GPS positioning capability



### What are the benefits of TrackInspect?

The primary benefits of TrackInspect are the ability to review previous inspection details while on track, the ability to select specific FRA and railroad defects from easy to use dropdown lists, and the elimination of on-track paper recording methods that can get wet or misplaced.

# SWITCHINSPECT™

## ELECTRONIC SWITCH INSPECTION TOOL



### What is SwitchInspect?

SwitchInspect is a PDA computer-based system to be used for conducting turnout inspections and collecting and evaluating data. SwitchInspect walks the inspector through all of the inspection steps to ensure that every required inspection task is performed to include all specific component measurements and condition checks. The inspector records the results of each individual inspection item on the PDA in either numeric or numeric rating form. Separate condition indices are calculated for each maintenance area of the turnout. Use of this numeric rating allows for determination of a switch condition value (numeric index) at the conclusion of the inspection. Such a switch condition value (index) serves as the basis for follow up action.

### How does SwitchInspect work?

SwitchInspect records inspection and condition data for every part of the turnout (to include points, frogs, guard rails, stand, etc.) into a database, together with information about location, notes, and other relevant data. The data is then uploaded to a host software package located on a stand alone desktop or network for analysis, display, and storage. SwitchInspect software also immediately identifies safety violations that require slow orders or service restrictions. A separate safety report is generated.

### Features:

- Step-by-step inspection
- GPS positioning
- Components categorized for inspection by:
  - Geometry
  - Switch Stand
  - Switch Point Area
  - Closure Area
  - Frog Area

### Benefits:

- Easy to use
- Comprehensive maintenance and condition inspection
- Determine maintenance/ condition indices for:
  - Tamping
  - Gauging
  - Grinding
  - Welding
  - Replacements
- Track measurements over time
- Report capabilities
- Displays an accurate running inventory



### What are the benefits of SwitchInspect?

SwitchInspect guides the inspector through a complete and thorough evaluation of every component in the turnout. With condition checks and measurement data, maintenance priority indices can be calculated to aid in resource allocation and maintenance planning.

### What is TiInspect?

TiInspect is a comprehensive PDA-based crosstie inspection system designed to accurately and efficiently collect tie condition data based on a tie inspector's assessment. This first-of-its-kind unit aids the tie inspector by providing an easy to use mechanism that allows for the complete collection and storage of valuable tie condition data. This data can be stored for each and every tie inspected, providing a complete database of real-time and historical tie conditions. In addition, offline analysis software is provided for viewing and analyzing the collected data and assisting in replacement decision making.

### How does TiInspect work?

The PDA records the tie inspector's input for tie condition from the handgrip. The inspector also records key data, including direction, fastener type, curvature, tie material and type, and comments through the virtual keyboard. Using TiInspect, the inspector can quickly evaluate how many good, marginal, bad, failed, and total ties were counted for any given mile while in on track. A complete record of all inputs is kept on the PDA and later downloaded to the host software. Optional replacement logic and marking software allows efficient placement and on-track locating of needed replacement ties.

<input checked="" type="radio"/> Location			<input type="radio"/> Settings			<input type="radio"/> Comment			
Division	Division Name								
Sub Div	Sub Name								
Line Seg	102	Track	1						
MP	23.0	MP Up	MP Down						
Validate Location		<input checked="" type="radio"/> Increase			<input type="radio"/> Decrease				
Tie Type		Curvature		Tie Totals					
<input checked="" type="radio"/> Cross Tie		<input checked="" type="radio"/> Tangent		Good 2221					
<input type="radio"/> Turnout		<input type="radio"/> Light		Marg. 319					
<input type="radio"/> Bridge		<input type="radio"/> Moderate		Bad 388					
<input type="radio"/> Crossing		<input type="radio"/> Severe		Failed 323					
<input type="radio"/> Open Deck				Total 3251					
Good		Marginal		Bad		Failed		Bad J/W	
Backup		Lock Screen		Review		About		Exit	



### What are the benefits of TiInspect?

- Accurate tie condition information for effective tie replacement planning
- Forecasting short term and intermediate tie requirements
- Detailed listing of bad tie clusters and FRA violations
- Prioritize tie replacement needs based on available resources / budget
- Manages tie infrastructure assets and costs

### Newly developed optional features:

- Tie Program Prioritization - based on condition, curvature, tonnage, climate, key routes, tie lives, rail size, any other factors
- TieAudit - evaluate tie inspectors by numerical comparison with an 'expert' inspector's own assessment of a sample of ties
- Age-Added Tie Replacements - add an appropriate number of additional ties to a replacement program to account for passage of time since inspection, tonnage, climate, and local tie life
- TieGangs - Update tie condition record by changing replacement ties to 'Good' once the replacement plan has been implemented

