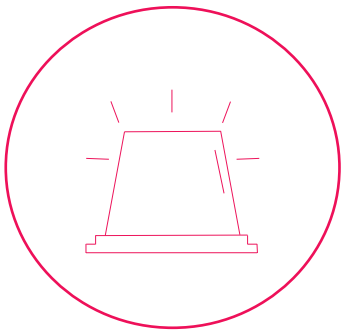LBFoster®
RAIL

WDMS

Wheel Data Management System

Wheel Data Management System

Keeping You Informed

L.B. Foster's **Wheel Data Management System (WDMS)** is a custom web-based application that allows subscribers to review train data and configure and manage alerts from any **MK-IV WILD data**. The application is available anywhere there is an internet connection.

PRODUCT FEATURES

Reports & Alarms

Data & Analytics

Site Health

Each time a train is measured by a WILD system, a report is generated listing all measured train weights, impacts, lateral forces, and hunting data.

Through the **Thresholds** page, the value for alarm parameters can be configured. Users may designate personnel to automatically receive alerts when certain alarms are generated, and multiple thresholds may be set for each parameter to classify the severity of alarms.

Users can **browse recent trains** to see every measured train consist on their network in reverse chronological order. In addition to the measured data, reports indicate the site, location, train speed, train direction, and vehicle information.

Every train report contains a table of data for each vehicle, listing all measured parameters for every axle.

Historical performance for any train, vehicle, or wheel may be filtered through the vehicle history, wheel history, and train search pages.

Each MK-IV WILD system listed in WMDS is equipped with a **graphical interface** which provides a real-time overview of the health status of all major components. Hovering over any component will provide information on the nature of any issue as well as recommendations for troubleshooting.

Every report generated by MK-IV WILD sites also captures a time-stamped **health status overview**, allowing users to review any issues that may have been present at the time of an alarm.

WDMS – Wheel Data Management System

Wheel Data Management System
Train & Vehicle Reports

When a train is detected by a WILD system, a report is automatically generated and added to WDMS. Train reports may be found by reviewing browsing recent trains, reviewing daily or statistical reports, or by using the history and search functions.

Train reports can be found through several reporting and search features found within WDMS. Selecting any train's timestamp will produce the train report.

Browse Recent Trains

Date: 08/03/23
Site: All
Direction: All
Search result limit: 1000

Train Date and Time (EDT)
08/03/23 00:00 Prev 24 hours from Now

▼ Train Date Time	WILD Status	Location	Trk	Dir	Lead Loco	Speed MPH	Total Locos	Total Cars	Total Axles
2023-08-03 12:03 EDT	N/A	Wexford	1	N	NS-1138	24	3	75	318
2023-08-03 12:00 EDT	N/A	Harrisburg	1	W	NS-9820	51	1	14	134
2023-08-03 11:50 EDT	N/A	Pittsburgh	2	S	NS-8043	52	4	133	556
2023-08-03 11:47 EDT	N/A	Greentree	1	E	BNSF-5296	45	4	49	428
2023-08-03 11:47 EDT	WARN	west marion	1	E	BNSF-5296	45	4	49	428

Train reports provide a comprehensive table of all vehicles in the consist with relevant data and can be filtered to view reports specific to alert types – **impact exception, overload, imbalance, and hunting.**

Consist/Weight Report

Consist/Weight Report • Impact Exception Report • Overload Report • Imbalance Report • Hunting Report

Train Header On ☐ Page Size 10000 Submit Back

SOUTHBOUND Train passed Bessemer, Track (2), Detector at 11:50 EDT Aug 3, 2023 **Consists - Weight Report**

Car	B-E Axle#	Lead End	Type	Tag	Tons	Speed MPH	Wild Alarm
1L	1 - 6	A	6 Axle Loco	USTX1234	223.5	52.2	
2L	7 - 12	B	6 Axle Loco	USTX1235	219.0	52.2	
3L	13 - 18	B	6 Axle Loco	USTX1236	219.4	52.2	
4L	19 - 24	U	6 Axle Loco	USTX1237	209.9	52.3	
5	25 - 28	A	Long Fr. Car	USTX1238	125.4	52.3	

Within a train report, selecting any specific vehicle tag number will produce a **vehicle report.**

Multi System By Car Report

Owner Code: ABC, Car Number: 12345, Location: DEFG, Track: 2, Train date and time: Thu Aug 03 11:50:00 EDT 2023

Vehicle History Wheel History

Impact Exception Report

Axle	Car/Truck/Axle	Lead End	B-Axle	Type/Tag	Axle Speed MPH	Veh Wgt KIPS	Trk Wgt KIPS	Nom KIPS	Dyn KIPS	Ratio	Peak KIPS	Lat Nom KIPS	Lat Peak KIPS	Dyn Alarm	Ratio Alarm	Peak Alarm	Lat Nom Alarm	Lat Pk Alarm
29	6 / 1 / 1	B	L 1 R 1	TOFC/COFC ABC-12345	52.4	192.3	94.8	23.3 23.1	7.3 13.1	1.3 1.5	30.6 36.2	-1.4 -0.5	-3.6 -3.7					
30	6 / 1 / 2	B	L 2 R 2	TOFC/COFC ABC-12345	52.4	192.3	94.8	24.5 23.8	21.6 9.8	1.8 1.4	46.2 33.7	0.0 -1.1	-1.8 -2.2					
31	6 / 2 / 1	B	L 3 R 3	TOFC/COFC ABC-12345	52.4	192.3	97.5	24.9 23.0	8.1 4.9	1.3 1.2	33.0 27.9	-0.8 -1.3	-3.0 -4.2					
32	6 / 2 / 2	B	L 4 R 4	TOFC/COFC ABC-12345	52.4	192.3	97.5	25.7 23.6	5.7 4.4	1.2 1.1	31.4 28.0	-0.2 -0.7	-3.1 -3.5					

Export options: Comma-separated | Tab-separated

Vehicle reports provide detailed data **for each individual axle of a car.** Reports are shown for each alert type, just like with train reports.

Overload Report

Car	Lead End	Car Type	Tag	Vehicle/Platform	Speed MPH	Vehicle Confidence Trk 1 Conf/Trk 2 Conf	Weight In Tons	Max Weight In Tons	Overweight In Tons	Overweight In Percent	Overload Alarm Level
6	B	TOFC/COFC	ABC-12345	Vehicle	52.4	0.77	96.2	143.0			

Export options: Comma-separated | Tab-separated

Any alarms generated for specific axles or cars cascade to the train report and are displayed alongside train reports anywhere they are tabulated within WDMS

Imbalance Report

Car	Lead End	Car Type	Tag	Vehicle/Platform	Speed MPH	Vehicle Confidence/ Trk 1 Conf and Trk 2 Conf	Platform Weight In Tons	Truck Weights In KIPS	B-End Axle Number	Vehicle Left/Right Wheel Weight In KIPS	Wheel Weight Difference In KIPS	Wheel Weight Difference In %	S-S Diff in KIPS	S-S Offset in In	Front/Back Imb. Alarm	S-S Imb. Alarm Truck 1 Truck 2
6	B	TOFC/COFC	ABC-12345	Vehicle	52.4	0.77	96.2	94.8 97.5	1 2 3 4	23.3 / 23.1 24.5 / 23.8 24.9 / 23.0 25.7 / 23.6	0.2 0.7 1.9 2.1	0.4% 1.4% 4.0% 4.3%	0.4 2.0	0.2 1.1		

Export options: Comma-separated | Tab-separated

Hunting Report

Car	Lead End	Car Type	Tag	Vehicle/Platform	Speed MPH	Platform Weight In Tons	Truck Letter	Truck Weights In KIPS	Truck Confidence	Truck Hunting Index	Hunting Alarm Truck 1 Truck 2
6	B	TOFC/COFC	ABC-12345	Vehicle	52.4	192.3	B A	94.8 97.5	0.77 0.90	0.04 0.06	

Export options: Comma-separated | Tab-separated

All reports can be **exported** as other comma-separated (.csv) or tab-separarted (.tsv) files.

Wheel Data Management System

Browse Recent Trains

All detected train consists for the day are automatically displayed. Users can filter recent trains by date, site, and direction.

The Browse Recent Trains page provides a table listing all pertinent information including the time and location of the measurement, speed and direction, max measurements for alarmable parameters, and the alarm status of the report.

Browse Recent Trains

Date: 08/03/23
Site: All
Direction: All
Search result limit: 1000

Train Date and Time (EDT)
08/03/23   00:00 ▾   Prev 24 hours from Now ▾

Site: All   Direction: All   [Search] [Chart]

| ▼ Train Date Time	WILD Status	Location	Trk	Dir	Lead Loco	Speed MPH	Total Locos	Total Cars	Total Axles	Total Tons	Max Peak KIPS	Max Dyn KIPS	Max Ratio	Max Lateral Nom KIPS	Max Lateral Pk KIPS	Max Hunt Idx	WABL Qualified	Train Alarm
2023-08-03 12:07 EDT	N/A	Carnegie	1	W	ABC-1234	48	2	78	324	4,032	76.4	49.1	5.8	2.4	5.5	0.15	Qualified	
2023-08-03 12:03 EDT	N/A	Butler	1	N	DEF-5678	24	3	75	318	6,348	61.7	32.5	4.7	4.1	6.7	0.11	Qualified	
2023-08-03 12:00 EDT	N/A	West Mifflin	1	W	GH-9101	51	1	14	134	2,441	72.0	42.9	4.1	2.9	6.3	0.14	Qualified	
2023-08-03 11:50 EDT	N/A	Coraopolis	2	S	IJK-1123	52	4	133	556	8,987	95.8	64.8	5.5	6.8	11.7	0.16	Qualified	
2023-08-03 11:47 EDT	N/A	Cranberry	1	E	LMN-1213	45	4	49	428	9,214	85.5	52.3	3.6	3.3	6.1	0.11	Qualified	●
2023-08-03 11:47 EDT	MAR4-1	Moon	1	E	OPQ-1415	45	4	49	428	9,207	86.7	47.3	3.8	4.0	6.5	0.07	Not-Qualified	●
2023-08-03 11:44 EDT	N/A	Sewickley	2	E	RST-1617	49	3	55	238	7,622	117.3	82.0	3.3	3.0	8.4	0.11	Qualified	
2023-08-03 11:43 EDT	N/A	Bridgeville	2	N	UV-1819	46	3	30	246	3,621	65.1	37.2	5.7	3.1	5.5	0.30	Qualified	●
2023-08-03 11:30 EDT	N/A	Bellevue	1	S	WX-2021	38	2	44	304	6,285	60.2	33.4	2.6	5.5	7.2	0.22	Qualified	
2023-08-03 11:27 EDT	N/A	St. Clair	2	E	YZ-2223	53	3	31	136	2,321	83.4	52.0	4.7	2.6	7.1	0.25	Qualified	
2023-08-03 11:25 EDT	N/A	Beaver	1	N	AB-2425	38	2	50	372	7,195	72.1	45.1	4.7	4.4	8.5	0.17	Qualified	

Trains per Site

08/03/23 00:00 | Last 24 hours from Now | Direction: All
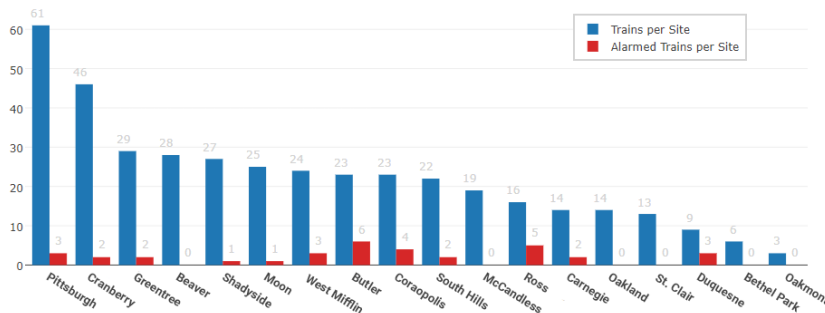
By selecting the Chart button at the top of the page, users can see the frequency of measured trains and reported alarms for each site.

Trains per Lead Loco Owner

08/03/23 00:00 | Last 24 hours from Now | Direction: All
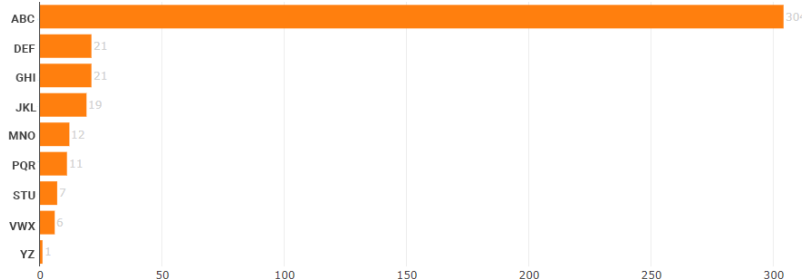
When dealing with multiple car owners on your network, it can get complicated. WMDS logs car owners and the recent trains chart feature shows the volume of trains attributed to each owner.

WDMS – Wheel Data Management System

Wheel Data Management System
Vehicle & Wheel History

Users can search for reports on **specific trains, vehicles, or wheels**, and can filter alarms by type and severity.
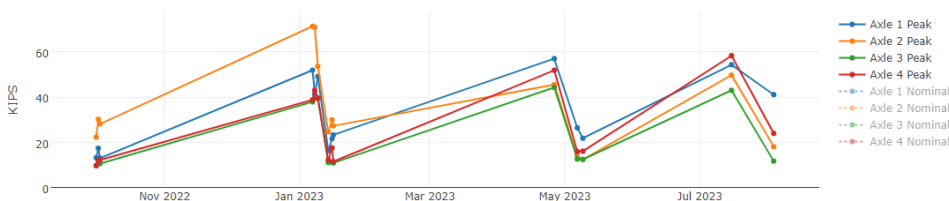
All search features are equipped with parameter fields to filter data, such as location, date ranges, operating speeds, track types, train and vehicle identifiers, and more.
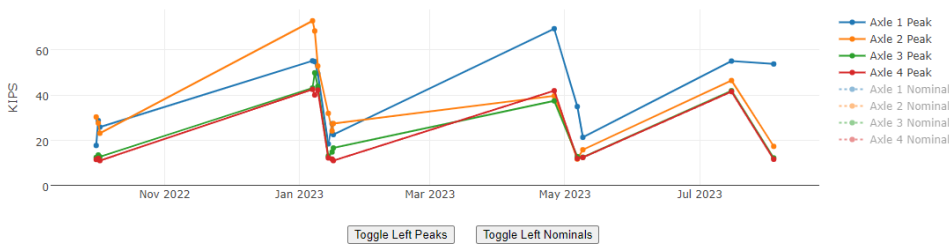
Users can view historical wheel performance in chart form, easily visualizing performance improvements after maintenance.

Left and right wheel performance are plotted independently. Peak and nominal loads for each individual axle can be toggled on and off to allow for comparative views.

Wheel Data Management System
Configuring Alarms

On the **Threadholds** page, users can configure thresholds for each type of alarm parameter. Users can also add custom alarms for other parameters provided by WILD train reports. Alerts for alarms can be transmitted via **FTP or email** to a list of designated recipients.

Thresholds

Impact Exception Criteria

	ID	Name	Description	Location	Direction	Owner	A	B	C	Peak D	E	Last updated
Edit	1	Default Exception Criteria	This is the default exception criteria.	*	*	*	0.0	0.0	0.0	125.0	140.0	Mon May 09 10:08:51 EDT 2016

Add

Overload Criteria

	ID	Name	Description	Location	Direction	Owner	A	B	Overload C	D	E	Last updated
Edit	1	Default Overload Criteria	This is the default overload criteria.	*	*	*	0.0%	0.0%	10.0%	15.0%	20.0%	Tue Jun 23 12:04:21 EDT 2015

Add

Imbalance Criteria

	ID	Name	Description	Location	Direction	Owner	A	Side-to-Side Imbalance B	C	D	E	Last updated
Edit	1	Default Imbalance Criteria	This is the default imbalance criteria.	*	*	*	0.0	15.0	20.0	0.0	0.0	Mon Jun 10 10:00:53 EDT 2013

Add

Hunting Criteria

	ID	Name	Description	Location	Direction	Owner	A	B	Hunting Index C	D	E	Last updated
Edit	1	Default Hunting Criteria	This is the default hunting criteria.	*	*	*	0.0	0.3	0.45	0.6	0.0	Mon Jun 10 10:01:59 EDT 2013

Add

Custom Criteria

	ID	Name	Description	Location	Direction	Last updated
Edit	5	Default Custom Criteria	This is the default custom criteria.	*	*	Wed Dec 15 03:47:46 EST 2010

Selecting **Add** or **Edit** for any alarm parameter produces a form field that allows users to edit the thresholds for up to 5 classes of alarms. Alarm thresholds can be configured so they only apply to specific sites, cars with certain tag ID's, weights, or other vehicle parameters relevant to the alarm type.

Edit Impact Exception Criteria

Criteria Name: Default Exception Criteria   Criteria Description: This is the default exception criteria.

Site: All   Direction: All   Owner Code: *

Car Number: 0 to 999999   Car Category: All
Car Weight: 0.0 to 99999.0 Tons   Car Type: All

	A	B	C	D	E	
Peak	0.0	0.0	0.0	125.0	140.0	KIPS
Dynamic	0.0	0.0	0.0	0.0	0.0	KIPS
Ratio	0.0	0.0	0.0	0.0	0.0	
Lateral Nominal	0.0	0.0	0.0	0.0	0.0	KIPS
Lateral Peak	0.0	0.0	0.0	0.0	0.0	KIPS

Update   Delete   Cancel

Up to **5 classes of thresholds** can be configured for each alarm. The threshold class that an alarm parameter reaches is included in the train report.

Wheel Data Management System

Site Health Status

Review the health status of all major WILD site components in real-time, with built-in troubleshooting and diagnostics recommendations.

The heart of the design of all WILD systems are its **Front-End-Processors**, which amplify, filter, digitize, and process signals to provide meaningful data. Each Front-End-Processor is monitored independently.

Each WILD system is equipped with a series of **strain gauges**, constantly monitoring for vertical (and optionally, lateral) impacts imparted on the rail. Each strain gauge is monitored independently.

Tag readers are typically installed with all WILD systems and can provide automatic car counting and identification (with a valid supplied car library). Locomotive and train identifiers are automatically added to reports when available.

South FEP #2 (SN: 00036) @ 2023-01-03 23:41:16 EST

FEP accelerometer failure.
Click for more...

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Hovering over any component will display details about any potential faults or failures and may provide recommendations for **corrective actions or troubleshooting steps** to remedy the issue.

All major **Bungalow Equipment** are monitored for health status, including the power supply, CPU, Networking equipment, logic controllers, I/O modules, and comms equipment. Power and communications cabling, both on-track and installed to the bungalow, are also monitored.
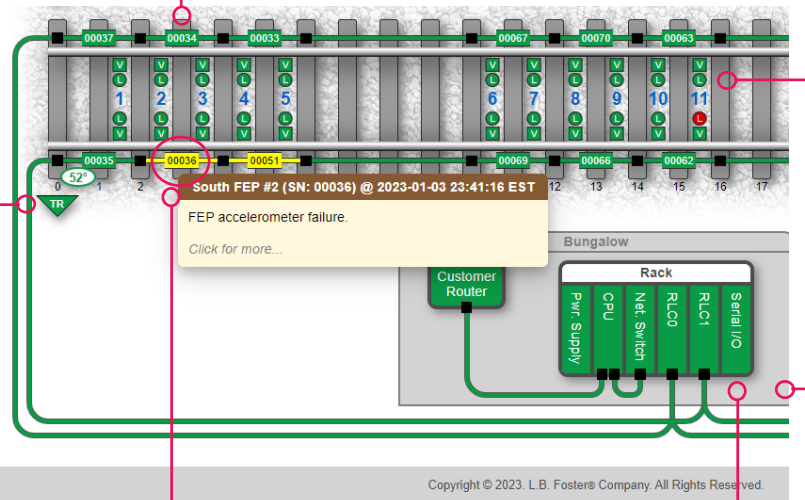
South FEP #2 (SN: 00036) @ 2023-01-03 23:41:16 EST

Refresh

FEP accelerometer failure.

Replace this FEP.

The site overview graphical interface displays the **health status** of all major components. Components listed in green are healthy with no issues; those listed in yellow are functional but are experiencing faults; red components need immediate attention. When the condition of a component is unknown due to connectivity issues or non-system related faults, they are listed as grey.

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