

Performance Indicators

- Best Practices



Measure and Fix!

Steven Miller
Director of Maintenance
Golden Gate Transit
November 16, 2016

Overarching Goals

- Availability
- Reliability
- Customer Experience



Lots of Maintenance Data Available

- Enterprise Asset Management System
- Financial and Accounting System
- Customer Service Incidents System
- On Board Data Monitoring Systems

How do we harness data into actionable information?

Key Performance Indicators



Golden Gate Transit: Metrics Matter

SCORECARD
2015/2016

Metric Categories	Plan Goal	July-Sept 1st Quarter	Oct -Dec 2nd Quarter	Jan - Mar 3rd Quarter	April- June 4th Quarter	Variance from Plan	Full Year
Miles between Road Calls	>20,000	26183	22276	22313	26472	4311	24311
On Time Preventive Maint	>80%	93.8%	96.7%	97.5%	97.4%	16.4%	96.4%
Thoro Cleaned	>68	85	60	58	93	24	296
Mechanic Man Hours per Thousand	10	9.8	9.8	9.8	9.9	-0.2	9.8
Servicer Man Hours per Thousand	5	4.2	4.3	4.8	5.5	-0.3	4.7
Mechanic Unscheduled Absences	<5%	4.8%	4.4%	5.3%	6.9%	0.4%	5.4%
Servicer Unscheduled Absences	<5%	6.0%	10.0%	2.5%	4.2%	0.7%	5.7%

Repair and Maintenance

From Reports

Maintenance Absenteeism and Hourly Summary Report - Quarterly

GOLDEN GATE TRANSIT

**MAINTENANCE
ABSENTEEISM AND HOURLY
SUMMARY**

For Period 4/1/2016 Thru 6/30/2016

Mileage	1,614,798
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1414 - MECHANICS, BODYPERSONS, & APPRENTICES: 37 positions

Hours Scheduled	19,240.0	=	11.9	hours per thousand miles
Hours Worked	15,514.5	=	9.6	hours per thousand miles
Hours Overtime	404.3	=	.3	hours per thousand miles

CLASSIFICATION OF HOURS MISSED

CATEGORY A (% of sched hrs)	1,903.3	=	9.9%	CATEGORY B (% of sched hrs)	1,329.3	=	6.9%
Vacation	1,411.0	=	74.1%	Sick(Paid)	798.8	=	60.1%
District Holiday	280.0	=	14.7%	Absent WO Pay	48.5	=	3.6%
Floating Holidays	208.0	=	10.9%	Industrial Injury (Paid)	.0	=	.0%
Jury Duty	4.3	=	.2%	MLOA And PLOA	482.0	=	36.3%
total hours = per cent	1,903.3	=	58.9%	total hours = per cent	1,329.3	=	41.1%

624 - SERVICERS: 19 positions

Hours Scheduled	9,880.0	=	6.1	hours per thousand miles
Hours Worked	8,507.0	=	5.3	hours per thousand miles
Hours Overtime	255.8	=	.2	hours per thousand miles

CLASSIFICATION OF HOURS MISSED

CATEGORY A (% of sched hrs)	576.0	=	5.8%	CATEGORY B (% of sched hrs)	413.0	=	4.2%
Vacation	328.0	=	56.9%	Sick(Paid)	291.8	=	70.6%
District Holiday	144.0	=	25.0%	Absent WO Pay	17.3	=	4.2%
Floating Holidays	104.0	=	18.1%	Industrial Injury (Paid)	.0	=	.0%
Jury Duty	.0	=	.0%	MLOA and PLOA	104.0	=	25.2%
total hours = per cent	576.0	=	58.2%	total hours = per cent	413.0	=	41.8%

CONSOLIDATED SUMMARY: 1414 - Mechanics And 624 - Servicers

Total Scheduled hours per thousand miles	18.0
Total worked hours per thousand miles	14.9
Total worked hours including overtime hours per thousand miles	15.3

From Reports



From Dashboard Indicators

Quick Reporting (T)

A, B, C, D Inspections Find Selected Action

List Bus Quick Reporting Ferry Quick Reporting Specifications

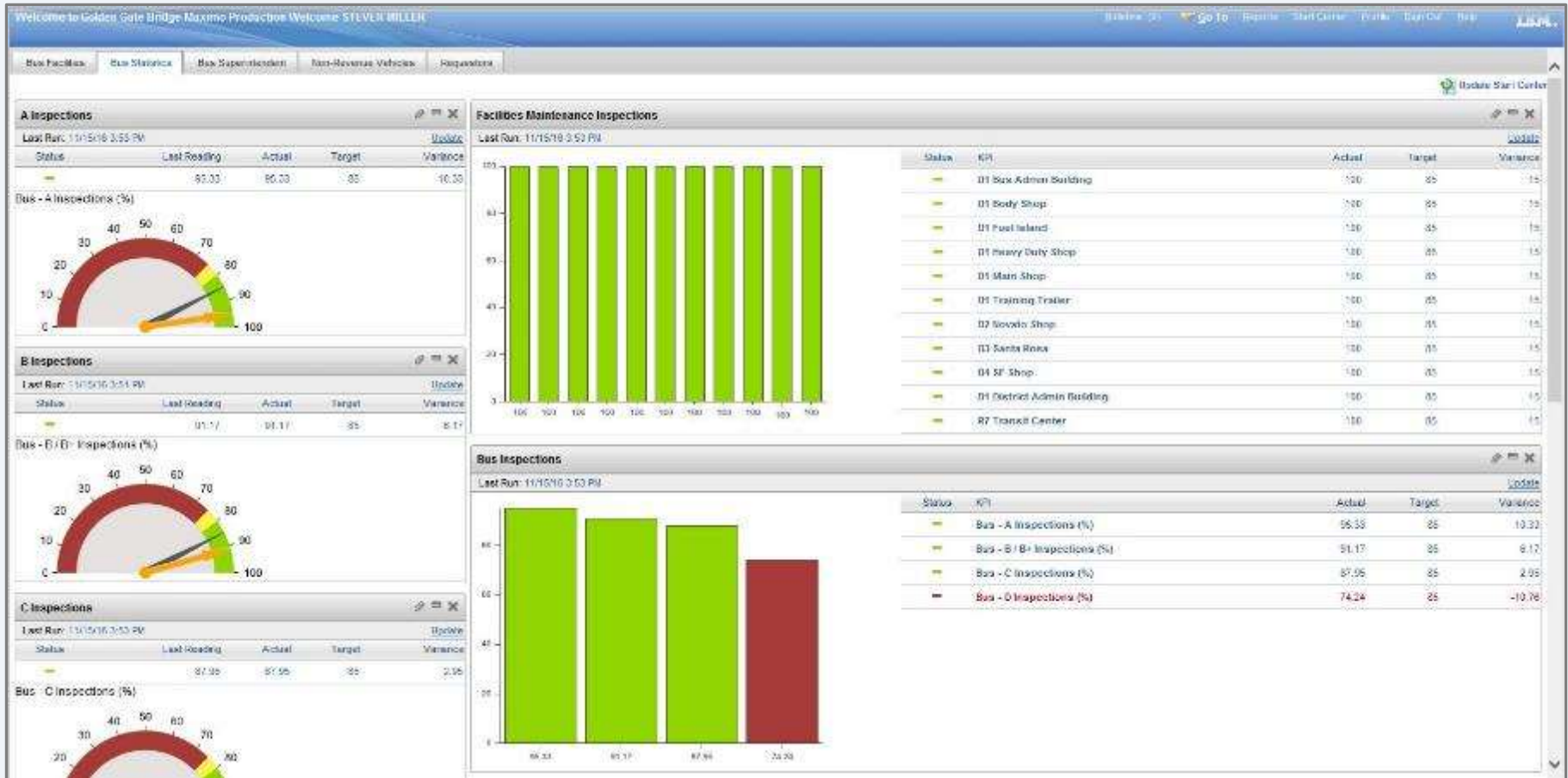
Advanced Search Save Query Bookmarks

Work Orders Filter 1 - 20 of 36 Download

Bus #	Work Order	Description	Job Plan	Owner Group	Job	Mechanic	Mil Delta	Status	Assigned Date	Actual Finish	Fleet
1447	304290	A / B / C / D INSPECTION	A ORN	BUSMAN			-58	WSCH	11/14/16 6:00 PM		ORN
3306	304154	A / B / C / D INSPECTION	A NFI	BUSMAN			-144	WSCH	11/12/16 5:01 AM		NFI
1553	304211	A / B / C / D INSPECTION	A ORN	BUSMAN			-128	WSCH	11/14/16 6:03 PM		ORN
3361	304221	A / B / C / D INSPECTION	A NFI	BUSMAN			-118	WSCH	11/13/16 5:01 AM		NFI
552	304515	A / B / C / D INSPECTION	B NFA	BUSMAN			-112	WSCH	11/14/16 8:01 PM		NFA
1538	302210	A / B / C / D INSPECTION	A ORN	BUSMAN			-82	WSCH	10/28/16 5:01 AM		ORN
1578	304217	A / B / C / D INSPECTION	A ORN	BUSMAN			-82	WSCH	11/14/16 6:01 PM		ORN
1526	304218	A / B / C / D INSPECTION	A ORN	BUSMAN			-28	WSCH	11/14/16 6:02 PM		ORN
1526	304148	A / B / C / D INSPECTION	B ORN	BUSMAN			-12	WSCH	11/12/16 5:03 AM		ORN
947	304517	A / B / C / D INSPECTION	B MCB	BUSMAN			25	WSCH	11/14/16 8:02 PM		MCB
1509	303234	A / B / C / D INSPECTION	B ORN	BUSMAN			39	WSCH	11/7/16 5:00 AM		ORN
957	304689	A / B / C / D INSPECTION	C MCB	BUSMAN			48	WSCH	11/11/16 5:02 AM		MCB
1550	304362	A / B / C / D INSPECTION	D ORN	BUSMAN			42	WSCH	11/15/16 5:01 AM		ORN
953	304265	A / B / C / D INSPECTION	D NFA	BUSMAN			75	WSCH	11/15/16 5:01 AM		NFA
958	304267	A / B / C / D INSPECTION	A NFA	BUSMAN			77	WSCH	11/15/16 5:01 AM		NFA
961	304158	A / B / C / D INSPECTION	B MCB	BUSMAN			79	WSCH	11/12/16 5:01 AM		MCB
948	304159	A / B / C / D INSPECTION	A MCB	BUSMAN			130	WSCH	11/12/16 5:02 AM		MCB
951	304372	A / B / C / D INSPECTION	B MCB	BUSMAN			131	WSCH	11/15/16 5:02 AM		MCB
1501	304208	A / B / C / D INSPECTION	B ORN	BUSMAN			133	WSCH	11/14/16 6:03 PM		ORN
1503	304267	A / B / C / D INSPECTION	D ORN	BUSMAN			143	WSCH	11/15/16 5:03 AM		ORN

Default Favorites

Dashboard Indicators



From Dashboard Indicators

Quick Reporting (T)

A, B, C, D Inspections Find Selected Action

List Bus Quick Reporting Ferry Quick Reporting Specifications

Advanced Search Save Query Bookmarks

Work Orders Filter 1 - 20 of 36 Download

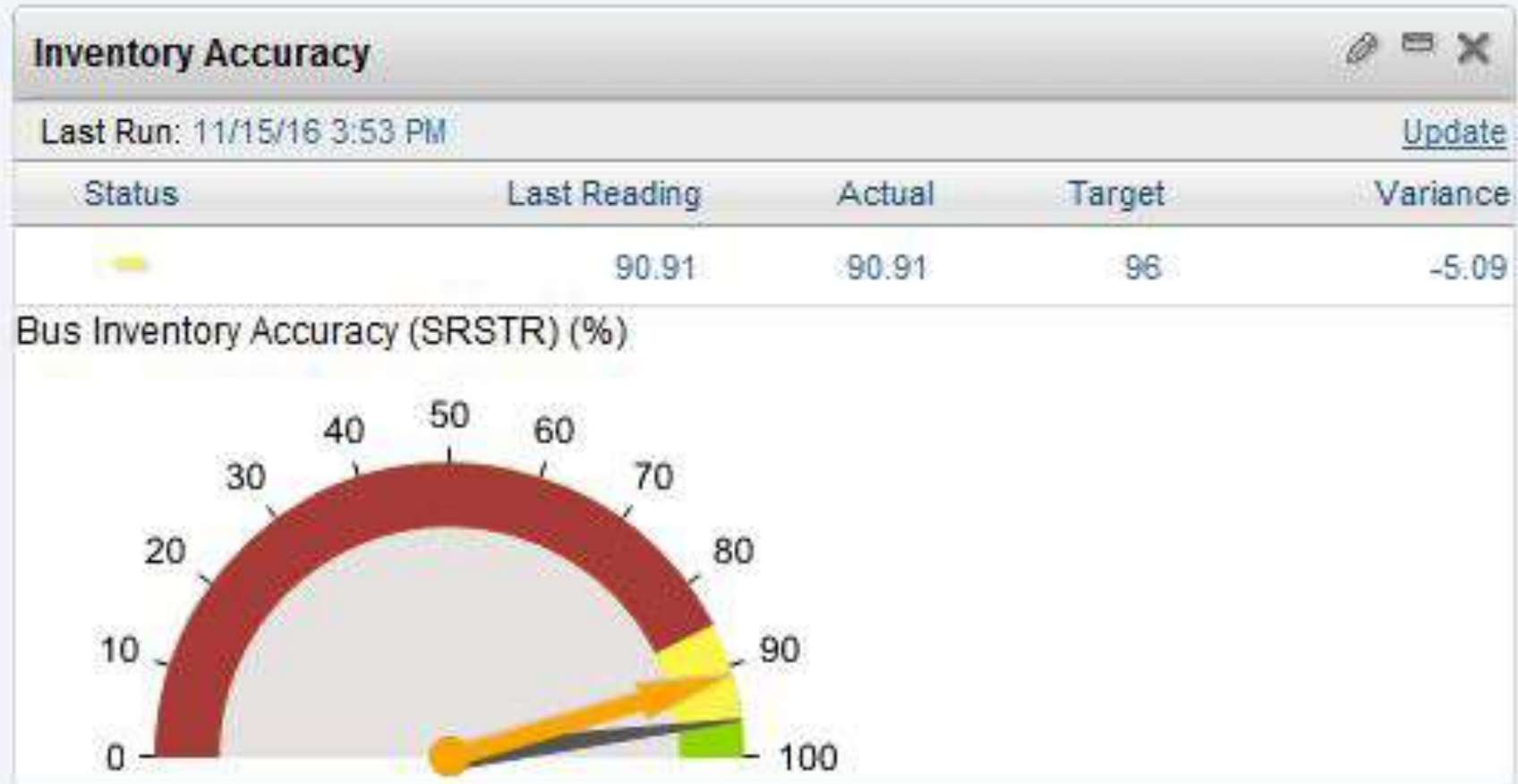
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Default Favorites

Dashboard Indicators



Dashboard Indicators



Dashboard Indicators



Data Through Telemetry



Telemetry

Assets (Tr)

Find: Select Action

Asset: 1118 ORION BUS 1520

Measurements: 1 - 15 of 765

Measurement Date	Meter	Description	Measurement Q
4/3/14 8:24 PM	EXH PRESS	Maximum Exhaust Backpressure	4.900
4/2/14 6:06 PM	EXH PRESS	Maximum Exhaust Backpressure	5.100
4/1/14 6:42 PM	EXH PRESS	Maximum Exhaust Backpressure	4.950
3/31/14 8:19 PM	EXH PRESS	Maximum Exhaust Backpressure	5.350
3/29/14 6:36 PM	EXH PRESS	Maximum Exhaust Backpressure	4.650
3/28/14 6:10 PM	EXH PRESS	Maximum Exhaust Backpressure	4.800
3/27/14 8:17 PM	EXH PRESS	Maximum Exhaust Backpressure	4.400
3/26/14 10:58 PM	EXH PRESS	Maximum Exhaust Backpressure	4.950
3/25/14 8:02 PM	EXH PRESS	Maximum Exhaust Backpressure	5.100
3/24/14 5:39 PM	EXH PRESS	Maximum Exhaust Backpressure	4.750
3/21/14 6:08 PM	EXH PRESS	Maximum Exhaust Backpressure	5.100
3/20/14 8:02 PM	EXH PRESS	Maximum Exhaust Backpressure	4.600
3/19/14 7:40 PM	EXH PRESS	Maximum Exhaust Backpressure	4.800
3/18/14 6:13 PM	EXH PRESS	Maximum Exhaust Backpressure	5.050
3/17/14 8:37 PM	EXH PRESS	Maximum Exhaust Backpressure	4.550

Telemetry - Wireless



GPAC Data System



WiFi Router

Telemetry

- Industrial Internet of Things - IIoT
- Enables true “predictive” maintenance
- Equipment often gets sick before it dies
- Enables exception-based maintenance alerts
- Allows remote response to equipment issues
- Favorable return on investment opportunities

Telemetry





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