

# **BOMBARDIER**

## **Six Sigma Program Final Report (P7)**

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### **AN1 - MMS Open Work orders**

2013-051

Start Date: 11-Jun-2003

Complete Date: 21-Aug-2003

**Group: Transportation**

**Division: Bombardier Transportation North  
America**

**Business Unit: Go Transit**

**Six Sigma Methodology: DMAIC**

**Project Owner: Rocco Colangelo**

**Provide 3 copies**

- ☐ Master Agent
- ☐ Core Team Member
- ☐ Group Six Sigma



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## 1.0 Executive Summary:

## 2.0 Key Words:

open work orders

## 3.1 Problem Description:

Too many Open work orders: An increasing number of Work orders are left open in MMS delaying the invoicing of these work orders. Customer Satisfaction is greatly affected as the number of jobs are not being completed. Because of the incompleting work order opened for the past four months, revenue for Bombardier is not captured immediately.

## 3.2 Goal/Objective Statement:

(CTQ) - Reduce the amount of open work orders in MMS.

## 3.3 Projected Business Benefits:

- Increase timeline to capture revenue.
- Increase Customer Satisfaction through work completion.

## 3.4 Assumption/Constraints:

Boundaries Included:

- Open work orders generated in MMS that exceeds 4 months duration.

Boundaries Excluded:

- QC generated work orders, Warranties, Finance and Special projects.

3.5 Project Timeline:						Savings Realized
	Define	Measure	Analyze	Improve	Control	Realization
Planned Start	30-Apr-2003	28-May-2003	18-Jun-2003	9-Jul-2003	30-Jul-2003	
Forecast Start	30-Apr-2003	28-May-2003	23-Jul-2003	25-Jul-2003	18-Aug-2003	
Actual Start	30-Apr-2003	11-Jun-2003	22-Jul-2003	23-Jul-2003	18-Aug-2003	21-Aug-2003
Planned Complete	28-May-2003	18-Jun-2003	9-Jul-2003	30-Jul-2003	27-Aug-2003	21-Aug-2004
Forecast Complete	28-May-2003	23-Jul-2003	25-Jul-2003	18-Aug-2003	21-Aug-2003	21-Aug-2004
Actual Complete	11-Jun-2003	22-Jul-2003	23-Jul-2003	18-Aug-2003	21-Aug-2003	

Financial - Current Forecast :9-Sep-2003

\$62 NR

Original Forecast 22-Sep-2003

\$0 NR

Note: All Currency in (000's)

Date 29-Sep-2003 Net Savings \$62 NR

Direct Savings (000's)		Indirect Savings (000's)	
Sales (Margin)	\$62	Process Efficiency	\$0
Material	\$0		
Headcount	\$0		
ODC's	\$0		
Overhead	\$0		
Assets	\$0		
Total Direct Savings	\$62	Total Indirect Savings	\$0

## Savings by Fiscal Year (000's)

FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
\$0	\$0	\$0	\$0	\$0	\$13	\$31	\$18	\$0	\$0	\$0

## Dept/Savings Impact (000's)

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*The department/savings should total the values of  
Headcount and Overhead which is equal to \$0.*

***Financial Assumption Comments***

Analyst project savings estimated based on Average Monthly Revenue loss of \$2,583 as generated from incomplete MMS work orders.

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### 3.6 Impact:

#### Customer

Local Management Team	
GO Transit	
Finance Budget and Control	

#### Company Performance Metrics

Customer Satisfaction
Sales Growth

#### Priority

High

#### Project Metrics:

Attributes	<input type="checkbox"/>	Leveraged	<input type="checkbox"/>	Customer Benefits	<input type="checkbox"/>	Cross-functional	<input type="checkbox"/>
Process Improvement	<input type="checkbox"/>	Critical Type		Metric		Baseline	Final

#### Improvement Metrics:

### 7.0 Summary Conclusion:

#### 7.1 Phase Conclusions:

Phase	Date	Conclusion
Measure	22-Jul-03	Based on the calculated data, the average amount of Designated/Unscheduled Repair workorders left opened for the period of Jan. 2003 to Jun. 2003 = 28 workorders. A Fishbone has been employed to define all probable causes.
Analyze	23-Jul-03	From the defect analysis (Pareto Chart) "No Supervisor follow-up" has the highest defects recorded. Using the Run Chart, it was calculated that on a monthly basis, Bombardier has incurred a average balance of potential Labour Loss (\$2,583.-).
Improve	18-Aug-03	1. A Clear defined procedure should be implemented outlining each step taken in the process from when a w/order is requested to when a work order is completed. 2. Each Clerk/Supervisor should address all open w/orders before the invoice cutoff date. 3. Training should be provided for Supervisors/Managers & Clerks on newly defined process. 4. The QA/QC Department should perform routine weekly audits on open work order following the guidelines listed. NB: To proper evaluate results, daily audits for a period of seven days would be done initially commencing August 11th to August 18th. Results of the pilot were successful - e.g. "No Supervisor follow-ups" category has reduced from 104 counts to 7 counts and "No reference to Defect Management" has improved from 11 counts to 1 count.
Control	21-Aug-03	Work Order Control Procedure SHOP PW-011 has been revised and updated. A Work Process Flow Chart has been created for guideline reference. Control Plan has been established to ensure accountability and accuracy of the process.

#### 8.0 Team Members:

Name	Functional Area	Expertise	BU/Company	Member Type	Cost Center
George Ku	Six Sigma		Go Transit	Bombardier	

#### 9.0 Authors: