



RCA Name Missed two regularly scheduled shipments

## Root Cause Analysis Report

### Problem Statement

**Focal Point** Missed two Go Juice shipments to customer

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#### When

Start Date 5/8/2012

End Date 8/14/2012

Start Time 8 a.m.

Unique Timing After new program load, and during peak demand period for Go Juice

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#### Where

Business Unit Go Juice

Location Houston, TX

Facility Ingredient supplier packaging line and Go Juice formulation line

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#### Actual Impact

		Cost
Revenue	Lost Sales	250,000.00
Customer Service	Customer Complaint	
Cost	OT, expedited shipping	30,000.00
Actual Impact Total:		\$280,000.00

Frequency 2 times overall

# Report Summaries

## **Executive Summary**

We missed two regularly scheduled shipments of Go Juice to our customer resulting in a \$280,000 lost profit opportunity. We missed the shipments because we had no inventory of Go Juice because we did not have the necessary ingredients to complete the formulation. This was caused by our ingredient supplier missing two shipments to us due to labeling problems in their packaging operations. Normally we carry some small amount of Go Juice in inventory, and the supplier normally carries some small inventory of ingredient, however, strong demand as of late (due to the increased sales) and JIT inventory strategies combined to catch us without sufficient inventory on hand to cover the shipments.

Solutions to prevent recurrence include: 1) Implementing a new step in product forecasting to improve accuracy of inventory planning by both us and our suppliers, 2) Adjusting our re-stock trigger points, and 3) Our ingredient supplier is making corrections for label printer porting, code change testing, and management of change.

## **Cause and Effect Summary**

We missed two regularly scheduled shipments of Go Juice to our customer resulting in a \$280,000 lost profit opportunity. We missed the shipments because we had no inventory of Go Juice because we did not have the necessary ingredients to complete the formulation. This was caused by our ingredient supplier missing two shipments to us due to labeling problems in their packaging operations. Normally we carry some small amount of Go Juice in inventory, and the supplier normally carries some small inventory of ingredient, however strong demand as of late (due to the increased sales) and JIT inventory strategies combined to catch us without sufficient inventory on hand to cover the shipments. Demand has been strong due to the heat wave and because Go Juice sells well during heat waves. JIT inventory management has only been in place a short time as a result of our LEAN efforts, so our re-stock trigger points may be set too tight.

Our ingredient supplier missed their last two shipments to us because they had no excess ingredient inventory (also due to JIT inventory management) and because they couldn't label the product containers that were ready. They couldn't label because their label printer was not working because of a printer port assignment problem that occurred after they had a programming code change. They did not catch the port assignment problem because they didn't do compatibility testing, the programmer didn't check the prior port assignment, and they did not receive any error messages from the printer.

## Solutions

<b>ID</b>	<b>Label</b>	<b>Description</b>		
1	<b>Solution</b>	Adjust inventory restock points upward to require 10% safety stock on hand		
	<b>Cause</b>	JIT inventory management		
	<b>Note</b>			
	<b>Assigned</b>	Sarah Ferguson	<b>Criteria</b>	Pass
	<b>Due</b>	10/31/2012	<b>Status</b>	Selected
	<b>Term</b>	Choose	<b>Cost</b>	\$0.00
3	<b>Solution</b>	Implement new SOP to require dry-run testing on all code changes		
	<b>Cause</b>	No compatibility testing		
	<b>Note</b>			
	<b>Assigned</b>	Bob Hughes	<b>Criteria</b>	Pass
	<b>Due</b>	10/31/2012	<b>Status</b>	Selected
	<b>Term</b>	Choose	<b>Cost</b>	\$0.00
6	<b>Solution</b>	Attach printer to port 9101		
	<b>Cause</b>	Printer attached to printer port 9100		
	<b>Note</b>			
	<b>Assigned</b>	Bob Hughes	<b>Criteria</b>	Pass
	<b>Due</b>	10/31/2012	<b>Status</b>	Selected
	<b>Term</b>	Choose	<b>Cost</b>	\$0.00
7	<b>Solution</b>	Update code to return an error message if print job doesn't start		
	<b>Cause</b>	No error message being returned when sending print job		
	<b>Note</b>			
	<b>Assigned</b>	Aiden McShane	<b>Criteria</b>	Pass
	<b>Due</b>	11/16/2012	<b>Status</b>	Selected
	<b>Term</b>	Choose	<b>Cost</b>	\$0.00
9	<b>Solution</b>	Add code change review to "Management of Change" checklist		
	<b>Cause</b>	Programmer not notified of correct port #		
	<b>Note</b>			

<b>Assigned</b>	Marie Gonzales	<b>Criteria</b>	Pass
<b>Due</b>	10/31/2012	<b>Status</b>	Selected
<b>Term</b>	Choose	<b>Cost</b>	\$0.00

11	<b>Solution</b>	Notify ingredient suppliers of anticipated demand spikes so they can build inventory	
	<b>Cause</b>	Go Juice inventories have been very low	
	<b>Note</b>		
	<b>Assigned</b>	Sarah Ferguson	<b>Criteria</b> Pass
	<b>Due</b>	10/31/2012	<b>Status</b> Selected
	<b>Term</b>	Choose	<b>Cost</b> \$0.00

12	<b>Solution</b>	Add new step in product forecast process that accounts for upcoming weather. If hot weather is in the 2-3 week forecast, ramp up projections internally and order more from ingredient suppliers	
	<b>Cause</b>	Go Juice inventories have been very low	
	<b>Note</b>		
	<b>Assigned</b>	Sarah Ferguson	<b>Criteria</b> Pass
	<b>Due</b>		<b>Status</b> Selected
	<b>Term</b>	Choose	<b>Cost</b> \$0.00

## Team

<b>ID</b>	<b>Label</b>	<b>Description</b>	<b>Label</b>	<b>Description</b>
1	<b>First Name</b>	Bob	<b>Last Name</b>	Hughes
	<b>Phone (1)</b>		<b>Phone (2)</b>	
	<b>Role</b>	IT tech	<b>Group</b>	
	Email			
2	<b>First Name</b>	Sarah	<b>Last Name</b>	Ferguson
	<b>Phone (1)</b>		<b>Phone (2)</b>	
	<b>Role</b>	Production planner	<b>Group</b>	
	Email			
3	<b>First Name</b>	Marie	<b>Last Name</b>	Gonzales
	<b>Phone (1)</b>		<b>Phone (2)</b>	
	<b>Role</b>	Production Supervisor	<b>Group</b>	
	Email			
4	<b>First Name</b>	Aiden	<b>Last Name</b>	McShane
	<b>Phone (1)</b>		<b>Phone (2)</b>	
	<b>Role</b>	Programmer	<b>Group</b>	
	Email			

## Evidence

ID	Label	Description
1	<b>Evidence</b> <b>Cause(s)</b>	Statement Ingredient not ready on ship date from supplier Our internal requirement More cost effective for both customer and supplier Sole source partnership with supplier JIT inventory management Ingredient out of inventory at supplier Trying to minimize working capital Higher than normal demand
	<b>Location</b>	
	<b>Link</b>	
	<b>Contributor</b>	Choose
	<b>Type</b>	Choose
	<b>Quality</b>	☆☆☆☆☆
2	<b>Evidence</b> <b>Cause(s)</b>	Supv statement Product requires label before shipping Product not labeled Label printer not printing Go Juice product not available to package No Go Juice in inventory No other source of Go Juice No one else makes Go Juice Go Juice inventories have been very low JIT inventory management Minimizing working capital Adoption of LEAN principles Improves balance sheet Supplier has been reliable historically Ran out of main ingredient for Go Juice Ingredient not ready on ship date from supplier Other suppliers don't have ingredient on hand No other method available to print labels Supplier of ingredient missed last two deliveries No contracts in place for 'back-up' suppliers Ship dates passed Not able to obtain ingredient from other suppliers Shipment cannot be made without product No perceived risk of supply interruption

**Location**  
**Link**  
**Contributor** Choose  
**Type** Choose  
**Quality** ★★★★★

3 **Evidence** Customer spec.  
**Cause(s)** Customer requirement  
**Location**  
**Link**  
**Contributor** Choose  
**Type** Choose  
**Quality** ★★★★★

4 **Evidence** Sys Eng comment  
**Cause(s)** Output data sent to printer port 9101  
Didn't detect port change  
Recent code update switched to port 9101  
**Location**  
**Link**  
**Contributor** Choose  
**Type** Choose  
**Quality** ★★★★★

5 **Evidence** Sys Eng comment  
**Cause(s)** Printer assigned port 9101 in database  
Printer attached to printer port 9100  
Printer assignment completed by DB  
Previous configuration  
No compatibility testing  
**Location**  
**Link**  
**Contributor** Choose

**Type** Choose  
**Quality** ★★★★★

6 **Evidence** IT tech comment  
**Cause(s)** No compatibility testing  
 9101 is code normally used for other label printers  
 Configuration change at startup  
 Programmer not notified of correct port #  
 Tech forgot to communicate to programmer  
 No error message being returned when sending print job

**Location**  
**Link**  
**Contributor** Choose  
**Type** Choose  
**Quality** ★★★★★

7 **Evidence** Sys.eng comment  
**Cause(s)** Programmer didn't check existing code

**Location**  
**Link**  
**Contributor** Choose  
**Type** Choose  
**Quality** ★★★★★

8 **Evidence**  
**Cause(s)** No other method available to print labels

**Location**  
**Link**  
**Contributor** Choose  
**Type** Choose  
**Quality** ★★★★★

9 **Evidence** Customer contract



**Cause(s)** Product requires label before shipping  
Shipment cannot be made without product

**Location**

**Link**

**Contributor** Choose

**Type** Choose

**Quality** ★★★★★

10

**Evidence** Observation

**Cause(s)** Heat wave  
Increased orders  
People drink more Go Juice in hot weather

**Location**

**Link**

**Contributor** Choose

**Type** Choose

**Quality** ★★★★★

## Notes

<b>ID</b>	<b>Label</b>	<b>Description</b>
1	<b>Note</b>	Add the actual printer port to eliminate the word "wrong"
	<b>Cause</b>	Output data sent to printer port 9101
2	<b>Note</b>	It would be important to get some actual/plausible port numbers from Jon/Aaron
	<b>Cause</b>	Output data sent to printer port 9101

