Supplier Training

Root Cause Analysis and Corrective Action Implementation

TACTAIR

Corrective Actions

At Young & Franklin and Tactair, our goal is to work with our suppliers to help avoid problems and help towards continuous improvement.

We have developed the following training document to explain our expectations for corrective actions and give guidelines to ensure corrective actions are robust.

This document is for reference only and does not supersede official communication

Quality Rejection Process: Flow

⇒ Nonconforming material is identified.

=> Internal Quality Action Request (QAR) is generated and dispositioned

=> Supplier's Percent Lot Accepted Quality Metric will show reject

=> Buyer sends Corrective Action Request letter accompanied by parts for rework/analysis or supporting documentation such as pictures

=> Supplier to submit CAR response to buyer within 3 weeks (within 2 weeks if no parts are returned)

=> CAR is reviewed

=> We will request to see corrective actions in use during visits and will review and discuss systemic issues quarterly

Quality Rejection Process: Accounting

Accounting pays for accepted parts only

Receiving Inspection rejections

- Parts returned without payment
- Line item added to the PO for repair/replacement
- Re-invoice and payment issued after acceptance of parts

Manufacturing, Assembly & Testing rejections

- Parts returned as Y&F/Tactair-owned material
- Vendor Quality purchase order (VQxxxxx) for repair/replacement
- No invoicing required

Quality Rejection Process: Communication

- Your Buyer is your Point of Contact
- You will receive a CAR Letter from your buyer and please submit your response directly to your buyer
- Contact Bill Addley, Supplier Quality Engineer, with questions or requests for additional information
- **Copy your buyer on ALL communication**

Quality Rejection Process: CAR Form

- Use our form unless your internal system requires use of your own
- Ensure your response addresses all sections of the our form
- Our form is posted in Adobe and Word format at www.yf.com or www.tactair.com
- Respond electronically, if possible

Young & Franklin / Tactair

Supplier Corrective Action Response (SCAR)

From:	SCAR Due Date:
	QAR No:
Reply to:	PO No:
	Part No:

Please provide Cause and Corrective Action on this form or equivalent. Your response must address all of the following items (use additional sheets as necessary):

1. Action taken to correct the specific nonconformance.

2. Root cause of the nonconformance.

3. Action taken to correct the root cause of the nonconformance.

4. Action being taken to assure that other parts are not affected by the same or similar discrepancies.

5. How did the discrepant parts escape your inspection/quality system?

6. Target dates for implementation of corrective action.

Supplier Quality Representative _____ Date _____

C/A Approved ___ Not Approved ___ C/A Follow-up Date:

Young & Franklin /Tactair Quality Approval _____ Date _____

FRM-QCP-08 REV: B

Quality Rejection Process: Y & F/Tactair 's Role

- We write a QAR and assign supplier responsibility with the information available at the time
- We may change responsibility due to new information
- We want to work with you on root cause analysis
- Robust improvements may be required at our end also
- Our goal is to prevent future problems for both of us

Many Root Cause Analysis Methods Available

- Use the tools that best fit the problem and your quality system
- We can help direct you to resources on root cause analysis techniques
- We will participate in problem solving if needed
- We won't dictate a specific tool for you to use, but we are looking for real use of these tools integrated into your business processes

Use Root Cause Analysis to drilldown into Issues and to Prevent Recurrence

- A true root cause can usually be found in incomplete or inadequate training procedures or process controls or their incorrect use. *"Operator error that escaped our AQL sampling plan" does not get to the real root cause of the issue*
- Instead, use a combination of root cause analysis techniques to go deep into a problem
  - 5 Why's - 6 Sigma - 8D
  - SPC - Data Analysis

Key to Root Cause Analysis is Asking the Right Questions

"*Operator error that escaped our AQL sampling plan" does not get to the real root cause of the issue*

- Were handling and packaging instructions documented in order to prevent part damage?
- Was the operator adequately trained?
- Was the part traveler up to date?
- Did the operator record measurements on the traveler or inspection sheet?
- Was the operator's gage calibrated?
- Was the operator rushing?
- Is the process capable?
- Was the tolerance too tight to manufacture consistently?

=> Use root cause analysis tools to get to the right questions.

Tools: 5 Why's

5 Why method of repeatedly asking "Why" to drill through the symptoms to the root cause is simple and powerful

Simple Example: You've just gotten a flat tire in your garage

Why?	You backed over a nail
Why?	It fell off a shelf
Why?	The shelf was warped
Why?	Water leaked through the roof
Why?	You never got around to patching the roof!

Tools: Data Analysis

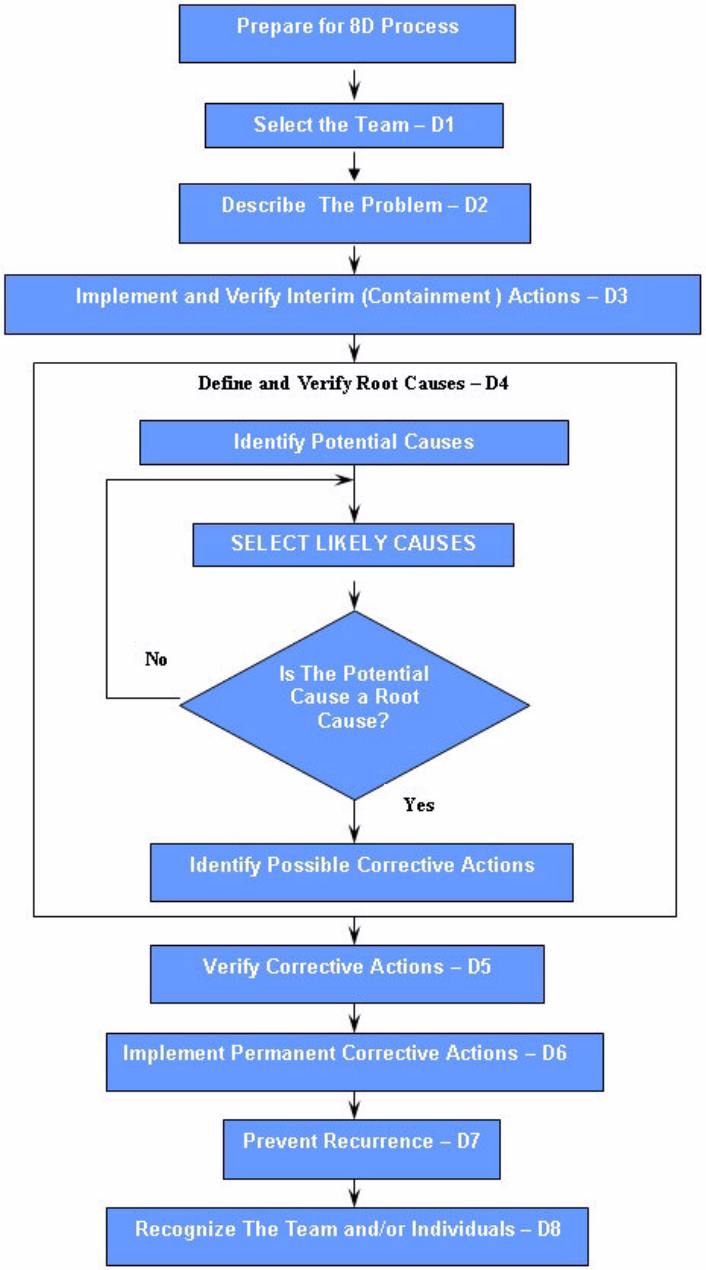
- Group defects by type (e.g. dimensional, damage, etc.)
- Look for root causes (e.g. training, process documentation)
  - Are there common causes regardless of part/customer/material?
  - Ask your shop personnel for their input
- Apply resources to fix root causes. Not necessarily biggest first – look for easy successes for encouragement
- Charts for trend analysis – are things getting better or worse?

Tools: Six Sigma and SPC

- Good for assessing and improving systemic issues and variation
- DMAIC Process (Define, Measure, Analyze, Improve, Control) supports data-driven improvements
- Low volume Statistical Process Control techniques allow you to analyze, control and improve

Tools: 8D

- Teamwork-focused method
- Involve us and your operators
- Separates interim and permanent corrective action
- Includes verification
- Maps directly to questions on our CAR form



Good Corrective Action Responses

- Include corrective actions from your 2nd tiers and processors
- Include copies of travelers and inspection cards showing updates
- Detail stock sort for rejected part number AND any other parts that could have the same issue
- Highlight preventative measures for rejected part AND any other parts that could have the same issue

Good Corrective Action Responses

- Involve the operator in root cause analysis
- “Standardize the Fix” to similar parts and operations
- Go to the highest levels of corrective actions
  - High level: True poka yoke (failsafe) that makes it impossible to repeat the error
  - Mid level: Prevents error from leaving the station
  - Low level: Prevents error from leaving the building

All QARs Count

- We do not distinguish between major and minor QARs since any issue will hold up an assembly
- We do categorize QARs to help identify systemic issues
- A “Use as Is” disposition does not mean that the issue is not important
- When possible, we will return parts to you. If we cannot, we will send digital pictures or other supporting information

No Repeat Issues

The true metrics of successful corrective actions are no repeat issues and prevention of similar issues

Corrective actions will be assessed on their ability to help us avoid future problems

Supplier Training

Corrective Actions

Training Complete

Thank You