



**Cypress
Group**

AS9100 Issues

Challenges

Pitfalls

Internal Auditing

Continual Improvement

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Challenge:

Aerospace Wants Improvements

Aerospace Supplier Improvements

- Better monitoring and measuring of processes
- Improved Quality & Delivery
- Better Internal control of processes, paperwork, traceability, schedules
- Utilizing Nonconforming Product info for Data Analysis, CA, & PA
- Systematic Root Cause Analysis
- Proactive Preventive Actions (# CA's vs PA's)
- More effective Internal Audits with Findings (you should be finding your problems)
- More effective Corrective Actions directed toward Process not Product
- Documentation requirements for certs, test results, etc.
- Improved Coordination with subcontractors
- Clear information in a Traveler Package

Registrar Improvements

- Tougher guidelines for auditors
- Registration/Surveillance Audit results consistent with performance to the primes
- Measuring # Findings
- Site Audits at Registrar & Witnessed Audits at Suppliers
Registration or Surveillance
- Tracking individual auditors and # of OFI's vs # of NC's
- Primes do not want OFI's when a NC is warranted

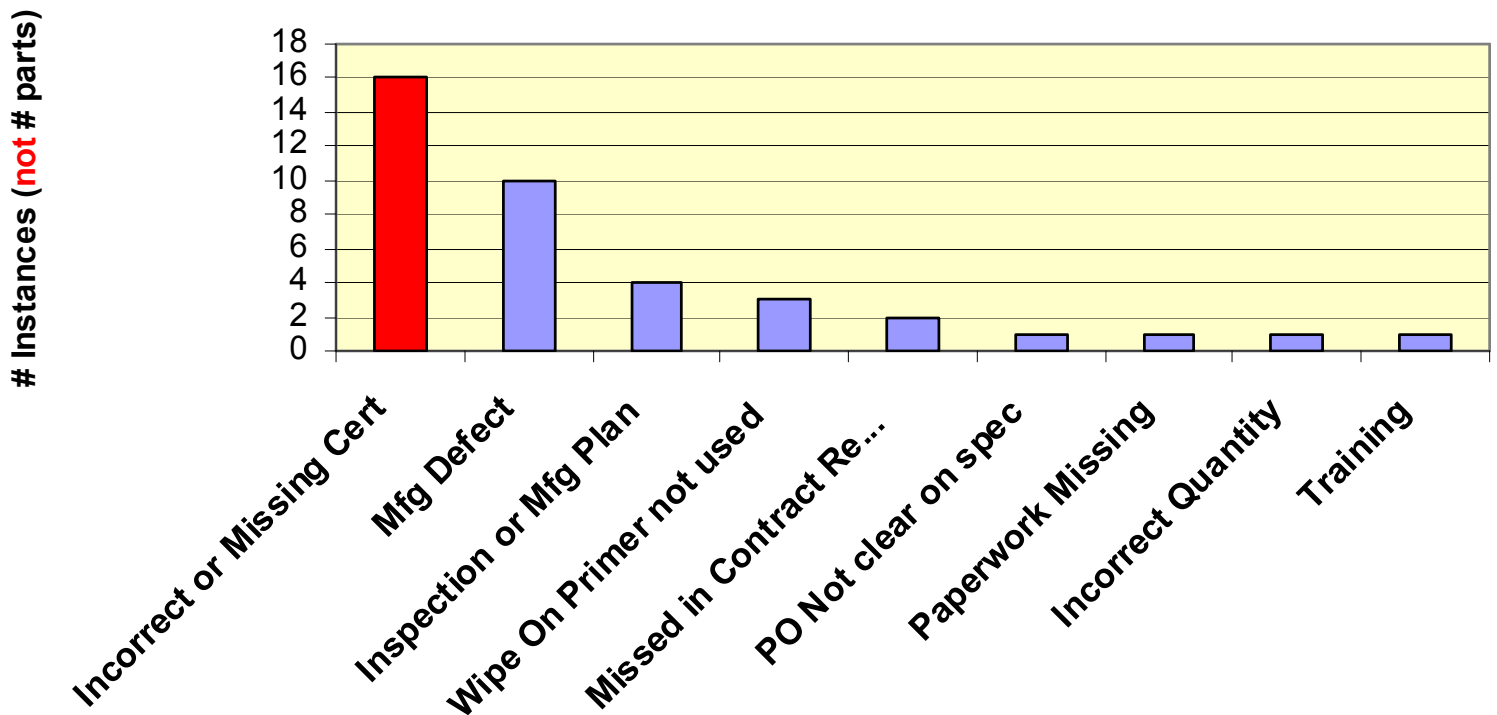
Effective Corrective Action

Aerospace is not getting better products from Suppliers through corrective action process

There are repeat problems

Points to Ineffective Root Cause Analysis

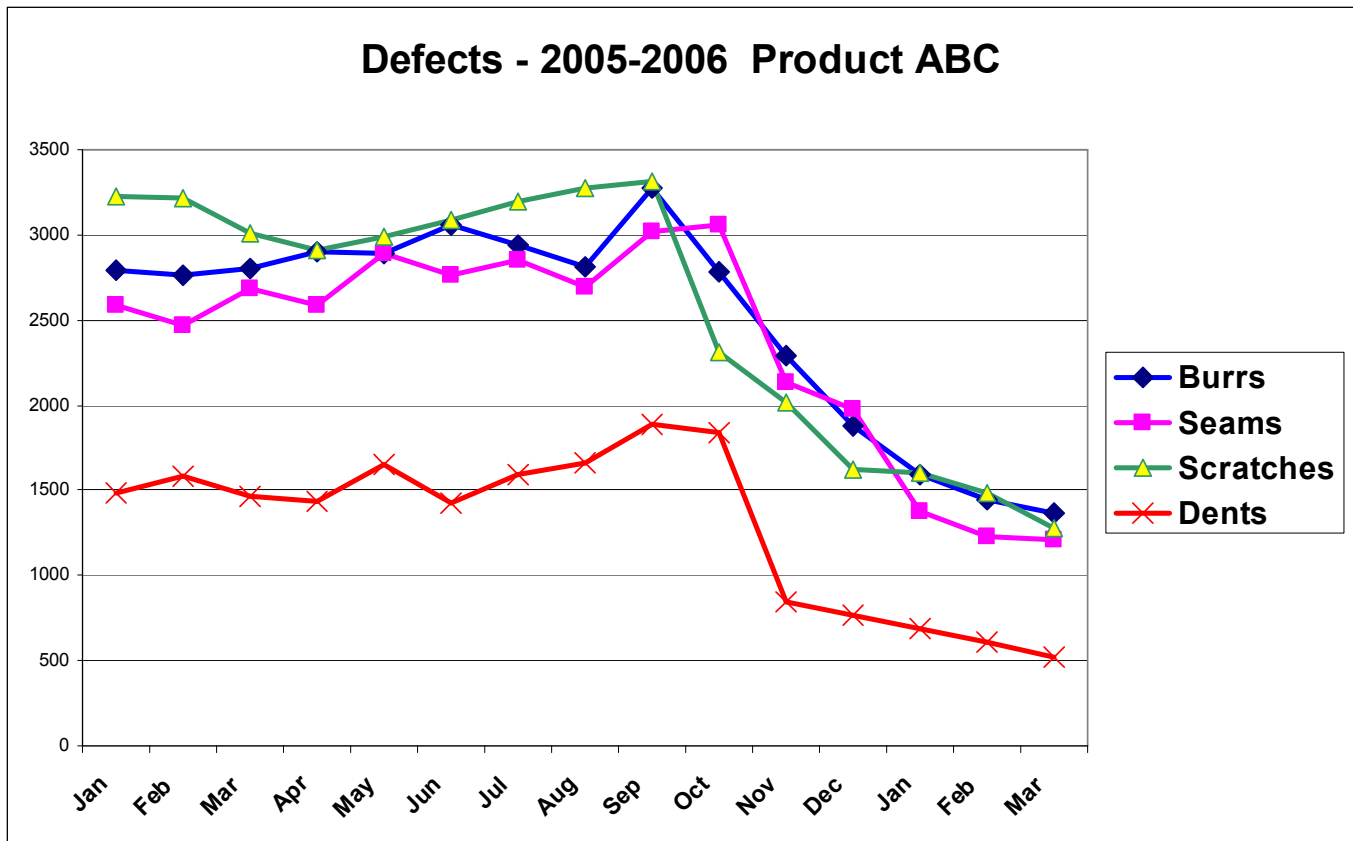
Defects/Returns from Customer X



Basic Root Cause Analysis

1. Identify the problem
2. List the potential root causes.
 - Materials → People → Environment
 - Methods (Process) → Machines
3. Are there sub-causes? List them.
4. Pick the most likely causes.
5. What action is needed to fix/prevent them.
 - Data Collection?
 - Quick fixes?
 - Next Steps?
6. Action implemented and monitored?
 - Process Change
 - Clear Roles & Responsibilities
 - Define what to monitor to see if fix is effective**
7. **Did it work?**
 - No, go back to line 4.
 - Yes, document it, standardize it, and celebrate!

Link Metrics to Process Changes



Process Log - Product ABC		
Date	Change	Comments
9/15/2005	Started Preventive Maintenance	Machines 1 and 2
10/12/2005	Expanded PM	Machines 3,4,5,6
10/20/2005	Training - Mat'l Handling	Receiving & Whse
11/5/2005	Replaced all needlenose pliers	
12/18/2005	New Setup Fixtures at Wct 15	Operators trained
1/5/2006	Training - Defect Identification	Raw Mat'l
1/30/2006	Changed Suppliers	Housings and glass

Internal Auditing

The Purpose of Internal Auditing

- Determine Compliance
- Check the effectiveness of business processes
- Ensure Customer requirements are met
- Identify Opportunities for Improvement
- Voice of the process

This is the power of the QMS for improving the business

Make the data & metrics talk to you!

Pitfalls, Potholes, & Speedbumps Taking Internal Auditing to Next Level

- **Missing Signatures on Operations**
- **Changes on Traveler w/o Initials & Dates**
- **Unidentified material, bottles, cans, etc.**
- **Expired items**
- **Epoxy or gluing Pot Life not identified**
- **Poor configuration control**
- **Quantities on Traveler do not add up**
- **“As Found” and “As Left” not on Cal History**
- **Comparison of Certs to Spec on Receiving**
- **Not flowing down all requirements on PO**
- **Flow down CA to suppliers**
- **Follow Up on CA’s when results not achieved**
- **Clear & Complete Design Plan with task sequence, significant stages, roles, resp, safety, key characteristics**
- **Design Review - “authorize progression to next stage”**
- **Clear & Documented Verification & Validation Testing**

Continual Improvement

Taking Internal Auditing to Next Level

Process Audits

- Take a job that just shipped and check the entire system
- Use a repetitive problem, conduct root cause analysis, find the breakdowns in the process that allow this to happen
- Use Customer Identified Problem, Return, or something they feel is important
- Find recent screw up and audit that process

Sequence & Interaction of Processes

CONTINUAL IMPROVEMENT

Management Responsibility
Quality Policy & Objectives
Management Review
Continual Improvement

Resource Management

Training & Competence
Suitable Work Environment
Suitable Equipment
Computer Backups

Measurement, Analysis, & Improvement

- On Time Delivery
- Supplier Rejects & Del'y
- Quality, Continual Improvement
- Internal Audit, Corrective Action
- Preventive Actions
- Customer Feedback

Product Realization

- Quoting & Contract Review
- Purchasing
- Design & Development
- Creating Work Orders
- Following Traveler & Inspection Criteria
- Verifying that it's been done and is correct!
- Supplier Eval
- Calibration

CUSTOMERS

REQUIREMENTS

SATISFACTION
CUSTOMER

Quality System