

# 5<sup>th</sup> Annual NASA Supply Chain Quality Conference

**Customer Audits  
from a  
Suppliers' Perspective**

**Forrest Reed, Director Quality  
EaglePicher Technologies**

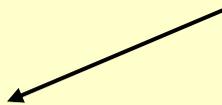
## EaglePicher Technologies

- Who we are,
- What we do,
- The mess we made of audits,
- What changed,
- How we evaluate where we are now.

**Design and Manufacture Specialty Batteries  
for Defense and Space applications.**

Thermal Batteries

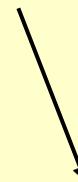
DOD Weapon Systems



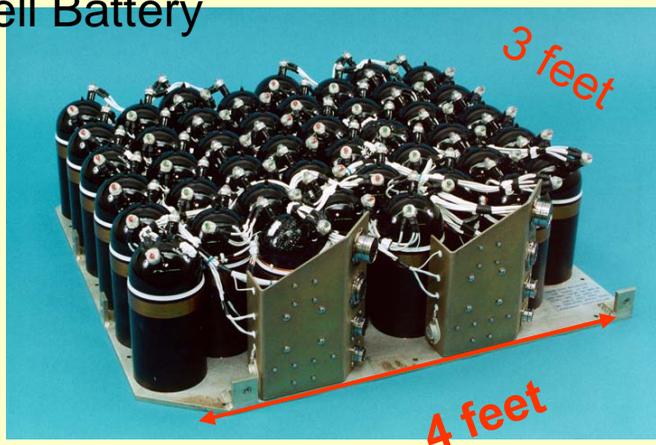
Multi-function charge,  
Discharge & testing.



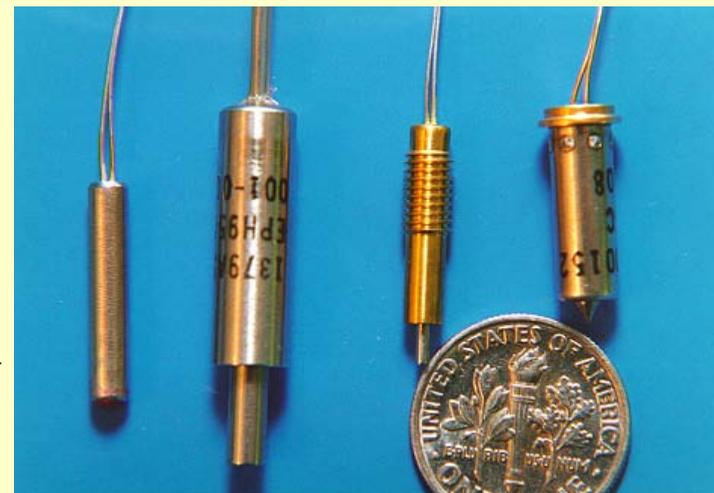
Lithium Ion  
with Electronics



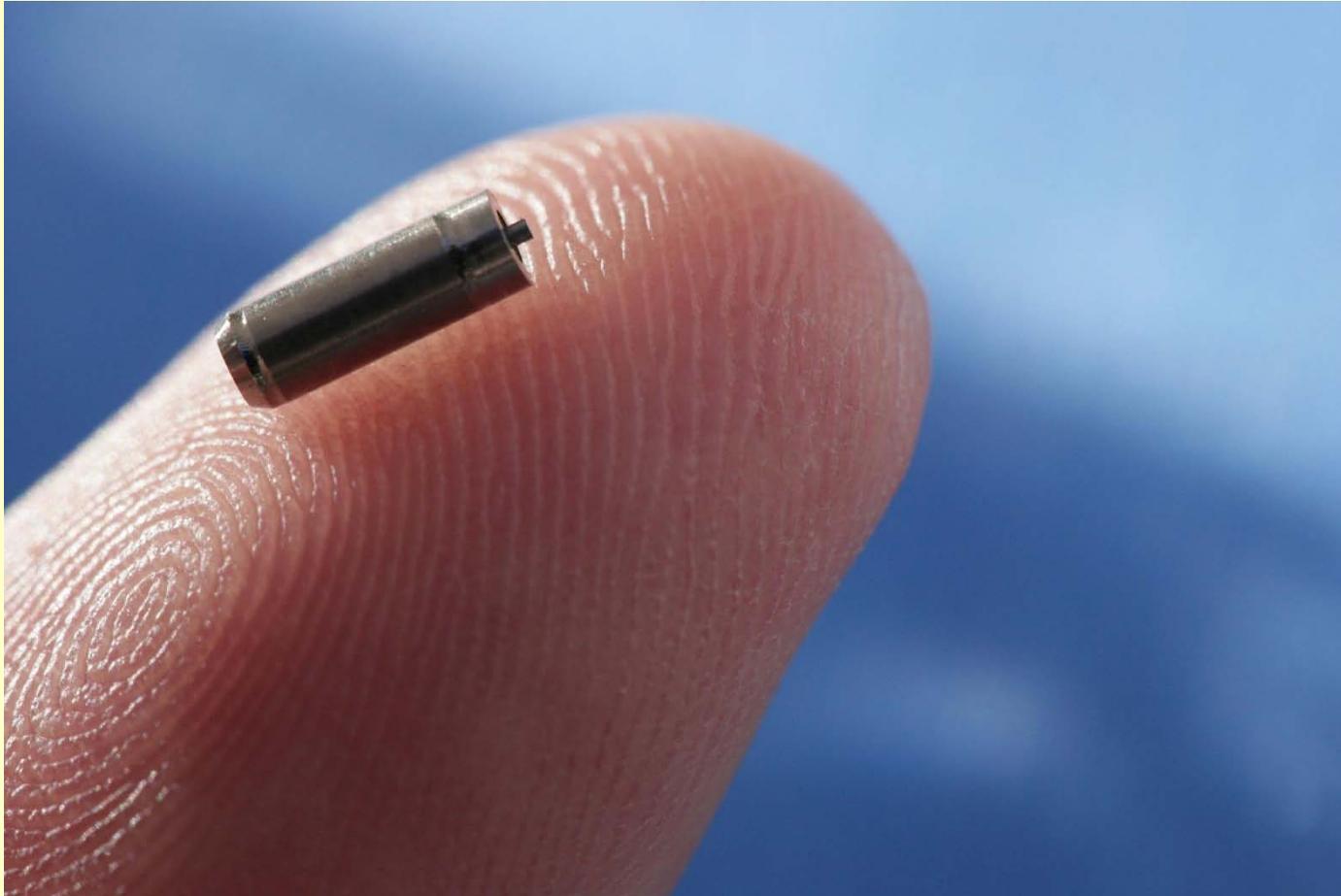
Nickel Hydrogen  
Multi-Cell Battery



Energetic  
Devices

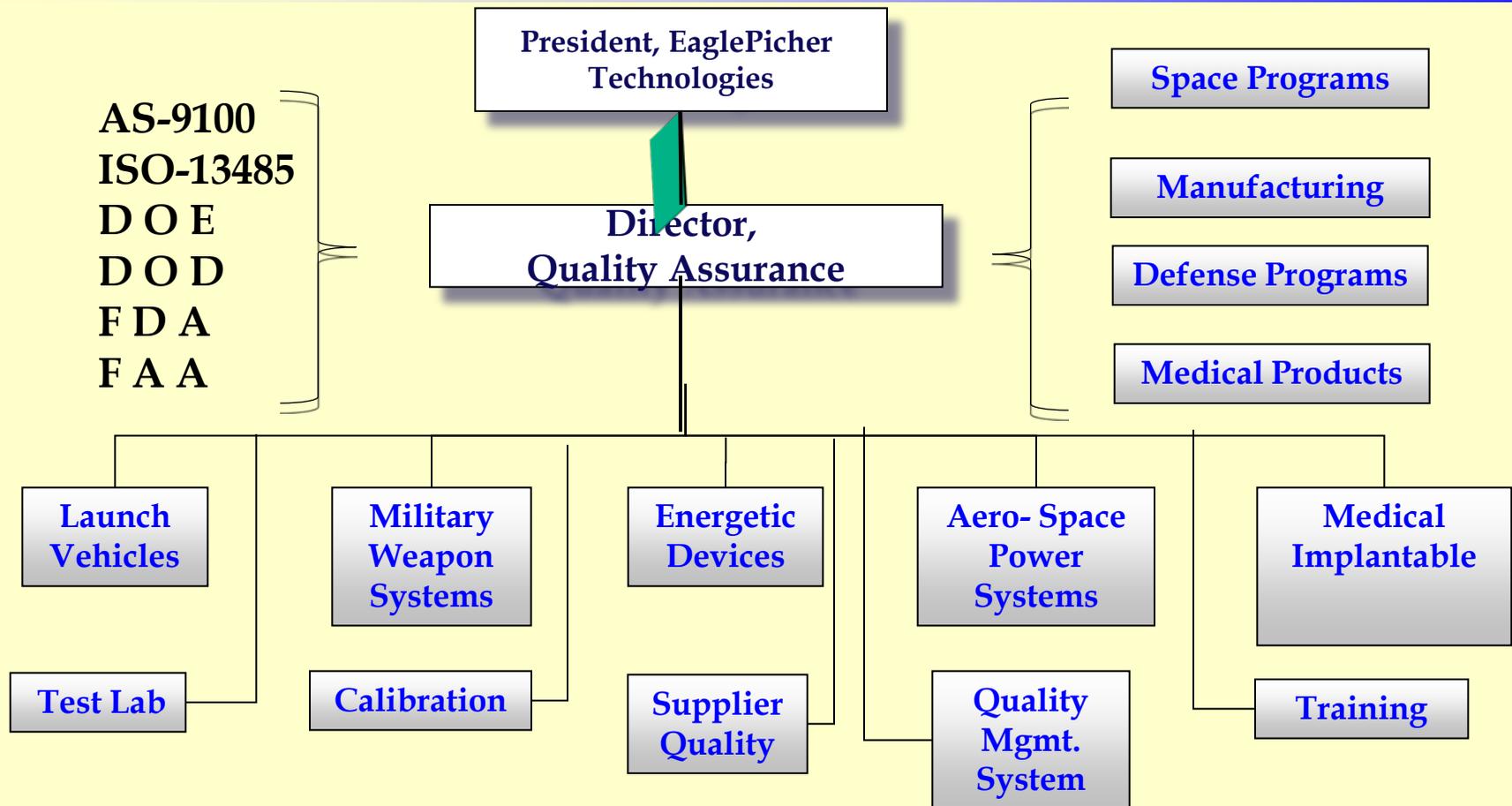


[www.eaglepicher.com](http://www.eaglepicher.com)



Jan 2007

World's Smallest Medical Implantable Battery



Approx 800 employees, 9 sites in 3 States and Canada  
What we thought was.....

The challenge for a consistent & healthy Quality System was  
**diversity** of Customers and **complexity** of products.

MDA & DCMA Level 3 CAR to EPT in Feb 2004

**Systemic Quality Issues.**

**Joint Industry Team from multiple entities including:**

- **Missile Defense Agency**
- **Industry Team Stakeholders:**
  - **Orbital Sciences**
  - **Boeing**
  - **Lockheed Martin**
  - **DCMA**
  - **Raytheon**

**The challenge for a healthy Quality System**

**....the need for a robust internal QMS that is compliant to the Standards,  
consistent across the Enterprise  
and clearly communicated to the Customer.**

## INDUSTRY TEAM MISSION

Review EP historical data 2-3 yrs of previous audits.

- Material non-conformance,
- Process non-compliance,
- Product failures, internal & external.

Company, product or program was irrelevant.

Primary review questions:

- Are there common or repeated deficiencies?
- Is there a methodology to evaluate changes?
- Documented structure for RC and CA ?
- Do metrics exist to demonstrate effective RC/CA efforts ?

## Common or Systemic Areas

- **Process Discipline**
- **Technical Data Package**
- **Training**
- **Root Cause**
- **Corrective Action**

Summary of Audits

Audit	Findings	C/A Plans	Opportunity for Improvement	Positive Observations
Nov 04 & Feb 05 <b>QMS</b>	24	<b>88</b>	32	0
July 05 – <b>Process Audit</b>	<b>47</b>	<b>71</b>	39	6

Same level of effort for each audit

- **Reality Check:** Goals were not getting accomplished because lack of focus:

Incomplete RC/CA activities	Very limited objective evidence of <u>analysis</u> or <u>implementation</u> or <u>training</u> .
Poor planning toward an evaluation of effectiveness	Not looking ahead to how we and the customer could <u>evaluate</u> the changes.
Inconsistent approach to determine a solution	How did we arrive here? 5-why, Fishbone, Fault-tree
Missing information to support problem closure	No internal structure with specific expectations and requirements for information flow to the customer. CAOFD

## **Keystone outcomes:**

Documented Guidelines in our QMS

- Objective Evidence of R/C analysis required.
- Specific Directions and Requirements for reviews.
  
- The Corrective Action connected to RC.
- Objective Evidence of CA implementation.
  
- Verification plan linked to CA + RC.
  
- RC/CA training required for all RC/CA owners.

Acknowledged that:

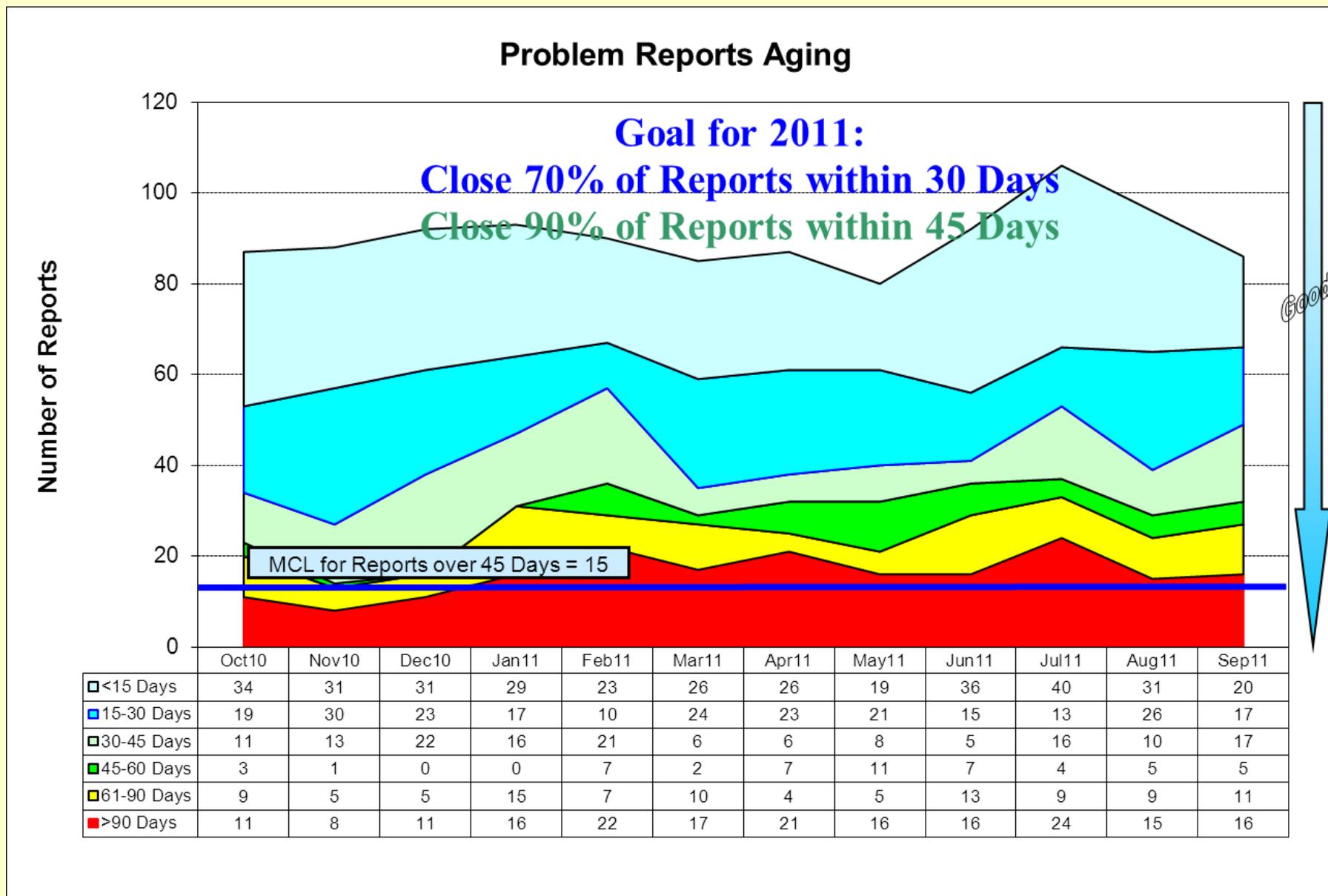
Appropriate communication with Customer may evolve to a  
**“healthy discord”**.

Focus on:

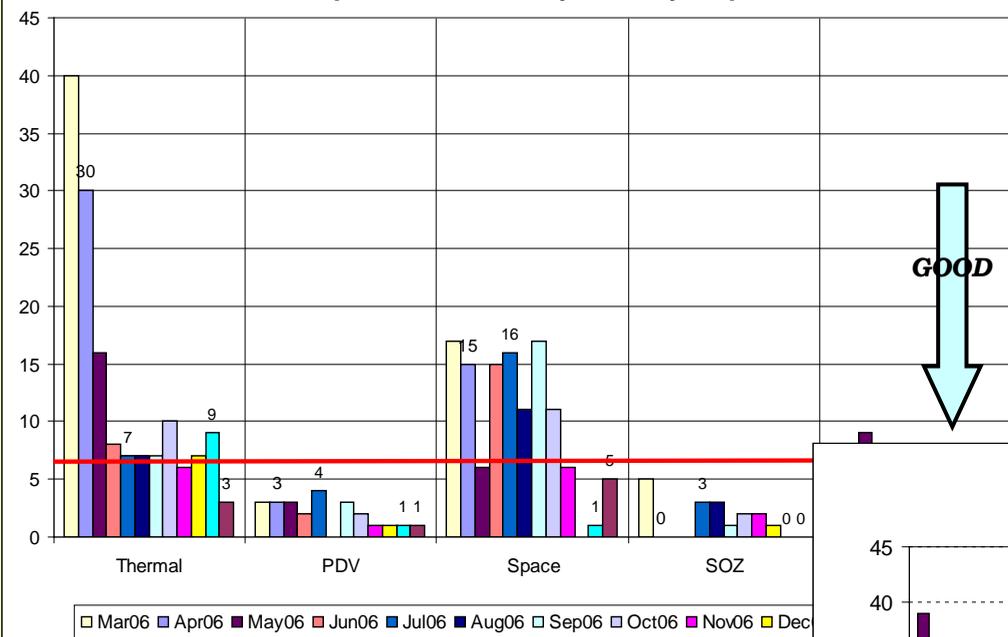
The **integrity** of our Quality data to support of the Customer.

- **Problem Reports – Aging**
- **Root Cause Accuracy**
- **Corrective Action Completeness**





Problem Reports Over 60 Days Old by Department



PR's sorted by *Battery Group*

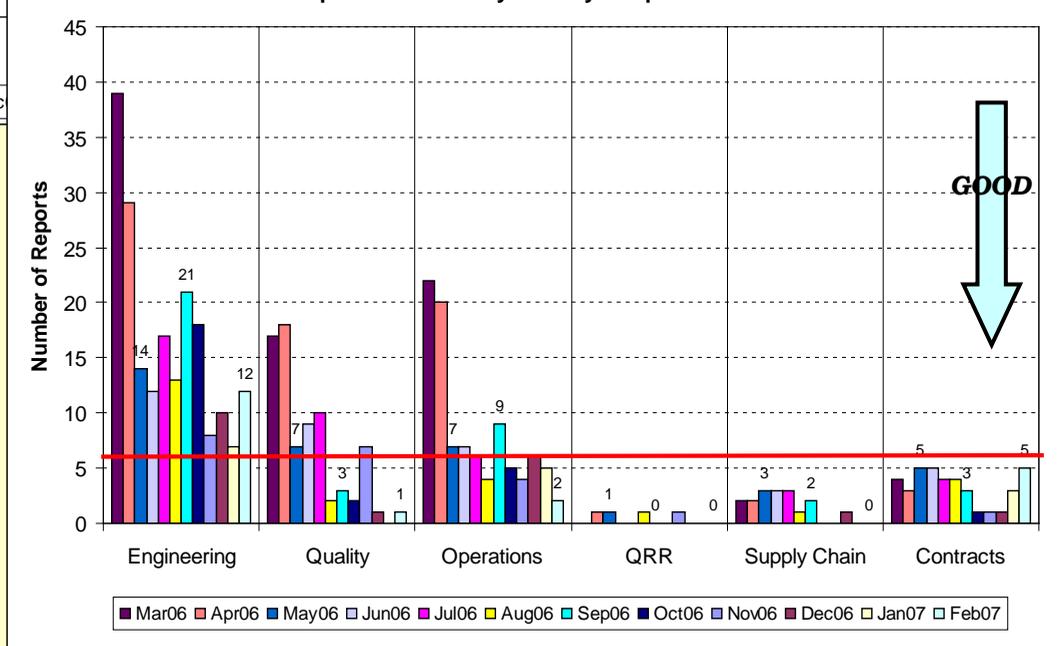


GOOD

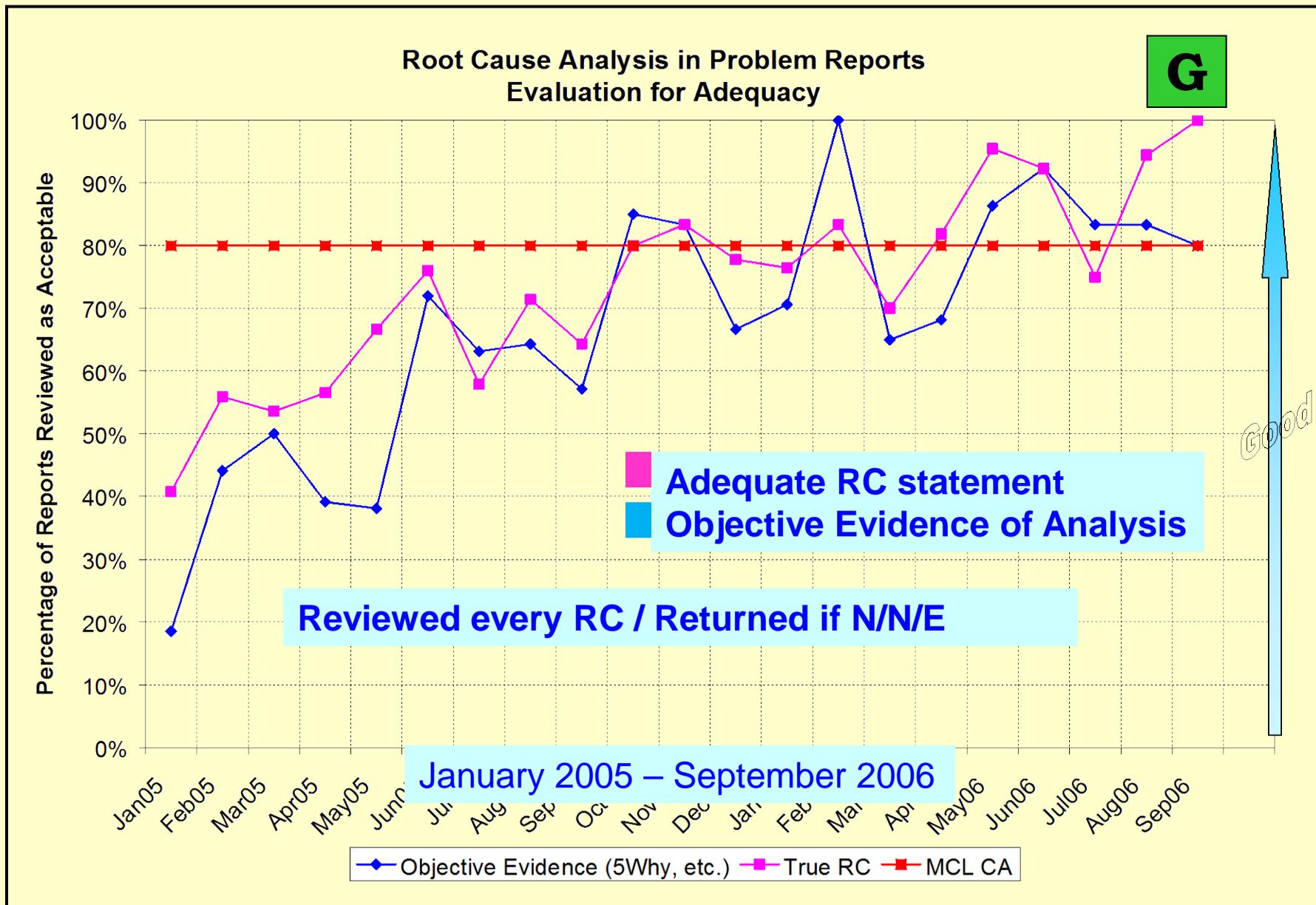
PR's sorted by *Functional Group*



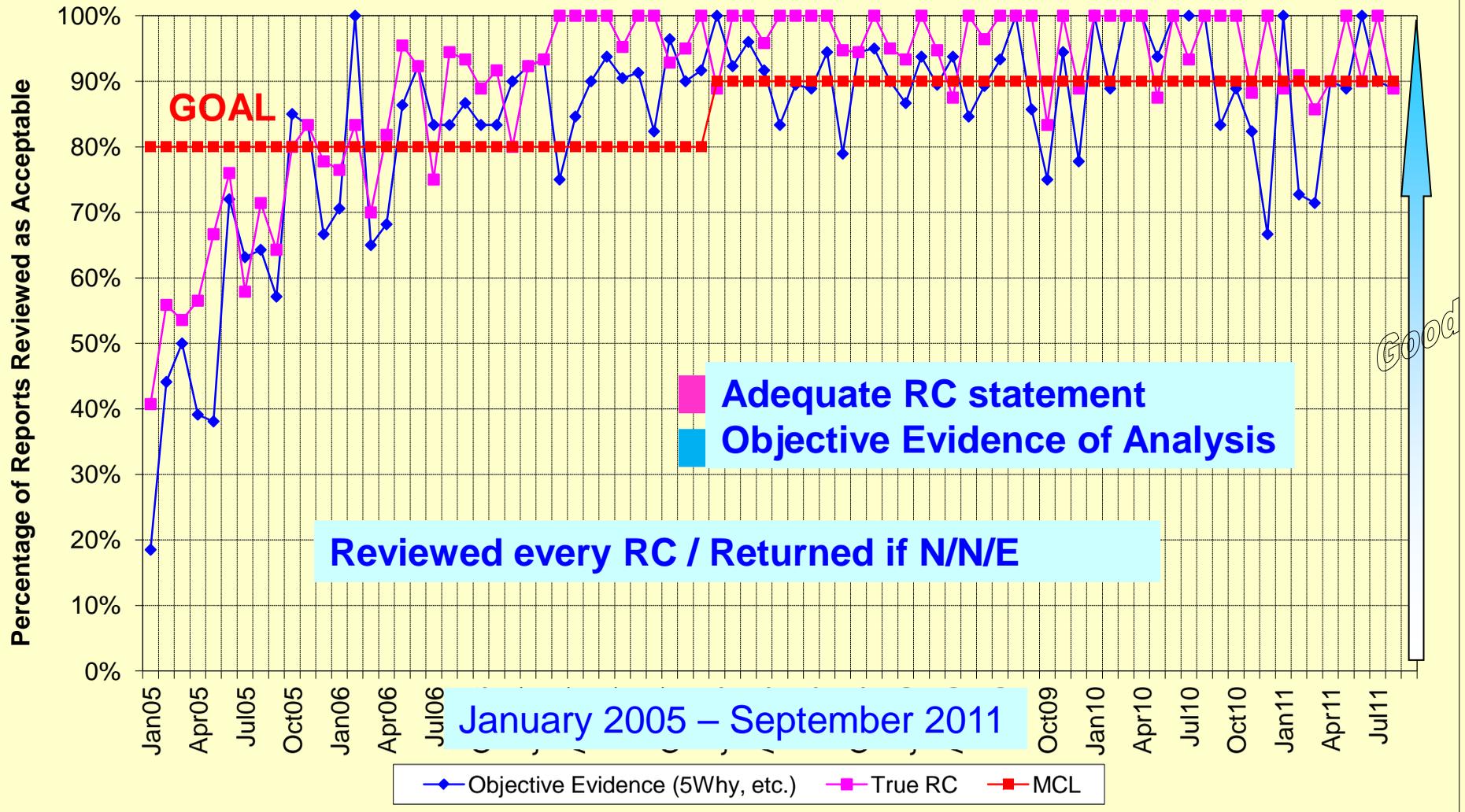
Problem Reports  
Reports over 60 Days Old by Responsible Area

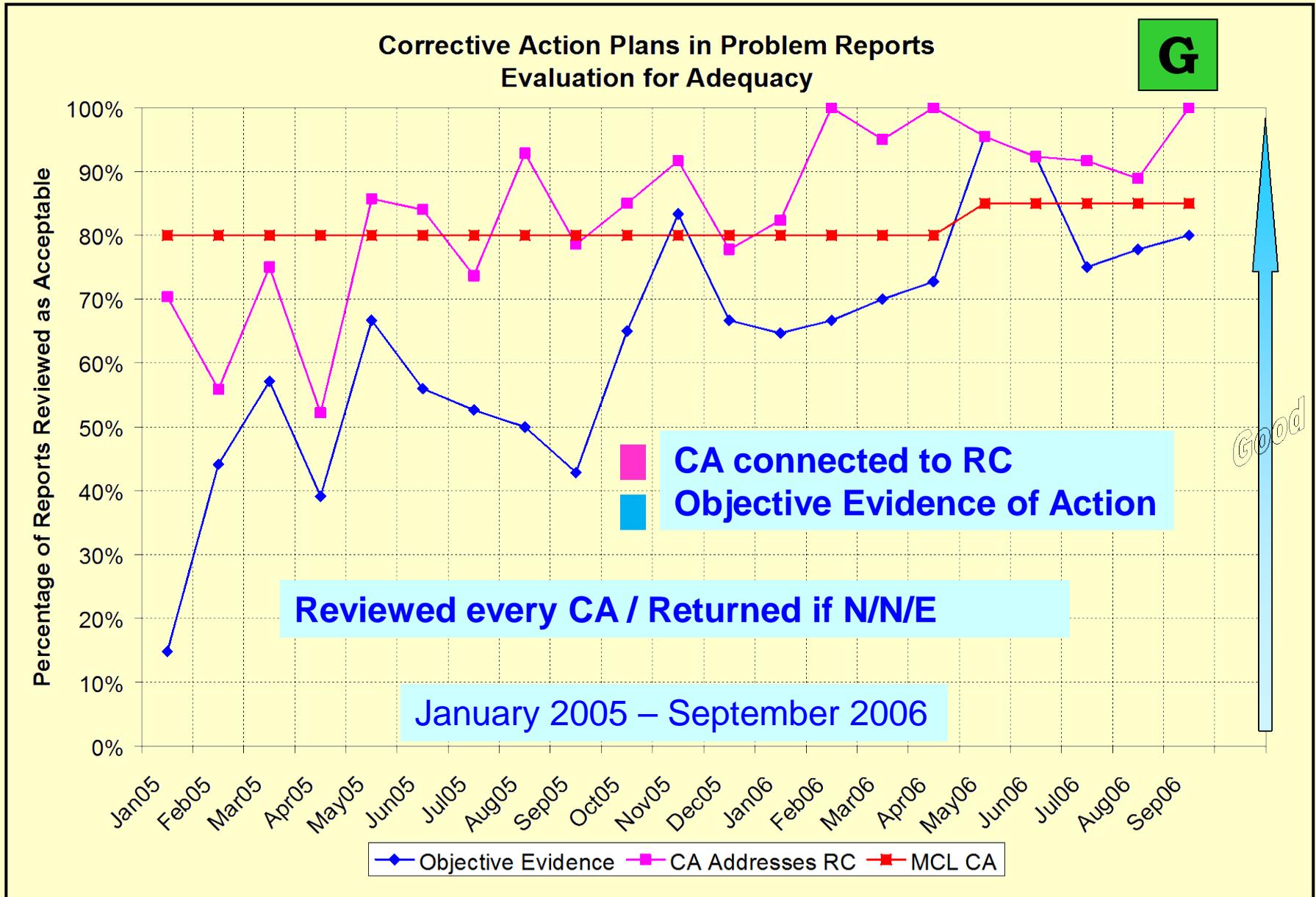


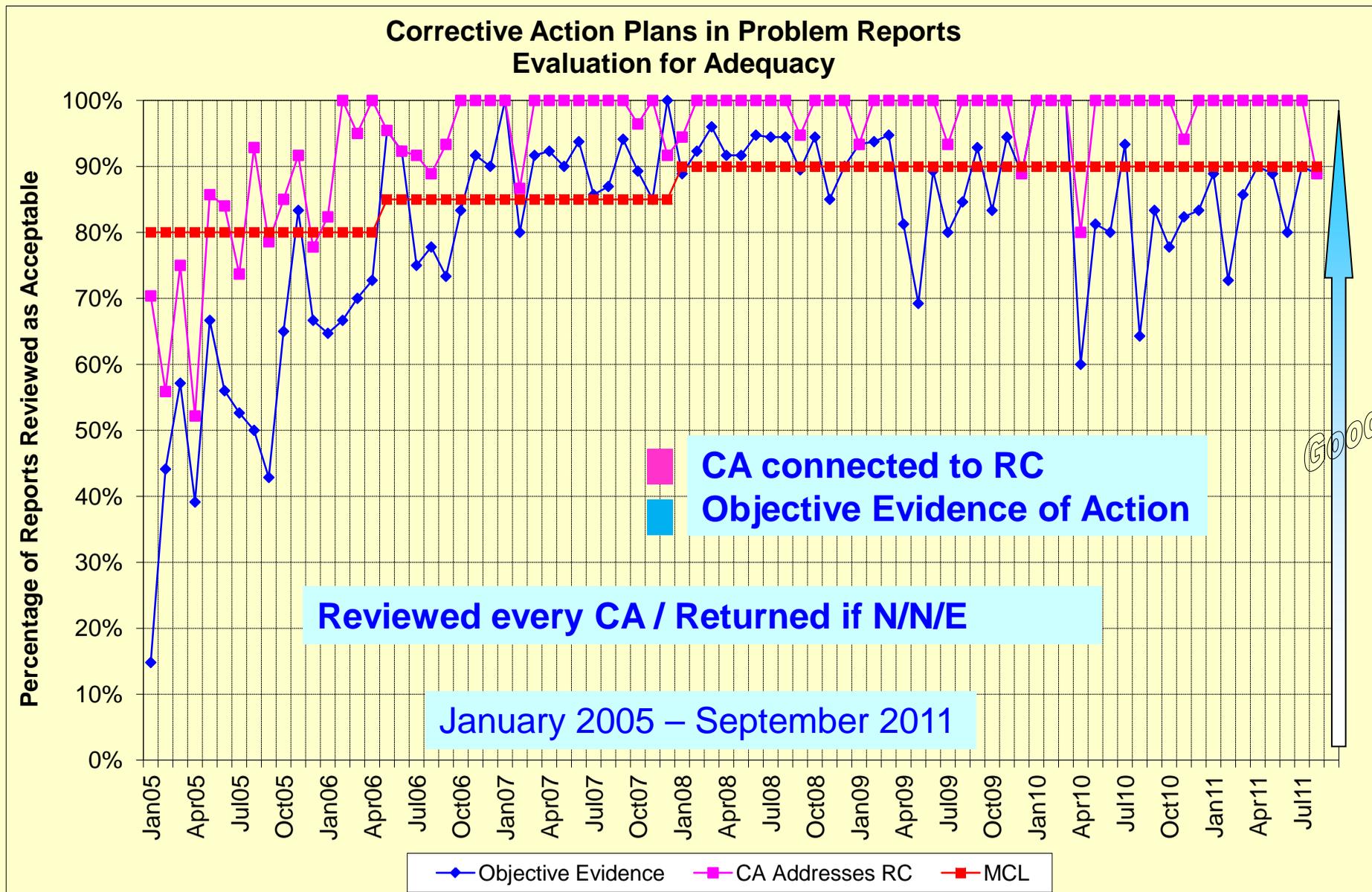
GOOD



Root Cause Analysis in Problem Reports  
Evaluation for Adequacy







Established a **“One Company”** set of metrics

Quality metrics => Enterprise Balanced Score Card

Adopted the philosophy of expectations:

**Knowledge -> Responsibility -> Accountability**

Roles – Responsibility – Actions – Accountability

Acknowledged that:

Appropriate communication with Customer may evolve to a  
**“healthy discord”**.

Focus on:

The **integrity** of our Quality data to support of the Customer.

**Customer on-site process checks are OK, any time.**

# **SUMMARY**

## **Lessons Learned**

### **As a Supplier looking at Audits from a Customers' Perspective**

- **We don't always “color inside the lines”, but we better have data to know who, when, where and why things did or did not happen and how it's going to get fixed.**

# Questions & Answers