

# A PEOPLE-FOCUSED APPROACH TO QUALITY

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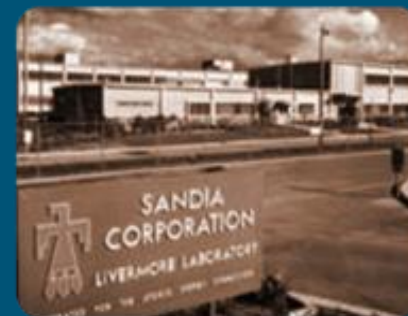
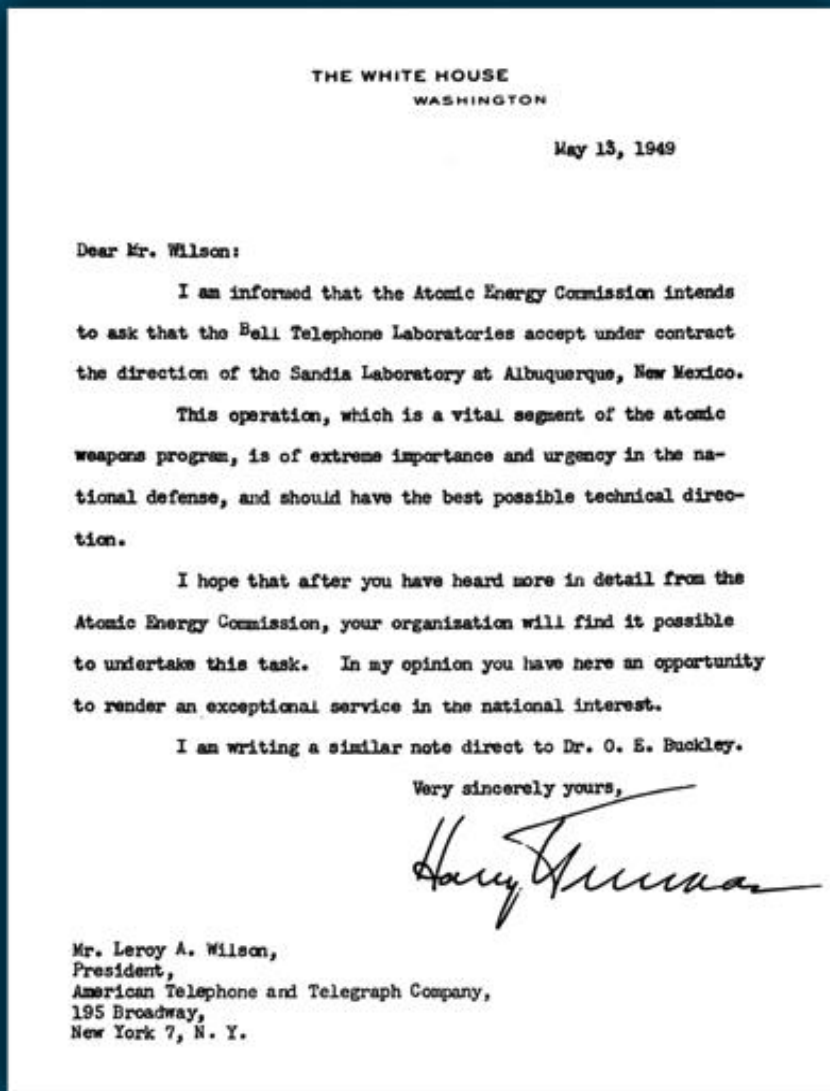


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- Sandia's History
- The Quality Assurance Challenge
- Traditional Tenets
- The New Environment
- A Role for the Quality Organization
- Results



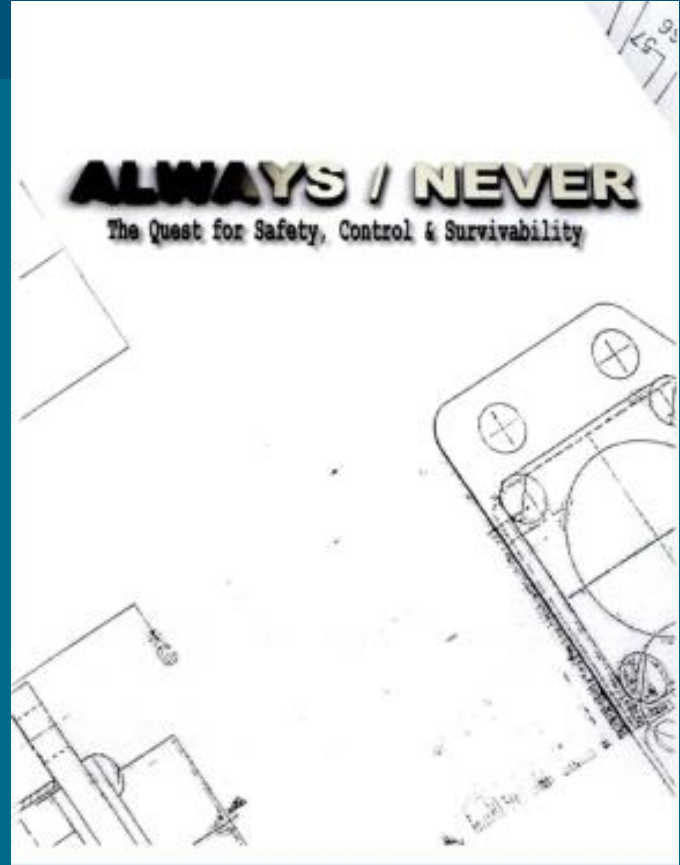


## The Garaged Mustang

An analogy for the quality assurance challenge faced in high consequence engineering



# AN ADDITIONAL QUALITY ASSURANCE CHALLENGE



# SIMILAR QUALITY ASSURANCE CHALLENGES?



# HISTORY OF QUALITY AT SANDIA



1945  
Z Division  
(Los Alamos)

1949  
Quality  
Inspection

1954  
QC-1

1960's  
Statistical  
Quality Control

1980-1990's  
Design Assurance

2004  
Lean/Six Sigma

2013  
NAP-24

**DOE/NNSA  
WEAPON QUALITY POLICY (QC-1)**

The purpose of this document, Weapon Quality Policy (QC-1), is to establish the Quality Management System for Nuclear Weapons Complex weapon activities.

The requirements in this document (along with other weapon quality requirements contained in contractual documents) represent the quality requirements for NNSA and its contractors for work in any weapon life-cycle phase unless specifically exempted by NNSA NA-10, Defense Programs.

This document supersedes QC-1, Revision 9, dated February 5, 1996.

Dr. Everett H. Beckner  
Deputy Administrator for  
Defense Programs,  
NNSA

Date: 02/10/2004 Page: 1 OF 29



NNSA POLICY LETTER  
NAP-24  
Approved: 6-20-13

**WEAPON QUALITY POLICY**



**NATIONAL NUCLEAR SECURITY ADMINISTRATION  
Office of Defense Programs**

AVAILABLE ONLINE AT:  
<http://hq.nsa.gov>

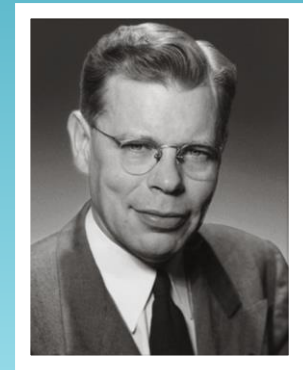
INITIATED BY:  
Weapon Quality Division



Sandians assembling electronics during the 1950s.



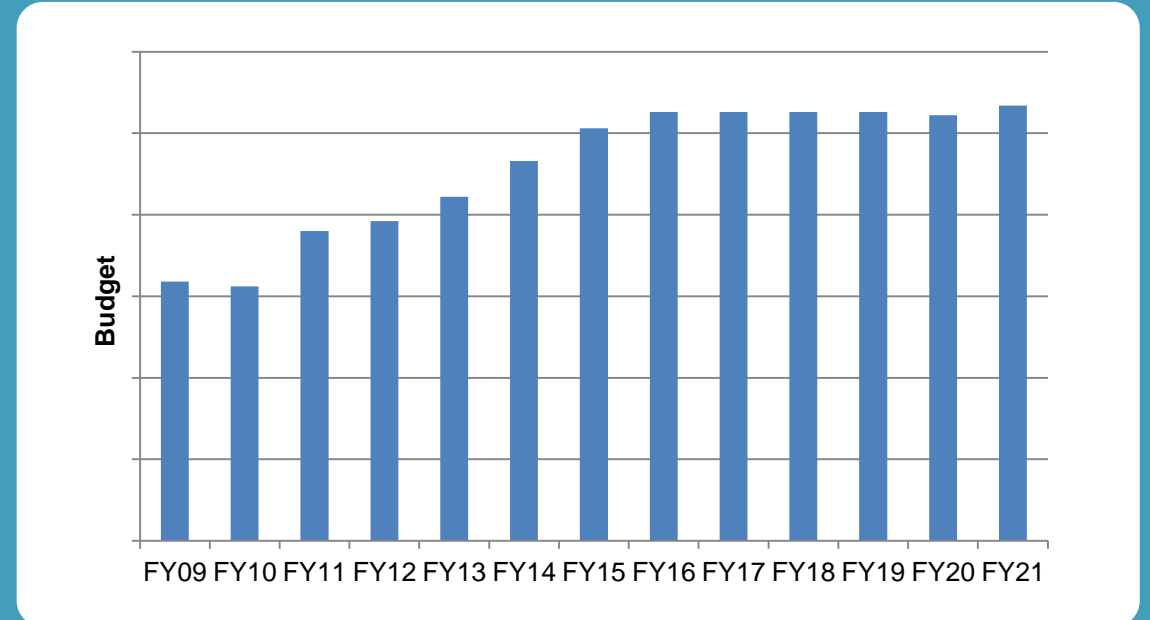
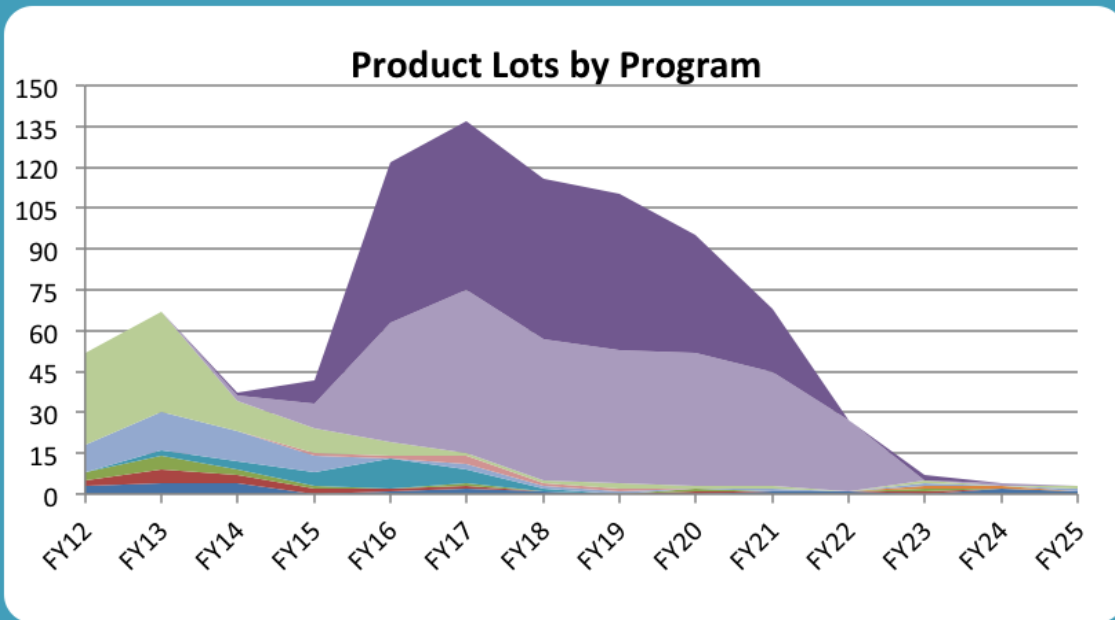
# RELIANT ON PEOPLE TO ASSURE QUALITY



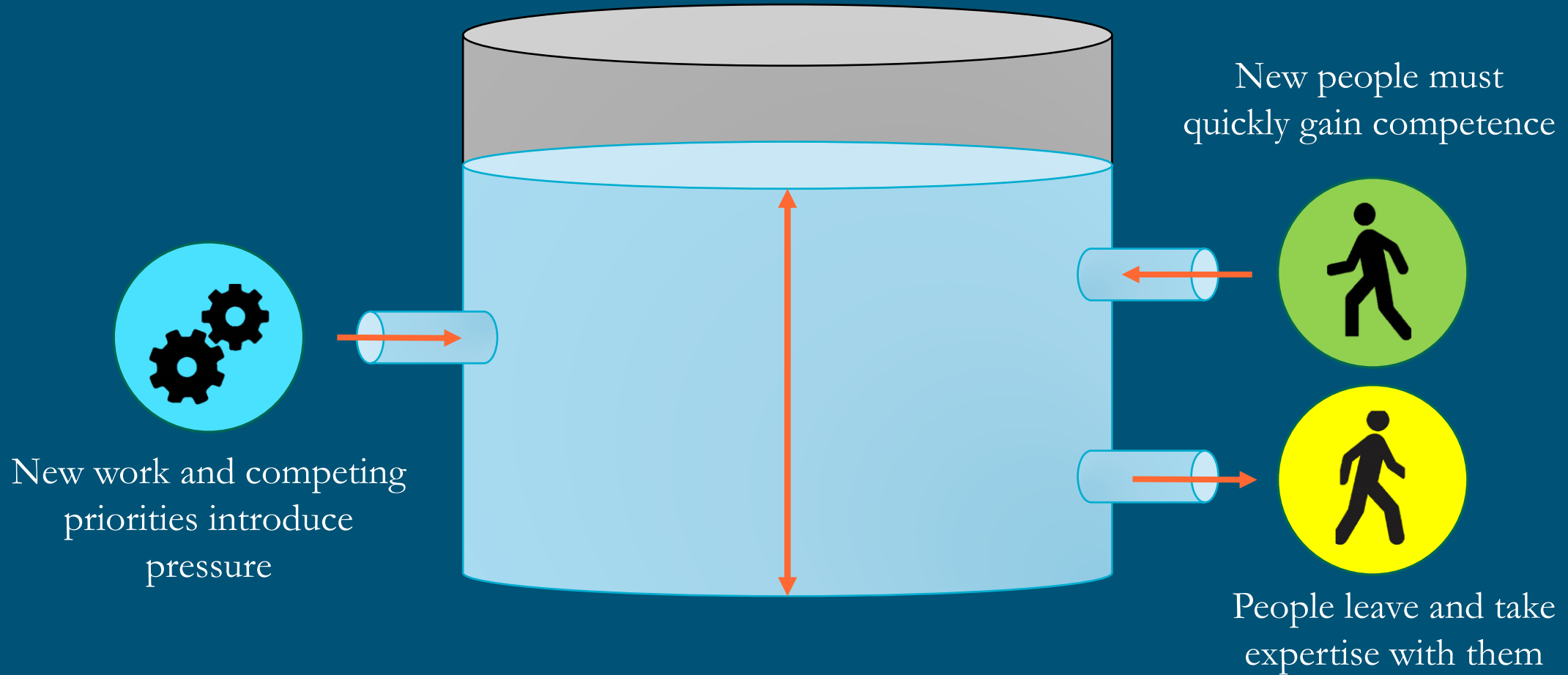




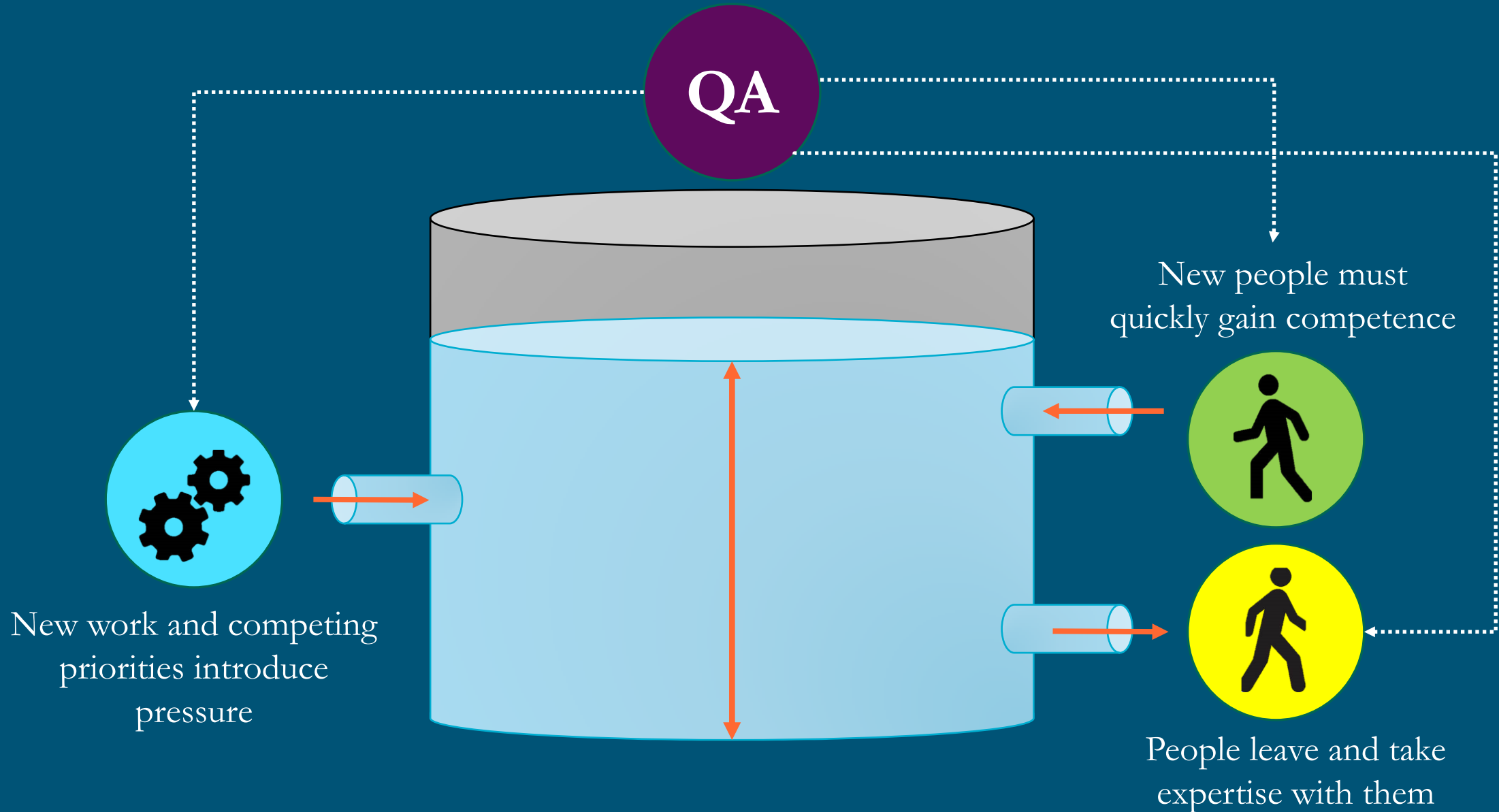
- Attrition and hiring
- Increasing workload
- Competing program priorities



# QUALITY ASSURANCE AT RISK



# A ROLE FOR THE QUALITY ORGANIZATION



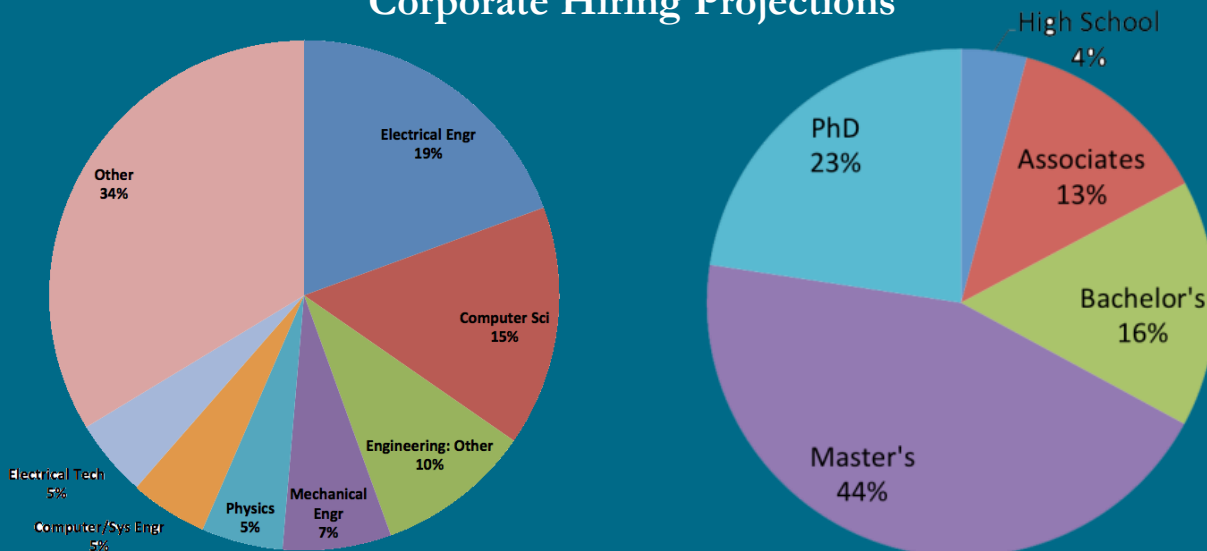
# I. STREAMLINE THE HIRING PROCESS



**Goal:** Efficiently hire quality engineers with credentials on par with project teams

**Result:** Streamlined processes were developed and used

Corporate Hiring Projections



Total Applicants 4/12 – 2/13	Screened Applicants	Selected for Interview	Offers Extended
773	137	55	41

Surety Assessment, Engineering, and Analysis Center Procedure		
Procedure Name: SAEA Center Hiring Process	Status: Released	
Identification Number: CAP-107	Issue: B	
Owner: J. Rick Fellerhoff, Director	Issue Date: March 26, 2012	
Author: Ramona Cordova	Last Self-Assessment Date: March 26, 2012	
CHANGE HISTORY		
Issue	Change Description	Issue Date
A	Initial Release <i>JR Fellerhoff</i>	08/01/11
B	Center Records Administrator performed Annual Review. Updated to current format, recent Center name changes.	03/26/12
<b>Overview:</b> In order to have consistency within the Surety Assessment, Engineering, and Analysis (SAEA) Center, there is a need to have a single hiring process for the Center. This is mainly due to some confusion on process, points of contact, etc.		
<b>Applicability:</b> All Managers, Persons of Interest (POI), Administrative, Staffing Support will follow this Process.		
<b>Procedure Inputs:</b>		
<ul style="list-style-type: none"> <li>Checklists and Tools created at Kaizen Event</li> <li>Current Process Procedure</li> <li>Customer information</li> <li>Vision and Objectives</li> </ul>		
<b>Procedure Outputs:</b>		
<ul style="list-style-type: none"> <li>A Lean Process to identify and hire qualified Candidates to meet SAEA Center's staffing needs.</li> <li>A Procedure with defined Roles and Responsibilities.</li> <li>A single repository such as SharePoint site to house all required/pertinent documentation.</li> <li>Ability to measure the effectiveness of Staffing Process</li> </ul>		

## 2. RAPID ONBOARDING




**Goal:** Provide a quick-start to new hires

**Result:** “Boot-camp” developed and rolled out to quality engineers



**NQT007**  
**The QE Primer**

A Staffer's Introduction to  
Quality Engineering at Sandia

 **NQT** February 2013  
National Security Quality  
Training Program

### 3. ENGAGE AND INFORM CUSTOMERS



**Goal:** Establish clear lines of communication and proactively engage customers of the quality organization

**Results:** Developed zipper plans, work agreements, and monthly quality reports



All customers on management zipper plans

Majority of quality engineer support documented in work agreements

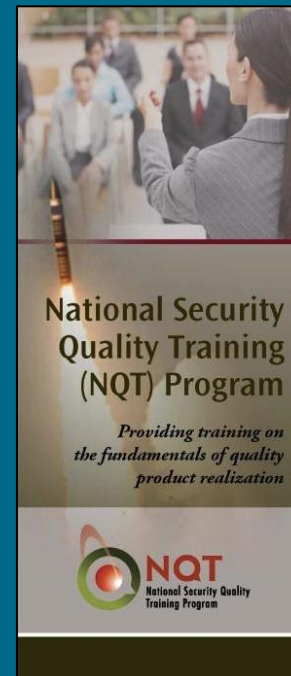
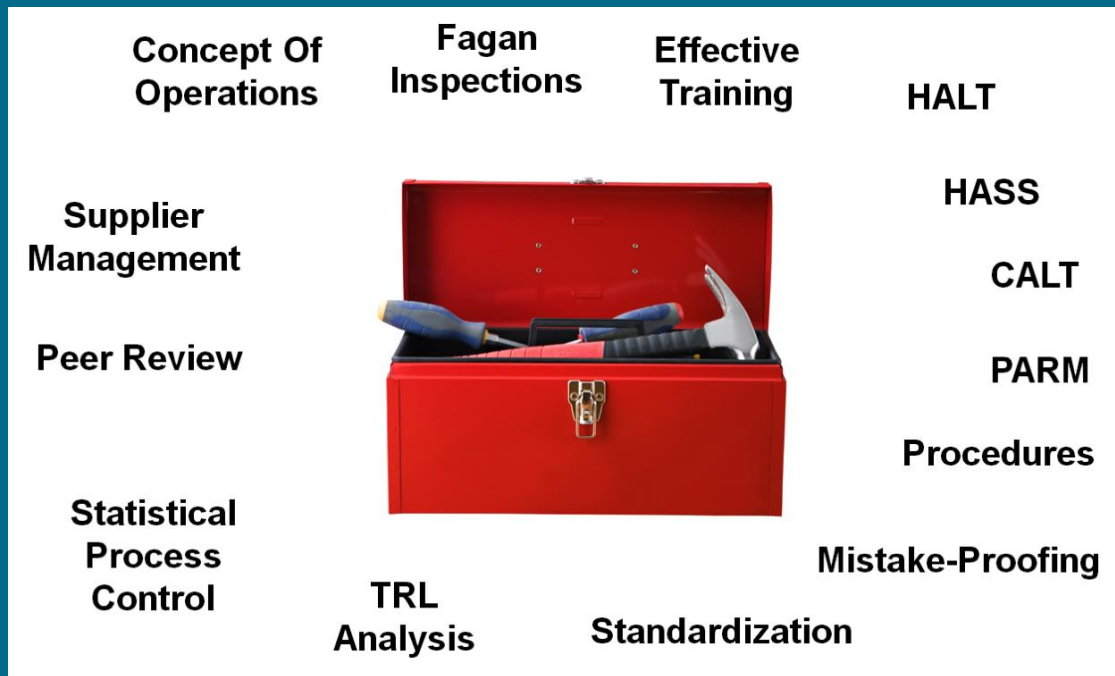
Major programs receive monthly state of quality reports

## 4. BUILD COMPETENCY



**Goal:** Provide training on engineering processes and preventive quality

**Result:** Developed and deployed a corporate-wide “quality” training program



### A Strategy for Prevention at Every Phase of the Product Realization Process

- |                        |   |
|------------------------|---|
| Requirements           | <ul style="list-style-type: none"> <li>▶ <b>NQT101 - Requirements Traceability</b><br/>Prevents ill-formed requirements</li> <li>▶ <b>NQT102 - Fagan Inspections</b><br/>Detects inconsistent, ambiguous, or misplaced requirements</li> </ul>  |
| Design and Development | <ul style="list-style-type: none"> <li>▶ <b>NQT5xx - Accelerated Testing and Other Preventive Methods</b><br/>Detects design, supply chain, and manufacturing defects through best practice engineering techniques</li> <li>▶ <b>NQT600 - Mistake-proofing</b><br/>Prevents manufacturing and assembly mistakes</li> <li>▶ <b>NQT800 - Supplier Quality</b><br/>Prevents supplier quality issues</li> <li>▶ <b>NQT400 &amp; 401 - Product Qualification</b><br/>Prevents common pitfalls in nuclear weapon qualification</li> </ul> |
| Production             | <ul style="list-style-type: none"> <li>▶ <b>NQT200 - Product Acceptance</b><br/>Detects inconsistencies between as-built product, design definition, and the supplier contract</li> </ul>   |



- As in high-consequence engineering organizations, quality assurance models are often heavily dependent on staff competency,
- Competency-dependent quality assurance models are at risk when the environment changes,
- Risks in a competency-dependent culture can be mitigated through changes to hiring, training, and customer engagement approaches,
- Quality organizations can mitigate risks in people-dependent assurance models by driving changes that benefit all departments.





THANK YOU

