A Practical Application of the Non-Advocate Review

Bruce Nishime
C-17: A High Performance Program

**Meeting Our Commitments**

- Excellent Quality
- Ahead of Schedule
- On Price
- 180 Aircraft Program

**Meeting Our Commitments**

- 138 USAF Aircraft - 6 Bases
- Worldwide Operations
- Best Fleet Reliability
- 4 UK C-17s Delivered

Over 898,750 Flight Hours!
USAF Fleet – 872,885  UK Fleet – 23,085
CC--17 Awards

2001 ISO9001-2000 / AS9100A Certification

1994 Collier Award

1996 California Quality Award

1998 Malcolm Baldrige National Quality Award

2001 UK MOD Smart Acquisition Award

2002 California Awards for Performance Excellence (Gold & Silver)

2002 IW Winner: Top 10 Best Plants

2003 Missouri State Quality Award

2003 Georgia Oglethorpe Award

SEI Standard Level 5

2003 Governor's Award for Performance Excellence

2003 Governor's Award for Performance Excellence
Quality Journey

- **Malcolm Baldrige Win**
  - Quest for Excellence and speaking engagements

- **Best Practice Exchange**
  - Deployment of best practices to new site tenants

- **Industry Week Top 25 Finalist**
  - Incorporation of high-leverage actions into strategic planning

- **Industry Week Top 10 Finalist**
  - Trained Examiners developed in-house

- **Internal Assessment**

- **CAPE* Applicant**
  - Use CAPE feedback to improve using internal Examiners

- **ISO**

- **CMMI**

- **CCE Team Excellence Applicant**

*CAPE = California Awards for Performance Excellence*
Issue

- Requirements verification/validation occurring late in development life cycle
  - Higher costs
  - Schedule delays
Solution

- Utilize Non-advocate Review Team to:
  - Perform root cause
  - Identify areas for improvement
  - Make recommendations based on diverse corporate knowledge from multiple programs
Definitions

- Independent Assessment - An impartial and in-depth analysis of a major issue or key milestone event performed by an Independent Assessment Review Team

- Non-Advocates: Subject Matter Experts (SMEs) from any of the following groups
  - Boeing non-program employees
  - Outside consultants
  - Industry SME
  - Fellows
  - Non-program related customers
  - Third party examiners
NAR Process

- Identify non-advocate team
- Define scope of review
- Data collection
- Analyze data
- Develop final report/outbrief
C-17 Application of NAR Process
Identify Non-advocate Team

- Selected from local site tenants
  - B-1B, C-130 AMP, C-17
- Utilized pool of Technical Fellows
  - Boeing recognized technical experts in various skills (i.e. Systems Engineering, Communications)
- Select chairperson
  - B-1B Chief Engineer
Define Scope of Review

- Software Development process
- Systems Engineering process
- Validation and Verification process
- Project Management
Expectations

- Identified expectations of upper management
  - Process issues
  - Improvement opportunities
  - Lessons learned
  - Recommendations
Resources Required

- Data
- Access to project personnel
- War Room - Facilities
- NAR Team availability and schedule
Data Collection

- **Documentation**
  - Deliverable
  - Non-deliverable (Engineering Notes)
  - Software Development Folders (SDF)

- **Interviews**
  - Engineers, Managers, Project managers
  - Customers
  - Suppliers
Analyze Data

- Lack of process compliance
- Lessons learned
- Process improvement
- Lean engineering opportunity
Develop Final Report/Outbrief

- Summarize issues
- Provide recommendations
  - Near-term
  - Long-term