Assessment of Naval Aviation Maintenance Safety Climate

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Trends in Naval Aviation

- Aircraft Procurement: Quantity & Rate
- Aircraft Aging, Postponed Maintenance
- Increased Maintenance Requirements
- Greater Demands on Maintenance Personnel

Expanded Focus on Maintenance Operations
Human Factors Quality Management Board
Aviation Maintenance Working Group

Three-Prong Approach:

1. **Human Error Analysis**
   - Adopted a Maintenance Extension of the Human Factors Analysis & Classification System for Investigating, Reporting, & Analyzing Mishaps

2. **Best Practices Benchmarking**
   - Adapted Crew Resource Management Training to form Maintenance Resource Management (MRM) to Enhance Teamwork & Hazard Awareness

3. **Safety Climate Assessment**
   - Developed On-Line Maintenance Climate Assessment Survey (MCAS) to Proactively Assess Maintenance Operations
MCAS Purpose:
Provide for the proactive measurement of an organization’s ability to safely conduct aviation maintenance in terms of unit leadership, culture, policies, standards, procedures, and practices.
High Reliability Organizations

**HROs** -- Organizations have less than their “fair share” of failures despite:

- managing complex & demanding technologies
- meeting peak requirements & time pressures
- routinely handling significant risks & hazards
- executing dynamic/intensely interactive tasks

(Roberts, 1990)

**HRO Model Components:**

- Process Auditing
- Reward System
- Quality Assurance
- Risk Management
- Command & Control
- Functional Relationships
-- On-line Diagnostic Tool
  -- Based on HRO Theory
    -- Designed for Maintenance Personnel
      -- Focuses on Key Maintenance Issues
        -- Results are Confidential (Password Protected)
          -- Data Available in Aggregate Database
            -- Can Compare Your Data with Other Data
The following survey is a SAMPLE. No actual responses will be recorded.

1. The NADEP adequately reviews and updates safety procedures.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree
   - N/A
   - Don’t Know

2. The chain of command monitors artisan qualifications and has a program that targets training deficiencies.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree
   - N/A
   - Don’t Know

3. Supervisors use safety and medical staff to identify/manage personnel at risk.
   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree
   - N/A
   - Don’t Know

   - Strongly Disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly Agree
   - N/A
   - Don’t Know

5. Tool Control and support equipment licensing are closely monitored.

Closed-ended Items

Open-ended Items
Closed-ended Survey Item Responses

The NADEP has a reputation for quality maintenance and set standards to maintain quality. (QA)

Legend
BLUE ■: ACTIVITY n=78, mean=3.9, SD=0.6

Open-ended Survey Item Responses

7. INADEQUATELY TRAINED PERSONNEL WHO HAVE MADE SOME TYPE OF STUPID MISTAKE. THEY'RE EXPLANATION WILL BE, "NOBODY TOLD ME ABOUT THAT."

8. marginal quality parts and marginal quality workshop. Also, extended our of overtime adversely affects quality.

9. [no comment]

10. excessive paperwork oversight or a tracking error in hours remaining on a component/mbra that has a poor method of serialization-present balance problem is the current exception

11. [no comment]

Item 44:
The next quality defect will be caused by... (200 words max.) (QA)

Select A Comparison Mode:
- Aircraft Category
- Aircraft Community
- Aircraft Model
HRO and Risk Management

HAZARDS

IDEAL

Potential Loss

Actual
A Management Tool to ID & Fill “the Holes”

- ID Potential Issues (Hazards)
- Risk Assessment/Prioritization
- Target Potential Risk Risk Areas
- Safety Performance Metric

- How close are we to an HRO?
So ... where are we?

Over 47,000 MCAS survey responses in the data base!

Over 500 Aviation Units Surveyed!

... that equates to over 2.4 million data points!

As of 20 Oct 03
MCAS Observations (n = 45,000)

✓ 61% of survey participants responded favorably to:
   “Peer influence discourages SOP, NAMP, or other violations and individuals feel free to report them.”

✓ 48% of survey participants responded favorably to:
   “The command recognizes individual safety achievement through rewards and incentives.”

Note: “responded favorably” indicates an “Agree” or “Strongly Agree” response.
MCAS Observations

(n = 45,000)

✓ 50% of survey participants responded favorably to:
   “Good communication exists up/down the chain of command.”

✓ 68% of survey participants responded favorably to:
   “My command has effective pass-down between shifts.”

Note: “responded favorably” indicates an “Agree” or “Strongly Agree” response.
MCAS Highlights

**Areas of Interest:**

- Cutting corners
- Recognizing safety achievement
- Communications
- Pass-down between shifts
Command Safety Assessment (CSA):
A complementary safety climate survey process designed for aircrew that measures an organization’s ability to safely conduct flight operations in terms of leadership, culture, policies, standards, procedures, and practices.
Relationships to Other Proactive Human Factors Tools . . . .

Data Triangulation
Questions?

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