NASA’s Journey to Safety Culture

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Work in the public sector? Want to become more involved?
Do you want to participate on our committee, or join our volunteer list?

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Outline

• NASA – Who, where and what?
• Our History
• The Beginning
• Safety Culture Program
  • NASA Safety Culture 5-Factor Model
  • Safety Culture Survey
  • Safety Culture Training
• For Example - Safety Culture at Ames Research Center
• 10 Years Later
NASA – Who Are We?

NASA Shared Services Center

- Glenn Research Center
  - Plum Brook Station
- Software Independent Verification and Validation (IV&V) Facility (GSFC)
- Goddard Institute for Space Studies
- Goddard Space Flight Center
- Wallops Flight Facility (GSFC)
- NASA Headquarters
  - Langley Research Center
  - Marshall Space Flight Center
  - Kennedy Space Center
  - Stennis Space Center
  - Michoud Assembly Facility (MSFC)

- Ames Research Center
- Vandenberg Air Force Base (KSC)
- Jet Propulsion Laboratory
- Armstrong Flight Research Center
- White Sands Test Facility (JSC)
- Johnson Space Center

SAFETY 2019
Our History – Many successes
The Beginning

- Columbia Accident Investigation Board (CAIB) Report
  - Two Root Causes: Technical and Organizational
  - Section 7 of the report discusses the Organizational Causes related to the Mishap
  - Section 7.4 – Organizational Causes: A Broken Safety Culture

- The Safety Culture Work Group (SCWG)
  - The SCWG was created to assess the current status of the Agency’s Safety Culture and to address any concerns at the Centers.
  - The NASA Safety Culture Program Manager leads the group. There is representation from every Center, each technical authority (OSMA, OCHMO, and OCE) and related areas, like Risk Management.
The SCWG reviewed all safety culture models that existed at the time.

James Reason’s Safety Culture Model

- James Reason, a noted scholar in organization management theory, described safety culture as basically an “informed culture” created by the interaction of four subcomponents: a reporting culture, just culture, flexible culture, and learning culture.

- Reason’s notion of safety culture has taken root and is used, for example, in the Joint Planning and Development Office’s (JPDO’s) implementation plan for the Next Generation Air Transport System (NextGen). JPDO also used these concepts of a healthy safety culture in the Safety Culture Improvement Resource Guide.
NASA Safety Culture Model

• Reporting Culture: We report our concerns.
• Just Culture: We have a sense of fairness.
• Flexible Culture: We change to meet new demands.
• Learning Culture: We learn from our successes and mistakes
• Engaged Culture: Everyone does their part. *
NASA Safety Culture Survey

- A short survey based on the NASA Model
- Anonymous survey
- Collect Demographic data
  - Affiliation – CS, Contractor, DoD, Tenants
  - Organization
  - Occupation
  - Level
  - Years of Service
- General questions (22)
  - Likert scale – 6 level with space to add comments
- Center Specific Questions
  - Generally Open ended questions
NASA Safety Culture Survey - Questions

- Please rate your immediate work area with respect to its Reporting Culture.
  - I know how to report safety concerns.
  - People are encouraged to report safety concerns.
  - Reported safety concerns are addressed at my Center.

- Please rate your immediate work area with respect to its Just Culture.
  - I am comfortable discussing unsafe conditions without fear of reprisal.
  - People are recognized for their contributions to safety.
  - Appropriate action is taken when safety rules are not followed.

- Please rate your immediate work area with respect to its Flexible Culture.
  - My CENTER uses information from past experiences to improve safety (new)
  - People in our organization manage change well.
  - Processes change to improve safety at my Center.

- Please rate your immediate work area with respect to its Learning Culture.
  - We learn from our successes and our failures.
  - People at my CENTER actively share safety information from past experiences.
  - Employees in my work area share knowledge with each other.

- Please rate your immediate work area with respect to its Engaged Culture.
  - I share responsibility for improving safety at my center.
  - Supervisors share responsibility for improving safety at my Center. (new)
  - Leaders demonstrate they value safety by "walking the talk."
  - In the last 12 months, I've been asked or felt pressured to compromise safety to get my job done.
  - I have sufficient resources (e.g., people materials, budget) to get my job done safely. (FEVS)

SAFETY=2019
NASA Safety Culture Survey

• Have Administrator and Senior Management Support
• There have been four cycles ("Rounds") since 2009
• There are five questions that are the same in each cycle
• We included Program/Project specific questions in this cycle – Round 4
• Results are presented to the Center’s Senior Leadership and then to the Administrator and Agency Leadership at the end of the cycle
NASA Safety Culture Training

- The SCWG developed two Safety Culture Training courses
  - Orientation to NASA Safety Culture
  - Safety Culture for Supervisors
- The Courses were developed primary to be taken online
- They contain:
  - An overview of the NASA Safety Culture Model
  - A description of each Safety Culture Element
  - Scenarios to test the individual’s comprehension of the models
    - The scenarios for supervisors are different. They need to take the necessary action expected of a supervisor.
1250 civil servants
FY2016 Budget ~$915M
1,900 acres – 5 Million ft²
Airfield: 9,000 & 8,000 ft runways
Core Competencies at Ames Today

- Entry Systems
- Advanced Computing & IT Systems
- Intelligent/Adaptive Systems
- Air Traffic Management
- Aerosciences
- Astrobiology and Life Science
- Space and Earth Sciences
- Cost-Effective Space Missions
NASA Ames Research Center
Safety Culture Survey Rounds 1-4

• Round 1 - June 2010
• Round 2 - April 2014
• Round 3 - October 2016
• Round 4 - April 2019

• Why do the survey?
  1. Management leadership
  2. Demonstrates commitment to improving safety
  3. Credibility, Trust and Empowerment
  4. Employees care as much about safety as you do.
Ames - Safety Culture Survey (SCS) - Historical

[Bar chart showing participants and % participation for rounds 1 to 4]
Ames - Safety Culture Training

- Round 1 – General Safety Culture Training 4211
  - General Safety Culture Training 3779
  - Supervisor Safety Culture Training 432
- Round 2 – Reporting Culture Training 2500
- Round 3 – Engaged Culture Training 3500
- Round 4 – Supervisor Safety Culture 83

- Total Trained in Safety Culture 10,294
Ames Research Center
Safety Culture and VPP History
Safety Culture + VPP

- The pursuit of VPP then followed by an Agency Safety Culture Program enabled Ames to change the hearts and minds of the staff, from an often disenfranchised and unengaged perspective to a staff that feels respected for reporting issues and engaged in the outcomes.

- The Agency Safety Culture Program has produced a major synergistic effect on what VPP started.
Evidence that Safety Culture took hold

- “I thought Safety was important”
- “What’s this going to do to our safety program?”
- “Safety is important lets get this back”
- “Who’s crazy idea was this?”
- “I thought Safety really was key to our successes”
- “I don’t understand – safety is important .....”
- “VPP really helped us – I can’t believe this”
- “no way- really?”
VPP + Safety Culture - What I realized

- Forced us to have a systems approach to safety
- Safety Culture Surveys
  - Forced us to listen to honest feedback
  - Lead us to improve in areas where employees felt there were weaknesses
- VPP interviews
  - Forced us to get all 2500 staff onboard and engaged
  - Lead us to having a strong safety culture
No amount of money could have done what the Safety Culture Program + VPP did for ARC

- **VPP**
  - One thing VPP does, is to provide a clear model and path
  - Has a defined end point that is verified by a third party

- **Safety Culture Program/Survey**
  - Provided us a model to listen and take action
  - Lead all parts of the organization “to do” safety for the right reasons and to do it when no one was watching.

- **VPP+ NASA Safety Culture Program**
  - Instilled a mature sense of individual and group responsibility for safety.
  - Instilled a reporting culture in a system of “experts”
BLS vs Ames Total Case Incident Rate (TCIR) 2015-2017
Ames Lost Times Cases Vs. Supervisor Accountability Metrics Performance

Lost Time Cases - Civil Servants - FY 1989 - FY 2017
- Required Safety Training
- Safety Meetings
- Monthly Safety Inspections
- Hazards Closed/Corrected
- Recommended Mishap Corrective Actions
- Required Medical Exams

VPP Started
Safety Culture

Lost Time Cases - Civil Servants - FY 1989 - FY 2017

VPP Started
Safety Culture

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What a formal NASA Safety Culture Program + VPP did for Ames...?

- Safety Culture
- Performance
- Endurance/Self-Sufficiency
- Relationship with Employees
- Relationship with OSHA
10 Years Later

- People are using the SC Model Language
- Leadership looks forward to regular feedback
- Organizations have made modifications based on results
  - 1st Cycle – 10,932 participants
  - 2nd Cycle – 9,424 participants
  - 3rd cycle – 14,452 participants
  - 4th cycle - 13,479 participants **
- Over 26,000 NASA personnel have completed training
  - Required for new civil servants
- We have developed Program Guidance, a Handbook, Requirement, website, promotional materials and an app
Improvements at Centers based on Safety Culture Survey Results

• Developed ongoing campaigns on reporting hazards and safety concerns
• Created / Reinstituted safety recognition programs
• Crafted workshops e.g. “Leading Change”, “Pedestrian Safety” for personnel and supervisors
• Broadened communication of mishap information
  • Post mishap reports to internal SharePoint sites regularly
  • Improved electronic delivery
• Began organizational meetings with Safety Culture message
• Re-opened gate to improve traffic congestion at peak hours
• More MBWA (Management By walking Around)
YOUR FEEDBACK IS IMPORTANT

Session Evaluations can be completed:

• On the Safety 2019 App
• Using the link in the email reminder you will receive at the end of each day
The End

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