

Safety Culture Survey at the Pantex Plant

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Goals and Objectives

- Background and Motivation
- Objectives
- Survey
 - Basis → Focus on HRO
 - Design → Questions
 - Vehicle
 - Delivery
- Current Status
- Expected Outcomes
- Next Steps

Background & Motivation

- Pantex Plant engages in high hazard operations
 - Explosives manufacture and testing
 - Nuclear weapon assembly and disassembly
 - Protective force operations
- Pantex cannot afford consequential event
 - Began Highly Reliable Organization (HRO) journey in 2007
 - 2008 developed approach – HRO & CFA texts
 - 2009-2010 heavy emphasis HRO leadership training
 - 2010-2011 full deployment (culture assessment important component)
- EFCOG Group on Safety Culture
 - Pantex supported in 2008 & continues with new EFCOG group
 - Pantex committed to be a lead in safety culture assessments
- Safety culture provides feedback as to effectiveness of HRO



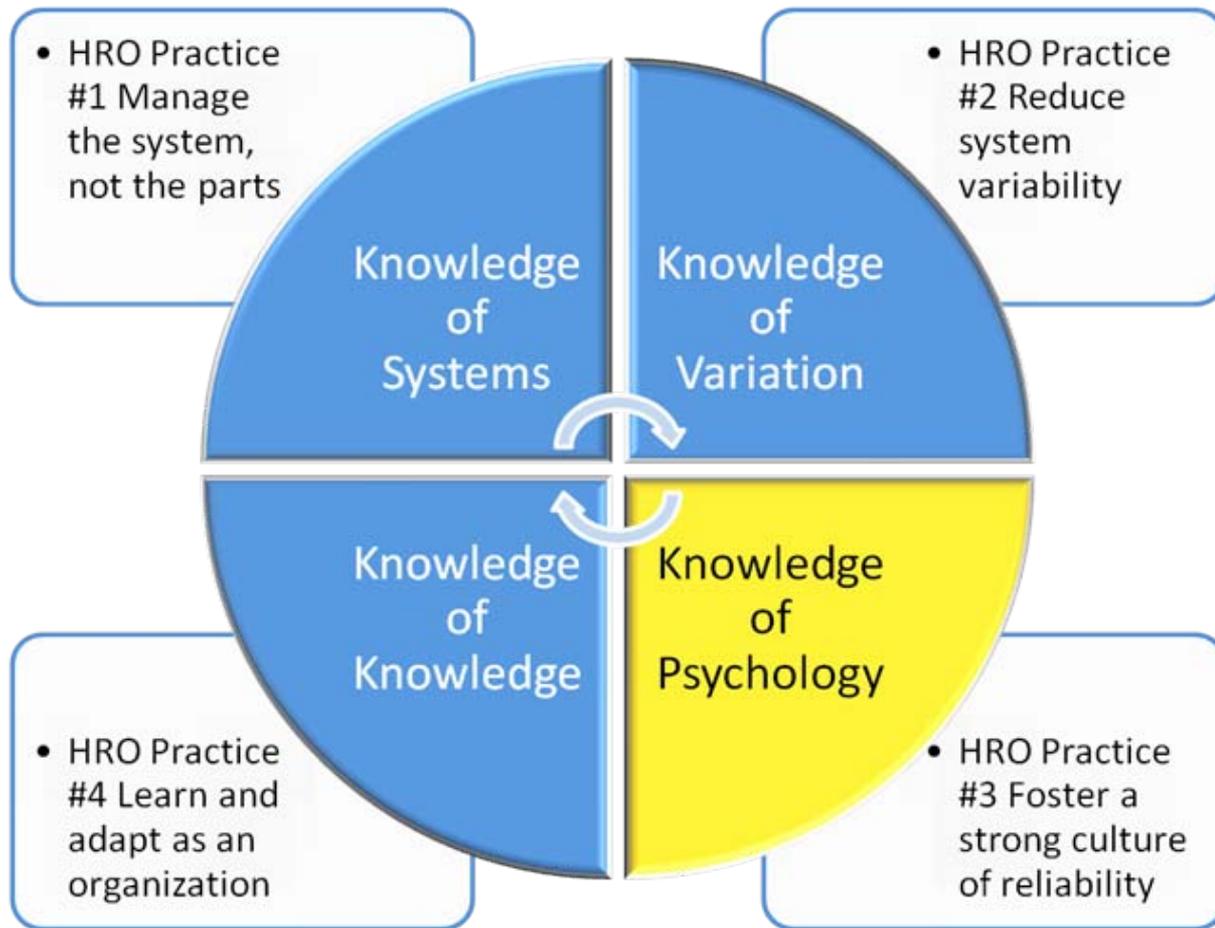
Objective of Safety Culture Survey

- Define culture model for Pantex Plant operations
- Develop Pantex-specific survey instrument
- Test to verify instrument design
- Pilot in Applied Technology Division
- Analyze data to identify:
 - Current performance levels
 - Empirical relationships between culture dimensions
 - Gaps across employee groups
- Develop action plan with metrics
- Deploy plant-wide



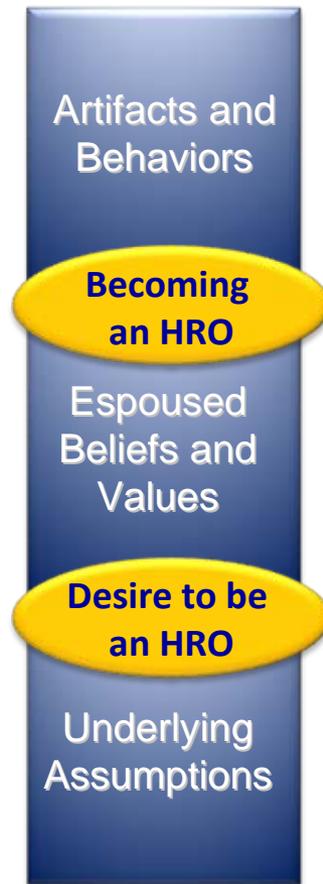
Basis for Survey

Pantex Approach to HRO



Basis for Survey

Healthy Organizational Culture



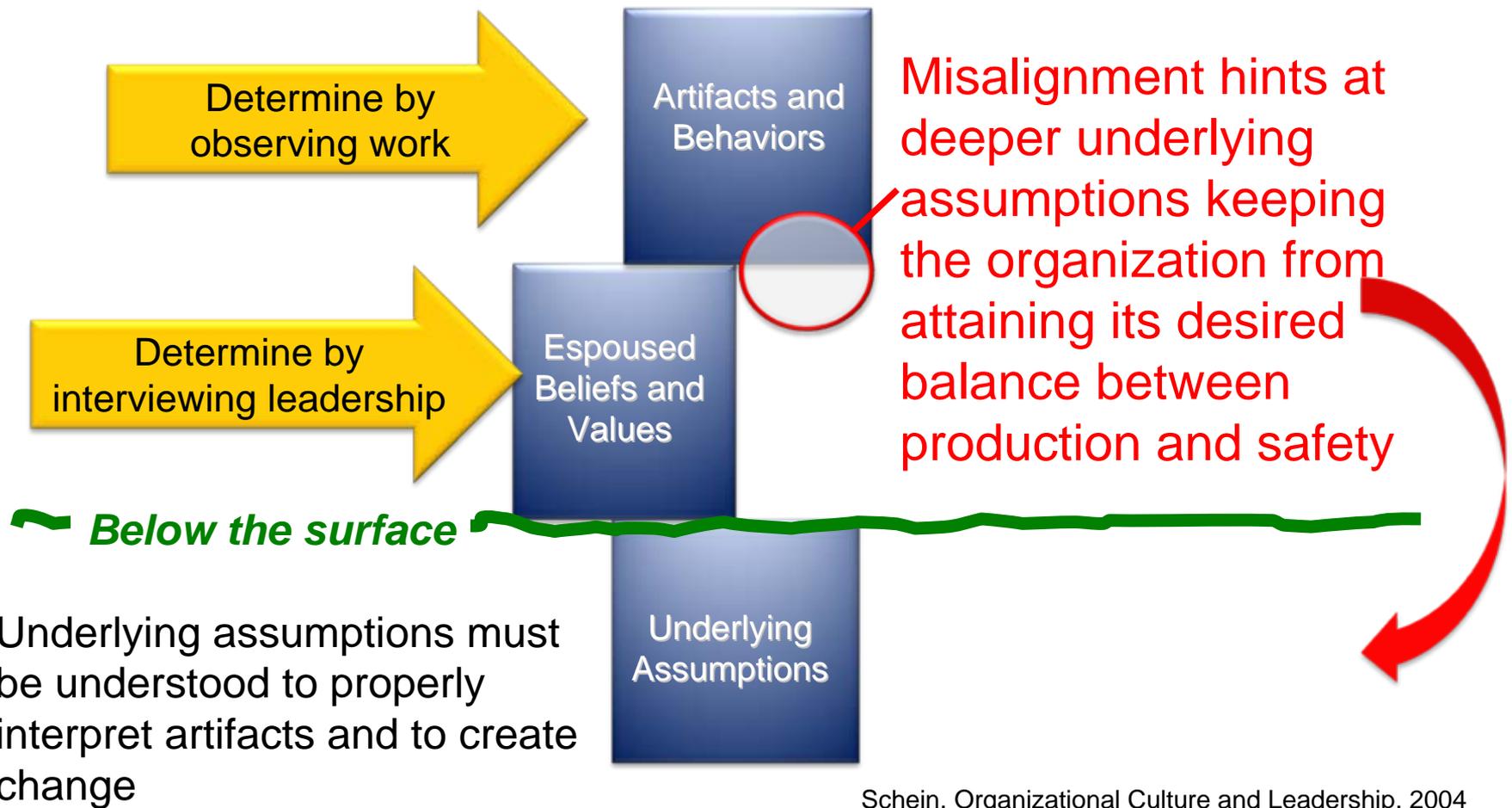
Balance and alignment between espoused values and artifacts or behaviors indicates **employees as evidence by safety culture buying-into HRO**

Balance and alignment between underlying assumptions and espoused values indicates **leaders walking-the-talk**

Adapted from Schein, Organizational Culture and Leadership, 2004

Basis for Survey

Assessing Organizational Culture



Survey Design – Texas Tech University

Common Themes of a Healthy Safety Culture

- Commitment to safety articulated at the highest levels of the organization and translated into shared values, beliefs, and behavioral norms at all levels.
- Necessary resources, incentives, and rewards provided by the organization to allow this commitment to occur.
- Safety is valued as the primary priority, even at the expense of “production” or “efficiency”; personnel are rewarded for erring on the side of safety even if they turn out to be wrong.
- Communication between workers and across organizational levels is frequent and candid.
- Unsafe acts are rare despite high levels of production.
- There is an openness about errors and problems, and they are reported when they do occur.
- Organizational learning is valued; the response to a problem focuses on improving system.

Survey Design

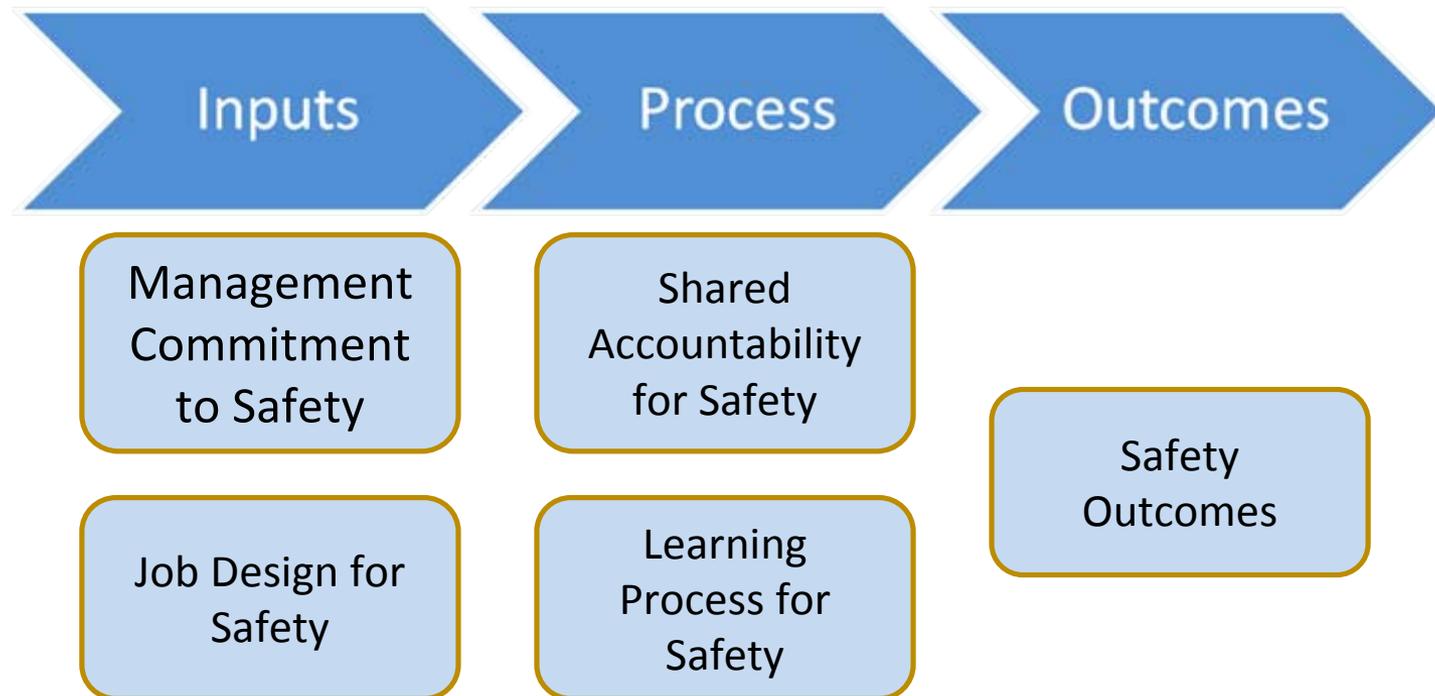
Safety Culture Survey Dimensions

- Management commitment
- Managerial actions
- Employee commitment
- Employee involvement
- Perceived risks
- Required work pace
- Beliefs about accident causation factors (systems thinking)
- Job-induced stress
- Safety communications
- Quality of safety procedures
- Safety training
- Quality of physical work arrangements
- Effectiveness of safety personnel
- Feedback and learning mechanisms
- Safety procedure adherence (behaviors)
- Safety outcomes
- Demographics
- Space for additional comments

Survey Design

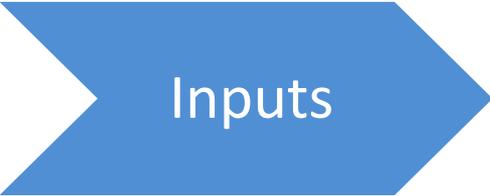
Pantex Safety Culture Model

- Developed based on literature review (SCART, IAEA guidelines for self-assessment, safety culture models from other industries), process observations, and feedback from Applied Technology safety team



Survey Design

Pantex Safety Culture Model

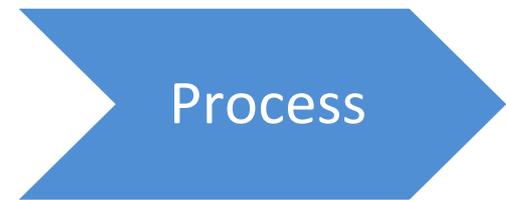


Inputs

Management Commitment to Safety	Job Design for Safety
Sufficient resources for safety	Employee autonomy
Responsive leadership for safety	Quality of process standardization
Personalized leadership for safety	Job Motivation
Organizational respect for the individual	Safety training adequacy
	Environmental turbulence

Survey Design

Pantex Safety Culture Model



Shared Accountability for Safety	Learning Processes for Safety
Quality of safety procedures	Systems thinking
Employee ownership of safety	Openness toward mistakes



Overall Perceptions of Systems Safety	Overall effectiveness of safety management system
	Likelihood of accidents/events
Historical Data	Event/incident and near-miss rates
Effectiveness of Safety Personnel	Safety officer and union steward

Survey Design

Feedback to the Effectiveness of the HRO

EFCOG Safety Culture Focus Areas

Pantex HRO Practices

Pantex Safety Culture Survey Dimensions

Leadership

- Clear expectations and accountability
- Management engagement and time in field
- Risk informed, conservative decision making
- Open communication/raising issues free from retribution
- Demonstrated safety leadership
- Staff recruitment, selection, retention, & development



HRO Practice #1: Manage the System, Not the Parts

- Leaders ensure the safety system selected, provides safety
- Leaders manage the safety system to reduce variability
- Leaders foster a culture of reliability
- Leaders model organizational learning



Management Commitment to Safety

- Sufficient resources for safety
- Responsive leadership for safety
- Personalized leadership for safety
- Organizational respect for the individual

Employee/Worker Engagement

- Personal commitment to everyone's safety
- Teamwork and mutual respect
- Participation in work planning and improvement
- Mindful of hazards and controls



HRO Practice #3: Foster a Strong Culture of Reliability

- Enable employees to make conservative decisions
- Ensure proficiency through hands-on training
- Encourage open questioning of, and challenges to, the safety system



Shared Accountability for Safety

- Quality of safety procedures
- Employee ownership of safety

Organizational Learning

- Performance monitoring through multiple means
- Use of operational experience
- Trust
- Questioning attitude
- Reporting errors and problems
- Effective resolution of reported problems



HRO Practice #4: Learn and Adapt as an Organization

- Generate decision-making information
- Refine the HRO system: apply a system approach to reduce variability



Learning Processes for Safety

- Openness toward mistakes
- Systems thinking
- Participatory learning
- Effectiveness of Union Steward
- Overall Perceptions of Safety System

Work Planning & Control using ISM Core Functions

- Define Scope, ID Hazards, Implement Controls
- Perform Work
- Feedback and Continuous Improvement



HRO Practice #2: Reduce System Variability

- Deploy the Break-the-Chain framework
- Evaluate operation of the safety system
- Systematically adjust processes



Job Design For Safety

- Employee autonomy
- Quality of process standardization
- Job motivation
- Safety training adequacy
- Environmental turbulence
- Perceived job risk
- Quality of physical working environment

Survey Vehicle

- Safety Culture Survey
 - Approximately 170 questions related to safety culture inputs and processes
 - Five questions related to safety outcomes
 - Four demographic questions
 - One free response field
 - Approximate time to complete = 20-40 minutes
- Perform additional process observations, document review, and focus groups to further understand results and develop action plans for improvement

Survey Delivery

Pilot for Pantex Plant

- Pilot testing
 - TTU graduate students
 - Applied Technology Safety Team
 - B&W Pantex senior staff
- Applied Technology Division
 - Approximately 160 people in 4 departments
 - HE Engineering and Physics
 - HE Manufacturing
 - Materials and Analytical Services
 - Facility Management

Survey Delivery

Pilot for Pantex Plant

- Administered in Applied Technology Division by:
 - Section and job function to see subcultures
 - Trained TTU personnel administered to ensure anonymity



Current Status

- Full scale data collection accomplished May-June
- Analysis June – September
 - Verify factor structure and psychometric properties
 - Assess within-group agreement and between-group differences
 - Evaluate gaps across organizational groups and relationships between variables
 - Meetings, focus groups, process observations, and/or document review to understand findings and formulate action plans
- Action plan formation September-October
- Deliver to entire Plant population FY 11



Expected Outcomes

- Better understanding of current safety culture within the Applied Technology Division and specific areas of strength and weakness across groups
- Identification of specific means of improving safety culture within and across groups
- Improved safety culture both within and across groups (long-term)
- Improved organizational reliability (long-term)



Next Steps

- Better understand results within Pantex
- Establish the expectations for healthy safety culture at Pantex
- Conduct safety culture assessment across the Plant
- Periodically (every two years) re-evaluate safety culture to determine progress
- Share safety culture methodology lessons learned with other sites and organizations

