



Emergency Management Issues Special Interest Group Annual Meeting



The Gold Standard for Mission Accomplishment Highly Reliable Emergency Response Organizations (ERO)

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Emergency Operations Support Program**

U.S. Department of Energy Office of Health, Safety, and
Security, HS-31, Washington D.C.

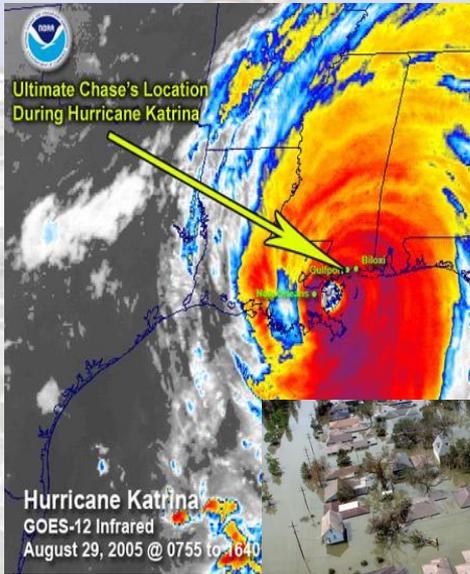


May 2-5, 2011 Charleston Marriott • Charleston, South Carolina

A Highly Reliable Emergency Response Organization (HRO) is the Gold Standard

- This presentation focuses on the concepts of promoting a highly reliable emergency response organization and achieving maximum performance of our emergency responders while achieving mission objectives reliably and safely.
- Mission success is achieved by utilizing organizational learning tools based upon concepts of High Reliability Organizations (HRO), and human performance improvement, in promoting reduction of organizational, operational risk and vulnerabilities.
 - Operational accidents and mission failures
 - Worker Fatalities, serious injuries, and high compensation costs
 - Financial and asset losses
 - Negative media attention
 - Loss of taxpayer and public officials confidence
 - Lawsuits and increased insurance costs

ERO mission failures can be large or small in scope, but the impact on the ERO is a disaster in itself.



CRS Report for Congress
Received through the CRS Web

Order Code RL33729

Monday, December 1, 2008

Rotorcraft Report: NTSB to Hold Hearing on EMS Operations

PUBLIC SERVICE

Federal Emergency Management Policy Changes After Hurricane Katrina: A Summary of Statutory Provisions

November 15, 2006

Keith Bea, Coordinator
Specialist, American National Government
Government and Finance Division

Elaine Halchin, Henry Hogue, Frederick Kaiser, Natalie Love,
Reese, Barbara Schwemle
Government and Finance Division

The National Transportation Safety Board (NTSB) has scheduled a public hearing to take comments and testimony on the safety of airborne emergency medical service (EMS) operations. The three-day hearing will begin on Feb. 3, 2009 at NTSB headquarters in Washington, D.C.

"We have seen an alarming rise in the numbers of EMS accidents and the [NTSB] believes some of these accidents could have been prevented if our recommendations were implemented," said Board Member Robert Sumwalt in a November 10 statement. "This hearing will be extremely important because it can provide an opportunity to learn more about the industry so that possibly we can make further recommendations that can prevent these accidents and save lives."

A study commissioned by the NTSB, "Special Investigation Report on EMS Operations," was completed in January 2006 and revealed 55 EMS-related aviation accidents between 2002 and 2005 involving 41 helicopters and 14 airplanes. They resulted in 54 fatalities and 19 serious injuries.



GOVEXEC.COM

"DHS failed to use catastrophe response plan in Katrina's wake. The Homeland Security Department did not use a plan for handling catastrophes in its response to Hurricane Katrina, even though some officials say that doing so could have saved lives and brought the chaotic situation in New Orleans under control".



- A High Reliability Emergency Response Organization is one in which in spite of the fact that it deals with hazardous, high consequence emergency operations, does so successfully, and demonstrates a trend of continuous performance improvement.



What We Seek to Accomplish

- We want to prevent emergency operations system failures and accidents that can destroy public confidence, erode your response capability, and put you out of the game, or business.
- We use a team based approach to learn from each other's experiences.



Who Has Experience Doing This?

ORGANIZATIONAL LEARNING "LESSONS LEARNED" ANALYSIS OPTIONS



FACILITATED LEARNING ANALYSIS IMPLEMENTATION GUIDE



Prepared by
U. S. FOREST SERVICE



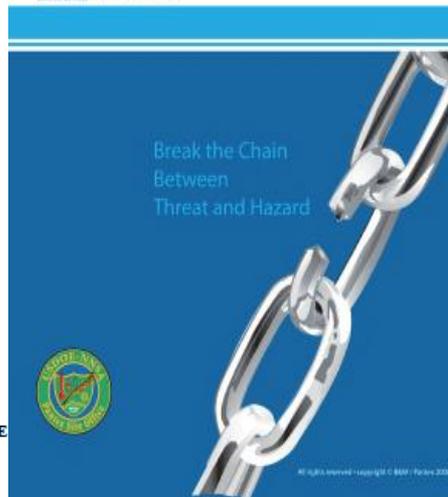
RISK MANAGEMENT AND HUMAN PERFORMANCE

August 2010

HIGH RELIABILITY OPERATIONS

A Practical Guide to Avoid the System Accident

B&W Pantex



EA-TECDC-1479

*Human performance
improvement in organizations:
Potential application for the
nuclear industry*



November 2005



DOE STANDARD

HUMAN PERFORMANCE IMPROVEMENT HANDBOOK

VOLUME 1: CONCEPTS AND PRINCIPLES



U.S. Department of Energy
Washington, D.C. 20585

AREA HFAC

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

How can we achieve a HRO/ERO?

- We take what you already know and do and apply **new lenses or tools**, that promote organizational learning that leads to enhanced management systems effectiveness, and human performance improvement – MISSION SUCCESS.
- We use feedback and improvement to enhance and maximize your internal processes for lessons learned, self assessments, testing , training, exercises, drills, etc.

**Mission Failure
Accident**

If your management system barriers fail, an unsafe or incorrect act could result, leading to Mission Failure, that could injure people, seriously damage, or cripple the organization.

The adequacy of, and your knowledge of YOUR Management system and its intended barriers to failure is important to successful mission accomplishment.

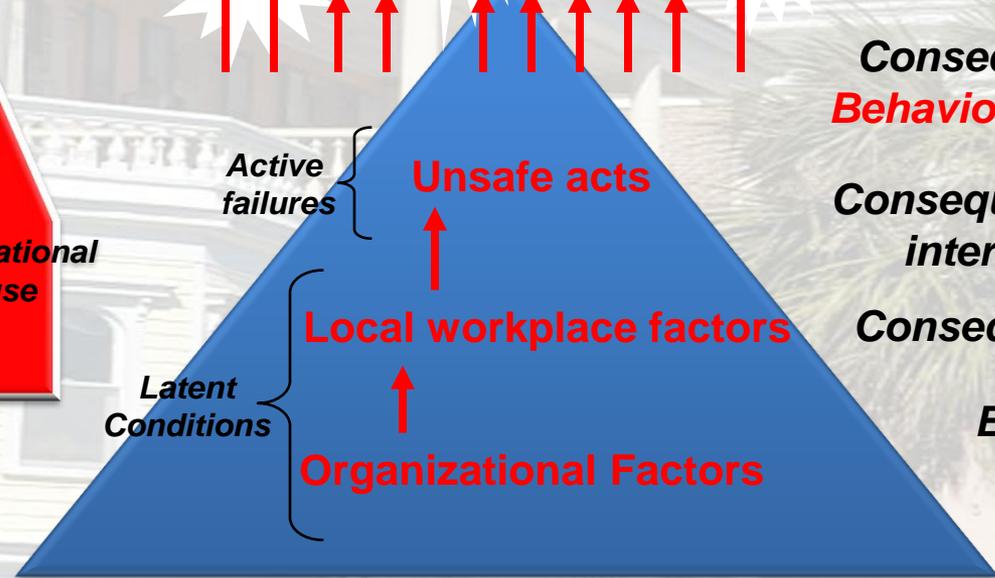
Failed Defenses/Barriers

*Consequence, **Un-safe Behaviors Human Errors.***

Consequence, workers cut corners and interpersonal conflict increases.

*Consequence, **stress in the workplace.***

Economic Conditions lead to a decision for a reduction in personnel both workers and supervisors.



Learn From Prior Events and Determine Your Organizational Weaknesses

Event Investigation



The investigation process REVERSES the path to the event and separates "WHAT" happened from "WHY" it happened. This allows us to drill down to find the:



- 1) Flawed defenses
- 2) Active failures (unsafe acts)
- 3) Human performance error precursors
- 4) Latent conditions (local workplace factors & organizational factors).



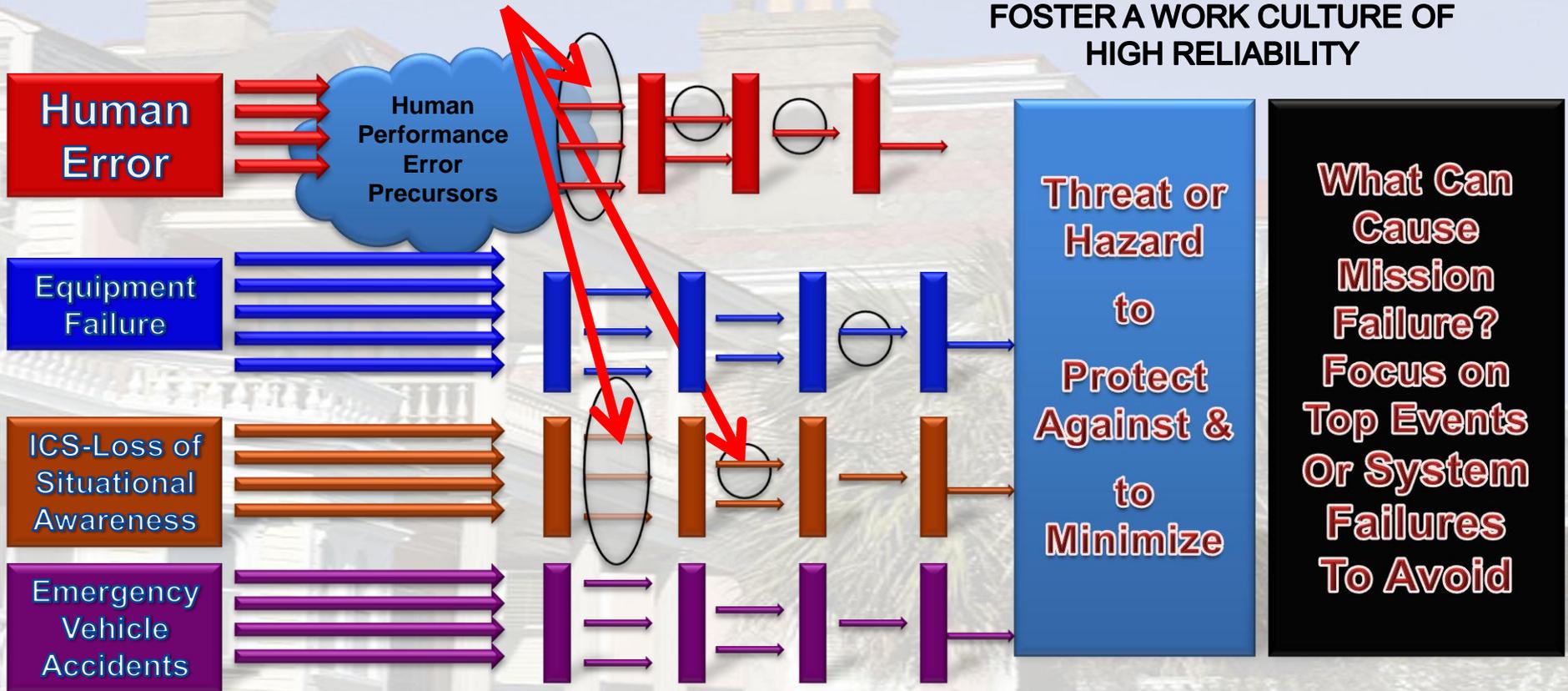
What kind of human errors impact mission performance?

| Task Demands | Individual Capabilities |
|--|---|
| ▪ Time pressure (in a hurry) | ▪ Unfamiliarity w/ task / First time |
| ▪ High Workload (memory requirements) | ▪ Lack of knowledge (mental model) |
| ▪ Simultaneous, multiple tasks | ▪ New technique not used before |
| ▪ Repetitive actions, monotonous | ▪ Imprecise communication habits |
| ▪ Irrecoverable acts | ▪ Lack of proficiency / Inexperience |
| ▪ Interpretation requirements | ▪ Indistinct problem-solving skills |
| ▪ Unclear goals, roles, & responsibilities | ▪ "Hazardous" attitude for critical task |
| ▪ Lack of or unclear standards | ▪ Illness / Fatigue |
| Work Environment | Human Nature |
| ▪ Distractions / Interruptions | ▪ Stress (limits attention) |
| ▪ Changes / Departures from routine | ▪ Habit patterns |
| ▪ Confusing displays or controls | ▪ Assumptions (inaccurate mental picture) |
| ▪ Workarounds / OOS instruments | ▪ Complacency / Overconfidence |
| ▪ Hidden system response | ▪ Mindset ("tuned" to see) |
| ▪ Unexpected equipment conditions | ▪ Inaccurate risk perception (Pollyanna) |
| ▪ Lack of alternative indication | ▪ Mental shortcuts (biases) |
| ▪ Personality conflicts | ▪ Limited short-term memory |

The Analysis Process

**STEP #6
LEARN FROM SMALL ERRORS**

**STEP #5
IMPLEMENT CORRECTIVE ACTIONS
FOSTER A WORK CULTURE OF
HIGH RELIABILITY**



**STEP #3
DETERMINE YOUR
MISSION THREATS**

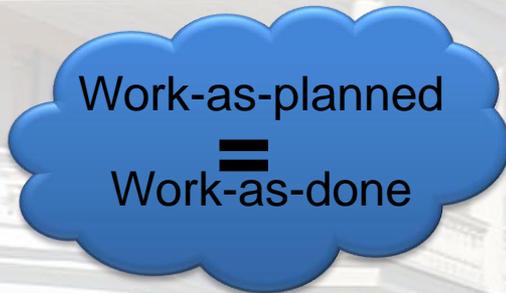
**STEP #4
MANAGE DEFENSES**

**STEP #2
RECOGNIZE &
MINIMIZE THREAT
OR HAZARD**

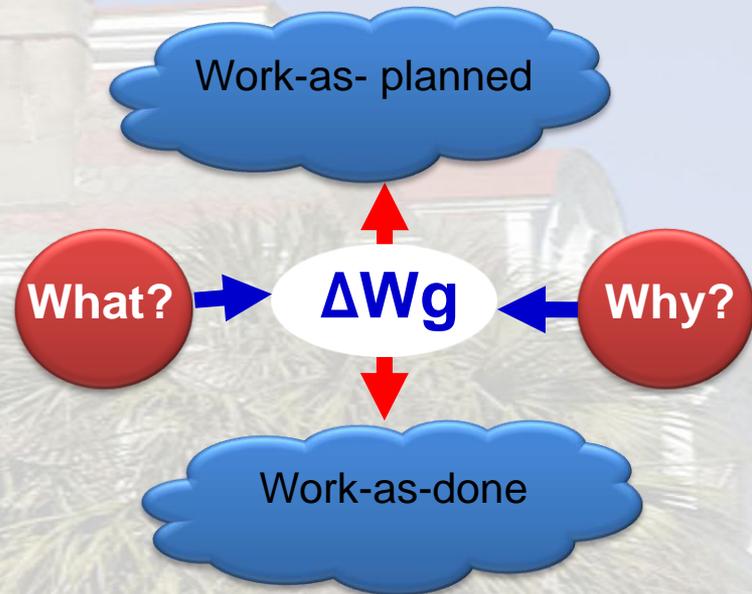
**STEP #1
ASSEMBLE YOUR
TEAM**

How You Operate Versus Reality

The Ideal – How you envision or expect work to be done.



How work is actually being done!



Determine the gap between work-as-planned or how you imagine it to be done versus how work-as-“actually” done (ΔWg) by using the analysis or investigation process.

This process may be used to analyze any aspect of your organization and mission performance!

Job Site Conditions (work-as-planned)

- Procedures (available/correct/usable)
- Personnel (available/qualified)
- Equipment (available/qualified)
- Hazards (assessed/documented/protected)
- Mission Plan Changes (performance)
- On scene Roles and Responsibilities (performance)
- Surveillances/ISI (on time/grace/missed)
- Safety Systems (operable/available/WO)
- Prior Corrective Actions (complete/effective)

2

Worker Behaviors (work-as-done)

- Pre-mission briefs (conducted/effective)
- Procedures (concerns/changes) able to be preformed
- Procedures (used/adhered) good worker compliance
- Deployment and Response (conducted well/effective)
- Barriers Countermeasures (known/protected/penetrated)
- Situational Awareness-Self checking -Peer checking
- Conduct of operations (observations)
- Stop work when uncertain
- Problem reporting

3

Organizational Processes & Values

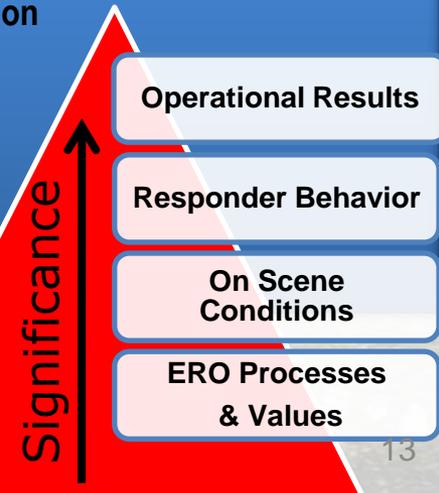
- Responder Safety Program
- Equipment and maintenance safety program
- Vehicle operations safety program
- Employee Safety Concerns Program
- Training and qualification programs
- Quality Management Program
- Self assessment and corrective action program
- Critical skills competencies development program
- Oversight, lessons learned, drills, exercise programs

1

Mission Results Versus Failure

- Mission Assignment and Deployment Failures
- Uncontrolled perimeter barriers
- Accidental Discharge of a weapon
- Vehicle Accident
- Hostile Media
- Unplanned distracting events
- Failed crowd controls
- Failed logistical support
- Worker injuries

4



A Simple View of the Process

“What”

Describe Work-as-planned

Procedures, Plans, Training

Map Out Work-as-done

Interviews, observations, exercises, drills, after action reports

List Barriers Actions Performance-as-planned

Evaluate Actions, Human Performance, Barriers-as-done

Comparative Analysis
(compare work-as-done to work-as-planned)

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(compare work-as-done to work-as-planned)

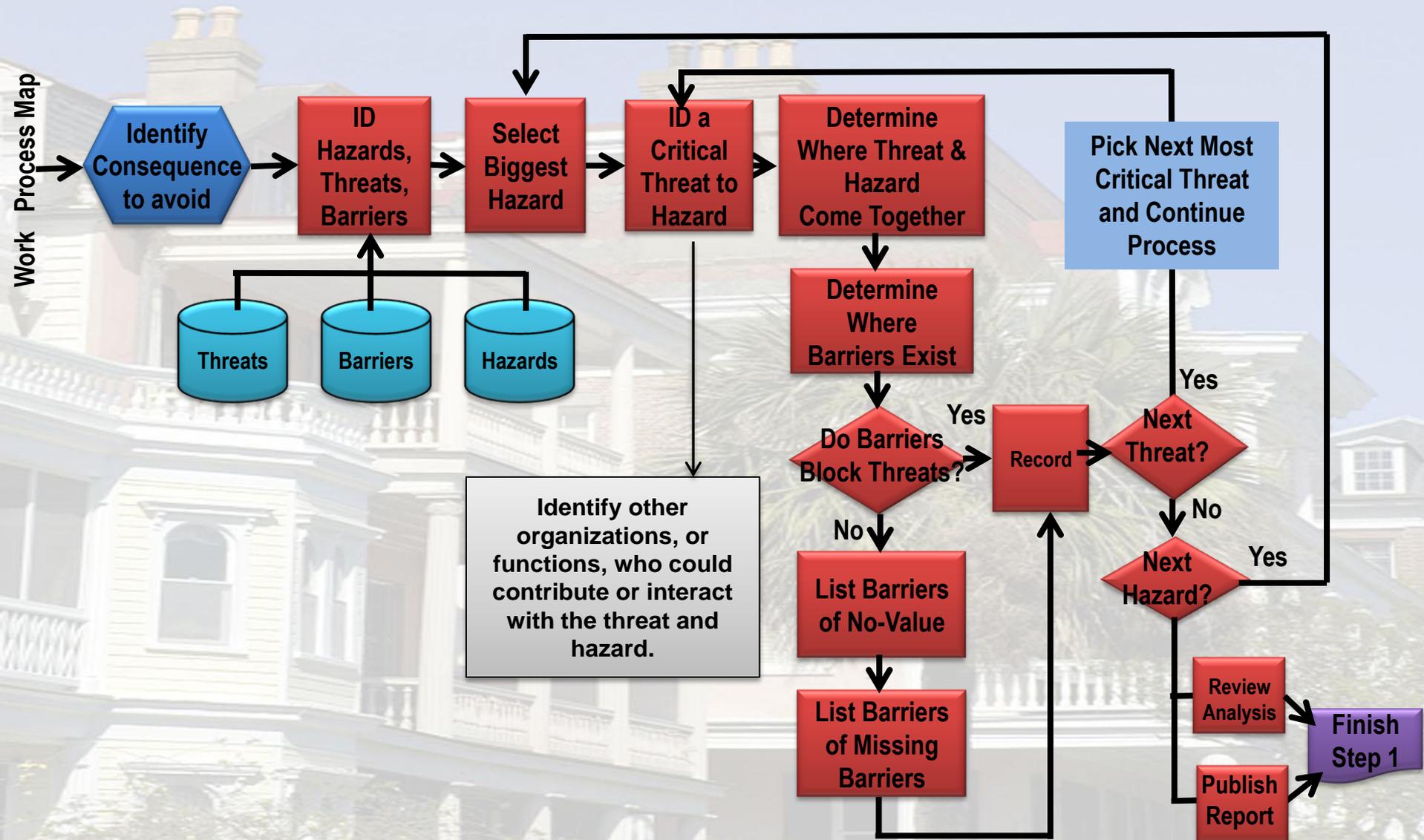
ΔWg

ΔWg

“Ask Why?”

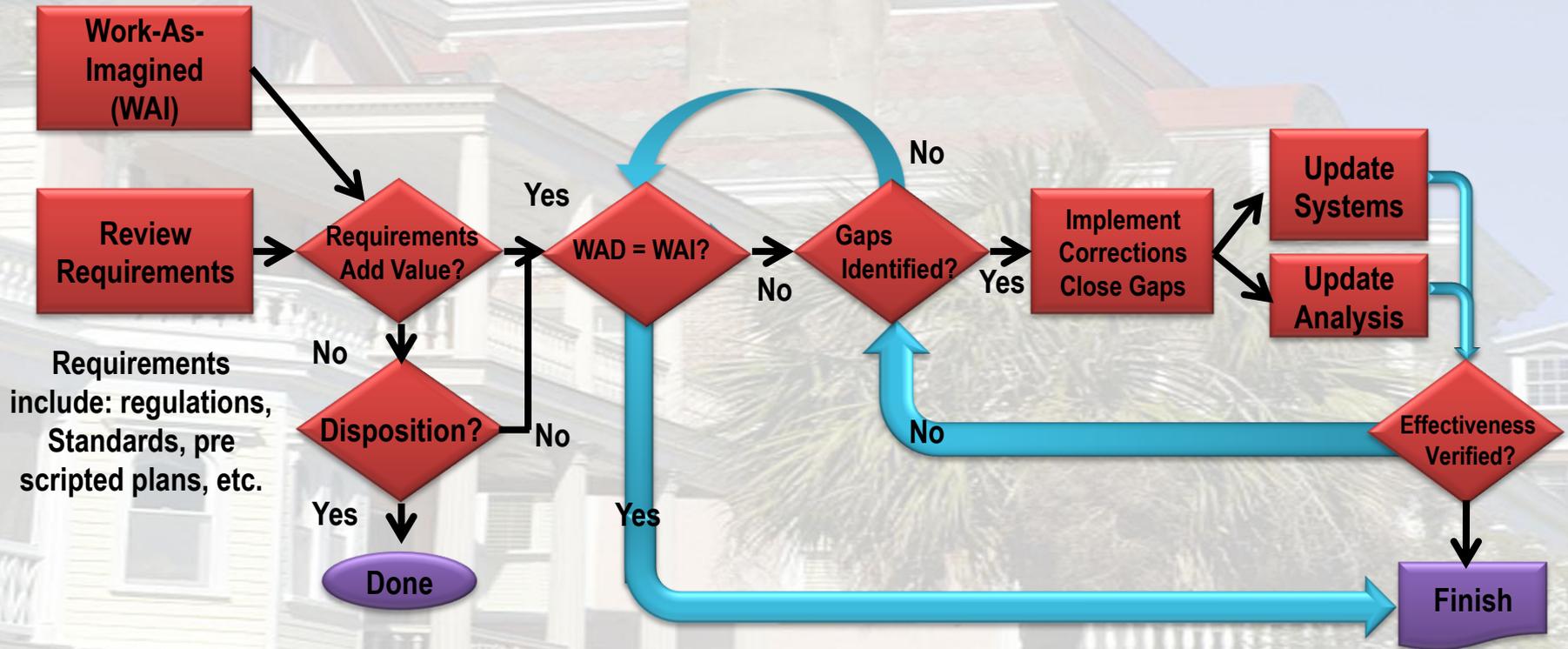
ΔWg = gap in work as done vs. as planned

Process in Detail – First Understand Hazards, Threats and Safety
Barriers in Work-As-Done - Start With the Top Potential Mission Failures / Threats
Then and Continue Process



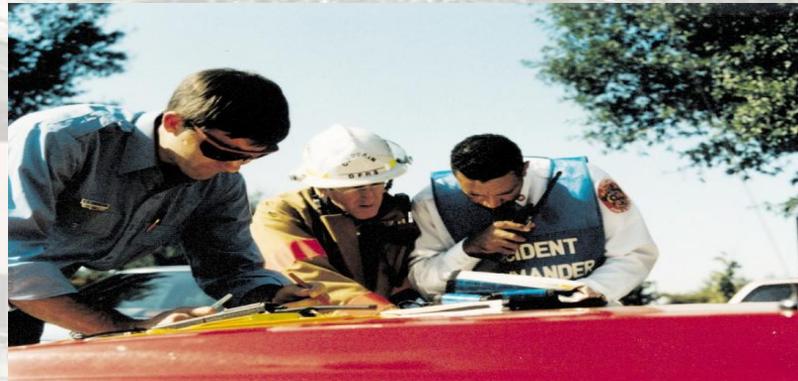
Process In Detail – Next act to improve your management systems and human performance - Reduce the gap between Work-As-Done and Work-As-Planned

Determined by
Training documents and
written procedures, etc.



How do we get started toward becoming a HRO?

- Be committed to a culture that fosters becoming a learning organization!
- Read the reference material.
- Take a course.
- Assemble YOUR team.



What do we do with the information we obtain?

- Implement corrective actions that improve your management systems and human performance!
- Verify the effectiveness of the actions you take!
- Monitor the system and re-evaluate performance!
- Don't blame people, fix the management system!

Pantex Seminar Announcement

BUILDING A HIGH RELIABILITY ORGANIZATION

"Does your organization need to be high reliability? Some types of system failures are so punishing that they must be avoided at almost any cost. The events are seen as so harmful that they disable the organization, reduce its capacity to pursue its goal, and could lead to its own destruction."



As the Federal Manager of the Pantex Plant, I am responsible for one of the most high consequence operations within the Department of Energy (DOE). I would like to personally endorse the efforts of B&W Pantex in their endeavor to capture and make practical the concepts of High Reliability Organizations (HRO) not just for Pantex or the DOE, but for any high consequence operation. The Pantex HRO program has gained national and international recognition.

In operations where we might error in our process, we learn from the mistakes as an organization. To I have developed a Causal Factors Analysis (CFA) process that is designed to determine "what" went wrong so we can better understand "why" it went wrong.

Our CFA process has gained recognition through industry due to its unique system approach, process, it results in offering important lessons learned as an organization and prevent re-occurrence.

I encourage any industry that cannot live with system failure to attend the Pantex HRO and CFA process can improve system safety and atmosphere that strengthens the culture of a

provides a logical understanding of important safety systems while encouraging continuous learning, improvement, and applied learning of our HRO practices. This process is not a "flavor of the day," but rather a system approach that protects the environment, the public, and our workers. It is here to stay!

Two Shot
Pantex Site Manager

One-Day HRO Seminar

- November 15, 2010
- January 24, 2011
- May 16, 2011
- August 8, 2011

Four-Day CFA Seminar

- November 16-19, 2010
- January 25-28, 2011
- May 17-20, 2011
- August 9-12, 2011

For more info
HRO@hro.org

All Seminars
Amarillo, Texas, USA



COURSE ANNOUNCEMENT

COURSE TITLE: OPERATIONAL SAFETY AND ACCIDENT ANALYST (SAF-231)

TIMES: 8:00 AM – 5:00 PM

DATE: Monday to Friday

LOCATION: DOE OPERATIONS OFFICE ROOM 315

SEATS: 24

COSTS: None

ATTIRE: BUSINESS CASUAL

CHRIS CODE: NONE

SESSION NUMBER:

PREREQUISITE: NONE

COURSE DESCRIPTION: This training course covers eight topical areas of event analysis training modules over a three-day period. The training includes discussions and exercises, group breakout sessions using case studies, and other activities.

COURSE OBJECTIVES: The purpose of this course is to familiarize participants with analytical techniques and human performance principles to proactively address causal factors leading to serious events. This course is used when overseeing or assessing organizations, facilities or investigating events or accidents. This course also addresses techniques and the results of the analyses. This course uses case studies, and dynamic learning activities to explore how leader behavior, and organizational processes and values affect productivity. This course provides participants with a working analytical techniques used to improve performance, reduce the severity of occurrences, and investigate accidents.

TARGET AUDIENCE: This course is intended to accommodate a broad spectrum of various organizational levels and technical specialties. Participants should have a degree of DOE or contractor experience. The training is intended for those who will assess or oversee facilities and activities, and may be involved in investigations. Additionally the course provides the skills required for an Accident Investigation Board.

UC Berkeley | MAP | CALMAIL | SEARCH UC Berkeley | 60

Center for Catastrophic Risk Management

Providing Solutions for catastrophic risks to societal infrastructures

Quick Links

Welcome to CCRM



About CCRM

The Center for Catastrophic Risk Management (CCRM) is a group of academic researchers and practitioners who recognize the need for interdisciplinary solutions to avoid and mitigate tragic events. This group of internationally recognized experts in the fields of engineering, social science, medicine, public health, public policy, and law was formed following the mismanagement and tragic consequences of

- Page links**
- » What is HRO?
 - » Workshops and Seminars
 - » Research Opportunities
 - » Industry Relationships
 - » Ongoing Research
 - » DONATE TO CCRM!

Breaking News!
CCRM & the Deepwater

High-Reliability.Org

Managing the unexpected!

Search

Home Page
A great place to get started

Special Announcement! --- Next HRO Conference April 20 & 21, 2011!

Fourth International High Reliability Organizing Conference

National Transportation Safety Board Auditorium
L'Enfant Plaza
Washington, D.C.

The International High Reliability Organizing Conference joins operators, managers, executives and academics from diverse industries to share methods for consistent, dependable performance under uncertainty or the unexpected.

High Reliability Organizing (HRO) describes the amalgamation of seemingly contradictory processes necessary to maintain performance in unstable circumstances. These can be high tempo or low tempo situations and effect processes, products, or people.

Main Menu

- Home Page
- About Us
- Our Goal
- HRO Models
- Conferences
- Previous Conf. Abstracts

HRO Resource Information

- **The Center for Catastrophic Risk Management (CCRM) Berkley:**
<http://ccrm.berkeley.edu/>
- **Wild land Fire Lessons Learned Center :**
<http://www.wildfirelessons.net/Home.aspx>
- **High Reliability Organizing:** <http://www.high-reliability.org/>
- **Highly Reliable Performance Blog published by the DOE Office of Corporate Safety Analysis :** <http://hsshpi.wordpress.com/about/>
- **DOE STANDARD, HUMAN PERFORMANCE IMPROVEMENT HANDBOOK VOLUME 1 and 2:**
- http://www.hss.doe.gov/nuclearsafety/ns/techstds/standard/hdbk1028/doe-hdbk-1028-2009_volume1.pdf
- http://www.hss.doe.gov/nuclearsafety/ns/techstds/standard/hdbk1028/doe-hdbk-1028-2009_volume2.pdf
- **International Atomic Energy Agency: IAEA-TECDOC-1479, Human performance improvement in organizations: Potential application for the nuclear industry:**
- http://www-pub.iaea.org/MTCD/publications/PDF/te_1479_web.pdf

Questions?



Contact:

dave.pegam@hq.doe.gov or 301-903-9840

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