Prevention / Detection / Correction
PDC Model

Your Basic Foundation for the HP Roadmap
Roadmap provides an overview to an Effective and Value-Added HPI Program

“Why”
“What”
“How”
North American Transmission FORUM

NATF HP Roadmap

Even if you are on the right path, you will get runover if you just sit there - Win Barrers

Support From Top -> Prevention -> Detection -> Correction -> Continuous Learning

Leadership Sponsorship and Engagement
- Management strongly supports the "Human Performance" (HP) program.
- Enhances HP strategies, objectives, and actions.

Define and Document
- Develops HP Program, including: core human performance (HP) program elements.

Market the Program
- Market the Program, following the necessary actions.

Prevention
- A proactive approach to reducing your risks that can save money, time, and pain.
- Resources: tools and techniques that add value to overall HP prevention.

Detection
- The ability to "Know What is Going On" in an organization via preventative mechanisms.
- Reporting Process:
  - Frequency of analysis, reporting, and monitoring.
  - Metrics: key indicators.

Correction
- An established systematic-based event learning approach that identifies and seeks corrective actions following events that could cause or contribute to an event.

Continuous Improvement
- Conducts continuous HP related feedback activities such as the LTV Learning Performance Feedback Group.
Leadership Sponsorship and Engagement

Why:
- Sets culture and influences change
- Establishes corporate objectives
- Emphasizes importance
- Provides resources
- Enables engagement in industry Human Performance forums
Leadership Sponsorship and Engagement

What:

- Importance and Value
- Enthusiastic support
- Human Performance champions
- Fluently “Speaks HP”
- Resources and personnel
- Addresses systemic weaknesses
- Focus on the cause, not the person
Leadership Sponsorship and Engagement

How:

- Educate leadership
- Benefit of predicting the likelihood of an event
- Conduct self-assessments
- Benchmark!
- Engage your entire organization
- Provide success stories at industry meetings
A proactive approach to reducing error rates that can lead to events by constantly focusing up front on processes, tools and techniques that add value to overall event prevention.
Develop Human Performance Training

Why:

• Successful implementation of the program requires relevant training (knowledge and awareness; specific training)
• Communicates the existence and importance of the program
• Improves sustainability – continuous improvement
Develop Human Performance Training

What:

• Identify resource needs for initial and ongoing training

• Determine the need for internal or external training

• Integrate HP into other training
Develop Human Performance Training

How:

• Establish training objectives utilizing the program document
• Use systematic approach (ADDIE)
• Hire a training vendor/dedicated resource
• Pilot the training – check and adjust
• Utilize a train-the-trainer for champions
• Dynamic learning activity/recorded media
• Computer based training/online training
Market the Program

Why:

• Communicates the benefits of the program
• Gains buy in throughout organization
• Maintains visibility of the human performance program
• Shares lessons learned
Market the Program

What:

• Various media “streams”, outlets - posters, emails, newsletters etc.
• Incorporated into meeting content
• Leadership messaging
• Branding (trinkets, stress balls, lanyards, note pads)
Market the Program

How:

• Leadership provides the resource to market the program
• Leadership and “HP Champions” provide messaging
• Target to all generations and demographics (across levels of organizations, front line workers, supervisors)
• Share program achievements internally and with other NATF members
• Keep leadership team informed of program progress and achievements
NATF HP Roadmap

Leadership Sponsorship and Engagement

- Define and Document HP Program
- Develop and Train HP Program
- Market the Program

Resources

- Economic benefits, cost avoidance
- Prevention

Prevention

A proactive approach to reducing errors that are discovered after they occur.

Corruption of processes, tools, and techniques that add value to the process prevention.

Market Program

HP program is a pre-requisite to successful and safe operations.

Market the Program

HP program is the pre-requisite to successful and safe operations.

Detection

Reporting Process

Why

• To proactively identify problems and issues so changes can be made to prevent conditions that can lead to events.
• To foster a culture in which events that may affect system reliability and/or personal safety are recognized by everyone in the organization, and are consistently reported.
• To change or reinforce behaviors that reduce the likelihood of events.
• To eliminate blame (recognizing the first principle of human performance that all humans make mistakes) and culturally reward self-reporters.
Reporting Process

What

- Identify types of issues/errors that could affect system reliability and/or personal safety
- A proactive approach that allows *anybody* to document or report *anything* they feel is an issue (within established thresholds)
- Available 24x7x365, user friendly
- Promote observation activities and coaching
Reporting Process

How

- On-line form for reporting events and/or near-misses
- Suggestion Box
- Observation program
- Reporting Hotline
Program Metrics

Why

• To determine or identify the effectiveness of HP initiatives
• To provide an indicator of actions and behavior
• To allow for trending and analysis of events that affect system reliability and safety
• To allow for historical analysis to determine whether corrective actions are having the intended effects.
• An equitable and transparent measurement of events, regardless of department or job classification, promotes a “just culture”.
• To compare various categories of events.
Program Metrics

What

- Event Rate
- Human Error Caused Events
- Error Rate
- Corrective Action Effectiveness
- Event Clock Resets
Program Metrics

How

- Develop dashboards for leadership
- Colored indicators
- Benchmark ratio of self-reported / self-revealing events
- Analyze system operations data to identify human error cause of reliability events
An established systematic-based event analysis approach that ultimately delivers corrective actions following events that prevent re-occurrence (e.g.: Taproot, RCI, HFACS, etc.). This should include technology based root cause analysis, apparent cause analysis and trending.
Systematic Approach to Event Analysis – Why?

• Essential part of an effective HPI program
• Causes are not always self-revealing
• Causes are not always what you think they are
• Guards against biases, assumptions, knee-jerk reactions
• Not enough time or resources to continually Band-Aid issues
• Gives voice to evidence and data vs. emotions and opinions
# Systematic Approach to Event Screening – What?

## APPENDIX 3: Event Criteria – DELIVERY OPERATIONS AND SERVICES

<table>
<thead>
<tr>
<th>Category</th>
<th>Level 1 – Independent Root Cause Analysis (RCA)</th>
<th>Level 2 – Apparent Cause Analysis (ACA)</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety</strong></td>
<td>• Employee Fatality or serious injury with a potential for fatality. Meets the Serious Injury and Fatality (SIF) criteria described in Section 7.1.</td>
<td>OSHA recordable event that does not meet Level 1 criteria.</td>
<td>Note: Refer to Section 7.2 for exclusions on minor OSHA recordable events that do not require a formal investigation.</td>
</tr>
<tr>
<td></td>
<td>• Near Miss incidents that did not result in serious injury/fatality but had the potential if circumstances had been different.</td>
<td></td>
<td><strong>Vehicle Events:</strong> Preventable vehicle incidents will be categorized as a Level 2. A formal ACA is not required. Please refer to HS-003 Record Keeping for Vehicle Accidents to determine if the incident is a Preventable Vehicle Accident (PVA).</td>
</tr>
<tr>
<td></td>
<td>Note: Refer to Section 7.1 for exclusions.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Systematic Approach to Event Analysis – What?

• **Root Cause Analysis (RCA)** – Root Cause Analysis is the structured use of a set of formal methods for investigating and determining the root cause(s) of the inappropriate action(s) or component failure(s). Root cause is the fundamental reason or cause which, if corrected, will prevent recurrence of a problem and/or similar problems.

• **Apparent Cause Analysis (ACA)** – Is the investigation to determine the apparent cause(s) believed to be the most probable cause(s) based on readily available information at the time of the investigation.

• **Common Cause Assessment**: A cause analysis tool used to collectively evaluate a given set of data for common causes drivers and establish actions to address those driver. Common cause is not considered a standalone process of cause investigation. It is a tool used with other techniques to investigate events.

• **Trending Only** – Lowest level category for issues that has little or no potential effect on safety and or reliability of system operations and does not require a cause evaluation. Trended events may be addressed and assessed through a common cause analysis.

Source: Duke Energy HPI Program Document
Systematic Approach to Event Analysis – How?

Phase 1 - Problem Recognition, Interim Management, and Compensatory Action Management

1.01 Problem Emergence/Discovery/Revelation
1.02 Immediate Actions by Interim Issue Management
1.03 Capture and Preserve Plant and System Data
1.04 Capture and Preserve Equipment Failure Data
1.05 Capture and Preserve Human Performance Data
1.06 Transfer of Evidence to Investigators
1.07 Draft Cause Problem Statement
1.08 Agree on Initial Scope of Analysis
1.09 Team Formation

Phase 2 - Investigation and Analysis Planning

2.01 Draft Cause Problem Statement
2.02 Agree on Initial Scope of Analysis
2.03 Team Formation
2.04 Investigation Planning - Determine Appropriate Analysis Methods

Phase 3 - Cause Analysis and Determination

3.01 Evidence Collection and Quarantine by Investigation Team
3.02 Define Additional Data
3.03 Qualify, Validate, and Verify the Data
3.04 Develop Graphical Representation of the Validated Data
3.05 Perform Reconstruction, Reconstruction/Scenario/Simulation
3.06 Perform Analysis of the Validated Data to Develop Chain of Cause and Effect Relationships
3.07 Identify & Validate Causes

Phase 4 - Corrective Action Development and Assignment

4.01 Identify Previous Effective and Ineffective Corrective Actions for Similar Events
4.02 Evaluate Extent of Condition of Symptoms and Causes
4.03 Identify Corrective Actions for Symptoms, Conditions, and Causes
4.04 Identify Expected Effectiveness Criteria for Each Corrective Action

Source: NPPD Corrective Action Program
Where Are You Now?