

MASHA, INC.

MID-ATLANTIC SAFETY AND HEALTH ALLIANCE

16th Annual Safety and Health Conference
October 30, 2025

***Continuously Improving Safety Performance with
Human and Organizational Performance
Fundamentals***

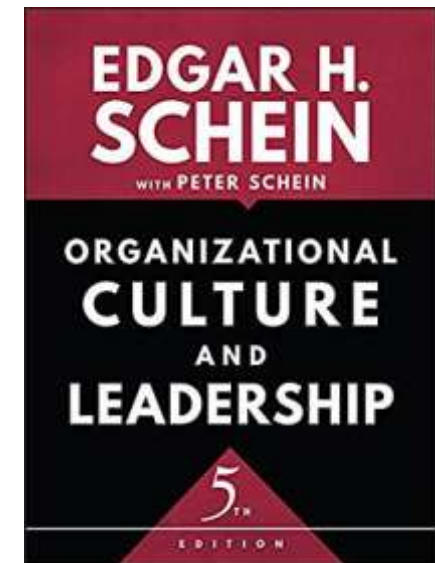
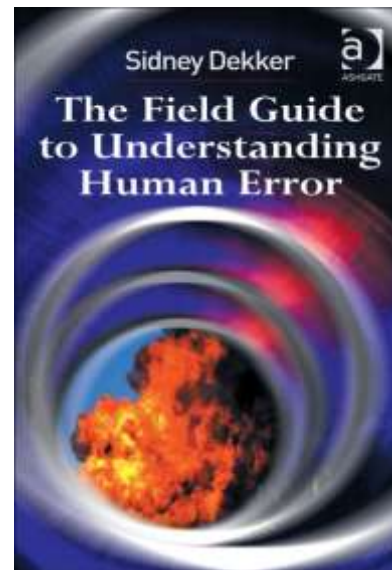
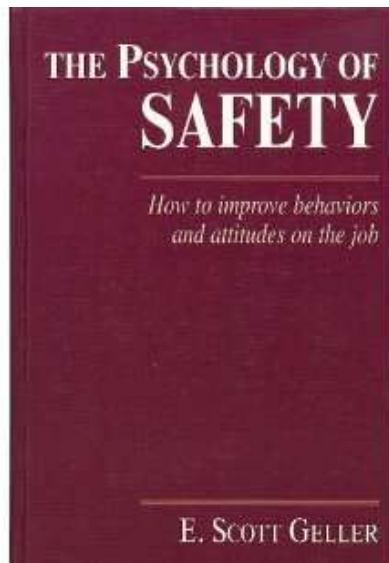
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What Is Safety?





Human & Organizational Performance The Experts



“Why did it make perfectly good sense for the individual to do what they did at the time of the event”

Sidney Dekker



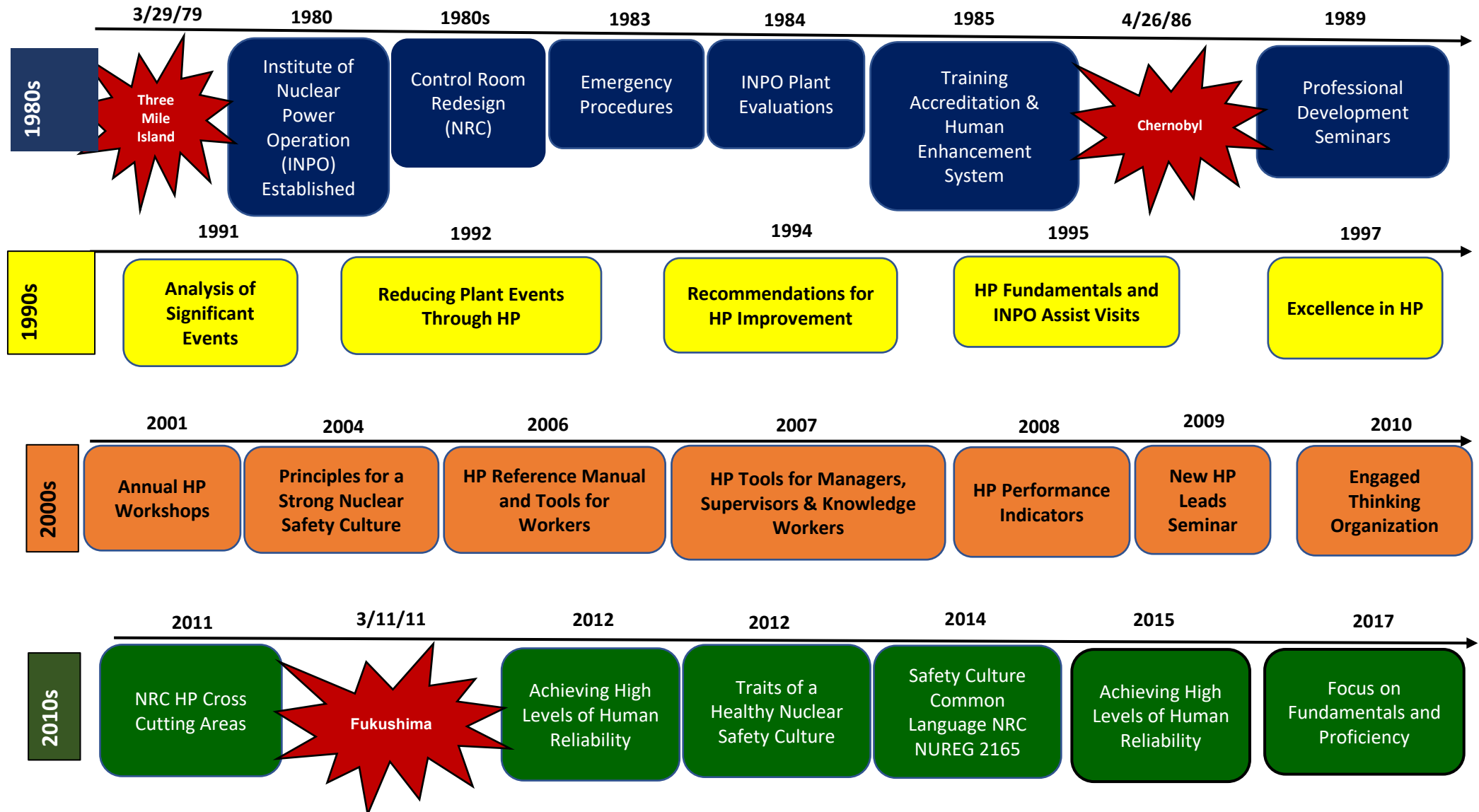
How Human Performance Fundamentals Started?

- Military
- Airlines
- Medical
- Nuclear Industry





Nuclear Power Generation Human Performance (HP) History

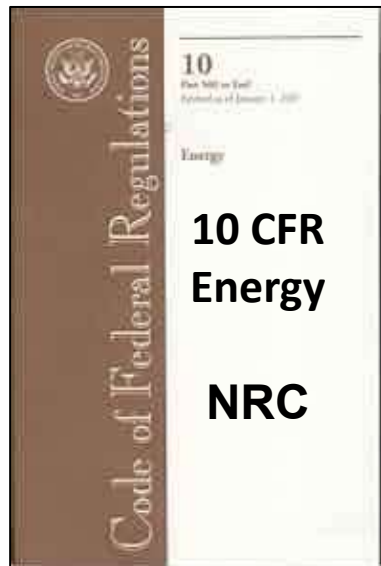




Safety is a Journey not a Destination



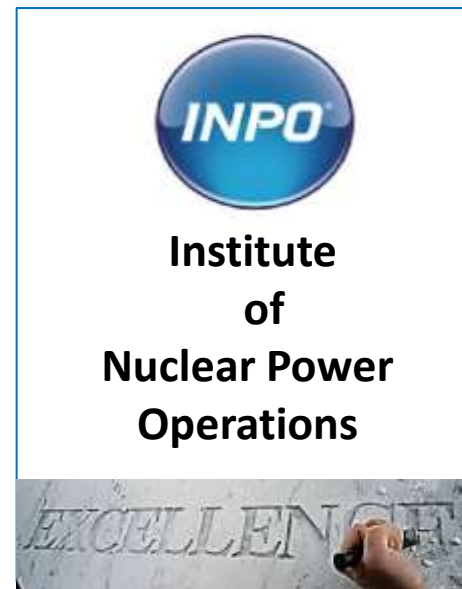
Nuclear Safety



Personnel Safety



Human & Organizational Performance

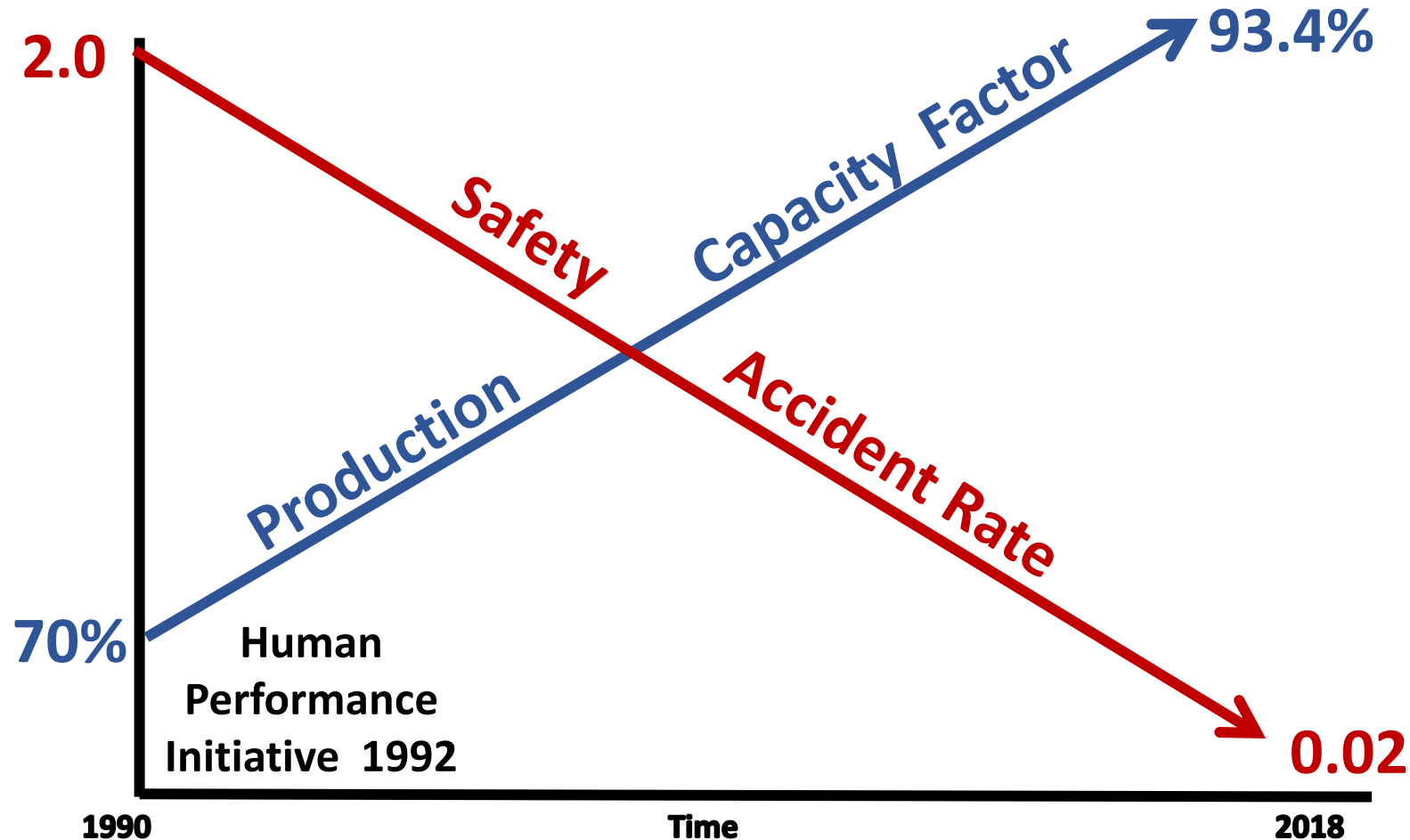


Safety Performance





Nuclear Power Generation Production & Safety Improvement



Industrial Safety Accident Rate = Lost Time & Restricted Duty Injuries per 200,000 Hours

Capacity Factor unitless ratio of actual electrical energy output to maximum possible

Source: Institute of Nuclear Power Operation (INPO) Annual Reports



Elements for Achieving Safe Operational Performance





What Makes a Good Safety Leader?

Walks the Talk

Cares for People

Listens to Understand

Asks Questions

Consistent



**Look in the Mirror ...
*What Kind of Safety Leader
are You?***

Thomas J. Watson, IBM



“Recently, I was asked if I was going to fire an employee who made a mistake that cost the company \$600,000.

No, I replied, I just spent \$600,000 training him. Why would I want somebody to hire his experience?”

Paul O'Neal, Alcoa



- Prioritized safety.
- His fight *for* safety gradually changed the culture. This opened the ground for innovation, teamwork, and trust.
- Safety improved and its market value increased from \$3 billion to over \$27 billion.

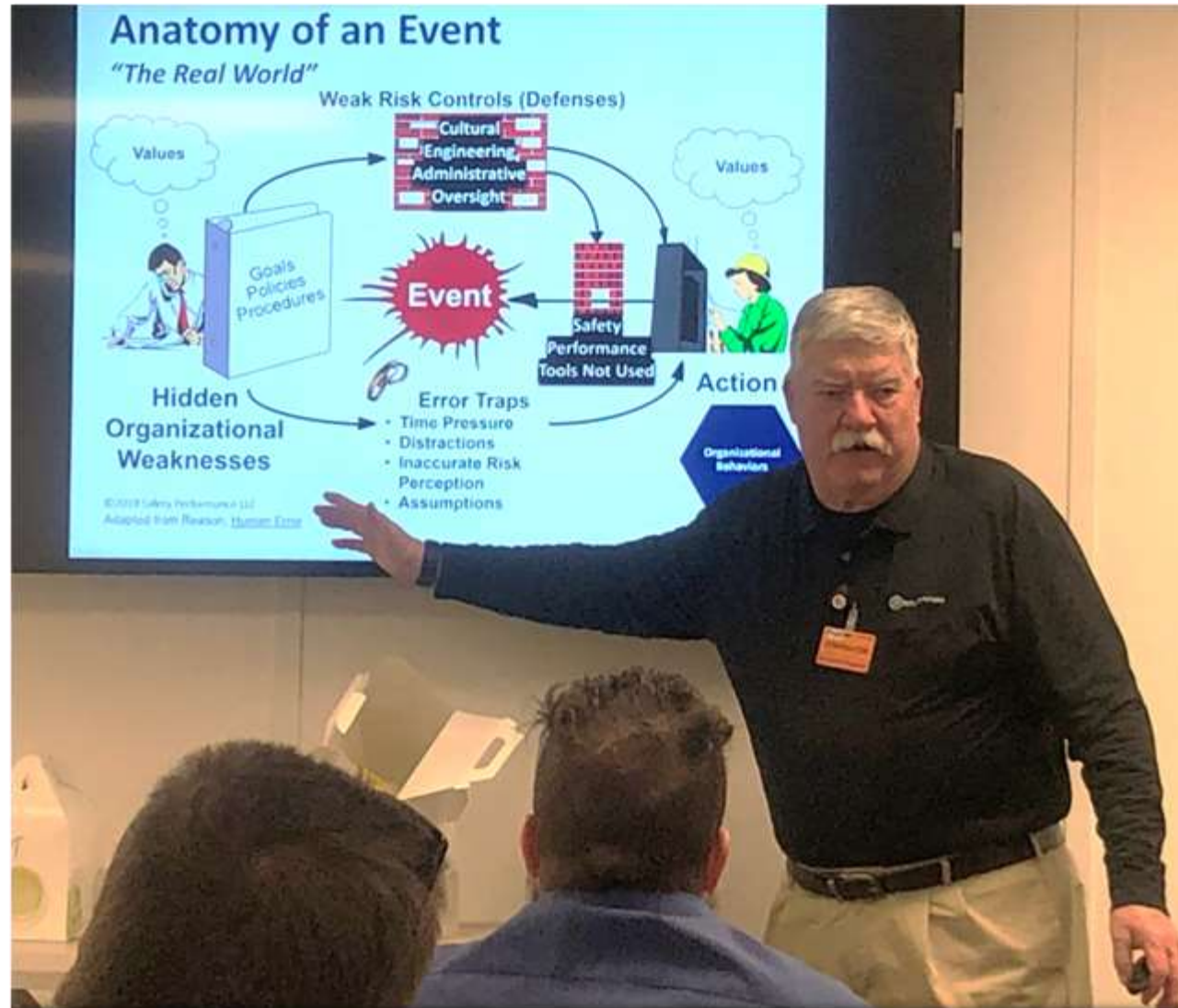


Ground Leadership





Ground Leadership





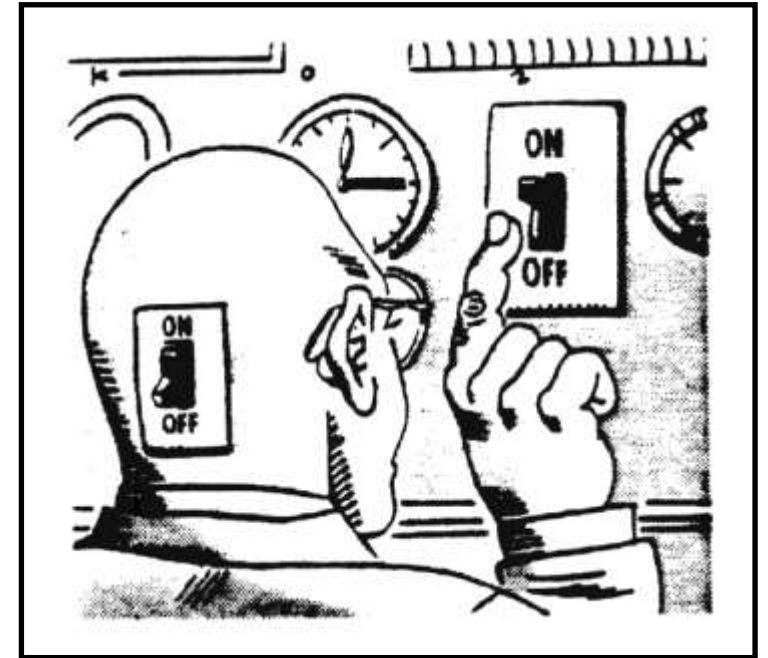
Every organization is perfectly aligned to get the results it gets!

- **The level of safety performance achieved is influenced by the collective behaviors of all individuals in the organization.**
- **People achieve high levels of safety performance based largely on the encouragement and reinforcement received from leaders, peers, and subordinates.**



Safety Performance Fundamentals

1. People make errors and take risks!
2. Error-likely situations & risks (hazard exposures) are predictable
3. Behaviors are influenced by
 - organizational values, programs, processes and job site conditions
 - what is encouraged and reinforced
4. Safety Performance Tools Reduce errors & Risk (ReR)
5. Mitigation Controls (MC) prevent events



ReR + MC → 0 Events



Safety Performance Error Traps



Time Pressure

Time pressure or being hurried can lead to taking short-cuts. Short cuts can quickly lead to injuries, damage to equipment, or harm the environment.



Distractions

Distractions are a concern as people multi-task or use social media to find out what's happening now. Distractions and Interruptions can double the error rate!



Assumptions

When performing the task for the first-time or make assumptions and choose to not use or refer to programs, processes or procedures, the risk of error can be as high as one in two. Flip a Coin!



Inaccurate Risk Perception

Having done the job safely many times before leads to complacency or overconfidence that can result in an inaccurate risk perception. Just because you've done the job several times before, does not mean that there is less risk.



Low Risk $\neq$ No Risk!



What are Hazards and Risks?

HAZARD - A situation in the workplace that has the potential to harm people, the environment or damage plant equipment.



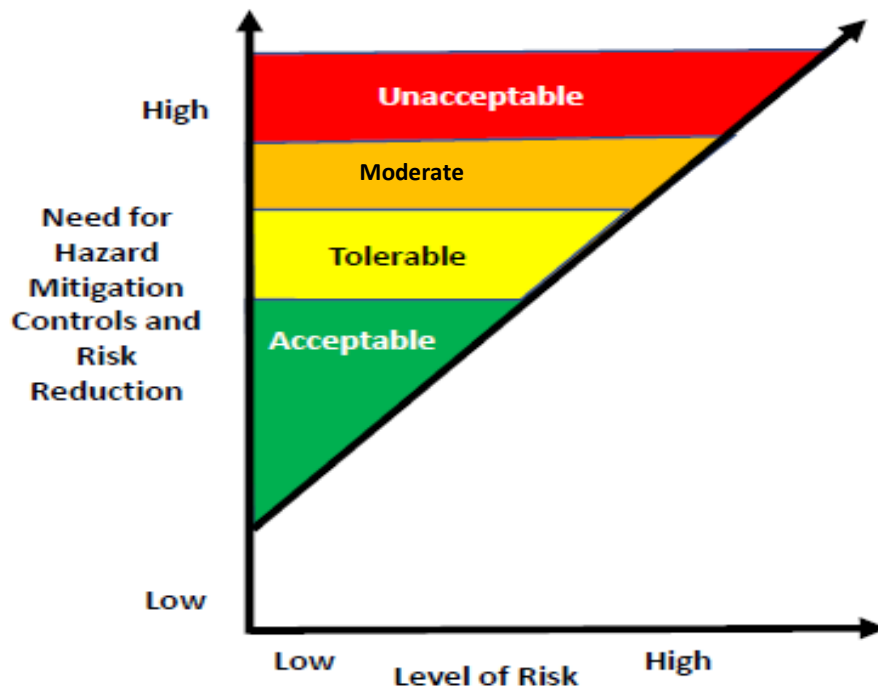
RISK - effect of uncertainty, often expressed in terms of a combination of the consequences and likelihood of an event



Sometimes, we make poor choices when we fail to identify the risk of our actions.



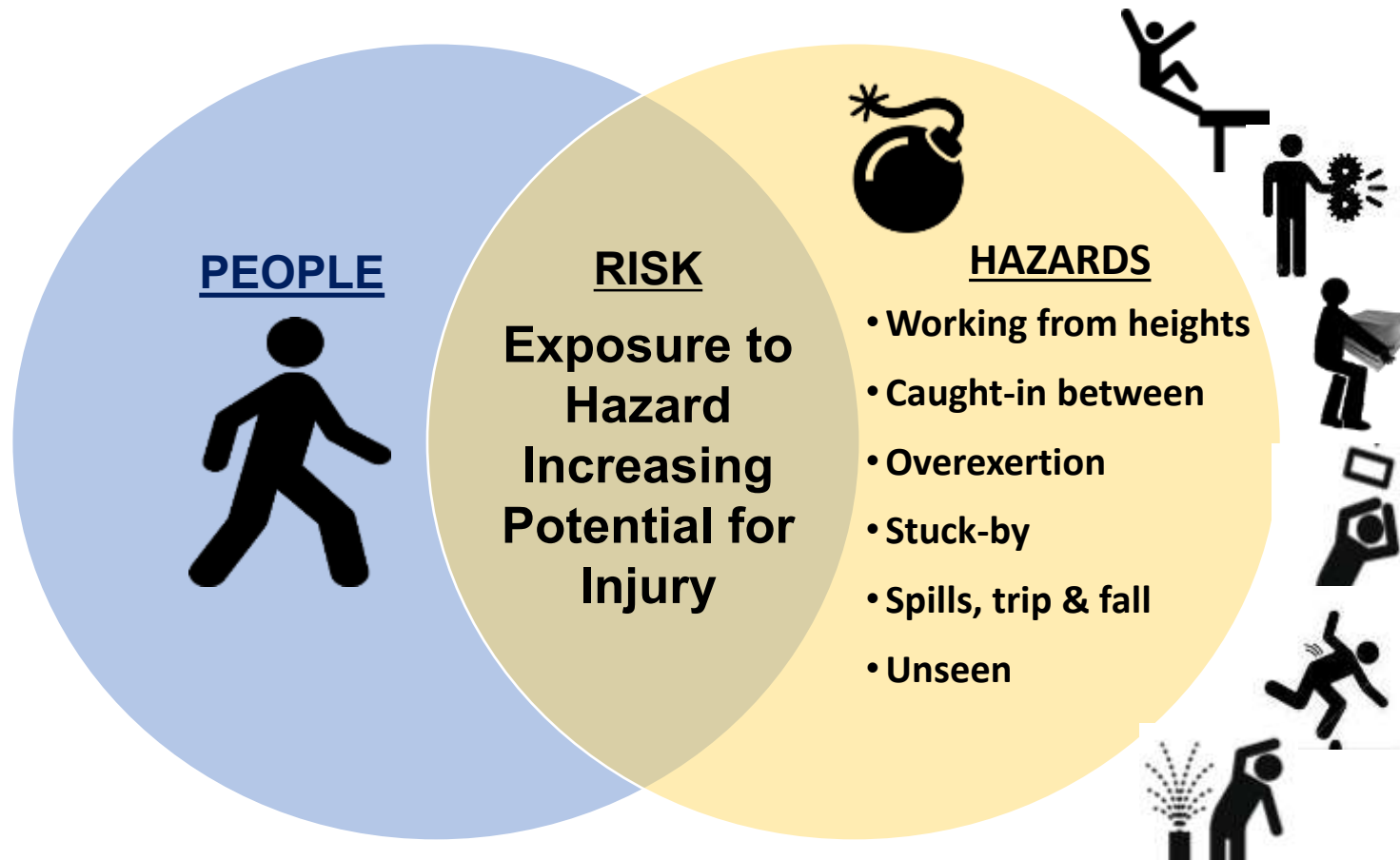
Every Job Has Risk



Example of Risk Reduction and Hazard Controls to Prevent Event:
Oversight, securing knives, relocating plug, placing a barrier in front of plug, inserting a plastic cover



Respect Risk!

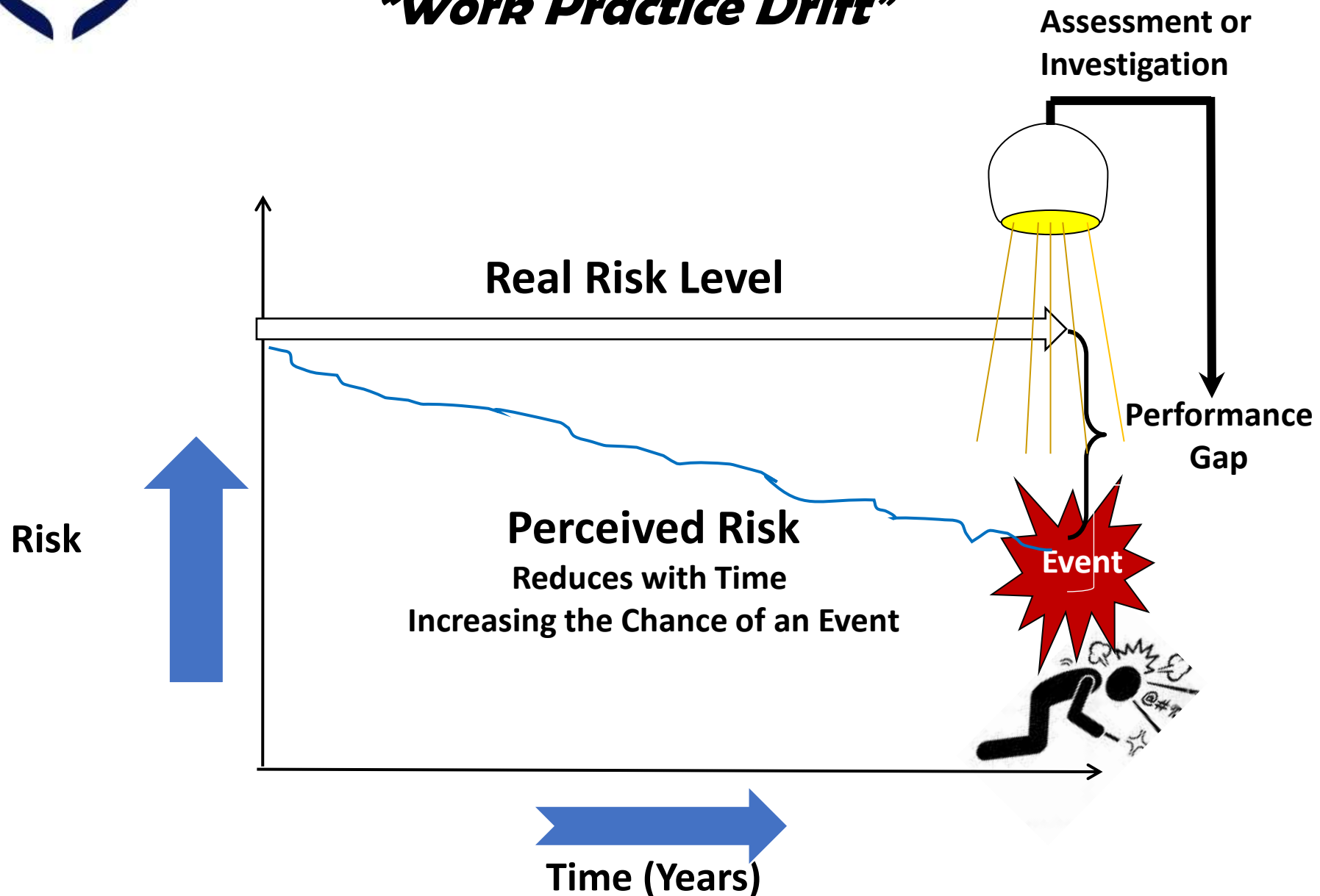


**Safety Improves when risk is
reduced or eliminated with
Safety Performance Tools and Defenses!**



Normalized Deviance

"Work Practice Drift"





Risk Matrix

Risk (R) = probability (P) x exposure (E) x consequence (C)

Likelihood				Consequence (C)				
				Minor injury/ near-hit	Medical case	OSHA-recordable (non-SIF)	Critical (potential SIF)	Catastrophic (SIF)
	Probability (P)	Exposure frequency (E)	Score	1	2	3	4	5
Frequent	Injury has occurred for hazard exposure: 5	Continuous (or many times daily): 5	25	25	50	75	100	125
Probable	Injury possible, not unusual; has even 50-50 chance each hazard exposure: 4	Frequent (about once daily): 4	16	16	32	48	64	80
Occasional	Injury would result from an unusual sequence or coincidence: 3	Occasional (once per week to once per month): 3	9	9	18	27	36	45
Remote	Injury has never happened after many years of exposure, but is possible: 2	Unusual (once per quarter): 2	4	4	8	12	16	20
Improbable	Injury practically impossible (has never happened): 1	Rare (has been known to occur): 1	1	1	2	3	4	5

@Safety



Risk Assessment Example

LOW RISK: $1 \times 1 = 1$

Likelihood: Improbable - 1

Consequence: Minor - 1

TOLERABLE RISK: $4 \times 2 = 8$

Likelihood: Occasional - 4

Consequence: Medical - 2

MODERATE RISK: $3 \times 16 = 48$

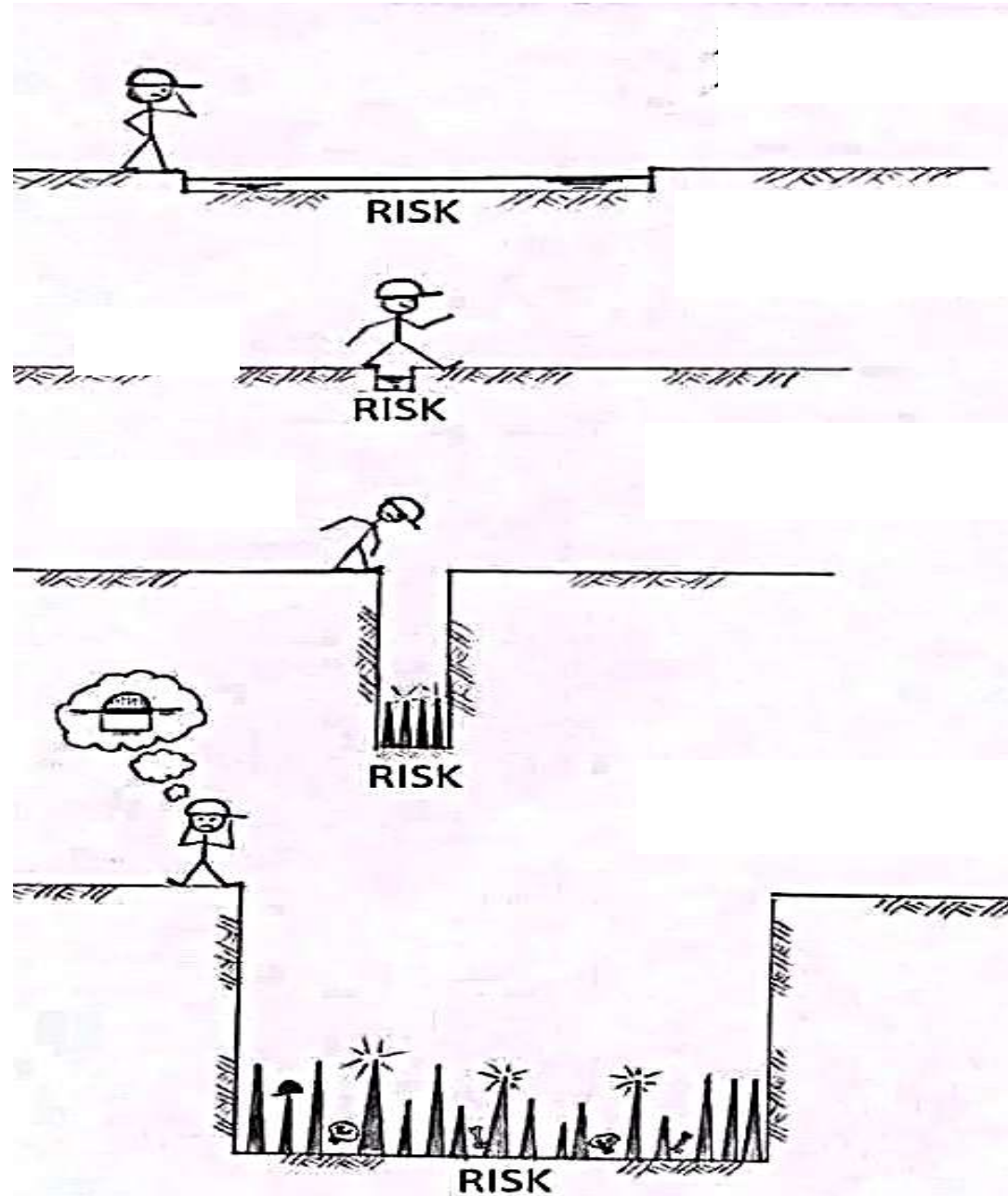
Likelihood: OSHA - 3

Consequence: Probable 16

EXTREME RISK: $5 \times 16 = 80$

Likelihood: SIF - 5

Consequence: SIF - 16



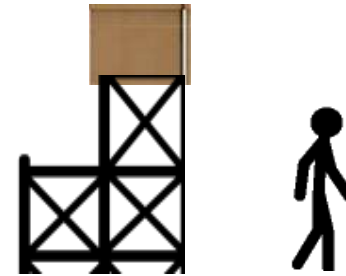


Reporting Hazards, Good Catches & Near Misses Prevents Events!

Would you
prefer to
report a
Hazard, Good
Catch, Near
Miss or an
Event?

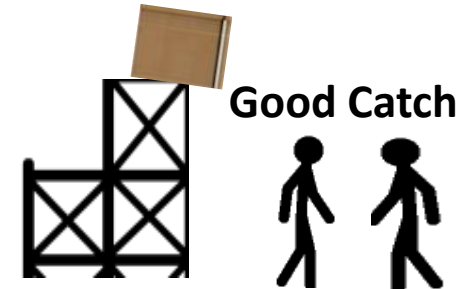
Hazard

Storing boxes
overhead near
the ledge.



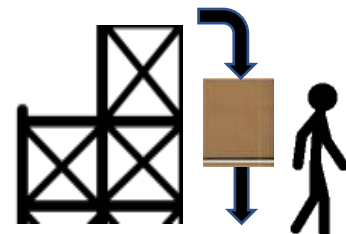
Risk

That box could fall
and strike you!



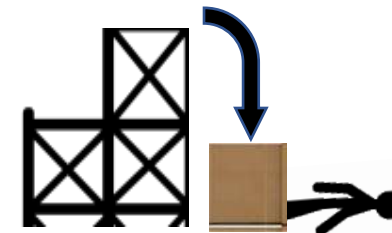
Near Miss

That box fell almost
striking me!



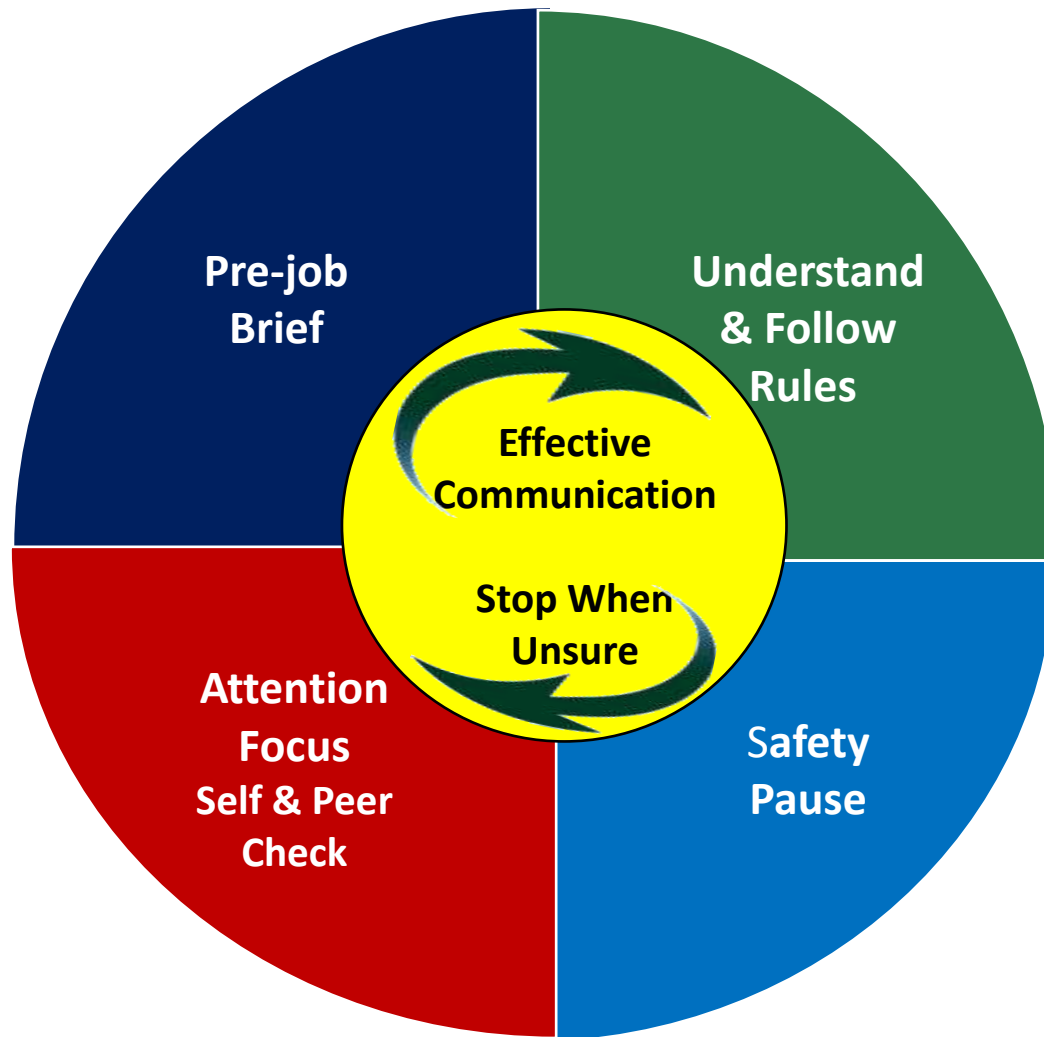
Event

The box fell
and struck me!





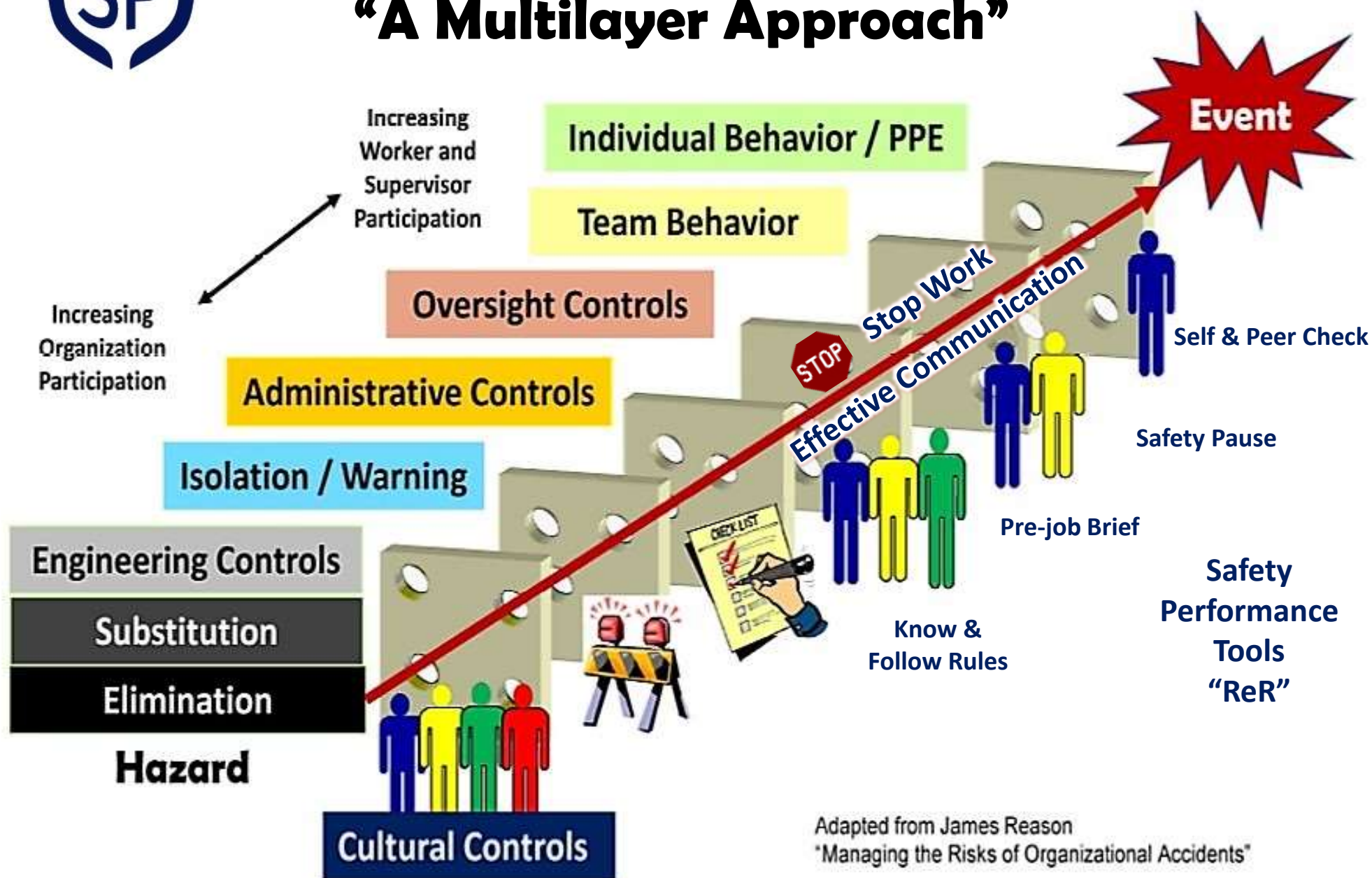
Safety Performance Tools





Hierarchy of Hazard Controls

“A Multilayer Approach”





Regulations and Rules



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LLC

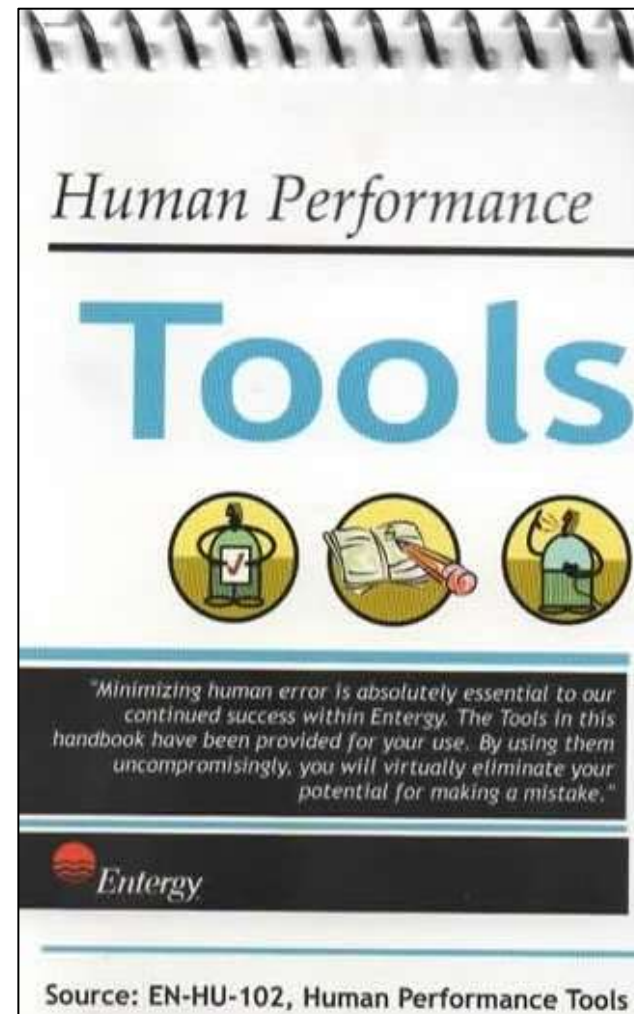


Handbooks

Traditional Safety Handbook



Human Performance Handbook





Example

Safety & Human Performance Handbook



Employee Environmental, Health,
and Safety Handbook

Manufacturing Operations

Section 1: General Safety – Policy

- 1.1. RESPONSIBILITIES
- 1.2. LIFESAVING RULES
- 1.3. INCIDENT REPORTING
- 1.4. GENERAL SAFETY RULES
- 1.5. HOUSEKEEPING
- 1.6. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Section 2: Hazard Assessment & Safety Performance Tool

- 2.1. HAZARD ASSESSMENT/HIERARCHY OF CONTROLS
- 2.2. STOP WORK
- 2.3. PRE-JOB RISK ASSESSMENT
- 2.4. POST-JOB BRIEF
- 2.5. WORK S.A.F.E.R.
- 2.6. TWO-MINUTE RULE
- 2.7. JOB HAZARD ANALYSIS (JHA)
- 2.8. FOLLOW THE RULES



Life Saving Rules

CRAFT

- Confined Space
- Rigging and Lifting
- Arc Flash / Electrical
- Fall Protection
- Tagging - Energy Source Control





Effective Communication





Attention Focus Self & Peer Checks

What

Self-Check focuses attention on the task, to think about the intended action and its expected response before performance, and verify actions taken after performance. **STAR (Stop, Think, Act, and Review)** is a technique to self check.



What

Peer-Check is a series of actions by two individuals working together at the same time and place, before and during a specific action, to prevent an error by the performer.





Stop When Unsure

What

STOP When Unsure involves a brief interruption work to discuss and resolve assumptions, uncertainty, changing conditions, or other potential unsafe conditions.

Why

- Reduce errors & exposure to hazards
- Ensure good decisions are made
- Challenge preconceptions and assumptions

When

Employees are responsible and authorized to stop work and seek help when Outside Of Programs, Procedures or Processes (OOPs), when you or others think or say the following words: **“Probably, I assume, I think, Maybe, Should be, Not sure, We’ve always done it that way, I’m 90% certain”**





Pre-job Brief

Employee in charge conducts the job brief before starting each job discussing:

- 1. Hazards associated with job**
- 2. Work procedures involved**
- 3. Special Precautions**
- 4. Energy source control**
- 5. Personal Protective
Equipment requirements**





One Size Doesn't Fit All!

FENOC **KEEP IMPROVING**

☒ BEAVER VALLEY ☐ D

☐ Introduce Yourself and Purpose of Observation

☐ Protective Equipment (Hard Hat, Safety Glasses, Fall Protection, etc.)

☐ Electrical/Mechanical (Loose Clothing, Lanyards, Etc.)

☐ Physical Activities (Lifting, Pushing/Pulling, Eyes on Hands/Path, Line of Fire, Rushing)

☐ Tools & Equipment (Use, Condition, Guards, Etc.)

☒ Procedure Use and Adherence

☐ Office Safety

☐ Housekeeping and Fire Prevention

☐ Radworker Practices

☐ Chemical Control

☒ Event-Free Tools/Techniques Training, Job Briefs, Communications, Self & Peer-Checking (First Check, Questioning Attitude (Stop if Unsure))

Observation: While
Unit #1 Water
A member of
Team gave me
in depth brief
on and
how
ON AND

Action Taken: Thanked him
briefing

Condition Report Number, If Applicable: _____

Observer (Print): STEPH

Section/Department: SECURITY

Mail Stop: _____ Extension: 5162

Date: 3/6/07

Put in Collection Box or Send to Human Performance

Safe and Event-Free Performance

KRADPRO BEAVER VALLEY
RADIATION PROTECTION EXCELLENCE

Work Order # _____ Unit _____

System _____ Asset _____

PRE-JOB / REVERSE BRIEF

☐ SCOPE: Review & Discuss Procedures, Work Orders & Tech. Specs.

☐ JOB HAZARDS & PRECAUTIONS

☐ PHYSICAL ACTIVITIES: Lifting, Pushing/Pulling, Eyes on Hands, Eyes on Path, Line of Fire, Rushing

☐ PERSONNEL PROTECTIVE EQUIPMENT

☐ PROTECTED TRAIN: _____ AFFECTED OK TO PROCEED

☐ OUT OF SERVICE TIME: ☐ PRA ☐ Tech. Spec. ☐ Maint. Rule

☐ EXPECTED PLANT RESPONSE: Alarms/Defects/Trips/Interlocks

☐ IDENTIFY PLANT TRIP SENSITIVE EQUIPMENT / DISCUSS PRECAUTIONS TO BE TAKEN

☐ INTERFACES: ☐ GFD ☐ Chemistry ☐ Security ☐ QC Other

☐ RAD WORK PRACTICES: RWP# _____ Expected Dose _____ ALARA Review _____

☐ CHEMICAL CONTROL: (MSDS) Flammable Storage & Fluid Control

☐ HOUSEKEEPING & FME

☐ DOCUMENTATION CHECKED:

☐ Walkdown Performed / Reviewed ☐ Survey Maps

☐ Risk Review Performed / Level ☐ Calculations / Data Transfer

☐ Work Order Signed On ☐ Procedure Approved for Use

☐ PERMITS: Confined Space ☐ SWP ☐ No

☐ PARTS: _____

☐ TOOLS / EQUIP. / M&TE: _____

☐ QUAL AREA: _____ Qualified? YES NO

☐ ROLES & RESPONSIBILITIES

☐ INDUSTRY EVENTS & LESSONS LEARNED

☐ EXPECTED RESULT & CONTINGENCY

What are the critical steps? _____ What barriers / defenses are in place? _____

What could go wrong? _____ Error precursors? _____

☒ HUMAN PERFORMANCE TOOLS: STAR ☐ Self / Peer Check ☐ Clear Communications ☐ Place Keeping ☐ QUOTA

Jim Radnor displayed excellent questioning attitude when he pushed back on taking pictures in an area with elevated dose rates when he believed drawings should provide the information needed.

Dong Canan 14994 8/1/07

NAME _____ Emp. No. _____ Date _____

OPS **CLEARANCE POSTING**
PRE-JOB BRIEFING
BEAVER VALLEY OPERATIONS TASK

(Briefing Should Cover The Following Items)

Tagged # 2010-30-545-007 Clearance # 2010-30-545-007

☒ Crews Shall Adhere To Communications Expectations For Direction And Information Exchange During Briefing And Task Performance.

☐ A Task Overview Shall Be Performed. Roles And Responsibilities Shall Be Assigned (Designated Lead Operator, Use Proper Place Keeping Techniques)

☒ Check That Switching Order Is A Official Tag Hang List

☒ Check EBF Checklist Has Been Authorized For Equipment Release: Schedule, Probabilistic Risk Assessment, Tech/Specs, Maint/Rule (OOB Time)

☒ Check If Switching Is Covered By Procedure

☒ Consider Effect On Running Components/Support Systems

FENOC
Human Performance
BVPS ENGINEERING
New Assignment and Briefing Card

Unit: 2 System: 24, 25, 30, 32, 34

Job: CERF - 000580

ASSIGNMENT CONSIDERATIONS

☐ Assignment Understood

☐ Safety Significance / Priority

☐ Scope Defined

☐ Budget Defined (N/A)

☐ Critical aspects defined

☐ Schedule / Milestones defined (N/A)

☐ Field Walkdown Partial

☐ Impact on other assignments

IMPACT ON PLANT ACTIVITIES

☐ Priority Train (N/A)

☐ Resource and Support requirements

☐ Team members identified

☐ System Health Report issues (N/A)

☐ System Improvement Plan (N/A)

☐ Training and Qualification Requirements

☐ Licensing / Regulatory impact

☐ PRA impact

☐ Problem Solving (N/A)

☐ Contingency Plan (N/A)

☐ Communications established

IMPLEMENTATION

☐ Tools / M & TE within calibration (N/A)

☐ Procedures, correct revision

☐ Industry OE / Lessons Learned

☐ Human Error Traps identified

☐ Peer or System / Component expert consultation

☐ Program Impacts defined

☐ Affect on configuration / Control / Documentation

☐ Personnel Safety considerations

☐ Documentation of results

Comments: Review all the HV tools prior to starting CERF-000580. I reviewed TER-2476 and communicated w/ the vendor. Self & peer checks upon completion

Engineer: George Boy

Date: 3/23/04 Eng. Section: 0074

OPS **OPERATIONS TASK**
POST-JOB BRIEFING
BEAVER VALLEY

(Briefing Should Cover The Following Items)

Task: 205T-15, 18, 2

☒ Crews Shall Adhere To Communications Expectations For Direction And Information Exchange During Briefing.

☐ Acceptance Criteria Met? Did We Achieve Desired Outcome?

☐ Tools: Test Equipment, Keys, Returned.

☐ NIMS Entries/Carryover Entries.

☐ Independent Verifications Completed.

FENOC BEAVER VALLEY
MAINTENANCE EXCELLENCE

Work Order # 2000 27646 Unit 2

System 2-36 Asset 2EGO-60

PRE-JOB / REVERSE BRIEF

☐ SCOPE: Review & Discuss Procedures, Work Orders & Tech. Specs.

☐ JOB HAZARDS & PRECAUTIONS REPLACE HOSES

☐ PHYSICAL ACTIVITIES: Lifting, Pushing/Pulling, Eyes on Hands, Eyes on Path, Line of Fire, Rushing

☐ PERSONNEL PROTECTIVE EQUIPMENT LIVE ENGINE

☐ CLEARANCE: ☐ Verified Safe ☐ Signed On ☒ Energy Check

☐ PROTECTED TRAIN: A AFFECTED OK TO PROCEED

☐ OUT OF SERVICE TIME: ☐ PRA ☐ Tech. Spec. ☐ Maint. Rule

☐ EXPECTED PLANT RESPONSE: Alarms/Defects/Trips/Interlocks

☐ IDENTIFY PLANT TRIP SENSITIVE EQUIPMENT / DISCUSS PRECAUTIONS TO BE TAKEN

☐ INTERFACES: ☐ GFD ☐ RadPro ☐ Chemistry ☐ Security ☐ QC Other HK

☐ RAD WORK PRACTICES: RWP# N/A Expected Dose _____ ALARA Review _____ Waste Minimization IV C

☐ CHEMICAL CONTROL (MSDS) Flammable Storage & Fluid Control

☐ HOUSEKEEPING & FME OFF

☐ DOCUMENTATION CHECKED

☐ Walkdown Performed / Reviewed ☐ Drawings / VTI Controlled

☐ Risk Review Performed / Level ☐ Calculations / Data Transfer

☐ Work Order Signed On ☐ Fire Watch Log

☐ Procedure Approved for Use QC CHECKED

☐ PERMITS: Hot Work ☐ Confined Space ☐ SWP ☐ N/A

☐ PARTS: Staged Proper Quality Class ☐ N/A

☐ TOOLS / EQUIP. / M&TE: (If special, note in WIP Log)

☐ QUAL AREA: _____ Qualified? YES NO

☐ ROLES & RESPONSIBILITIES

☐ INDUSTRY EVENTS & LESSONS LEARNED

☐ EXPECTED RESULT & CONTINGENCY

What are the critical steps? _____ What barriers / defenses are in place? _____

What could go wrong? _____ When do we stop? _____

Error precursors? _____

☐ HUMAN PERFORMANCE TOOLS: STAR ☐ Self / Peer Checks ☐ Clear Communications ☐ Place Keeping ☐ QUOTA

HUMAN PERFORMANCE TOOLS:

WALBUR LED AN EXCELLANT PTB FOR A DIESEL GENERATOR JOB ON FLEX HOSES. GOOD COMMUNICATION & STRESS OF HUMAN PERFORMANCE TOOLS

MARK E McMAHON 13630 8/17/04



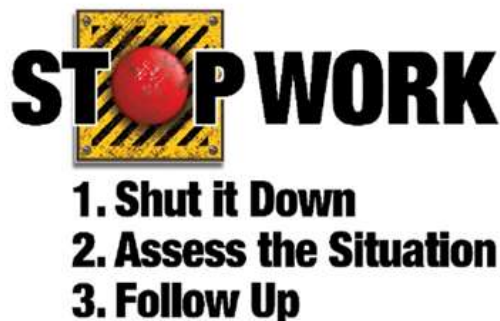
Pre-Job Risk Assessment



Name:	
Date:	
Time/Shift:	
Location:	
Supervisor:	

Job Description/Number:

**Remember, you always have the authority and responsibility to STOP WORK if you identify any unsafe conditions.*



Evaluate the task and list all actual or potential hazards.

Based on the hazards identified, list the controls that will be used to mitigate risk

What Life Saving Rules apply to this job?

Working at Heights	
Lockout/Tagout	
Machine Guarding	
Confined Spaces	
Suspended Loads	

PRE-JOB RISK ASSESSMENT FORM 3170A (05/3/2019)

What permits/authorizations do you need?

Hot Work	
Excavation	
Critical Lift	
Scaffold Inspection	
Other:	

What PPE do you need?

Safety glasses	Gloves	
Safety Shoes	Respirator	
Hard Hat	Goggles	
Face Shield	FR Clothing	
Ear Plugs	Chem. Resistant Clothing	
Other: (specify)		

Post-Job Brief

Y N

Is the work site cleaned up?		
Job status communicated?		
What worked well?		
What can be improved?		

WORK S.A.F.E.R.

Summarize critical steps <i>What does the task involve?</i>	Anticipate errors/mistakes <i>What can go wrong?</i>	Foresee consequences <i>What is the worst that can happen?</i>	Evaluate controls/defenses <i>What can you implement to eliminate hazards?</i>	Review previous experience <i>How has this been done in the past?</i>
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Safety Pause



SAFETY PAUSE
**WHEN STARTING,
RETURNING OR
INTERRUPTED ...**

- 1. Explore:** (Look up, down & around)
 - Recognize hazards & controls
 - Any potential challenges?
- 2. Review / Follow Rules**
 - Life Saving Rules / JSA / Job Brief
 - PPE / Safety Equipment
- 3. Perform Final Safety Check**
 - What is the worst that can happen and why won't it?
 - Have all questions been answered?



**STOP if Unsure and
Ask for Help!**

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“Situational Awareness”





Safety Pause



2-Minute Drill

WHEN STARTING A JOB OR RETURNING TO A JOB SITE...

- Explore:** (look up, down and around)
 - On the Right Train / Component?
 - Are Conditions as we discussed them at the Pre-Job Brief?
 - Any other jobs underway in the area?
 - Any trip-sensitive components present?
 - Any new job site hazards?
 - Any other job site changes?
- Review the Rules:**
 - Procedure / Work Document use
 - Duties, Roles and Responsibilities
 - Stop points / Contingency actions
- Verify Readiness to Proceed:**
 - Conduct SAFER Dialogue if appropriate
 - Are we mentally engaged in the task?
 - Are we all on the same/right step?

2-Minute Drill

Stop ... Look ... Think ... Engage

- Barriers Intact?
- Right Work Location / Component?
- Bump Hazards?
- Safety Hazards & Mitigation?
- What Can Go Wrong & What Are We Doing to Prevent?
- Has Anything Changed from the Brief / Preview?

STOP STOP IF CONDITIONS ARE NOT AS BRIEFED!

FENOC 2-Minute Drill

STOP, LOOK AND THINK!

- Are we on the correct Unit/Train Component?
- Proper for the task:
 - PPE & FME Controls
 - ALARA Techniques Briefed Appropriately?
 - Clearances verified and signed on?
- Are there any job site hazards?
- How can we correct/avoid them to prevent injury?
- Does the area contain any of the following:
 - 2 Foot Zone Rule / Bump Hazards
 - Trip-Sensitive Equipment
 - Protected Equipment Postings
 - Other jobs in the Area
- Has our plan changed or does it need to change? If yes, then:
 - STOP!
 - Place the job in a safe condition
 - Contact supervision
- What are the Critical or Risk Important steps for this task?
- What could go wrong and what are we doing to prevent it?

Two Minute Rule

"Our work is never as urgent, nor our schedule as important, that care cannot be taken to avoid injury."

Take two minutes to evaluate your job site.

A) Look up and down, look all around

B) Ask yourself or each other:

- "What are the hazards?"
- "How can I get hurt?"
- "What is different?"

C) Take action to understand or mitigate any hazards before proceeding

Need help? Contact your supervisor.

BRAIDWOOD STATION

"TAKE 2"

Ensure that:

- ☒ Nuclear
- ☒ Industrial
- ☒ Radiological Safety

Has been properly evaluated

FirstEnergy Utilities

Job Site Conditions

Are we on the correct Circuit or Component?

Engaged & on the same / right step

Proper for the task:

- PPE, tools and equipment

Have we positively identified and properly controlled all energy sources?

- Clearance verified
- Tested-de-energized
- Proper grounding

Are there any job site hazards?

How can we correct/avoid them?

Does the area contain any of the following:

- Barricaded areas
- Trip-Sensitive Equipment
- Component
- Other crews working in the area
- Bumping Hazards

How can we prevent an injury?

Is our plan changed or does it need to change? If yes, then:

- STOP!**
 - Place the job in a safe condition
 - Conduct new job briefing

What are the critical steps, if any, for this task?

Any action that will trigger immediate, irreversible, intolerable harm if that step, or a previous one, is performed improperly

FirstEnergy Utilities

Potential Hazards

- Permits/Procedure
- Confined Space
- Overhead Loads
- Chemical Use/Storage
- Energy Control
- Electrical
- Line of Fire
- Traffic
- Dog/Bee/Tick Bites
- Pinch Points
- Bending/Lifting
- Heat/Cold Stress
- Housekeeping
- Lighting/Ventilation
- Slips/Trips/Falls
- Sharp/Wet/Wet Surfaces
- Weather

The Risk Challenge

Assess the Risk

- Anticipate errors that could occur at each critical step.
- What could go wrong?
- What is the likelihood?
- What are the possible consequences?
- What is the worst that could happen?
- How do we prevent it from happening (Human Performance Tools, controls and barriers, defenses)?

MAKE SAFETY A WAY OF LIFE

2 minute DRILL @ the Job Site

- What are the hazards in the area?
- How could I get hurt?
- Have I reviewed the applicable JHA?
- Do I have the proper PPE?
- Are proper safety barriers in place?
- Am I on the correct unit / train / component?
- How will I maintain Status Control?
- Do I have the necessary FME tools?
- Are my planned dose reduction techniques appropriate?
- Am I impacting Security? (if yes call x2222)
- What else could go wrong?
- Do I need to go have I changed the plan?

PSEG Nuclear LLC

Two-minute Rule

"Our work is never as urgent, nor our schedule as important, that care cannot be taken to avoid injury."

Take two minutes to evaluate your job site.

A) Look up and down, look all around

- Prevent dropped/falling objects
 - Use lanyards
 - Use netting
 - Use toe boards
- Prevent Foreign Material Exclusion (FME)

B) Ask yourself or each other:

- "What are the hazards?"
- "How can I get hurt?"
- "What is different?"

C) Take action to understand or mitigate any hazards before proceeding

Need help? Contact your supervisor.

NOTHING IS ROUTINE!

McCarl's

Take a Moment for Safety Safety Self-Check

- Did I review and understand the Task Plan for Safety?
- What hazards are in my work area?
- How could I get hurt performing this task?
- Can I do this job safely?
- Do I have the proper PPE?
- Has my energy been verified?
- Am I on the correct Unit/Train/Component?
- Has anything changed?
- What else can go wrong?
- Have I done my part to keep others safe?



Post Job Brief

What

A Post-Job Brief is performed to gather information and lessons learned from workers after task completion.

Why

- To identify what worked well?
- To identify what we can improve?
- To identify any lessons learned that need to be captured and passed on to others?

When

After task completion.

**POST JOB BRIEF**

After task discuss:

- ☐ What worked well?
- ☐ What can we improve?
- ☐ Any lessons learned that need to be captured and passed on to others?

**Every Job is a Reflection of You!**

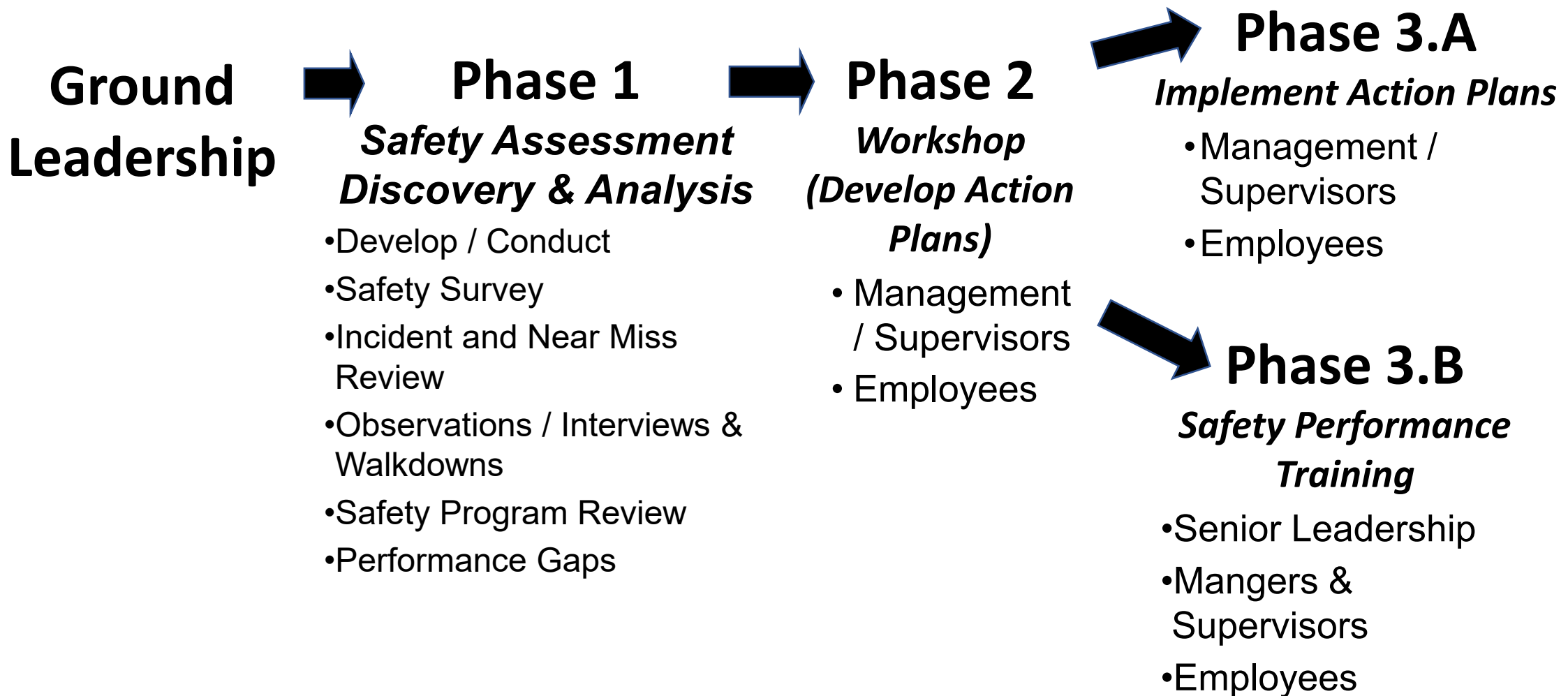
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Safety Performance Plan

Starting Your Journey





Example Safety Survey

27 Questions

Each question was rated from 1 (Low) to 5 (High) with open ended questions 26 and 27.

1. Employee Engagement
2. Business Plan Safety Initiative to Improve Safety
3. Relationships
4. Expectations for Safety Performance
5. Leaders Demonstrate Commitment to Improving Safety Performance
6. Safety Culture
7. Upward Communication
8. Communication
9. Safety Accountability
10. Safety Improvement Plans, Goals and Performance Indicators
11. Safety Incident Investigation Reports
12. Management & Supervision Feedback & Coaching
13. Follow-up of Safety Issues
14. Safety Related Work Orders
15. Safety Meetings
16. Previous Safety Assessments
17. Programs, Procedures and Work Instructions
18. Training
19. Job Site Conditions and Housekeeping
20. Stop Work Incentives
21. Rewards and Recognition
22. Pre-job Briefs/Risk Assessments
23. Roles and Responsibilities
24. Two Minute Rule
25. Life Saving Rules
26. What are the top 3 Strengths and Improvement Opportunities
27. If I were CEO of the company, what is one thing I would change to improve safety and why?



Example Safety Performance Survey

Longridge Energy Safety Performance Survey

This survey will ask you various aspects of safety.
Read each item, then rate it from 1 (Low) to 5 (High).
Your comments are **confidential** and will greatly aid improving safety performance.

Department: OPS

Employee Classification: Management

Hourly ☒

1. Employee Engagement			
RATING	1	3	5
	People are involved with safety by doing their job safe and safety performance is good enough.	People have limited opportunities to be involved with safety and seldom volunteer.	People have many opportunities and are actively involved with safety. There is Ownership, Pride and Teamwork.

2. Business Plan Safety Initiative to Improve Safety			
RATING	1	3	5
	I am not aware of any plans to improve safety performance.	I am aware of some plans to improve safety performance.	I am very aware of our plans to improve safety performance.

3. Relationships			
RATING	1	3	5
	Management, Supervision and Workers are frequently at odds over safety issues.	Management, Supervision and Workers work together, but need to improve working relationships for resolving safety issues.	Management, Supervision and Workers have an excellent working relationship for resolving safety issues.

4. Expectations for Safety Performance			
RATING	1	3	5
	Expectations for Safety Performance are not clear.	Expectations for Safety Performance are clear but people are not sure how to meet expectations.	Expectations for Safety Performance are clear and people openly practice such behaviors to meet expectations.

5. Leaders Demonstrate Commitment to Improving Safety Performance			
RATING	1	3	5
	Leaders commitment and support for Safety is not apparent.	Leaders commitment and support for Safety is apparent for most people with mixed messages.	Leaders commitment and support for Safety is highly visible.

6. Safety Culture			
RATING	1	3	5
	The culture is not conducive to Safety.	The culture is inconsistent with mixed messages on Safety.	A strong Safety Culture exists, supported clearly and consistently by management.

Longridge Energy Safety Performance Survey

23. Roles and Responsibilities			
RATING	1	3	5
	Roles and responsibilities for safety are not clear nor understood.	Roles and responsibilities for safety are not always clear nor understood.	Roles and responsibilities for safety are clear and understood.

24. Situational Awareness			
RATING	1	3	5
	Situational Awareness is not understood, infrequently performed with little or no worker participation.	Situational Awareness is infrequently performed with some worker participation.	Situational Awareness is performed for every job with excellent worker participation.

25. Life Saving Rules			
RATING	1	3	5
	Life Saving Rules are not understood, nor are they consistently followed and reinforced.	Life Saving Rules are somewhat understood, followed, and reinforced.	Life Saving Rules are clearly understood, always followed, and consistently reinforced.

26. What are the TOP 3 Safety Strengths and Improvement Opportunities?

Strengths	Improvement Opportunities
1. All safety ideas are taken into consideration 2. We are able to form the safety program to fit our needs 3. We are not at the "its always been that way" stage	1. Stop the daily POD meeting. It should be once a week. Nobody really listens in that meeting. Keep the daily safety and compliance topic but stop the rest. 2. The corporate LOTO program is garbage. Too many gray areas 3. Need to employ common sense more often

27. If I were the CEO of the company, what is one thing I would change to improve safety and why?

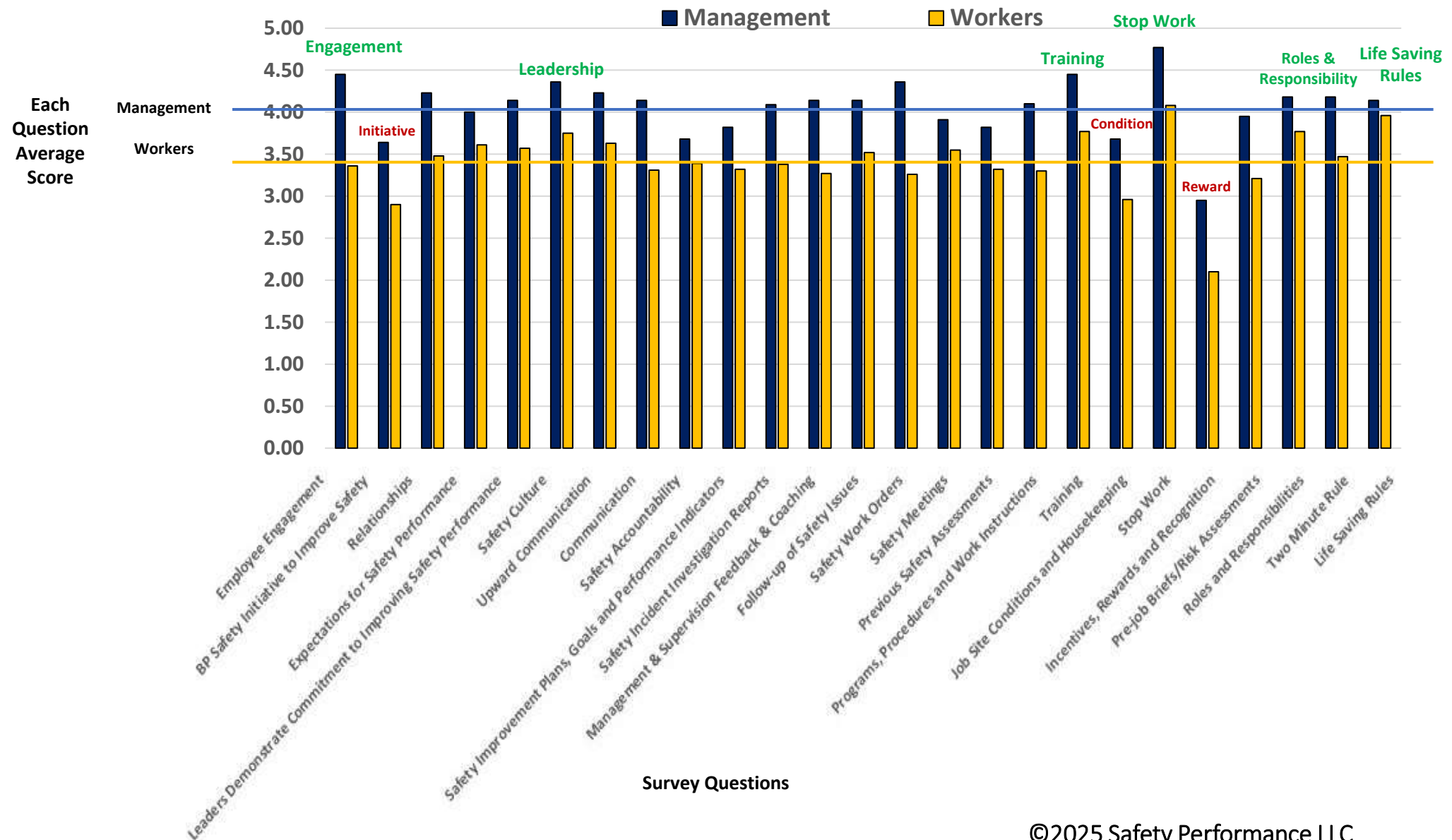
I would split the corporate safety programs up into different industries. That way the programs could be more defined. There is too much gray area in the corporate programs. The LOTO program should spell out every situation you could find yourself in and how to deal with it. Our program does none of that.



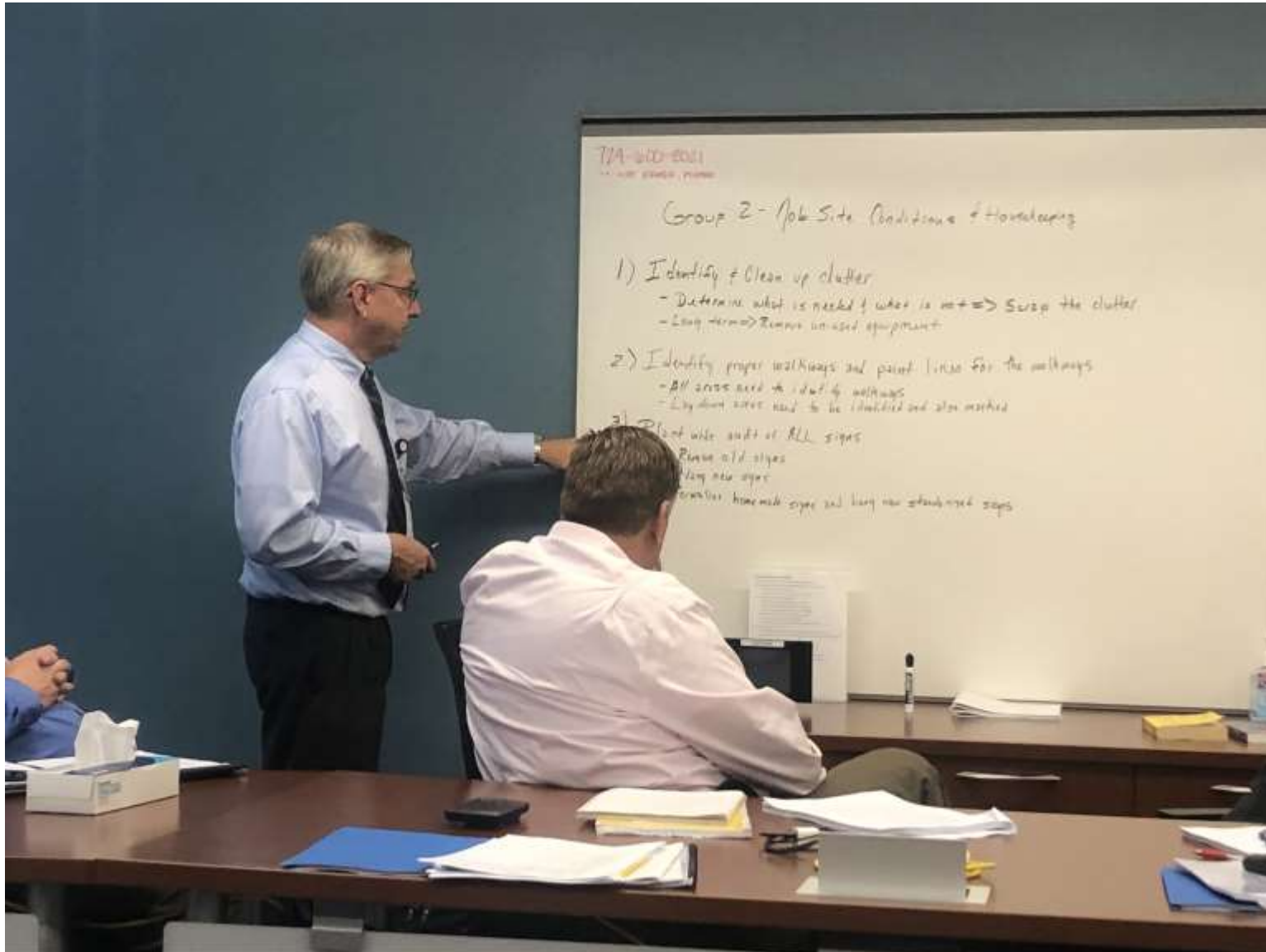
Example Safety Survey

Manufacturing

49% Participated 186 of 377 Employees



Workshop





Example Safety Survey

Safety Survey Question No. 26

“What are the TOP 3 Strengths and Improvement Opportunities?”

902 Strengths Received

1. Stop Work and the 2 Minute Rule – 113
2. Training – 91
3. Life Saving Rules – 72

932 Improvement Opportunities Received

1. Job Site Conditions & Housekeeping – 146
2. Communications – 92
3. Training – 78

Safety Survey Question No. 27

“If I were the company CEO , what is one thing I would change to improve safety & why?”

151 Comments Received

1. Walk the Talk- 22
2. Improve Job Site Conditions & Housekeeping – 18
3. Provide Incentives and Recognition – 16
4. Hold Everyone Accountable for Safety – 15
5. Improve Communications – 12
6. Stress Safety over Production – 11



Example Safety Assessment

Strengths



- **Management and Union Leadership's** commitment to improving Human Performance and willingness to “Solve Problems & Fix What We Focus On.” When concerns with the increase of significant events, the management team has taken a proactive approach to intervene and reverse the trend including an Operations Excellence team assessment.
- **The new Work Package Planning Procedure** provides a good opportunity to standardize work instructions including the identification of critical steps and actions, and the use of appropriate human performance tools.
- **Observations** provided good details and improvement opportunities. During September 2023, there were 161 observations by 42 observers.

Incidents

	Significant	Other
2020	11	30
2021	3	23
2022	2	15
2023	4	13

Example

Area for Improvement



Shallow Investigations of Human Performance Behaviors Not Met & Potentially Significant Incidents

Recommendations

- Improve reporting of observed “behaviors” that met or did not meet Human Performance Tools standards. Observation details should specify the correct behavior that met standards or the behavior that did not meet standards and why.
- Develop guidance for reporting and investigation of an incident that has the “potential” to be significant. The Potentially Significant incident would be considered the last level of defense. A Potentially Significant incident would be related to one of the Duke’s “Keys to Life” and receive the proper level of investigation.



Workshop

Example

Commitment to a Safety Strategic Plan

Safety Performance Strategic Plan



Director, Site Operations

Maintenance

Director, Performance Improvement

Director Engineering

Outage & Work Management

Site Vice-President

Safety Performance Strategic Plan

Our Vision

The people at Beaver Valley Power Station are committed to excellence in Safety & Human Performance. A Strategy has been developed in support of the FENOC Strategic Objectives for Safe Event-free Plant Operation. An action plan has been developed to add focus to this initiative, as well as emphasize ownership and accountability. The signatures in this document signify the individual's ownership and accountability to this plan.

Manager, Operations

Superintendent, Unit 1 Operations

Superintendent, Unit 2 Operations

Manager Maintenance

Superintendent, Instrument & Control Maintenance

Superintendent, Electrical Maintenance

Superintendent, Mechanical Maintenance

Superintendent, Planning & Support

Superintendent, Maintenance Services

Superintendent, FIN Team

Superintendent, Nuclear Construction

Manager, Site Projects

Manager, Nuclear Training

Chemistry Manager

Manager, Radiation Protection

Manager, Design Engineering

Manager, Plant & Equipment Engineering

Manager, Technical Services Engineering

Manager, Work Management

Manager, Outage Management

Manager, Site Protection

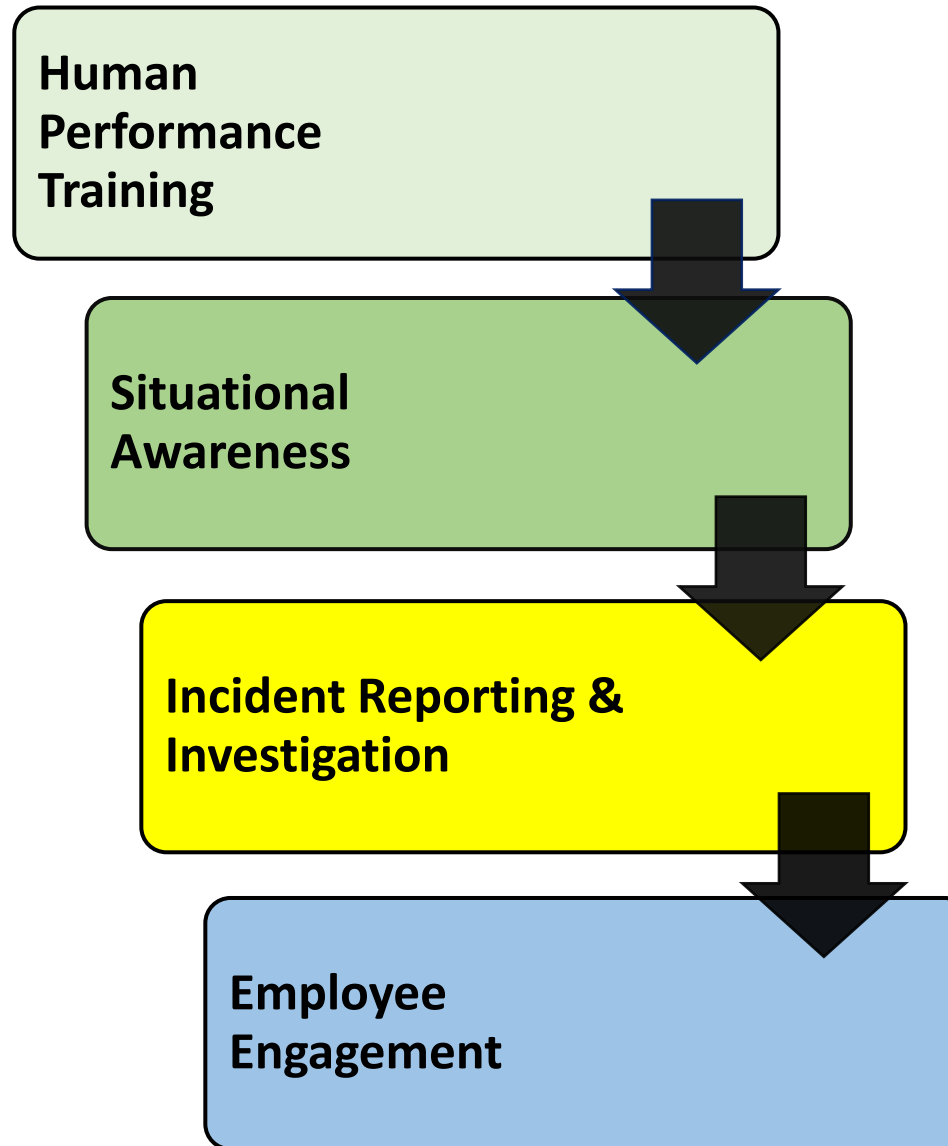
Manager, Human Resources

Manager, Regulatory Compliance



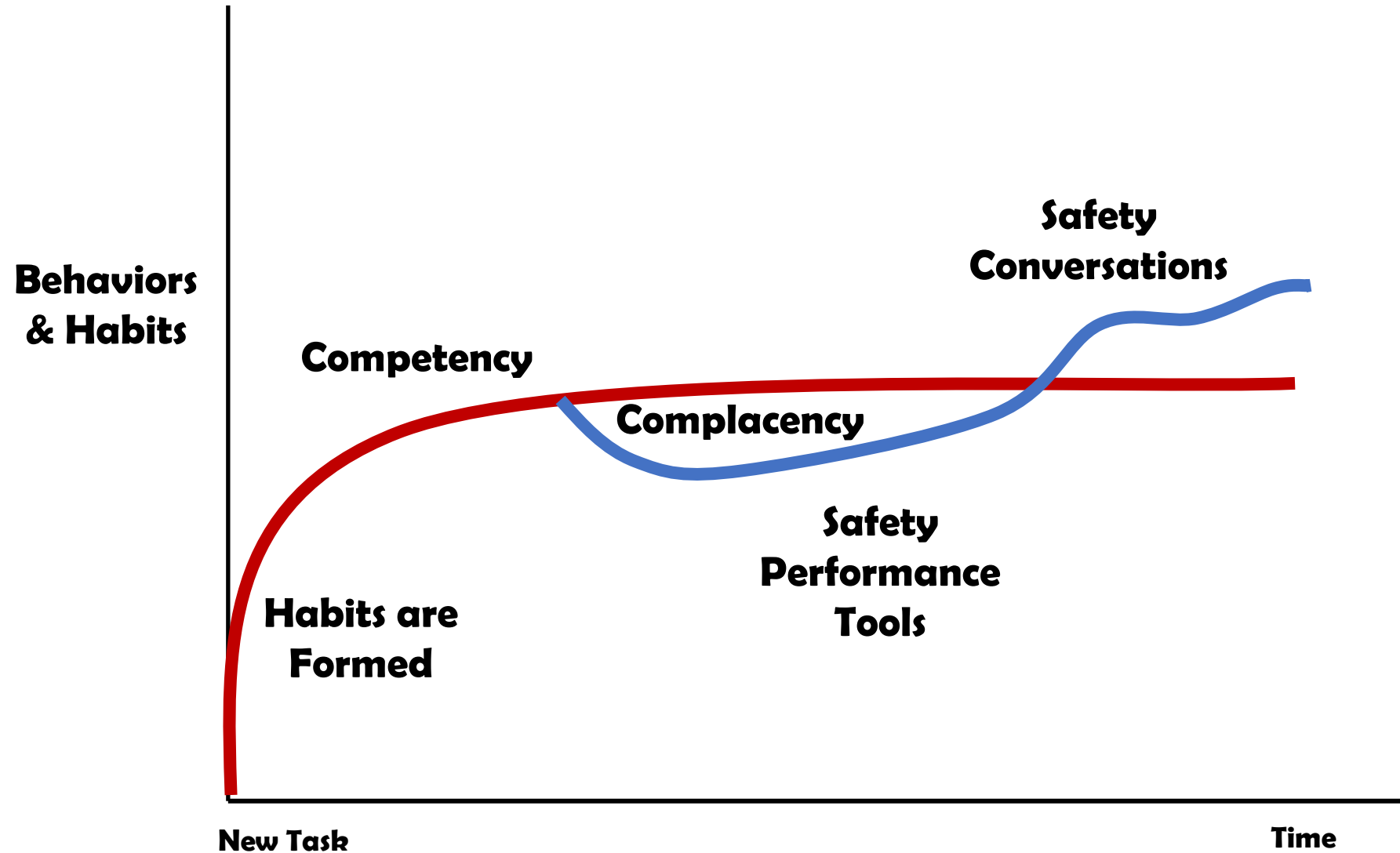
Workshop

Example Improvement Plan





Participation Guards Against Complacency





Training Includes Technical and “Soft” Skills

Piping Challenge Procedure

PREREQUISITES



Conduct a Pre-Job Brief.

Wear proper PPE for the task at hand.

ACTION

LOC

Initials

NOTE: The LOC column identifies where the associated ACTION is accomplished:

“C” = performed in the control room

“L” = performed locally

“LP” = performed at a local panel

“C/L” or “L/C” = a combination of control room and local activities

NOTE: Terminate the exercise if observed actions could injure personnel or damage equipment.



CAUTION: No foreign material shall exist in piping or valve. If foreign material is found, remove immediately.

1. INSERT yellow 6-inch pipe into red base. Direction of flow facing up.	L	<i>[Signature]</i>
2. INSERT red 6-inch pipe into blue base. Direction of flow facing down.	L	<i>[Signature]</i>
3. PLACE elbow on red 6-inch pipe with elbow facing east.	L	<i>[Signature]</i>
4. PLACE elbow on yellow 6-inch pipe with elbow facing west.	L	<i>[Signature]</i>
5. SCREW white 5-inch pipe into elbow that is on yellow 6-inch pipe. Direction of flow with 6-inch pipe.	L	<i>[Signature]</i>
6. SCREW yellow 5-inch pipe into elbow that is on red 6-inch pipe. Direction of flow with 6-inch pipe.	L	<i>[Signature]</i>





Safety ...

No Natural Feedback Mechanism

If we take shortcuts,
the *naturally occurring positive consequence*
from doing the job with less effort can cause
undesirable behaviors to continue.





Why Observe & Coach?

- A person's risk perception comes from personal judgment about a situation



- Risk perception is not always accurate for routine low risk activities



Let's Talk Safety & Listen

1. See something?
2. Say something ...
ask how job is going?
– Listen!

3. Talk about safety:

- ☐ Safe work practices
(2 or 3)

- ☐ Improvement opportunities or concerns (if any)

4. Give thanks and summarize





Let's Talk Safety & Listen Examples

Safe Behavior

"I thought you did a nice job with keeping your eyes on the task because it just takes a second for something to happen."

(Pause)

"And I saw you stayed clear of the moving parts which is good, so your hands don't get cut or pinched."

(Pause)

"And I thought it was good that you kept the tools and materials away from the machinery so that nothing rolls in and gets kicked back out."

Improvement

Opportunity

"I just wanted to ask you if those are the best gloves for this type of task?"

(Pause)



Recognizing Behavior

It's more than just saying "good job"

- Highly personal and must be earned.
- Must be real, frequent and immediate.
- Most effective way to sustain safe behavior.



"I observed that you wearing all the required PPE with total focus on following your procedure. If you had not, there could have been an incident."



Recognizing Behavior

What If?

***Shawn Williams
did not coach
Radiation Safety
Work Practices?***



Shawn Williams

Coaching Safety & Radiation Safety Work Practices

Shawn,

Your efforts to improve Safety and Human Performance at Beaver Valley Power Station are greatly appreciated.

As indicated in this KIP Human Performance Observation, the implementation Human Performance Tools [Briefings, Communication Skills, Procedure Use, Self-Checking (STAR), Peer Checking and a Good Questioning Attitude] are vital in improving Safety and Human Performance at our station.

You have set a great example for your peers to emulate in utilizing these skills. We urge you to not only continue exercising these skills, but also to encourage your fellow workers to practice them as well at work and at home.

On behalf of our Plant Safety Committee and Human Performance Leadership Team, thank you for your personal effort and commitment to Keep Improving Performance 24 Hours a Day, 7 Days a Week, 365 Days a Year!

FENOC KIP Human Performance	
Keep Improving Performance	
☒ BEAVER VALLEY	☐ DAVIS-BESSE
☐ PERRY	
☒ Introduce Yourself and Discuss The Purpose of Observation	Safe Task ☒
☒ Protective Equipment (Hard Hat, Safety Glasses, Fall Protection, etc.)	☒
☐ Electrical/Mechanical Hazards (Loose Clothing, Lanyards, Exposed Metal, etc.)	☐
☐ Physical Activities (Lifting, Pushing/Pulling, Eyes on Hands/Path, Line of Fire, Rushing/Hurrying)	☐
☐ Tools & Equipment (Use, Condition, Guards, etc.)	☐
☐ Procedure Use and Adherence	☐
☐ Office Safety	☐
☐ Housekeeping and FME	☐
☒ Radworker Practices	☒
☐ Chemical Control	☐
☒ Event-Free Tools/Techniques (Training, Job Briefs, Communications, Procedure Adherence, Self & Peer-Checking (First Check, Flagging/Robust Barriers), Questioning Attitude (Stop if Uncertain) and Verification Practices)	☒
Observation: <u>Shawn Williams</u>	
<u>coaching junior RP tech on job</u>	
<u>coverage - used all proper PPE</u>	
<u>good rad worker practices, excellent</u>	
<u>3-way comms - GREAT MENTORING</u>	
Action Taken: <u>Congratulated Shawn on</u>	
<u>excellent mentoring</u>	
<u>gave feedback on performance</u>	
Condition Report Number, if written: <u>56</u>	
Observer (Print): <u>J. Manning</u>	
Section/Department: <u>RADPRO</u>	
Mail Stop: <u>7507</u>	
Date: <u>4/24/08</u>	
Put in Collection Box or Send to Human Performance	
Safe and Event-Free Performance	



Recognizing Behavior



What If?

***Paul Rankin
did not have a
good
questioning
attitude?***



Recognizing Behavior

What If?

Russ Chiodo did not performed a good pre-job brief?

S.T.A.R.

BEAVER VALLEY
MAINTENANCE EXCELLENCE

Order # 200248689 Unit 2
System GO Funt. Loc. POLAR CRANE
PRE-JOB (REVERSE BRIEF) ZERN-201

☒ SCOPE: Review & Discuss Procedures, Work Orders & Tech. Specs.
☒ PERSONAL PROTECTIVE EQUIPMENT
☒ PHYSICAL ACTIVITIES: Lifting, Pushing/Pulling, Eyes on Hands, Eyes on Path, Line of Fire, Rushing
☒ CLEARANCE: ☐ Validated Functional Location ☐ Verified Safe ☐ Signed On ☐ Energy Check
☒ DUAL UNIT EQUIPMENT IN SAME BUILDING
☒ PROTECTED TRAIN: N/A ☐ AFFECTED ☐ OK TO PROCEED
☒ OUT OF SERVICE TIME: ☐ OPA ☐ Tech. Spec. ☐ Maint. Rule N/A
☒ EXPECTED PLANT RESPONSE: Alarms / Defects / Trips / Interlocks
☒ IDENTIFY PLANT TRIP SENSITIVE EQUIPMENT and DISCUSS PRECAUTIONS TO BE TAKEN
☒ INTERFACES: ☐ OPS ☐ RadPro ☐ Chemistry ☐ Security ☐ QC ☐ Other
☒ RAD WORK PRACTICES: RWPE 202-5003 ☐ RP Brief
☐ Expected Dose ☐ ALARA Review ☐ Contamination Controls ☐ Waste Minimization
☒ CHEMICAL CONTROL: (MSDS) Flammable Storage & Fluid Control
☒ HOUSEKEEPING / FME / TRANSIENT MATERIALS
☒ DOCUMENTATION CHECKED:
☐ Walkdown Performed / Reviewed ☐ Drawings / VTI Controlled
☐ Risk Review Performed / Level ☐ Calculations / Data Transfer
☐ Work Order Signed On ☐ Fire Watch Log
☐ Procedure Approved for Use ☐ FME Log
☒ PERMITS: ☐ Hot Work ☐ Confined Space ☐ SHP ☐ N/A
☒ PARTS: ☐ Staged ☐ Proper Quality Class ☐ N/A
☒ TOOLS / EQUIP. / M&TE: (If special, note in WWP log)
☒ QUAL AREA: POLAR CRANE Qualified? ☒ YES ☐ NO
☒ ROLES & RESPONSIBILITIES
☒ CONDUCT S.A.F.E.R. DIALOGUE:
☐ Summarize critical steps, job hazards (e.g. asbestos, lead, etc.) & precautions.
☐ Anticipate errors or mistakes for each critical step.
☐ Envision a probable or worst case consequence if an error was to occur during a critical step.
☐ Evaluate defensive barriers or contingencies to prevent and catch errors and to mitigate consequences for errors at each critical step.
☐ Review previous industry experience & lessons learned relevant to the specific task.
☒ HUMAN PERFORMANCE TOOLS: Training, Procedure Adherence (placekeeping), Communications, Questioning Attitude (OOPS), Self & Peer Checking (including First Check, Flagging, Robust Barriers and Verification Practices) Job Briefs

★

What is the worst that can happen?

→ Take CARE when climbing ladder
→ Do NOT PARK over Steam
GENERATOR - Go to back side AREA
→ Have enough EXTRA batteries
→ Give good turnover brief to Relief
→ Do thorough inspection

Russ Chiodo 13470 0161 5-1-08
NAME SAP No. Section Date
(Rev. 4)



Recognizing the Coach

“Operators used good communication techniques in a very noisy environment. However, 3-way was not used 100% of the time. Coached importance of 100% 3-way communication”

Jim Schwer Observation of Pump Work

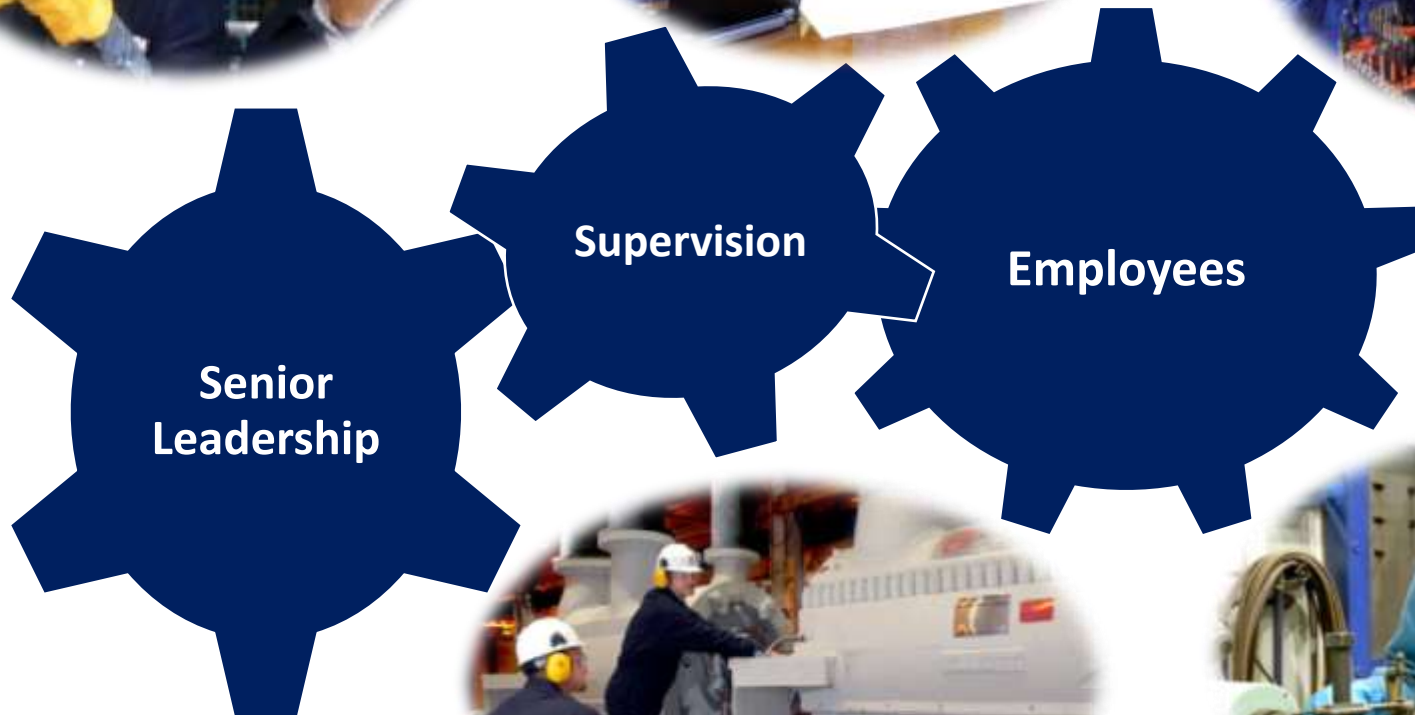
“Post-job critique not completed until the next day due to shift turnover. Electricians attended the brief. This was essential to having a firm understanding of the tasks performed”

Matt Morgan Observation of Post-job Brief for Battery Charger Work Performed





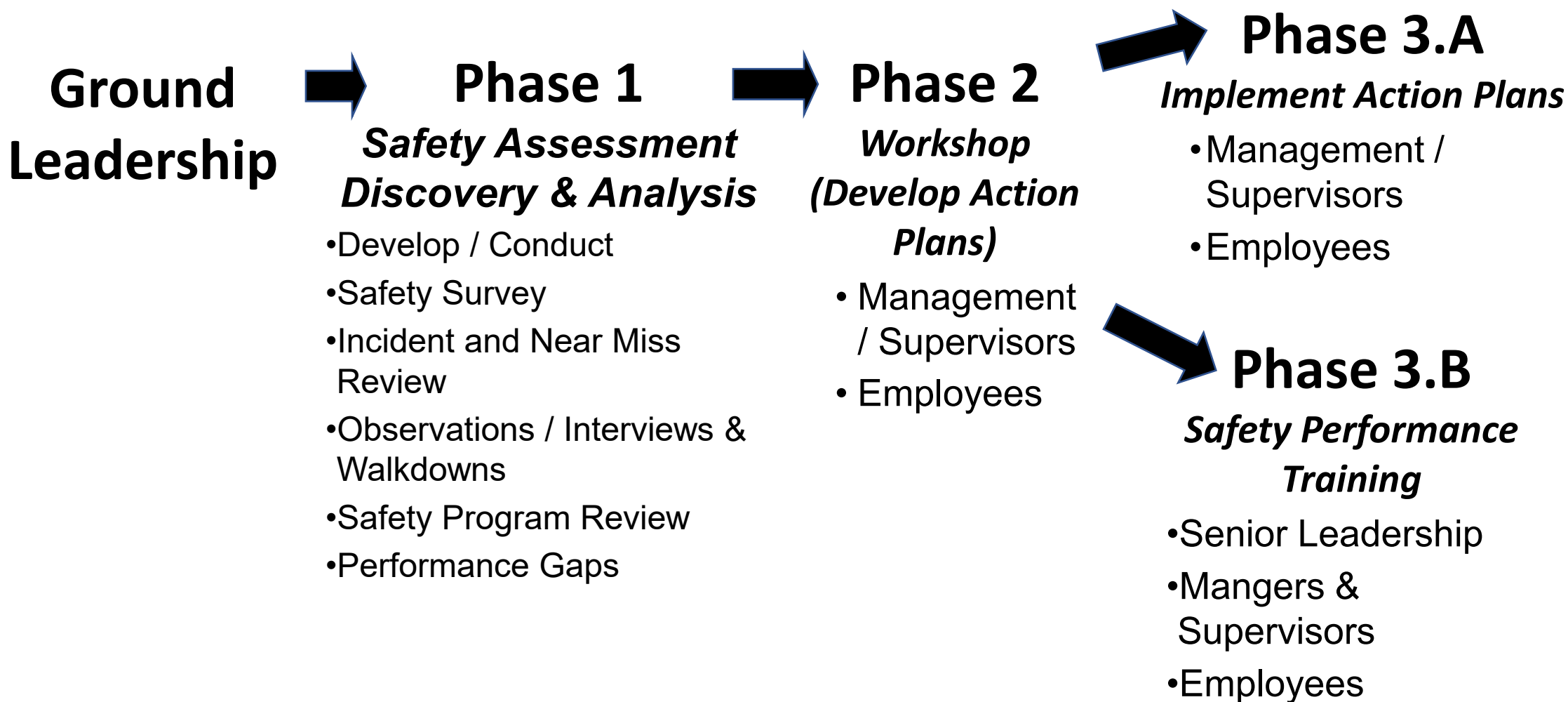
An Aligned Engaged Team Leads to Safety Excellence!





Safety Performance Plan

Starting Your Journey





PROFESSIONAL SAFETY MAGAZINE

NOVEMBER 2019

HUMAN PERFORMANCE
Peer-Reviewed

A Systematic Approach to SAFETY PERFORMANCE

By John F. Kowalski and John C. Summers

IN TODAY'S BUSINESS WORLD, success necessitates meeting more than the required minimum standards (regulations). Safety performance is about individuals, leaders and the organization working together using safety (human) performance fundamentals and tools to protect personnel, property and the place (environment).

Safety has come a long way since the 1970s. For years, traditional safety focused on separating individual pieces of the process to obtain results. A systematic approach to safety performance is fundamentally different from traditional safety in that it focuses on the safety process.

A high performing organization is grounded on five fundamental safety performance principles:

- 1) People make errors.
- 2) Organizational values and programs influence behavior.
- 3) Behaviors are influenced by what is encouraged and reinforced.
- 4) Errors and risk can be reduced through the use of safety performance tools.
- 5) Events can be eliminated through the use of defenses.

Senge (2006) defines systems thinking as "a way of thinking about, and a language for describing and understanding, the forces and interrelationships that shape the behavior of systems."

Systems thinking focuses on how people interact with the system in a system, "a set of elements that interact to produce behavior" (Armstrong, 1996). Systems thinking expands its view to take into account increasingly larger numbers of behavior interactions (organization, leader, individual) in a system (the process) that produces desired results.

Each individual plays a key role in working together as part of the organization to achieve the desired safe results. The below table summarizes:

This article provides a systematic thinking approach using human and organizational performance fundamentals and analysis techniques to improve safety performance. The techniques described apply to individuals, leaders and the overall organization.

The authors present a six-part model based on the philosophy that to reduce errors and eliminate events of consequence, adequate human performance tools and defenses must be in place.

The theory aspects are presented, as well as several real-life examples from various industries where applying the correct action or methods leads to improved, consistent results.

Several aspects include those by the individual, as well as those supported and reinforced by the organization.

In all cases, individuals, leaders and the organization should consistently strive for high safety performance standards. An aspect that plays a key part in what safety behaviors are employed is the culture and subculture of the organization. Simply stated, culture can be considered as "the way we do things around here."

To establish a proper perspective, consider that, according to Bureau of Labor Statistics (BLS, 2018a, b) data, the rate of fatalities in the U.S. has almost leveled off (with a recent slight increase) while the rate of nonfatal injuries has steadily declined. Why do significant events, including injuries, continue to occur even though lower-level incident rates are declining? Some may answer that lower-level incidents are not being reported. Why could this be occurring? Possible reasons include:

• Reporting the consequence (i.e., low incident rates), which indirectly encourages non-reporting.

• Creating a punishment atmosphere when lower-level events are reported.

• Not encouraging the reporting of lower-level incidents and near-misses.

Leaders in many organizations tend to reward and recognize job results (production) and frequently overlook or take for granted the prevention behaviors necessary to safely complete the job. Additionally, production results are visible and establish natural feedback, whereas prevention behaviors get no natural feedback. For example, you wear a hard hat and safety gloves and shoes all day in a hot, humid environment. At the end of the workday, nothing happened. So, you might say, "I was really glad I wore this hard hat, safety glasses and shoes; they saved me to wear more. I probably lost some additional heat, and nothing happened that I otherwise would have needed."

We often associate safety with the OSHA incident rate or days without a lost-time incident. With this premise, the organization could (and sometimes does) conclude that no OSHA recordables means no problems.

In some organizations, after an incident (event) the primary focus is on identifying what the person did or did not do that caused the event. Additionally, the cause is frequently identified as an "unsafe behavior" and opportunities for improvement focus on the individual. Dekker (2014) offers:

Do you try to understand why it made sense to do what she did? The worker probably did not come to

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FIGURE 1
SAFETY PERFORMANCE
PROCESS



FIGURE 2
NORMALIZED
DEVIANCE



work to do a bad job. If what she did made sense to her, it probably makes sense to others as well. That points to systemic conditions to examine.

If an assumption is made that individuals come to work to do their jobs, not to get hurt, then digging a little deeper to identify organizational factors that influence individual behaviors is warranted. In the worst possible scenario, the person performed the correct action, and a hidden (latent) flaw or problem existed, leading to the event. All the individual behavioral change actions in the world will not improve this condition.

Pushing back the layers can lead to more important questions (and answers):

• What about the behaviors of the leaders?

• Does the investigation include review of the work situation that existed when the event or injury occurred?

• Does it include supervisor and manager follow-up to identify how they may have influenced (or did not influence) on-the-job behaviors?

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• Does the investigation include reviewing preparations for job performance, what job previews, hazard analysis, walk downs or prejob briefings occurred before work commenced?

• What previous operating experience, if any, existed before this performance?

• What was the focus of the job brief?

Often, the focus before and during the task is on what it takes to get the job done. High-reliability organizations also focus on what to avoid while achieving success. A site vice president at a nuclear power plant in northwest Ohio has great words to consider when briefing workers: "We have all the time necessary to perform the job correctly the first time, we just don't have any time to waste."

Safety Performance Process

Safety performance combines individual safety, human performance and organizational performance into one process to protect people, the property (plant) and place (environment). The safety performance process has six key elements starting with organizational behaviors and ending with safe results (Figure 1). Single-to-use programs, processes and procedures, and hazard risk analysis are vital parts of the safety performance process. However, they alone do not guarantee success. To be effective, the alignment of behaviors of the organization, leaders and individuals is needed. Each aspect of the safety performance process is outlined here.

Organizational Behaviors

Safety starts with the culture of the organization. Safety performance is management-sponsored and leadership-driven by the collective behaviors of the company from the board of directors to the workers in the field.

After providing human performance training at a power station in western Pennsylvania, training feedback was solicited from trainees, some of whom provided negative feedback. A meeting was held to discuss the subject material. During the meeting, the attention focused on one individual, a non-union worker and an informal leader who the workers respected. Attendees commented that they liked the training, but that their supervisors would not let them out the human performance techniques.

In the days that followed, after being asked several times to help lead the human performance effort, the informal leader finally agreed to help. With his leadership, the program flourished. Workers became involved with the process and made several suggestions to improve it. Workers also started to coach each other and apply safety performance tools more consistently. A key result was that errors decreased.

Every organization has leaders like this informal leader at all levels of the organization. It is critical to identify and engage these leaders to improve safety performance.

While interacting with hundreds of companies and thousands of employees, the authors have often been asked, "How can we reduce errors?" After analyzing hundreds of consequential events, a few common themes usually appeared. First, individuals were not consistently applying appropriate error prevention tools. Second, and more importantly, defenses to protect against errors were either flawed or missing. On further investigation, the authors frequently identified an organizational weakness. If a program was in place to reduce errors and ensure defenses, it was inconsistently applied. Worst case, there was no program, no systematic approach, to protect individuals and the organization.



Thank You

**"Great leaders are successful when they
influence others to be successful!"**

John Summers 2022

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