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Nuclear Department Fleet Procedure		Page 1 of 81

Title: **HUMAN PERFORMANCE TOOLS**

Approval:

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INFORMATION USE
• **Procedure should be available, but not necessarily at the work location.** • **Procedure may be performed from memory.** • **User remains responsible for procedure adherence.**

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1.0 PURPOSE

1.1 Establish the expectations for the use of the human performance error-prevention tools.

1.2 Provide an understanding of error precursors and which human performance error prevention tools provide the best barriers to eliminate the potential for error.

2.0 APPLICABILITY

2.1 This procedure is applicable to all nuclear generating sites and the nuclear generation corporate office.

2.2 Use of the tools described in this procedure is recommended. Studies and experience have shown that the use of error reduction tools will enhance the ability to minimize errors and thus reduce the frequency and severity of events. While the lack of use of the tools in this procedure may be identified as a contributor to an event, human error alone is rarely seen as a root cause for events. Organizational weaknesses persist that create error likely situations that lead to events. Consequently, the greatest potential for improvement in human performance lies with the identification and elimination of weaknesses in the organization and processes.

3.0 RESPONSIBILITIES

3.1 Department Managers:

1. Implementing the requirements and expectations of this procedure within their departments.

2. Instilling the expectation and the need to use the Human Performance Tools in Site personnel.

3. Routinely participating in training and in-field observation and coaching with their personnel to reinforce use of the tools.

4. Effectively using the Individual and Leader / Supervisor Human Performance Tools described in this procedure.

3.2 Department Supervisors:

1. Routinely observing work in progress and training to promote application of the Human Performance Tools.

2. Coaching regularly to reinforce use of these tools through both positive and constructive feedback. For maximum impact, this feedback can refer to:

   a. Plant events that were avoided.

   b. Instances where the ineffective use of these tools has caused or contributed to plant events.

3. Ensuring that the specific application of the Human Performance Tools is identified and discussed during pre-job briefs.

4. Effectively using the Individual and Leader / Supervisor Human Performance Tools described in this procedure.

3.3 Human Performance Coordinator:

1. Providing a recommendation to training and reinforcing the nature and use of human performance tools.

2. Providing insight to Site Management on the human performance tools that require additional focus based on insights gained from the Observation Program, Corrective Action Program and other trending tools.

3.4 All Individuals:

1. Performing tasks in a thoughtful, conscientious manner.

2. Effectively using the Human Performance Tools described in this procedure.

3. Coaching and reinforcing the expectations for using Human Performance Tools with peers.

4.0 DEFINITIONS

4.1 **Behaviors** - Observable (action) and non-observable (thought) activity by an individual; “what people do.”

4.2 **Coaching** - The process of observing behaviors, comparing them to desired behaviors and providing feedback by reinforcing desired behaviors and correcting those that do not meet expectations.

4.3 **Contact Time** - The cumulative amount of time spent in the company of employees, observing and coaching their behaviors.

4.4 **Error (general definition)** - Human error is an action that exceeds some standard or limit of acceptability. Human error is a behavior that is caused by a variety of conditions related not only to unacceptable individual behavior but also to unsuitable management and leadership practices and organizational weaknesses.

1. **Active Error** - Errors that change equipment, system, or plant state triggering immediate undesired consequences.

2. **Latent Error** - An error, act, or decision that results in organization related weaknesses or equipment flaws that lie dormant until revealed either by human error, testing, or self-assessment.

4.5 **Error-Likely Situation** - A work situation in which there is a greater opportunity for error when performing a specific action or task due to error precursors. An error-likely situation typically exists when task-related factors exceed the capability of the individual (mismatch) at the point of "touching" the physical or paper plant.

4.6 **Error Traps (Precursors)** - An unfavorable condition at the job site or a characteristic of the task or an individual that increases the probability for error during a specific action. A matrix of error traps and tools is provided in Attachment 3.

4.7 **Human Performance Error Prevention Tools** - A collection of standard human error reduction tools intended to prevent events, reduce human errors and improve station performance. (See Attachment 1)

4.8 **Latent Organizational Weakness** - Undetected deficiencies in the management control processes (e.g., strategy, policies, work control, training and resource allocation) or values (shared beliefs, attitudes, norms and assumptions) creating workplace conditions that can provoke errors (precursors) and degrade the integrity of defenses (flawed defenses).

4.9 **Performance Mode** - One of the three modes a human processes information based on one's level of familiarity and attention given to execute a specific task.

1. **Skill-Based Task** – A task driven by stored patterns of pre-programmed instructions. When personnel make an error while performing familiar or well-practiced tasks, it is a skill-based error.

2. **Rule-Based Task** - A task performed following stored rules accumulated via experience and training. A rule-based error is made when a rule (from training, procedure, etc.) is misapplied or a shortcut is taken.

3. **Knowledge-Based Task** - A task with no pre-programmed instructions or rules. An example is problem solving. When an error is made in a situation where rules do not exist or are not known it is a knowledge-based error.

5.0 REQUIREMENTS

5.1 GUIDING PRINCIPLES OF HUMAN PERFORMANCE MANAGEMENT

The following principles, when applied to programs, processes, and interpersonal relationships, encourage excellent human performance throughout the organization cultivating behaviors practiced by individuals to protect the reactor core as well as the reliability of the physical plant:

- People are fallible and even the best make mistakes.
- Error-likely situations are predictable, manageable, and preventable.
- Individual behavior occurs within the context of organizational processes and values, which serve as the principal influence on the choice of behaviors.
- People achieve high levels of performance based largely on the encouragement and reinforcement received from leaders, peers, and subordinates.
- Events can be avoided by understanding the reasons mistakes occur and applying the lessons learned from past events.

The basic purpose of these human performance tools is to help the individual worker maintain *positive control* of a work situation—that is, *what is intended to happen is what happens, and that is all that happens*. This is another way of saying, “Do the job right the first time.” Before taking an action, a conscientious worker understands the significance of the action and its intended result. Such thinking takes time. Every human performance tool slows things down to ultimately speed things up by avoiding delays that accompany events triggered by active errors. When used thoughtfully and rigorously, human performance tools give the individual more time to think about the task at hand - about what is happening, what will happen, and what to do if things do not go as expected.

5.2 PRINCIPLES OF HUMAN PERFORMANCE TOOL IMPLEMENTATION

5.2.1 This procedure does not address all possible Human Performance Tools, but is limited to the nuclear fleet adopted tools. The tools described in this procedure are applicable to all employees. These tools are most easily adapted to field activities involving written instructions or real time manipulation of equipment. However, the underlying principles and the concept of using tools to enhance human behavior can improve performance in the workplace.

5.2.2 Various tools/techniques have evolved that, when consistently and rigorously applied, can reduce the potential for human error. Some of these tools involve individual behaviors (i.e., self-checking, placekeeping, etc.) while others involve "team" behaviors (i.e., communications, peer-checking, pre-job briefings, etc.). Most of these tools are somewhat unnatural to the average person. For example, we don't routinely use three-part communications in our lives, and checking someone else's work (e.g., peer-checking) can be perceived as offensive to some people. Therefore, these behaviors need to be developed and reinforced in the workplace. If consistently and effectively applied, they help minimize human errors and make each of us more successful.

5.2.3 This procedure has been developed to provide tools to assist each of us in changing behaviors to improve human performance at our Sites. These tools include:

1. Tools that Individuals can use to prevent errors during task or activity performance (Attachment 1). These are broken down into two additional categories. 1) Fundamental tools that always apply, and 2) Conditional tools that depend on the work situation or risk involved.

2. Tools that Leaders and Supervisors can use to prevent errors during task or activity performance (Attachment 2)

3. A matrix that provides a cross-reference of human performance tools that can be used to address error likely situations (Attachment 3)

5.2.4 For engineering activities, also refer to FG-E-HU-01, Engineering Human Performance.

5.3 ACCOUNTABILITY AND OWNERSHIP

We recognize, acknowledge and accept responsibility for the reality of work situations. Problems are identified and solved with commitment and follow-through.

5.3.1 Individual Accountability Definition

Doing what you said you would do to the required standard, and if you determine you will not be able to meet the expectation, notify your supervisor soon enough to allow an alternate plan to be developed.

5.3.2 Organizational Accountability Definition

- Developing clear standards and expectations
- Communicating the standards and expectations in a manner that assures individuals are knowledgeable of them
- Monitoring conformance to the standards and expectations and coaching when appropriate
- Implementing consequences in a manner that achieves behavior change and maintains a strong safety conscious work environment

5.4 HUMAN PERFORMANCE HANDBOOK

The HU Handbook contains a pocket sized summary of the information from this procedure. It is intended to be used as a complimentary field guide for this procedure.

5.5 RISK MANAGEMENT AND CONSERVATIVE DECISION MAKING

Risk management identifies and evaluates the risks created by human activities, inherent plant conditions, and external influences (e.g. weather or regulatory requirements), and pinpoints ways to control them. A human performance risk assessment identifies the threats that human error potentially poses for a work activity that involves significant human interaction with important plant equipment, whether the physical plant (such as pipes, values, and switches) or the paper plant (such as design bases documentation and procedures). It gives management insight into what controls and barriers are most appropriate to either eliminate or minimize those threats, especially for high-risk activities. High-risk activities have the potential to challenge nuclear safety, hurt people, spoil the environment, trip the plant, damage equipment, cause an over exposure, or cause a regulatory violation.

Human performance risk combines the likelihood (probability) of an undesired action and its consequences.

Risk = Likelihood x Consequence

After the critical steps or phases of an activity are identified, the likelihood is evaluated by the identification of error precursors, complexity, and margins for error. Consequence is evaluated by the anticipation of the worst-case outcomes on plant, property, and personnel safety should an error occur at one or more critical steps.

Conservative Decision Making is a close companion to Risk Management. Conservative Decision Making does not mean making the most conservative decision. It means making an informed decision that carefully weighs the risk of the action against potential barriers. It is the basic principle behind Risk Management. The first goal should always be to implement a “no risk” option. If it is not possible or reasonable to eliminate the risk, then conservative decision making involves using barriers that either reduce the probability or cap the potential consequences such that the risk is appropriate for the situation.

Normally we tend to disregard the probability term of the equation. In other words, we usually understand what the potential consequences are, but dismiss that it will ever really happen. As examples, think of why people do not wear seat belts ("I've never been in an accident", implying the probability going forward is zero). Or think of the Titanic ("unsinkable", implying the probability that it can sink is zero). The Captain of the Titanic most likely understood that it could sink, but nevertheless acted as though the probability was extremely low (by maintaining speed through an area known to have icebergs). Therefore, a good way to craft the right conservative decision is to visualize that whatever **could** go wrong **will** go wrong, and then to figure out what the right set of barriers are to properly minimize the risk.

5.5.1 See FP-OP-COO-01 and FP-WM-IRM-01 procedures for more details on these tools.

6.0 RECORDS

None

7.0 REFERENCES

7.1 SOURCE DOCUMENTS

7.1.1 National Academy for Nuclear Training, "Human Performance Fundamentals Course Reference", December 2002

7.1.2 INPO document, "Excellence in Human Performance", September 1997

7.1.3 INPO document 07-006, "Human Performance Tools for Managers and Supervisors".

7.1.4 INPO document 06-002, "Human Performance Tools for Workers", April 2006

7.1.5 NEI / INPO / EPRI Industry wide Benchmarking Project LP002, "Human Performance Process Benchmarking Report", May 2001

7.1.6 FP-PA-HU-01, "Human Performance Program"

7.1.7 FP-PA-ARP-01, "Action Request Process"

7.1.8 CD 3.4, "Picture Of Excellence"

7.2 REFERENCE DOCUMENTS

7.2.1 FP-PA-HU-03, “NMC Observation Program”

7.2.2 FP-PA-PAR-01, “Performance Assessment Review Board”

7.3 COMMITMENTS

None

8.0 REVISION SUMMARY

8.1 Added “FME” to the “Are You Ready?” Checklist

8.2 Replaced reference to FG-PA-PAR-01 with FP-PA-PAR-01

9.0 ATTACHMENTS

9.1 Attachment 1 – Individual Tools

9.2 Attachment 2 – Leader/Supervisor human Performance Error Prevention Tools

9.3 Attachment 3 – Error likely Situations vs. Error Reduction Tools Matrix

9.4 Attachment 4 - INPO Human Performance Model

ATTACHMENT 1

INDIVIDUAL TOOLS

The standard set of Individual Human Performance Tools is listed below. Based on the nature of the activity or task, use of these tools should be required:

Fundamental

1. Self-Checking (STAR)
2. Procedure Use and Adherence (includes placekeeping)
3. STOP when Unsure (includes questioning attitude)
4. Coworker Coaching
5. “Are You Ready” Checklist

Conditional

1. Verification Practices (includes peer checking, independent and concurrent verification)
2. Verbal Communication
3. Flagging
4. Turnover

This attachment provides the following generic element of each of the Individual Human Performance Tools.

1. **What Is It** - A description of the tool
2. **Why It’s Important** - A discussion of how the tool can prevent errors
3. **When To Apply** - A statement on when the tool should be used (while this cannot address every situation it should be sufficiently detailed to allow the typical worker to understand when to use the tool)
4. **How To Do It** - A discussion of how the tool is implemented
5. **General Rules and Insights** - A discussion on rules and insights including tips when applicable
6. **Risk Practices to Avoid** – A set of behaviors, beliefs, assumptions, or conditions that tend to diminish the effectiveness of the tool.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

SELF-CHECK (STAR)

1. What Is It

Self-Check (STAR) is a Human Performance Tool that helps the individual methodically focus his/her attention on the details of the task at hand. The individual consciously and deliberately reviews the intended action and expected response **before** performing the task. This includes distinct thoughts and actions designed to enhance an individual's attention to detail in the moment just before performing the task.

S STOP

T THINK

A ACT

R REVIEW

2. Why It's Important

When work practices are identified as a cause of an error or event, the human performance problem often involves a lack of or ineffective self-checking. Events attributed to human error are usually the result of a physical manipulation of a plant component by an operator or a technician. Errors by those who do not manipulate controls in the plant, such as managers, engineers, procedure writers, and work package preparers, may not be immediately apparent but can establish latent conditions that eventually result in plant events. Proper use of self-checking will improve the ability of all station personnel at all levels to detect potential problem situations before an undesirable situation occurs.

Knowing how to self-check is important. Knowing when to self-check is just as important. Self-checking techniques must be emphasized continuously and positively reinforced when used. Good self-checking can be an effective tool in avoiding many of the common human performance traps, making it the single most important Human Performance Tool. These traps include; **time pressure, distraction/interruption, overconfidence, multiple tasks, vague guidance, first shift/late shift, peer pressure, change/off normal, physical environment, and stress**. It is particularly effective for skill based repetitive tasks.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

SELF-CHECK (STAR)

3. When To Apply

NOTE:	For activities that do not involve physical actions, such as reviewing and approving documents, some of the specific physical actions of self-checking do not apply. However, the fundamental principles of self-checking do apply**.**

Simply stated, self-checking must be used for every task or job that has a potential to impact the physical plant. Some examples include:

- Manipulating plant components
- Component disassembly/reassembly/routine maintenance
- Determining Technical Specification requirements
- Performing calculations
- Revising drawings and procedures
- Reviewing and approving documents, regardless of whether or not an additional verification is performed

4. How To Do It

Self-Checking is performed as follows:

STOP

This is the most important step of any self-checking technique.
Pause before performing a task to enhance attention to detail.
Eliminate current or potential distractions.

THINK

Understand specifically what is to be done before performing a task.
Identify the information necessary to correctly perform the task.
Understand the expected results of the action.
Do not proceed in the face of uncertainty.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

SELF-CHECK (STAR)

ACT

Identify the correct item by physically pointing to the component label, before taking any action. (POINT)

Read the document that directs manipulation of the component. The best technique is to read this aloud, even if alone, to use the additional human attributes of speaking and listening. (READ)

Read the component label. Again, read out loud. (READ)

Perform the intended action. For physical actions, ensure hand contact is not lost.

REVIEW

Verify that the actual response is the expected response.

If an unexpected response is obtained, take action as previously anticipated/determined.

Ensure all actions are conservative.

For non-physical tasks, step back and perform a “sanity” check of the task results.

5. General Rules and Insights

To be effective, self-checking must be consistently performed with a high degree of precision. The physical actions associated with self-checking are formal and observable. By making self-checking observable we improve the formality and focus with which the tool is applied while providing peers and supervisors an opportunity to coach the quality of the self-checking.

Self-checking must be performed against controlled information sources. These include: formal component tags (vice magic marker labels), controlled postings/mimics (vice hand-drawn postings), actual work document information (vice verbal information), actual procedure requirements (vice “off the top-of-the-head” information). Significant errors have resulted when individuals self-check against uncontrolled information sources.

The Self-Check process is intended to be a continuous sequence. If interruptions occur during the sequence, such as someone asking you a question or seeking out additional information, then start over.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

SELF-CHECK (STAR)

6. Risk Practices to Avoid to Avoid

- Not understanding the intent of a procedure step before performing it; following a procedure without understanding it
- Self-checking without referencing the guiding document
- Performing several manual actions in rapid succession
- Performing more than one action at a time
- Performing the action when uncertainties or discrepancies exist
- Talking with another person while performing the action
- Looking at something other than the component being manipulated
- Not self-checking again after losing visual or physical contact
- Not knowing if the action is a critical step
- Feeling sleepy or fatigued while performing a critical step
- Not taking the time to verify that results are correct
- Not self-checking when flagging is used

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

PROCEDURE USE & ADHERENCE

1. What Is It

Procedure adherence means understanding the procedure's intent and purpose and following its direction. The user performs all actions as written in the sequence specified by the document. However, if it cannot be used as written, then the activity is stopped, and the procedure is corrected before continuing. Following the procedure without question does not guarantee safety because procedures sometimes contain hidden flaws. But, understanding the overall purpose and strategy of the procedure promotes safer outcomes. Ideally, adhering to procedures keeps the plant's configuration within its safety analyses and licensing requirements.

2. Why It's Important

Procedures are the primary tool we use to safely and efficiently operate and maintain the plant. How we use procedures is the most fundamental Human Performance Tool we have to perform work without error. Industry experience has shown that not properly following procedures is a large contributor to human error and many consequential events. A well-intentioned worker can find themselves in a variety of situations where uncertainty exists in using a procedure. Clear guidance covering these situations will produce more consistent and error-free performance. Additionally, the way employees use and maintain procedures is a primary measure of the site's and fleet's safety culture.

3. When To Apply

- When manipulating, altering, monitoring, or analyzing equipment
- When a procedure exists for a work activity
- When no procedure exists, but there should be (STOP and get help)
- When required by technical specifications or other technical documents

4. How To Do It

Fleet procedures call for varying levels of use (continuous, reference, information), depending on the difficulty of the task and the consequences of the error.

See FP-G-DOC-03 for details on using this tool, including guidance on placekeeping.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

PROCEDURE USE & ADHERENCE

5. General Rules & Insights

Understanding, properly performing, and complying with station procedures is required of all employees. Procedures are written for an individual who has been trained and is qualified. No one should attempt to perform a procedure they are not qualified to perform. Procedures are written to be used with a thinking compliance mentality. "Cook booking" or "blind compliance" are not effective procedure use techniques.

Thinking Compliance - "Thinking" compliance with procedures is absolutely critical. Thinking compliance requires a step-by-step application of the procedure. It also requires user engagement far beyond blindly following the procedure or "cook booking" the procedural steps. The user must understand the procedure's purpose and the effect or anticipated result of each step prior to performance. Precautions and limitations are reviewed and understood before using the procedure. Step sequence is followed unless the procedure specifically allows steps to be performed out of sequence and, even then, deviations occur only after the impact has been evaluated and understood. Responses to actions are anticipated by the performer and verified as the step is performed. Additionally, placekeeping is used to eliminate potential errors with procedure implementation.

6. Risk Practices to Avoid

- Assuming a procedure is well written and accurate
- Not reviewing a procedure before performing a job
- Commencing a procedure without establishing initial conditions
- Performing a procedure step without understanding its purpose
- Not submitting feedback (technical accuracy and usability)
- Performing a procedure without knowing critical steps
- Using an attachment or data sheet in place of the procedure
- Using a procedure for a task that the user is not qualified for
- Believing "A good operator doesn't need a procedure."
- Using multiple procedures at the same time
- Using a "reader-doer" method at critical steps
- Not knowing immediate actions from memory (operators)
- Skipping steps or segments of a "routine" procedure, because those steps have been "unnecessary" in the past
- Using a previous, superseded revision of a procedure
- Marking steps "N/A" (not applicable) without authorization

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

PROCEDURE USE & ADHERENCE

- Following a procedure knowing it will cause harm if followed as written
- Using a procedure, or segment of a procedure, for a task other than that intended by the procedure.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

STOP WHEN UNSURE

1. What Is It

Stopping when unsure is a tool to be used when a person is uncertain about how to proceed, or when it is first recognized that the plan or conditions have changed. Stop when unsure includes questioning attitude.

Stop when unsure is a subtle tool, as many times we convince ourselves we are sure. A better name for this tool might be stop when you should be unsure, which reinforces the need to be alert to job conditions that indicate an event is imminent.

2. Why It's Important

Significant events have occurred when legitimate questions regarding plant evolutions were insufficiently resolved before work proceeded. In some cases, the people raising the questions did not adequately advocate their positions, or they deferred to the judgment of others. In other instances, questions were not adequately addressed because the urgency of accomplishing the task took precedence. When confronted with uncertainty (i.e., knowledge based space) the chances for error are high (1 in 10 to 1 in 2). Therefore, it is crucial to apply this tool when called for.

Fostering a questioning attitude culture among station personnel is an essential element in identifying and correcting inappropriate courses of action. Personnel must have confidence that the questions they raise will be valued and properly evaluated. Consideration of worst case scenarios is a routine part of pre-job briefs. A questioning attitude is especially important when time pressure is present and the focus is on efficiently implementing the plan. Management must strengthen and foster a strong questioning attitude culture on a daily basis for this tool to prevent events.

A questioning attitude promotes a preference for facts over assumptions and opinion. Questions such as "What if…," or "Why is this acceptable?" help improve recognition of improper assumptions and possible mistakes. The structured approach described below promotes the discovery of facts. Facts depend on the reliability of the information source and the accuracy of that information. Facts are verifiable and visible expressions of behaviors and information. Without sufficient facts, the performer stops the activity to address an unpredictable work situation that could lead to either a serious mistake or a significant event.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

STOP WHEN UNSURE

3. When To Apply

Times to consider using Stop When Unsure include, but are not limited to, the following situations:

- If you are not confident that the action you are about to take is appropriate.
- If the task or work scope has changed and you are outside of the plan, procedure, or policy.
- If the work flow is interrupted because of a change and requires refocusing on the task.
- When a “gut feeling” tells you that something is not right.
- Unexpected results
- Unfamiliar situations
- When hearing words such as assume, probably, I think, we’ve always, etc.
- Questions about the job that you have no answers for
- Uncertain that you are in compliance with expectations, procedures, regulations
- You are unclear what successful job completion is

4. How To Do It

- Stop the activity
- Place the equipment and the job site in a safe condition.
- Do not answer your own question. Notify your supervisor.
- Obtain help from someone who possess the appropriate expertise
- Base decision of facts from valid information source or person

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

STOP WHEN UNSURE

5. General Rules and Insights

There are several industry events that have occurred primarily because the work plan had changed and the personnel involved in the activity either continued or were directed to continue. It is important for all personnel, especially Supervisors and Managers, to understand the consequences of continuing a work activity when the plan has changed. Many sites have adopted the phrase “Plan the Work; Work the Plan”. When outside of the original plan, personnel need to stop, regroup and collaborate with management prior to proceeding.

As a team and as individuals we must never assume that conditions are as we think they are. We must always take the steps necessary to ensure the appropriate condition exists and that the information presented has been validated for accuracy before proceeding. A good method of avoiding assumptions is to use one of the following techniques, depending on the type of question:

- Answer your question by referencing a controlled source of information, such as the procedure, Tech Specs, Tech Manual, etc.

- Do not answer your own question. If you have a question and the answer cannot be verified against a controlled source, ask the question of a peer or other co-worker. Is their answer consistent with what you assumed to be the answer?

6. At-Risk Practices to Consider Avoiding:

- Dismissing contrary evidence or points of view
- Discounting the concerns of less experienced individuals
- Not asking for help from more knowledgeable persons
- Not asking for help for fear of embarrassment
- Feeling inadequate if you have to ask for help
- Emphasizing “who’s” right instead of “what’s” right
- Thinking the task is “routine” or “simple”
- Believing nothing bad can happen
- Assuming “skill of the craft” is sufficient to address a situation
- Not having clear abort criteria
- Being unaware of critical attributes or critical parameters
- Answering one’s own questions regarding a critical step

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

CO-WORKER COACHING

1. What Is It

Co-Worker Coaching is a situation in which co-workers remind, advise, or assist each other to ensure the task is done correctly. Co-Worker Coaching is the process where an individual observes, questions and corrects (if necessary), or compliments the actions of another person.

Co-Worker Coaching is distinguished from peer checking primarily by the source of the request. With peer checking, the performer requests or a procedure directs the action, whereas co-workers coaching is typically unsolicited.

2. Why It's Important

Coaching is a necessary element in achieving and maintaining the desired workforce behaviors. Coaching is a proactive means of improving human performance and preventing events. Coaching is most effective when it is regular and heavily weighted with positive reinforcement of the desired behaviors. To be effective, coaches must be very knowledgeable of the desired behaviors and able to identify subtle flaws in the implementation of Human Performance Tools. Identifying and correcting these subtleties ensures the tools will work when the workforce is challenged by latent organizational weaknesses, flawed defenses or error-likely situations.

Ways you benefit from being coached:

- Heightened awareness of your own behaviors.
- Receive feedback to reinforce safe behavior.
- Allows you to learn about safe and potentially hazardous behavior through feedback.
- Helps develop a questioning attitude.
- Develops an increased commitment to helping the site become an industry leader.
- Builds trust and teamwork.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

CO-WORKER COACHING

3. When To Apply

Co-Worker Coaching should be considered on all tasks. A questioning and caring attitude regarding the overall site, which includes the physical plant, co-worker, work processes and work tasks, is essential and required to be used at all times. Personnel should always be on the lookout for situations that may be unsafe, abnormal or error likely; e.g. complex procedure, a change in plant conditions during an activity, inexperienced personnel, vague guidance, etc. Also, remember to let people know when they have done something well.

Co-Worker coaching is not just a tool to be used in the field. Managers and supervisors using Co-Worker Coaching with one another is a good practice. Co-Worker Coaching at critical points in a decision making process or implementation process can prove to be a valuable tool in avoiding future errors.

4. How To Do It

- Immediately correct unsafe behaviors.
- Recognize that while it is uncomfortable to approach others, people genuinely want to know if they are making a mistake.
- If at all possible, reinforce good behaviors or correct undesired behaviors as they occur.
- If the activity does not allow immediate feedback, do it at a break in the activity or as soon as the activity is complete.
- Ensure feedback is specific and addresses behaviors not individuals.
- Timely feedback corrects undesired behaviors allowing positive reinforcement once the desired behavior is demonstrated.
- Take every opportunity to positively reinforce desired behaviors. It is the most effective method to ensure consistent performance.
- Be sure positive reinforcement is specific and addresses the behavior and the standard.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

CO-WORKER COACHING

5. General Rules and Insights

When the culture exists in which personnel are able to coach their co-workers without retribution during daily activities in regards to safety, human performance, misunderstandings, etc., then overall plant performance will climb to new levels.

6. Risk Practices to Avoid

- Convincement yourself that the person will not be receptive to your message
- Approaching someone with a “you’re at fault” attitude.

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

"ARE YOU READY?" CHECKLIST

1. What Is It

The "Are You Ready?" Checklist is a tool used as a personal pre-job briefing, immediately preceding the work activity and upon arriving at the work site. It consists of several questions to gauge the worker's preparedness for the job.

2. Why It's Important

While this tool is a personal pre-job brief for work activities with a low level of risk on radiological, industrial or nuclear safety, do not get it confused with a formal pre-job brief. This tool is important for individuals to refocus themselves immediately preceding performance of a work activity to ensure they understand the task and everything that needs to occur for successful performance.

3. When To Apply

This tool is used prior to performing any task that includes an error-likely situation and may be used during any task performance. This tool is used for self-briefings in which the frequency of the work activity is monthly or more frequent. Any job that appears as routine should incorporate the use of this checklist prior to start of the job to ensure complacency and overconfidence is not present. This tool can also be used by a supervisor as a limited pre job brief, when a full pre job brief is not required.

4. How To Do It

This checklist is used by answering the following questions prior to starting a job:

NOTE:	The bolded questions can be displayed in any order and augmented with additional questions on site lanyard cards or checklists.

Am I qualified to perform the task?

- *Have you received training and completed qualification for the task you are about to perform?*
- *Have you checked the qualification matrix?*
- *Have you recently done this or a similar type task?*
- *Do you feel comfortable performing the task independently?*

Am I Fit For Duty?

- *Do I have any issues or conditions that could hamper my job performance?*
- *Fatigue Rule (Effective 10/1/09) – Am I a covered worker? Is this covered work?*

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

"ARE YOU READY?" CHECKLIST

Do I understand the task?

- *Have you reviewed the procedures and work orders for the job?*

Can I do it safely?

- *Are PPE requirements understood and are PPE available?*
- *Have you applied the job site hazards analysis/risk assessment?*

Are there any radiation protection issues?

- *Are you signed onto the proper RWP?*
- *Do you understand your dose limits?*

Are you aware of high dose areas at your worksite?

Will my activity generate foreign material?

- *Are there Foreign Material Exclusion (FME) requirements listed on the work order?*
- *What level and controls are needed to prevent foreign material intrusion?*

What error likely situations do I have?

- *Have you considered task demands, work environment, individual capabilities, and human nature for potential error-likely situations?*

What error reduction tools will I use?

- *What error reduction tools will you use to ensure event free operation considering the error-likely situations?*

What can go wrong?

- *What's the worse thing that can happen if an error is made?*
- *How can my work tasks affect nuclear safety?*
- *Have nuclear risks been evaluated and controlled?*
- *What risk level is this job?*

What conditions stop this task?

- *What abort criteria will you use to stop the task?*

ATTACHMENT 1
INDIVIDUAL TOOLS

FUNDAMENTAL

"ARE YOU READY?" CHECKLIST

Am I ready to start work?

- *Have you resolved all concerns related to proceeding on with the task?*

At the Job Site (e.g., two minute drill)

- *Are conditions consistent with my expectations?*
- *Do I understand my surroundings?*
- *What job site hazards exist?*

5. General Rules and Insights

Studies have shown that most events occur during the performance of routine work activities and that had appropriate human performance tool usage been used, the events may not have occurred.

This tool when used appropriately will help to prevent errors that are most often made during the performance of routine work in which formal pre-job briefings are not required. It will take discipline by the individual and reinforcement by supervision to ensure this tool is used on a routine basis.

6. Risk Practices to Avoid

- Not allowing workers time to review procedures/work documents
- Participants not prepared for the task
- Addressing human performance tools in generalities vice specifics
- Omitting a discussion of specific controls for each critical step
- Workers failing to express concerns they may have
- Not using lessons learned from previous activities for the task
- Hurrying, not taking the time to look around the job site
- Thinking that "routine" or "simple" means "no risk"
- Believing nothing bad can happen
- Not talking about hazards or precautions with coworkers
- Not talking about "gut feelings"

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

VERIFICATION PRACTICES

1. What It Is

Verification practices refers broadly to three tools—concurrent verification, independent verification, and peer-checking—that involve a second person to confirm the actions and results achieved by a performer. While peer-checking (PC) focuses on preventing a mistake by the performer, independent verification (IV) and concurrent verification (CV) focus more on confirming the correct configuration, or status of equipment.

IV entails the highest degree of independence, which is important for the effectiveness of the verification process. However, when immediate undesirable effects can occur, CV is used, while maintaining as much independence as possible. For the sake of convention, the term “verification” refers to the confirmation of the condition of equipment consistent with the status required by a procedure. On the other hand, “checking” refers to the confirmation of a correct action—prevention of an error by a performer. From a timing standpoint, CV and PC occur **before** the action is taken, while IV occurs **after** the action is taken.

2. Why Its Important

It is a well-known fact that human beings make mistakes. It is an equally well-known fact that teams are consistently more successful than individuals. Verification practices simply build upon that fact and provides a "team of two" to better ensure important activities are performed without error.

The process of verification helps users maintain positive control of alterations of risk-important equipment. Verification supports the alteration, confirmation, and documentation of the equipment condition consistent with the procedure. Because it is important to establish the correct equipment condition, the procedure serves as a record of the verification, as indicated by each person’s signature or initials, and signifies that the equipment is in the condition specified in the procedure step.

The primary intent of verification is to confirm the final condition of the equipment. However, CV is usually reserved for an action of a critical nature—when an error with the action could result in immediate and possibly irreversible harm. When used thoughtfully and rigorously, CV provides a means to prevent an error in the act of establishing the new equipment or component condition. This aspect of CV is very similar to peer-checking, which aims to prevent an active error during a task.

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INDIVIDUAL TOOLS

CONDITIONAL

VERIFICATION PRACTICES

3. When To Apply

Independent Verification

- During system alignments of safety-related or important equipment
- During placement and removal of clearance tags
- Verification of calculations
- During restoration of equipment to service after maintenance
- During alignment of fire protection systems or components
- During installation and removal of temporary modifications such as jumpers, hoses, and so forth
- As-left position of reactor protection system process instrumentation after maintenance
- When changes in equipment status could adversely impact core damage frequency

Concurrent Verification

Consider using CV for actions that could lead to irreversible consequences such as the following:

- nuclear safety:
    - fuel damage
    - loss of a safety function
    - loss of reactivity control
- industrial and radiological safety:
    - death
    - injury
    - overexposure to ionizing radiation
- environmental safety:
    - uncontrolled discharge or emission of harmful substances
- plant safety (including productivity):
    - plant trip or unintended significant reduction in power
    - equipment damage and/or property loss

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INDIVIDUAL TOOLS

CONDITIONAL

VERIFICATION PRACTICES

Peer Checking

Unless the guiding document already specifies CV, work activities involving tasks or situations such as the following could benefit from the use of PC:

- critical steps
- reactivity manipulations
- irreversible or otherwise unwanted actions
- comparisons of test data with acceptance criteria
- start or stop of major components
- return to or removal from service
- identification of correct parts or correct component before maintenance
- during installation of similar components or parts that could be interchanged or installed incorrectly
- error-likely situations related to important actions
- first time performance for the individual
- individual is uncomfortable performing the task
- task is infrequently performed or complex in nature
- task has been a challenge in the past on industry OE exists

4. How to Do It

Independent Verification

The **performer** performs the following actions:

a) Self-check the correct component.
b) Perform the action specified in the guiding document.
c) Confirm the expected results.
d) Sign or initial the guiding document.
e) Inform the **supervisor** upon completion of the task or notify the assigned **verifier**.

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INDIVIDUAL TOOLS

CONDITIONAL

VERIFICATION PRACTICES

When notified, the **verifier** performs the following actions:

a. Self-check the correct component.

Caution: Use verification methods specified in approved instructions to verify the condition of various component types.

b. Determine the as-found condition, without changing it, using one or more of the following means:
- physical hands-on check (preferred)
- remote indication:
  - If multiple remote indicators are available, use as many as possible.
  - If possible, perform at least one check locally to confirm remote indication.
- system response

c) Compare the as-found condition with the guiding document.
d) Notify the **supervisor** if the component condition does not agree with the guiding document.
e) Sign or initial the guiding document if the component condition agrees with the guiding document.
f) Notify the **supervisor** or **performer** upon completion of the IV.

Concurrent Verification

a) Prior to execution, the **performer** and **verifier** mutually agree on the action to take, referencing the guiding document separately, and the equipment condition to achieve.
b) The **performer** self-checks the correct component.
c) The **verifier** separately self-checks the correct component.
d) The **performer** and the **verifier** agree, once more, on the action to take, on which component, and the final condition of the component.
e) The **verifier** observes the **performer** before and during execution, to confirm the **performer** takes the correct action on the correct component.
f) The **performer** executes the correct action on the correct component.

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

VERIFICATION PRACTICES

g) If the **performer's** action is inconsistent with the guiding document, the **verifier** directs the **performer** to stop the action. The **performer** places the equipment in a safe condition and notifies the **supervisor**.

h) By one or more of the following methods, the **performer** and the **verifier** separately confirm that the condition and the expected response are correct:

- hands-on check (preferred)
- remote indication:
- If multiple remote indicators are available, use as many as possible.
- If possible, perform at least one check locally to confirm the validity of the remote indication.
- system response

i) The **performer** and **verifier** sign or initial the guiding document to record the verification.

Peer Checking

a) The **performer** self-checks the correct component.

b) The **peer** self-checks the correct component.

c) The **performer** and the **peer** agree on the action to take and on which component.

d) The **peer** observes the **performer** before and during execution, to confirm the **performer** takes the correct action on the correct component.

e) The **performer** executes the intended action on the correct component.

f) If the **performer's** action is inconsistent with the intended action, the **peer** stops the **performer**.

g) If the **performer's** action is consistent with the intended action, the **peer** informs the **performer** that the action taken is correct.

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INDIVIDUAL TOOLS

CONDITIONAL

VERIFICATION PRACTICES

5. General Rules and Insights

Peer-checking is typically uncomfortable for people to do. There are many natural human barriers to effective peer-checking. These include:

- Senior workers may not like to be checked by junior workers
- Junior workers may not like to check senior workers
- Co-workers that do not routinely interact with each other
- Some think it may slow the work process
- Some think it makes self-checking less effective. (This is a myth. In fact, because most of us would rather that others not see us make a mistake; we do a more effective job of self-checking.)
- Workers may not want to challenge or question another person's technical or professional abilities

When peer-checking becomes engrained in the work force, an intangible secondary benefit occurs. That intangible benefit is overall teamwork improves and error-rates go down. When the barriers that prevent effective interaction are broken down through regular peer-checking, it becomes second nature for all levels of the organization to challenge/check on each other in non peer-checking situations. Peer-checking also allows us to learn from each other, the interaction of workers helps exchange knowledge, skill and experience. This benefit improves culture and personnel performance.

The IV process confirms the condition of equipment required to be in a particular condition to maintain the plant's physical configuration required for safe operation. Otherwise, adverse consequences could result later if the improper condition remains undetected. IV can only be used when an immediate, adverse consequence of a mistake by the performer cannot occur, because IV catches errors after they have been made, not before or during.

The IV process tends to have a higher probability of catching an error than PC or CV, because the verifier's knowledge of the system, component, or work situation is unaffected by the performer. The verifier physically checks the component's condition without relying on observation of or verbal confirmation by the performer. Preferably, the verifier is not directly involved in the activity the performer is involved in.

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INDIVIDUAL TOOLS

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VERIFICATION PRACTICES

Independence exists when the verifier has *freedom of thought* from the performer. Separating the acts of the performer and verifier in time and by distance promotes freedom of thought for IV. *Separation in time* exists such that the verification occurs after initial alignment of the component (or initial verification). *Separation by distance* is established when audible or visual cues of either person are not detectable by the other person. That means the performer, while establishing the desired condition, does not communicate with the verifier, or the verifier is not in a position to either observe or hear the performer.

For CV, the performer and verifier create *freedom of thought* between them as much as practical. Freedom of thought requires the verifier, to the extent possible, to be mentally objective, without relying on the other person as to what has or has not been done. Because CV requires both individuals to work together, side by side, true independence cannot be achieved. But, each person attempts to be as objective and unbiased as possible during each step of the CV process.

The purpose of PC is to *prevent* an error by the performer. Error prevention is the principal function of the PC technique. PC augments self-checking by the performer—it does not replace it. PC involves two people (performer and peer) self-checking in parallel, agreeing together that the action is the correct action to perform on the correct component. Similar to concurrent verification (CV) but less formal, this technique takes advantage of a fresh set of eyes not trapped by the performer's task-focused mind-set. The peer, an individual familiar with the activity, may see hazards the performer does not see.

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INDIVIDUAL TOOLS

CONDITIONAL

VERIFICATION PRACTICES

6. Risk Practices to Avoid

Independent Verification

- Verifier is in close proximity at the time the performer acts.
- Verifier uses the same indicator(s) of system status as the performer.
- Verifier uses only process parameters to determine component status. (Possible alternate flow paths could render process indicators unreliable.)
- Performer and verifier walk to the component location together before the initial act.
- Performer informs the verifier of what has or has not been done before the IV.
- Performer and verifier are coworkers on the same job or evolution.
- Performer is less attentive to the action, believing the verifier will catch any problems.

Peer Checking and Concurrent Verification

- Peer is inexperienced with the task.
- Peer is not paying close attention to the performer.
- Peer is unable to view the component.
- Peer is significantly junior to the performer and may be reluctant to correct the performer.
- Peer is not prepared to prevent an error by the performer.
- Peer assumes the performer will not make a mistake.
- Performer acts before the peer is ready to perform the peer-check.
- Performer and peer swap roles during the task.
- Performer or peer does not self-check rigorously, assuming the other person will.
- Performer or peer uses verbal cues or observed actions of the other individual instead of personal confirmation or self-checking.
- Performer is less attentive to the action, believing the peer will catch any problems.
- Performer asks another person to peer-check, when that person is already engaged in a risk-important activity (such as transients).
- PC is over-used, eventually leading to complacency by both parties.

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

VERBAL COMMUNICATIONS

1. What Is It

Proper communications ensure that both the sender and receiver have a consistent understanding of the information contained in the message. Different techniques include 3-part communication, phonetic alphabet and clarification questions.

2. Why It's Important

Consistent safe and effective maintenance and operation of the plant, during both normal and emergency situations, necessitate accurate verbal communications. Humans routinely use informal and imprecise forms of conversational communication that are prone to error or misinterpretation. These forms of communication are comfortable and acceptable when the consequences of communication errors are insignificant. However, many of the daily activities at a nuclear plant can, if not performed properly, result in unacceptable consequences. Effective verbal communications in these activities reduces the likelihood of an error; therefore, this is an essential human performance tool.

3. When To Apply

The verbal communications principles and three-part communications technique, discussed below, are applied whenever miscommunication can result in a consequential error. This includes face-to-face, radio, and phone communications. More specifically, this tool is used when:

- Communicating an important plant condition or parameter value which may require some action by the recipient
- Communicating instructions to operate or test plant equipment
- Communicating instructions from a formal work document, such as a procedure, work plan, task instructions, work order, work package, etc.
- As directed by departmental specific guidance

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

VERBAL COMMUNICATIONS

Effective communication principles can be used to improve any communication; even when there is not a potential for a consequential error. Experience has shown that regular use (practice) of these principles and techniques will result in effective application during critical stressful situations.

4. How to do it

NOTE:	These principles can improve all verbal communications and are not limited to critical communications.

Principles

- Use specific terminology and avoid like-sounding words (increase/decrease, LPCI/HPCI, etc.).
- Use equipment noun names and equipment ID numbers.
- When communicating component, train, channel, or procedure step designators use the phonetic alphabet.

A – ALPHA	H – HOTEL	O – OSCAR	V – VICTOR
B – BRAVO	I – INDIA	P – PAPA	W – WHISKEY
C - CHARLIE	J – JULIET	Q – QUEBEC	X – X-RAY
D – DELTA	K – KILO	R – ROMEO	Y – YANKEE
E – ECHO	L – LIMA	S – SIERRA	Z – ZULU
F – FOXTROT	M – MIKE	T – TANGO	
G – GOLF	N – NOVEMBER	U – UNIFORM	

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

VERBAL COMMUNICATIONS

NOTE:	When communicating an alphanumeric component descriptor such as the "P" in 1P-36A or the "CV" in CV-1407, it is not necessary to use the phonetic alphabet for that descriptor. The phonetic alphabet is used for the train specific identifier such as the "Alpha" in 1P-36A.

Commonly Accepted Practice:

1. **Sender** states the message.
   - If practical, the sender positions himself or herself in front of the intended receiver (preferably face to face).
   - The sender gets the attention of the receiver, such as using first names.
   - Sender states the message clearly and concisely.
2. **Receiver** acknowledges the sender.
   - The receiver paraphrases the message in his or her own words.
   - Equipment designators and nomenclature as stated by the sender are repeated word for word.
   - The receiver asks questions to verify his or her understanding of the message.
3. **Sender** acknowledges the receiver's reply.
   - If the receiver understands the message, then the sender responds with "That is correct" (or similar affirmation).
   - If the receiver does not understand the message, the sender responds with "That is wrong" (or words to that effect) and restates the original message.
4. **If corrected**, …
   - Receiver acknowledges the corrected message, again paraphrasing the message in his or her own words.

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

VERBAL COMMUNICATIONS

Example

CRS to RO

"Jim, stop Alpha Reactor Coolant Pump."

RO to CRS

"Understand, stop Alpha Reactor Coolant Pump."

CRS to RO

"That is correct."

Functional or paraphrased repeat-back is a repeat back that effectively restates the key elements of a message. A functional repeat-back may or may not use the exact wording used by the sender but maintains the exact intent.

Example

Supervisor to Craftsperson

"Bob, using the Tech Manual, perform an alignment check of emergency feedwater pump P-7 Bravo motor and pump. If the alignment is out of spec., realign the pump and motor in accordance with the Tech Manual."

Craftsman to Supervisor

"Understand, using the Tech Manual, check alignment of emergency feedwater pump P-7 Bravo motor and pump and realign as required."

Supervisor to Craftsperson

"That is correct."

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

VERBAL COMMUNICATIONS

5. General Rules and Insights

Conversational communication is used extensively to discuss a particular situation and determine a course of action. At times, specific instructions develop during routine discussions. It is important to transition to three-part communications when instructions are given that meet the above criteria. The receiver more effectively understands the transition if the sender communicates the message as an order/directive.

Effective three-part communications requires continuous practice. When both the receiver and sender assume responsibility for ensuring all of the elements are applied the individuals more quickly develop effective three-part communications.

Routine practice in applying the principles and techniques, even in non-critical communications, is the key to becoming a proficient communicator.

6. At-Risk Practices to Consider Avoiding: General Rules and Insights

- Sender not using receiver's name to get receiver's attention
- Sender speaking from behind the receiver or not making eye contact when it is practical to do so
- Sender not taking responsibility for what is said and heard
- Sender or receiver not stating his or her name and work location when using a telephone or radio
- Sender attempting to communicate with someone already engaged in another conversation
- Sender stating too much information or multiple actions in one message
- Sender not giving enough information the receiver needs to understand the message
- Sender not verifying receiver understood the message
- Receiver reluctant to ask for clarification of the message
- Receiver taking action before the communication is complete
- Receiver not writing the message on paper if there are more than two items to remember
- Receiver given information unrelated to the immediate task
- Receiver mentally preoccupied with another task
- Overusing the tool for non-operational communications
- Not using three-way communication in order to expedite the task
- Message not being stated loudly enough to be heard
- Enunciating words poorly
- Conflict between *what* is said (content) and *how* it is said (feelings)

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

FLAGGING

1. What It Is

If a component is physically near other similar-looking components and is handled multiple times during an activity, flagging helps the user consistently touch the correct component. Using self-checking, an individual distinctly marks the correct component with a flagging device that helps a worker visually return to the correct component during the activity or after a distraction or interruption.

Workers can also use flagging to shield components from inadvertent touching or manipulation, such as “trip-sensitive” equipment in the vicinity of the manual activity. Flags denoting components not to be touched during a work activity are commonly referred to as “robust operational barriers” by some utilities.

2. Why Its Important

Several events have resulted from an individual starting an activity on one component, taking a break or being distracted from the component, and subsequently working on an adjacent, similar component. Wrong unit, wrong train events have decreased dramatically with improved labeling, color-coding, and better procedures. However, to ensure workers perform actions on the correct equipment, some stations have implemented “flagging” that either denotes the correct component to work on or highlights those not to touch during an activity.

3. When To Apply

- When handling a component near similar-looking components multiple times
- While working on multiple trains in close proximity
- While working on a component that will be manipulated multiple times
- During work near “trip-sensitive” or otherwise risk-important equipment
- When the need for flagging is identified during the pre-job briefing

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

FLAGGING

4. How To Do It

a. **Identify** the component to be flagged using self-checking
b. **Flag** the designated component to be handled or worked on using an approved device (green colored device recommended).
c. **Flag** components to be avoided using an approved device (red colored device recommended).
d. **Perform** work assignment or equipment manipulation.
e. **Remove** flagging devices(s) when work is complete.

5. General Rules and Insights

Managers are encouraged to approve the flagging devices. Devices such as colored adhesive dots, ribbons, colored tags, rope, chains, magnetic placards, and red electrical tape, have been used. Flagging devices that remain securely in place during the work activity are used exclusively for that job and should not interfere with plant equipment, including indications for operation.

In general, if flagging is used, it would most commonly entail identifying the equipment to be manipulated. It also may be appropriate to only identify equipment to be avoided. Flagging both equipment to be manipulated and avoided may be appropriate, but must be done with caution. ***In all cases, it is crucial to correctly communicate exactly which type of flag is being employed on the job***. Use of green and red flags fosters this communication.

6. Risk Practices to Avoid To Avoid

- Using similar flags for components to handle and for those not to handle
- Flagging a component to be handled only once
- Flagging both components to be manipulated and to be avoided during the same activity, using the same type of flags
- Not self-checking or peer-checking before applying flagging
- Using a flagging that does not remain securely attached
- Using a flagging device that obscures indicators or interferes with equipment
- Using unapproved flagging devices
- Not removing a flagging device after completing the task
- Using electrically conductive material for flagging device

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

TURNOVER

1. What It Is

Turnover is the orderly transfer of work-related information, tasks, and responsibilities between individuals, one off-going and the other on-coming.

2. Why Its Important

A turnover provides time for the on-coming individual to establish an accurate mental model of the work activity—situation awareness—before assuming shift responsibilities or commencing work. A good turnover helps every individual understand where things stand at the beginning of the shift and what is expected to occur during the shift. Turnovers occur during major plant activities, such as refueling outages, for the permanent transfer of project responsibilities between two individuals, between off-going and on-coming shifts, or for maintenance tasks exceeding one shift in length.

3. When to Apply

- Prior to shift change
- When responsibilities are transferred between people, work groups, or departments (handoffs)
- When responsibilities for in-progress tasks/activities change
- When work extends beyond one shift

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

TURNOVER

4. How To Do It

a. **Maintain an accurate turnover log**. Accurately record information relevant to the job during the shift in a log or relevant procedure. Before the turnover, the off-going individual compiles information such as the following for the on-coming individual's review:

- Status of the jobs(s): work completed, work remaining, and equipment status, plus specific parameters and related values
- Schedule requirements, changes, and parallel activities
- Objectives/tasks in progress and milestones to be accomplished
- Procedures being used and last steps(s) completed
- Problems, unusual conditions or system lineups and resolution or status
- Critical steps, possible error-likely situations, countermeasures, and contingencies
- Availability and location or resources for planed tasks
- Key contact, support personnel, and organizational interfaces

b. **Review the turnover log, and walk down the work area**. The on-coming individual independently reviews the turnover log, relevant work documents, status boards, and logs, checking for consistency and accuracy of information prior to assuming responsibility. Additionally, he or she examines the work location(s), including controls, components, tools, and equipment. Preferably, the on-coming and off-going individuals walk down the work location together.

c. **Discuss the information**. The principal individuals conduct a meeting face to face using formal three-way communication on critical information and responsibilities. Each person listens for and challenges assumptions asking questions as needed.

d. **Transfer responsibility**. Transfer responsibility for work activities from the off-going individual to the on-coming individual. The off-going person is confident that the on-coming person is fully capable of assuming the duties and responsibilities of the work station and planned tasks before handing over responsibility for the job

ATTACHMENT 1
INDIVIDUAL TOOLS

CONDITIONAL

TURNOVER

5. General Rules and Insights

Turnovers must be thorough and accurate, as well as brief and simple. Individuals conduct turnovers visually, verbally, and in writing. A walkdown of the work location(s) offers visual confirmation of work and equipment status. Both parties talk about the work situation. As a backup, individuals use three-way communication for risk-important information. Verbal information, while more convenient, is prone to distortion and may be forgotten. The most common error in a turnover is the inadvertent failure to pass along important information—a poor handoff. Therefore, a written log guided by a checklist is important to the safe continuation of the work in progress. Finally, the off-going person should be confident that the on-coming person is fully capable of assuming the duties and responsibilities of the work station and planned tasks before handing over responsibility for the job.

6. Risk Practices to Avoid To Avoid

- Conducting a turnover while the off-going individual is in the midst of an important activity requiring full attention
- Not talking face to face; no verbal explanation
- Leaving out critical information or the bases for decisions
- Not documenting activities and important information
- Performing the turnover in a distracting environment
- Interrupting the turnover
- Transferring responsibilities to an on-coming individual who is not fit for duty, or who is otherwise unprepared
- Conducting a turnover in a hurry
- Not enough time allowed for a turnover; turnovers not accommodated in the schedule
- Off-going individual unable to communicate with on-coming individual after turnover, if something was overlooked

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

The standard set of Leader / Supervisor Human Performance Tools are listed below. Based on the nature of the activity or task, use of these tools should be required during the performances of normal duties:

- Pre-Job Review
- Post-Job Critique
- Behavioral Expectations
- Observations
- Task Assignment
- Leadership
- HU Oversight Committee
- Change Management
- Dynamic Learning Activities
- HU Clock
- Performance Analysis
- HU event Investigation

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

PRE - JOB BRIEF

1. What Is It

A pre-job briefing is a meeting of workers and supervisors conducted before performing a job to discuss the tasks involved, hazards, operating experience, and related safety precautions. This meeting helps individuals to better understand *what to accomplish* and *what to avoid*. Pre-job briefings help participants avoid surprises in the field and reinforce the idea that there are no "routine" activities.

Participants clarify the task's objectives, roles and responsibilities, and resources—what to accomplish. Knowing clearly what you are trying to do improves error recognition. Similarly, precautions, limitations, hazards, critical steps, controls, contingencies, and relevant operating experience are addressed—what to avoid.

The effectiveness of a pre-job briefing depends greatly on the preparation of the workers and supervisors. People come to the pre-job briefing prepared to discuss the work. This promotes a quality dialogue that helps everyone understand what they are to accomplish and what to avoid, providing an opportunity to raise everyone's awareness of critical activities and to mentally rehearse performance of critical steps.

2. Why It's Important

The most important thing a supervisor can do is to ensure expectations and standards are well communicated and understood by all participants involved with a job just prior to starting a job. The Pre-Job Brief is a formal process to reinforce expectations.

3. When to Apply

This tool should be applied prior to the start of any job with the extent and detail of the Pre-Job Brief based on the potential or actual risk and or consequences to personnel or the plant if an error is made. Pre-Job Briefs for jobs in-progress should also be done at the start of the shift when a job takes longer than one shift to complete.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

PRE - JOB BRIEF

4. How to Do It

- Ensure the workers and job leads have completed a review of the job including a review of the work documents or procedures used in the job.
- Obtain and review the applicable Pre-Job Brief Checklist and ensure all relevant information needed for the brief is obtained, including applicable OE.
- Gather all participants in a briefing location that has ample room and is free of distraction. This ensures everyone has a chance to listen and participate in the discussion.
- Ensure all personnel involved with the job are in attendance and are participating in the briefing.
- Evaluate the job error precursors, error-likely situations, identify critical steps, and determine defensive strategies.
- Encourage each individual to express any concerns they may have with performing the job.
- Ask each worker if they feel prepared enough to complete the job error free.

5. General Rules and Insights

Pre-job briefs are more than getting together to review the job before starting. Most of the work of conducting a Pre-Job Brief is in the preparation. A thorough review of the procedure or work instruction along with a review of previous internal and external operating experience should be factored into what is most important to emphasize. The Task analysis done on the job should result in contingency measures or additional barriers put into place to prevent the error or mitigate the consequence of an error. More complex jobs should typically involve a more thorough Pre-Job review prior to the brief.

Data from the industry has shown that use of reverse briefs can lead to better task execution. Reverse briefs are Pre-Job Briefs lead by an individual contributor using the standard guidelines and procedures. By having an individual contributor prepare and lead the Pre-Job Brief they are much more likely to be engaged with the work and create an environment of better engagement of others involved with the job.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

PRE - JOB BRIEF

6. Risk Practices to Avoid

- Discussing human performance tools in generalities
- Conducting the meeting as a monologue, without active participation by the assigned worker(s)
- Workers failing to express their concerns or ask questions
- Holding separate briefings for principal workers
- Using a “cookbook” approach to the briefing covering every item on the pre-job briefing checklist regardless its applicability
- Being insensitive to how mind-sets or expectations may disguise problems and warning signals
- Not assigning individual-specific responsibilities for contingencies and abort decisions
- Conducting the meeting in a noisy, distracting environment
- Holding briefings longer than 30 minutes, which could promote inattention and lack of interest
- Not considering equipment work history or the worker’s personal experience as relevant sources of operating experience
- Not considering the worker’s proficiency with the task to determine if the task is performed infrequently
- Covering operating experience irrelevant to the task

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

POST - JOB CRITIQUE

1. What Is It

A post-job review, or "after-action review," is a regular self-assessment method conducted after a work activity to solicit feedback from the worker. Usually, the feedback involves a face-to-face meeting between workers and supervisors, but the method is not limited to a meeting. Meetings should be brief and concise, and give workers the opportunity to submit feedback. Regardless of the feedback method used, workers can reliably submit feedback on key aspects of work preparation and work performance.

Post-job reviews provide workers and their supervisor a forum to document or discuss what went well and to identify potential enhancements. Workers review the work activity just completed to identify opportunities for improvement. An effective post-job review identifies lessons learned to improve future task performance and aids closure of the paperwork related to the job. The principal participants could meet after work is done, preferably after taking a break. Breaks give the participants an opportunity to wind down. Such breaks give people time to think about the work accomplished.

2. Why It's Important

Errors that trigger significant events are organizational failures. Therefore, feedback on work preparation and work performance is very important information for management. Procedure and equipment problems and minor human error require management's attention. Such conditions tend to be latent in nature and accumulate within the organization if uncorrected. If workers do not communicate the information, managers miss an opportunity to improve. Post-job reviews provide management an opportunity to eliminate weaknesses with processes, programs, policies, and so forth that could challenge event-free plant performance.

3. When to Apply

This tool should be applied after the completion of a job. It can also be used to review and capture lessons learned in the middle of a job that are complex or longer in duration. The depth and duration of the Post-Job Critique should be based on the complexity and risk of the job.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

POST - JOB CRITIQUE

4. How to Do It?

- Verify the review is done as soon as practicable after the job is complete. Critiques can also be done after completion of a high risk activity of a longer term job.
- Be brief and to-the-point. Post-Job Critiques should not be longer than 10 to 15 minutes.
- Identify what went well and what could be improved.
    a. Surprises, unexpected error traps, industrial safety hazards, equipment condition, or personnel issues.
    b. Procedure or work order quality, i.e. technical accuracy and usability.
    c. Quality of supervision, planning, and scheduling
    d. Tools, parts, resources,
    e. Obstacles to performance
    f. Training related to job requirements
- Determine method to follow up on problems and successes (CAP, GAR, PCR, Good Catches, etc.)

5. General Rules and Insights

The two most important outcomes of the Post-Job Critique is the dialog among workers and leaders on the challenges associated with the job, and the collection and documentation of the problems or enhancements.

6. Risk Practices to Avoid to Consider Avoiding

- Not performing a post-job review or documenting feedback after working on risk-important plant equipment
- Principal workers not involved in the post-job review
- No time allotted for the post-job review, or done in a hurry
- No method of follow-up identified to address issues
- No follow-up with principal workers for high-interest issues
- Post-job review or follow-up not done face to face
- Important issues not documented for reference for future pre-job briefings

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

BEHAVIORAL EXPECTATIONS

1. What Is It

Procedures do not always specify every action needed to accomplish a task successfully. Some steps or behaviors important for success, such as skill of the craft, are typically assumed (or overlooked) by the procedure writer or planner. Safety depends on the user's proper response in work situations that are not addressed by written instructions. Expectations specify what managers and supervisors want and give people direction on how to respond or adapt to uncertainty. Many expectations are consolidated in "Conduct of…" administrative procedures.

2. Why It's Important

If management personnel do not communicate expectations clearly, and they fail to reinforce, coach, or correct them consistently, then behavior standards tend to decay, evolve, or drift. When safety receives less attention from management, reasonable people tend to make tradeoffs with human performance tools and other safe work practices to get the job done or to achieve other goals. Less-safe practices and shortcuts by workers become accepted practice when managers and supervisors say nothing when they see such practices. Accepted practice becomes the de facto standard, regardless of what is taught in the classroom or written down in administrative procedures. If routine noncompliance is the norm for a particular expectation, then the reasonableness of the expectation should be reviewed.

3. When to Apply

Prior to starting any job, the standards (procedures, work instructions, etc.) should be clearly established and the expectations of performance (use or error prevention tools) understood by the workers. These standards and expectations can be embedded in the work instructions, covered in the Pre-Job Briefing, or provided in the training and qualification of the individuals performing the job.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

BEHAVIORAL EXPECTATIONS

4. How to do It?

- Develop human performance expectations for each task and each job.
- Define the standards in terms of ACEMAN behaviors that are specific, observable, objective, and doable.
- Communicate your expectations and standards through policies, procedures, briefings, observations, etc.
- Model your expectations through your actions.
- Coach and correct practices and behaviors that do not meet expectations.

5. General Rules and Insights

Standards and expectations define the boundaries by which employees should operate to get work done. Often when worker performance is not what is expected there is a deficiency in the clarity, communication, or reinforcement of the standard. All three elements have to be in place to ensure behaviors are aligned to what is expected.

6. Risk Practices to Avoid

- not establishing expectations for risk-important situations not addressed by procedure
- not communicating expectations and their purposes to users
- not reinforcing users when managers see expectations used properly
- not comparing current expectations with industry best practices
- creating expectations that are too difficult to be understood or followed
- requiring expectations to be followed without explaining the benefit to the user
- incorporating artificial behaviors (no value added) into an expectation that is only for the benefit of the observer, such as Touch STAR (physically touching a component's label during self-checking)
- assuming expectations are addressed by skill of the craft
- assuming desired practices or behaviors are based on common sense
- rationalizing current performance despite evidence of decline or performance gaps with respect to expectations

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

OBSERVATIONS

1. What Is It

Physically watching work being performed at the job site. The job site may be in the field on a maintenance or operations activity, in the office performing administrative duties, watching meetings, or training activities. An observation is a means to observe and evaluate worker behaviors to the standards and expectations desired for the task.

2. Why It's Important

Through field observations, managers and supervisors can see firsthand what is happening in the plant. The quality of individual performance and supervision, the adherence to standards and expectations, the effectiveness of administrative processes, procedures, and training, as well as the materiel condition and the strength of the organization's values and safety culture require continual scrutiny. Field observations also provide managers and supervisors with the ability to gauge the effectiveness of performance improvement efforts.

Real-time field observations provide managers and supervisors with opportunities to do the following:

- See, first hand, actual job-site conditions and worker practices.
- Provide performance feedback to workers through face-to-face reinforcement, coaching, and correction.
- Detect organizational and programmatic weaknesses related to the support of in-field work activities.
- Enhance organizational alignment on expectations and values.
- Document (organizational factors) key aspects, including immediate action taken (to improve organizational effectiveness).

When managers and supervisors devote time to observations, workers are reassured that their managers and supervisors actually know what is going on and that they have an opportunity to express their opinions, feelings, and concerns about work. Personal involvement raises the credibility of the manager and supervisor in the eyes of the worker. Direct involvement in work activities improves management awareness of strengths and of areas that need improvement and promotes the real-time correction of unsafe/at-risk practices and the prompt reinforcement of expectations.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

OBSERVATIONS

3. When to Apply

Observations should be considered anytime a consistent use of expected behaviors is needed to successfully perform a task. More consideration should be given to higher risk tasks and jobs to provide an Enabler for those jobs with a higher consequence from error. Frequently performed, lower risk jobs should also be observed to reinforce use of the right behaviors. This will serve to reduce the chance of the worker using the wrong behaviors in a higher risk job.

4. How to do It?

The observation process contains four steps / phases including:

- Preparation
- Conduct
- Follow-up / Feedback
- Documentation

The details of how to conduct and document observations can be found in FP-PA-HU-03, “Human Performance Observation Program”.

5. General Rules and Insights

Behaviors seen in the workforce are there because they are being reinforced by some type of consequence as it relates to the individual. The job of the leader is to identify when behaviors do and do not meet expectations, and to understand how those behaviors are being reinforced. Observations provide the means to see what workers do and to provide specific consequences (positive reinforcement or coaching) to either increase or decrease the frequency of the behavior reoccurring.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

OBSERVATIONS

6. Risk Practices to Avoid

- performing a cursory observation (drive-by) to satisfy a quota
- performing several quick observations at the end of a reporting period to satisfy a quota
- not incorporating the results of observations into performance improvement processes
- being insufficiently critical—being overly polite
- limiting observations to a narrow range of work activities, such as complex versus simple tasks, repetitive versus infrequently performed activities, technician versus knowledge workers, employees versus supplemental personnel
- being unfamiliar with related work documents
- being unaware of critical phases or critical steps of an activity
- overlooking the use of human performance tools during risk important phases or actions of the activity
- not being intrusive enough to see behaviors important to good human performance
- interrupting a worker at risky points during a task
- using untrained observers
- not providing immediate feedback
- believing that observations are punitive in nature or offer no useful feedback to workers
- observing only the task and disregarding the total work situation
- not following up to investigate *why* what was observed occurred
- not communicating pertinent information back to the work group's management

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

TASK ASSIGNMENT

1. What Is It

Whether a task involves work in the plant or in the office, managers and/or supervisors assign or delegate tasks to people who are able do the job effectively and safely. The degree of manager involvement varies depending on the task—its risk and environmental factors, as well as factors relevant to the performer. High levels of involvement are necessary for complex, high-risk tasks and for tasks that involve considerable change to important processes or systems.

2. Why It's Important

This tool provides a means to analyze the potential pitfalls and traps associated with a particular job and to determine and deploy defensive strategies to prevent workers from falling into those traps.

Matching the right person to the job is an opportunity to evaluate the risk, complexity, and frequency of performance of the task in light of the individual considered for the job. Qualification for the task is first and foremost but not the only factor to consider. Talent, recent experience, proficiency, and attitudes are other important factors to consider. In some cases tasks are assigned for developmental purposes. Other factors related to a person's mental, physical, and emotional readiness to do the work include personal preferences, fatigue, illness, disabilities, and stress. Comparing these individual factors with the demands of the task improves the supervisor's ability to assign the right person to the task.

3. When to Apply

Task assignment should be applied during Pre-job Briefs with the workers to make everyone aware of the location of the error traps and to jointly develop strengthened barriers (defenses) to ensure the job will be successful.

- When assigning a job or task to a person who will have direct contact with plant equipment, potentially altering the status of equipment important to safety.
- When selecting persons to perform a project that is relevant to the configuration of safety-related plant structures, systems, or components.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

TASK ASSIGNMENT

4. How to do It?

- Review the work package or procedure to understand the details of the job.
- Identify any potential vulnerabilities (traps) associated with the job.
- Discuss the error prevention tools or other defensive strategies (contingencies) that can be used to prevent an error.
- Ensure expectations for error reduction tools the contingencies and are clearly communicated to the workers involved with the job.

Worker Factors – Consider the worker's qualifications, proficiency (frequency of performance), experience, fitness, attitude, ingrained work habits, personal distractions, and even personal preferences in light of the demands the task.

Task Factors – Verify that the person(s) assigned to the task understands the task's purpose, goals, and success criteria. Consider the potential impact of the work setting on performance; for example, physical workload, availability of procedures, schedule pressure, supervision, hazardous conditions, tools, and coordination.

Risk Factors – Assign an individual(s) considering the task's risk importance and complexity. Consider the degree of discretion the person will have to make decisions without others' input.

Environmental Factors – Consider the time of day, habitability, interruptions, distractions, and accessibility, among other factors.

Other Factors – Consider the need for additional (just-in-time) training; operating experience; the availability of other qualified and experienced personnel; the development of other personnel during the job, task, or project; and whether a walkdown was conducted, if applicable.

5. General Rules and Insights

The task assignment should be applied for every job with a quick review and discussion of the error traps for the job. The value from the analysis is the discussion with the workers involved with the job and the customized application of the most relevant error prevent tools. Some sites identify their Most Error Likely Task (MELT) for each shop or crew and apply a rigorous analysis of error precursors and strategies to mitigate or prevent the error.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

TASK ASSIGNMENT

6. Risk Practices to Avoid

- having insufficient qualified staff for the amount of work required by the organization
- using only task qualifications as a factor for task assignment
- regularly assigning the *best* performers to the riskiest jobs
- not consulting with experienced workers or supervisors when assigning a task, if the supervisor or manager is not personally familiar with the task
- not having a face-to-face discussion between the supervisor and the subordinate assigned to important or complex tasks
- assigning inexperienced personnel, or those without proficiency, to high-risk jobs without additional support or contingency plans
- assigning jobs to people unsuitable to the task because of resource constraints
- assigning supervisors to a work group when they have no experience with the jobs the work group performs
- over relying on a single expert and not developing bench strength in the task, should the expert be unavailable
- not having a clear picture of success
- not considering a worker's recent work history when assigning him or her to a job that involves more than one unit, train, or component

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

LEADERSHIP

1. What Is It

The six practices listed below in order of effectiveness communicate what a manager or supervisor holds as key to the success of the organization. These practices provide leaders with powerful means to consistently and systematically convey their priorities, values, and beliefs about safety. Application of these leadership practices, along with the attributes described in INPO's *Principles for a Strong Nuclear Safety Culture* (November 2004) and *Leadership Fundamentals to Achieve and Sustain Excellence in Station Performance* (September 2007), will go a long way in shaping how people think, feel, and behave toward safety and reliability.

2. Why It's Important

When there is a conflict between safety and production, safety should win hands down, every time. Managers senior managers in particular fuel enthusiasm for safety by what they pay attention to, react to, and talk about. To ensure that basic work processes and controls are robust, well-supported, monitored effectively, and sustained, managers and supervisors pay attention to what values, beliefs, and assumptions they convey. A presumption that has stood the test of time in human performance is that *people want to do a good job*. Managers and supervisors communicate what a good job is to the workforce by what they accept. This tool helps managers develop proper responses to situations in their organizations that involve safety. A robust safety culture requires aggressive leadership that explicitly emphasizes the principles and attributes of a strong nuclear safety culture.

3. When to Apply

- when nuclear, industrial or radiological safety is threatened
- when production pressure is high
- during operational decision-making
- when events occur
- while planning
- when interacting with subordinates
- during periodic progress meetings
- while recognizing or rewarding individuals

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

LEADERSHIP

4. How to do It?

7. **Measures** – what managers pay attention to, measure, and control on a regular basis, conveying a clear vision of good human performance
8. **Reactions** – personal responses to critical incidents or crisis, insisting on high standards regardless of consequences or perceived risk
9. **Resources** – priorities used to allocate scarce resources, signifying human performance as a core business success factor
10. **Coaching** – overt attempts to role model, coach, or teach in the field, while preserving healthy, professional relationships
11. **Rewards and Recognition** – criteria used to reward, recognize, and discipline individuals to reinforce safe behaviors and avoid punishing honest mistakes
12. **Promotion** – how managers recruit, hire, promote, and dismiss employees characterized as fair and honest

5. General Rules and Insights

Production and prevention compete for attention as well as resources. Both prevention and production are necessary for long-term success. But sometimes managers err when they *assume* people will be safe. Managers have to make sure that station production goals and processes do not conflict with safety and reliability (prevention). Production—or the lack of it—gets all kinds of feedback, while safety and prevention have no natural means of feedback unless something bad happens. Production tends to take priority over prevention unless there is a strong safety culture nurtured by strong leadership. Without strong leadership, safety-oriented behaviors will not happen over the long term. Prevention behaviors are value-driven. Workers may not choose a conservative approach because their immediate supervisor unwittingly promotes production. The way managers communicate and what they talk about bias the workforce either toward production or toward safety.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

LEADERSHIP

6. Risk Practices to Avoid

- not having or not acting consistently with a clear set of values that make safety the overriding priority
- exerting intense management pressure to meet due dates or schedules, without building in quality checks
- diverting resources from safety initiatives to production activities in the belief that safety will not suffer
- using rewards inconsistent with espoused values and beliefs
- rewarding or promoting individuals who get results using unsafe, at-risk, or unethical behaviors
- not appreciating those who, by consistently being well prepared and using safe practices, avoid ”fire fighting” situations (the adept ability to extinguish, to confine, or to escape from sudden threats to safety, reliability, or production)
- recognizing and/or rewarding personnel who are good at “fire fighting”
- using measures that focus exclusively on productivity efforts
- treating human performance as less than a *core business* issue
- assuming that all errors are due to poor attitudes, recklessness, or negligence
- focusing exclusively on the individual(s) when investigating an event
- acting impulsively or emotionally, without consciously considering the message possibly received by those who see and hear the outburst
- sending contradictory or inconsistent messages regarding production and safety
- attempting to fund all or too many projects
- inconsistently linking rewards or punishment with specific behaviors
- assigning unqualified or inexperienced personnel to safety important positions
- promoting individuals to positions of higher authority based solely on their technical expertise

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

HUMAN PERFORMANCE OVERSIGHT COMMITTEE

1. What Is It

Typically, members of the organization's senior managers establish the vision for human performance, which addresses work outcomes, work practices, and related values and beliefs. The management team develops and agrees to a strategy to achieve the vision. Human performance improvement plans are prepared and tracked to address present and future human performance challenges and are consistent with the station mission and business plan. The senior manager promotes managing human performance as the responsibility of the manager, not a staff member. This does not diminish the fact that people are still responsible for their choices.

2. Why It's Important

Human Performance Oversight is accomplished through Performance Assessment Review Board (PARB) meetings. Managers gain an accurate understanding of the state of human performance and create the right picture of excellence. The committee structure can be applied at a site, department, or shop level. As long as human performance is perceived as a core business activity, the PARB will serve as an effective means to improve human performance. The PARB functions to integrate site wide human performance initiatives along with the following:

- Oversee the organization's human performance strategy.
- Identify emerging human performance issues, and determine strategies for improvement.
- Oversee the implementation of initiatives. Promote and reinforce the use of human performance tools.
- Identify human performance communication, education, and training opportunities.

3. When to Apply

- on a regular basis, such as quarterly, bimonthly, or monthly, depending on how rapidly change is occurring
- when establishing or reinvigorating a human performance program
- when a site/department/group has reached a slowdown or plateau in human performance improvement
- when cross-functional human performance issues recur

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

HUMAN PERFORMANCE OVERSIGHT COMMITTEE

4. How to do It?

See FP-PA-HU-01 and FP-PA-PAR-01 for details

5. General Rules and Insights

Using data from the corrective action program and field observations, indicators can be developed and trended. From these indicators, managers identify the issues that challenge excellent human performance, using, for instance, Pareto charts to break out the leading issues of concern. Once identified, managers can analyze the reasons for the challenges and then develop relevant corrective actions. This information forms a foundation for department and station human performance improvement plans.

6. Risk Practices to Avoid

- having less than full participation from key department managers and senior leaders
- being overly polite to senior personnel or to one another such that the true status of human performance remains obscure
- not challenging or holding peers accountable for identifying and resolving human performance focus areas in their respective organizations
- over relying on the absence of events as proof of improvement
- not developing a human performance improvement plan or including human performance improvements with current site improvement plans
- frequently canceling or deferring the meeting
- developing corrective actions that will not deliver tangible results
- managers not expressing passion or energy; not taking ownership of human performance in their respective organizations
- delegating actions to the human performance specialist or performance improvement department
- losing focus on human performance by combining the meeting with other management meetings
- scheduling the meeting for a length of time that does not accommodate the agenda
- not providing meeting material before the meeting to allow participants to review the information prior to the meeting
- holding a meeting without an agenda
- running a “status” meeting instead of questioning the effectiveness of human performance improvement efforts

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

CHANGE MANAGEMENT

1. What Is It

Change management is the application of systematic tools and techniques that promote the successful development, planning, communication, implementation, and evaluation of change. Continuous improvement depends on effective change management. When managers make complex and far-reaching changes, the chance for error is high. A structured approach to planning and implementing change reduces the potential for error by managers and supervisors. Several approaches to change management exist. However, whether it is a popular method used by Wall Street or one developed in-house, managers should use it consistently as designed.

2. Why It's Important

The change management process is used to the extent necessary to support a successful change. Complexity and risk are the prevalent factors that determine the degree of change management required - the amount of management scrutiny. Complexity is determined by the degree of interrelated parts, systems, processes, elements, components, groups, and so forth that are involved. Risk is an assessment of the threat to safe and reliable operations that the change could spawn. It is suggested that a graded approach be used to determine the scope and formality of the change and the level of management involvement.

3. When to Apply

- when implementing an improvement specified in the station business plan
- when a change has a cross-functional impact that involves more than one organizational unit
- when a change affects several people or work groups, not individual contributors
- when acceptance of the change is essential to safe performance
- when technology is altered significantly
- when the proposed change will affect station key performance
- indicators

4. How to do It?

See FP-PA-CMP-01 for details on implementing a change management program

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

CHANGE MANAGEMENT

5. General Rules and Insights

A systematic change management process addresses the following key elements:

- Visualizing the desired end state
- Determining the scope of the change
- Planning the change in regard to its complexity and risk
- Studying the impact of the change on stakeholders
- Assigning roles and responsibilities
- Communicating why, what, who, how, where, and when
- Managing the implementation of the change
- Evaluating the effectiveness of the change

6. Risk Practices to Avoid

- taking additional action before the change takes effect, which can lead to a *program du jour* attitude toward change
- making a change without a clear vision of the end state
- not using a plan for a complex or high-risk change
- planning a change without considering the new values, attitudes, beliefs, and behaviors needed to be successful
- not consulting the people affected (stakeholders)
- not holding people accountable for using the change management process
- believing that a systematic process to guide the management of change is unnecessary
- losing patience, perseverance, and commitment to the change management process
- not training people on change management processes and expectations
- deleting or short-circuiting the review of change management plans
- assuming the *people issues* are not as important as the processes, structures, and financial issues

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

DYNAMIC LEARNING ACTIVITY

1. What Is It

The DLA is performed as if the participants were doing the activity in the plant or other relevant job site. They use the same tools and procedures and interact with others to complete the activity. In most cases, faults, defects, and errors are embedded in the scenario to challenge each participant's ability to perform the activity properly. Front-line workers who are passionate about human performance make the best DLA facilitators. They relate better to their peers and more effectively communicate the benefits of applying the expectations reinforced in the DLA.

2. Why It's Important

A dynamic learning activity (DLA) provides facilitators, observers, and participants with an opportunity to experience firsthand how knowledge, skills, work practices, and processes are applied while they perform realistic work activities in a simulated work environment. The activity is set up to be as realistic and authentic as possible, replicating actual physical, administrative, and cultural constraints. The DLA will often reveal organizational weaknesses, thereby offering an opportunity to improve relevant engineered administrative, cultural, and oversight controls. Also, DLAs can be used to indoctrinate supplemental workers prior to outages or for just in- time training before critical work activities.

3. When to Apply

- on the first day of continuing training for line personnel
- at the conclusion of initial training on human performance tools
- when managers or supervisors exhibit a deficiency regarding human performance
- during pre-outage orientation for supplemental workers

4. How to do It?

See training procedures FP-T-SAT-20 (Design), FP-T-SAT-30 (Development), and FP-T-SAT-40 (Implementation), for details on dynamic learning (i.e., laboratory) activities.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

DYNAMIC LEARNING ACTIVITY

5. General Rules and Insights

The intent is to provide participants and observers with opportunities to self-evaluate their application of current knowledge, skills, work practices, and processes. Performance is not formally graded. However, it typically is assessed, and strengths and areas for improvement are discussed during a post activity review. The emphasis is on critical self-evaluation in a non-threatening environment. The learning comes from the interaction and collaboration during the activity and from the identification of strengths and areas to improve observed during the activity.

6. Risk Practices to Avoid

- establishing unrealistic working conditions
- not being self-critical during the post activity review
- facilitators or observers not being knowledgeable of expectations and standards
- having too many distracters in the scenario, such that the participant(s) cannot be successful
- coaching during the conduct of the activity
- providing feedback to participants before giving them an opportunity to self-correct during the activity
- limiting identification of areas for improvement to the participant; not including relevant organizational factors

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

HUMAN PERFORMANCE EVENT-FREE CLOCK

1. What Is It

Many stations use human performance event-free clocks as an indicator of human performance. Managers tend to emphasize the *reset* because it provides an opportunity to communicate and reinforce expectations. The human performance tool(s) that could have avoided the error(s) that triggered the event provides real-time operating experience that can help station personnel apply specific tools better. However, for some people, the phrase “event-free clock” has a negative connotation. The workforce commonly views event resets as an embarrassment to the individual(s) involved in the event and as a reminder to people of how they failed.

2. Why It’s Important

The real value of the event-free clock is its ability to indicate organizational learning. Engineers monitor equipment performance using the mean time between failures as an indicator of equipment reliability. Human performance can be monitored using a similar method. The “average number of days between event resets” indicates how well the organization supports human performance. Several defenses must fail in concert to result in consequences severe enough to exceed the threshold of the reset criteria. Serious events are organizational failures. Consequently, resets of the site event-freeclock should always be investigated thoroughly.

3. When to Apply

- as a means of measuring organization wide human performance
- to indicate the organization’s support of front-line human performance

4. How to do It?

See FP-PA-HU-01 for details on administering the clock reset process.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

HUMAN PERFORMANCE EVENT-FREE CLOCK

5. General Rules and Insights

An increasing trend in the average number of days between resets is a positive indicator of continuous improvement in human performance. *Dependence on an absolute number should be minimized when the goal for the site event-free clock is set.* Managers are tempted to declare victory when the average number of days between event resets exceeds the goal, which can lead to overconfidence and a lack of aggressive continuous improvement. A more appropriate goal for the event-free clock is a *positive trend* in the average—an ever-increasing average number of days between event resets. Also, progress is better communicated when the current number of days since the last reset is compared with the current average. A statistically validated negative trend warrants review and investigation.

The event-free clock indicator is useful in comparing performance between stations, presuming the stations use the same criteria that define a human performance event. Using self-revealing events related to physical plant structures, systems, and components triggered by human performance minimizes subjectivity.

Many managers use event-free clocks to monitor the organizational vulnerabilities in their departments. Department event-free clocks should have a threshold of severity/consequence lower than the site clock criterion but tight enough to reveal vulnerabilities. That way, resets of the site event-free clock will be minimized because latent vulnerabilities (flawed defenses, controls, and barriers) are found and corrected at the department level.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

HUMAN PERFORMANCE EVENT-FREE CLOCK

6. Risk Practices to Avoid

- justifying that an event need not result in a clock reset when it meets the threshold of a human performance event reset
- emphasizing the shortcomings of people who triggered an event that qualifies as a reset
- not clearly explaining to plant personnel the trend of the average and what it means
- using an absolute value as the goal for the measure; not including the trend of average
- accepting a stable or flat performance trend without taking action to improve performance
- resetting the clock for events that are not human performance related
- using subjective criteria to *reset the clock*—so-called *discretionary reset*
- resetting the clock on a legacy issue (usually issues older than 18 months)
- using the event-free clock indicator as an input to personnel performance review and bonus programs
- allowing department event-free clock resets to consistently exceed 100 days without revising the event reset criteria (lowering the threshold)

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

PERFORMANCE ANALYSIS

1. What Is It

Managers and supervisors need a tool that helps them develop a clear understanding of a performance discrepancy and why it exists. Performance gap analysis identifies the difference between what *is* happening and what *should* be happening and what is *causing* the problem. Performance gap analysis helps define the performance problem or opportunity by contrasting current performance with desired performance and by systematically identifying the factors that contribute to the performance gap. Using a systematic approach to diagnose performance problems provides a means of identifying organizational vulnerabilities, whether they are technical, administrative, or cultural.

2. Why It's Important

Performance analysis helps determine what the right fix for a performance problem is. Training can be an effective solution, but only if the cause of the performance problem relates to a lack of knowledge or skill. Training is also a solution that entails considerable resources. Performance analysis helps us match the optimum action to the cause of the performance gap.

3. When to Apply

- after identifying a performance gap during DRUM
- when recognizing an adverse trend or recurring human performance issue
- when operating experience reveals a gap to excellence
- during causal analysis of an event triggered by human performance
- when an external agency identifies a human performance issue

4. How to do It?

a. Complete form QF-0444

b. Have QF-0444 reviewed by line and training supervision

c. Attach form QF-0444 to the CAP that documented the performance gap.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

PERFORMANCE ANALYSIS

5. General Rules and Insights

Performance analysis is related to the Needs Assessment (QF-1010-01a) process. A Needs Assessment is used to evaluate a training request, which means: 1) a performance gap does not necessarily exist, and 2) the initial belief is that training is appropriate.

Performance analysis does not pre suppose that training is the right solution, and allows a more in depth analysis of the performance gap than the Needs Assessment.

6. Risk Practices to Avoid

- assuming that a lack of proper motivation or training is the cause of an individual performance problem
- assuming that the plant environment and technical systems are basically safe
- using an unsystematic approach to analyzing the causes of performance problems
- defining the performance gap without noting the difference between *what is* (actual) and *what should be* (desired)
- choosing corrective actions that have the least leverage on closing the performance gap
- providing training when inadequate procedural guidance exists

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

HUMAN PERFORMANCE EVENT INVESTIGATION

1. What Is It

An analyst can build the context of people's decisions and actions by identifying the following for each individual:

- what he or she was trying to accomplish (goal)
- what he or she was paying attention to (object of focus)
- what he or she knew at the time of the decision or action(situation awareness)

This information is available from the individuals through interviews and by a review of the job-site conditions for each individual (procedures, recorder traces, logs, computer printouts, and so forth).

2. Why It's Important

Most investigations of events triggered by human error are distorted by hindsight by knowledge of facts known to the analyst, after the event, that the principal individual(s) was unaware of at the time. Such hindsight tends to bias the analyst to search for data that confirms the individual's shortcomings. Explaining what people could or should have done explains nothing about why they did what they did. To err or not to err is not a conscious choice. Therefore, the challenge for the root cause analyst is to discover why the decisions and actions of the principal individuals appeared reasonable to them at the time. A well-structured investigation facilitates this discovery by collecting data on and analyzing the interaction among people as well as their interactions with the system or process and the immediate work environment.

3. When to Apply

- after a significant event that requires a root cause analysis
- when an apparent cause analysis is performed

4. How to do It?

See FP-PA-HU-01 for details on conducting a HU event investigation.

ATTACHMENT 2

LEADER / SUPERVISOR TOOLS

HUMAN PERFORMANCE EVENT INVESTIGATION

5. General Rules and Insights

A common pitfall to root cause analysis is prematurely denoting the root cause of an event as *inattention to detail* or *not following procedures*. Inattention to detail and not following procedures are not root causes, because there are no reliable corrective actions that can absolutely prevent recurrence of human error. There are usually several reasons the error and the event occurred. Post-event analysis helps expose latent weaknesses in the organization. Shifting one's thinking from "who caused…" to "what could have prevented…" is important for effective causal analysis of human performance events.

6. Risk Practices to Avoid

- denoting individual shortcomings as root causes
- explaining why people erred by what they *failed* to do, such as failure to follow procedure or failure to self-check
- using labels, such as "complacency" or "loss of situation awareness" to explain human error, which obscures factual data important to understanding why people did what they did
- assuming that people are not appropriately motivated to perform safely
- assuming that people have a choice between making errors and not making them
- believing that human error is disconnected from the features of the task, the work setting, the culture, and the organization
- presuming a cause and then selecting the facts that best support this cause
- looking for fragments of information to confirm a theory about what happened, which erroneously guides the search for evidence (confirmation bias)
- explaining the causes of an event by focusing only on the frontline worker, without considering the job-site and organizational factors that set the stage for performance
- believing there is one root cause
- assuming that technical systems are basically safe, and that safety is achieved by simply protecting them from unreliable people

ATTACHMENT 3

ERROR LIKELY SITUATIONS VS ERROR REDUCTION TOOLS MATRIX

These error likely situations do not include all possible error likely situations and error precursors, but is limited to the nuclear fleet adopted error likely situations.

Time / Schedule Pressure

Time pressure is when a sense of urgency associated with finishing a task causes people to feel anxious or stressed. Schedule pressure is time pressure that comes from sense of urgency to adhere to a schedule.

Distractions / Interruptions

A distraction or interruption is a condition of either the task or work environment that diverts one's attention from the task and requires the individual to stop and refocus on the task sequence before proceeding.

Multiple Tasks

Performance of two or more tasks simultaneous, either physical or mental, that results in divided attention, mental overload, or reduced focus on the tasks.

Unfamiliar Task

An unfamiliar task is a task performed by an individual or crew that has:

- Never been performed or
- Has not been performed within the past six months.

Body Rhythm

Body rhythm is the normal physiological affects caused by life patterns, such as sleep/awake cycles, digestion, and to returning work after time off.

Vague or Incorrect Guidance

Vague or incorrect guidance is primarily written guidance that does not effectively define the task or guidance that contains technical errors.

Ineffective Communication

Ineffective communication is primarily verbal communication in which the sender and receiver do not have a consistent understanding of the information being exchanged.

ATTACHMENT 3 (CONTINUED)

ERROR LIKELY SITUATIONS VS ERROR REDUCTION TOOLS MATRIX

Over Confidence

Over confidence is not making prudent decisions because of under estimating the risk i.e., the likelihood as well consequence of making an error. Over confidence can be fostered by successful past performance, short duration tasks, and time pressure.

Stress (Work and Home)

Stress is the feeling of anxiety when a situation of concern is not within the individual's control. Regardless of the source of stress, the affect on the individual is similar.

Physical Environment

Physical environment is the physical condition under which the task is to be performed. These conditions include: lighting, noise, cramped space, temperature, contamination, as well as the human-machine interface, such as labels, the shape or location or controls, indicators, etc.

Task / Scope Change

Task / scope change is the situation when workflow is interrupted because of a change in specific task or scope of job. Work flow interruption requires a re-focusing on the revised task.

Peer Pressure

Peer pressure is the situation when the individual's actions are negatively impacted by the group's stated or perceived opinion.

ATTACHMENT 3 (CONTINUED)

ERROR LIKELY SITUATIONS VS ERROR REDUCTION TOOLS MATRIX

NOTE: Try to eliminate the situation first. Any tool may work depending the situation.				
Error Likely Situations	Possible Error Reduction Tools to Use for the ELS vs. Individual and Supervisory Human Performance Tools			
	Individual	Individual	Individual	Supervisory
Time/Schedule Pressure	STAR	Procedure use and Adherence	Peer Checking	Leadership
Distraction/Interruptions	Procedure use and Adherence	Are you Ready Checklist	STAR	Task Analysis
Multiple Tasks	Peer Checking	Are You Ready Checklist	STAR	Risk Management
Unfamiliar Task	Stop When Unsure	Are You Ready Checklist	Co-Worker Coaching	Job Observation
Body Rhythm	STAR	Peer Checking	Are You Ready Checklist	Job Observation
Vague or Incorrect Guidance	Stop When Unsure	Flagging	Conservative Decision Making	Pre-Job Brief
Ineffective Communication	Verbal Communications	Stop When Unsure		Standard and Expectations
Over Confidence	Procedure use and Adherence	Conservative Decision Making		Job Observation
Stress (Home & Work)	Peer Checking	Procedure use and Adherence	STAR	Behavioral Expectations
Physical Environment	STAR	Verbal Communications	Peer Checking	Task Assignment
Task/Scope Change	Are You Ready Checklist	Stop When Unsure	Conservative Decision Making	Post Job Critique
Peer Pressure	Stop When Unsure	Conservative Decision Making	STAR	Behavioral Expectations

ATTACHMENT 4

INPO HUMAN PERFORMANCE MODEL

Human Performance System. A system is a network of elements that function together to produce an outcome. **Human performance is a system--the organizational nature of human performance**. Though it may seem intangible, forces within the station environment, the social system, incentives and disincentives systems, and shift scheduling system are examples of systems that typically function behind the scenes.

Systems Thinking. Understanding organizational systems and the impact of station processes and leadership dynamics on job-site human performance is important to effective management of human performance. Systems thinking involves “thinking” through the multiple causes and effects, the variables that come to bear on the employee at the point of touching plant equipment. A simple model of these interdependencies is provided below, referred to as the performance model.

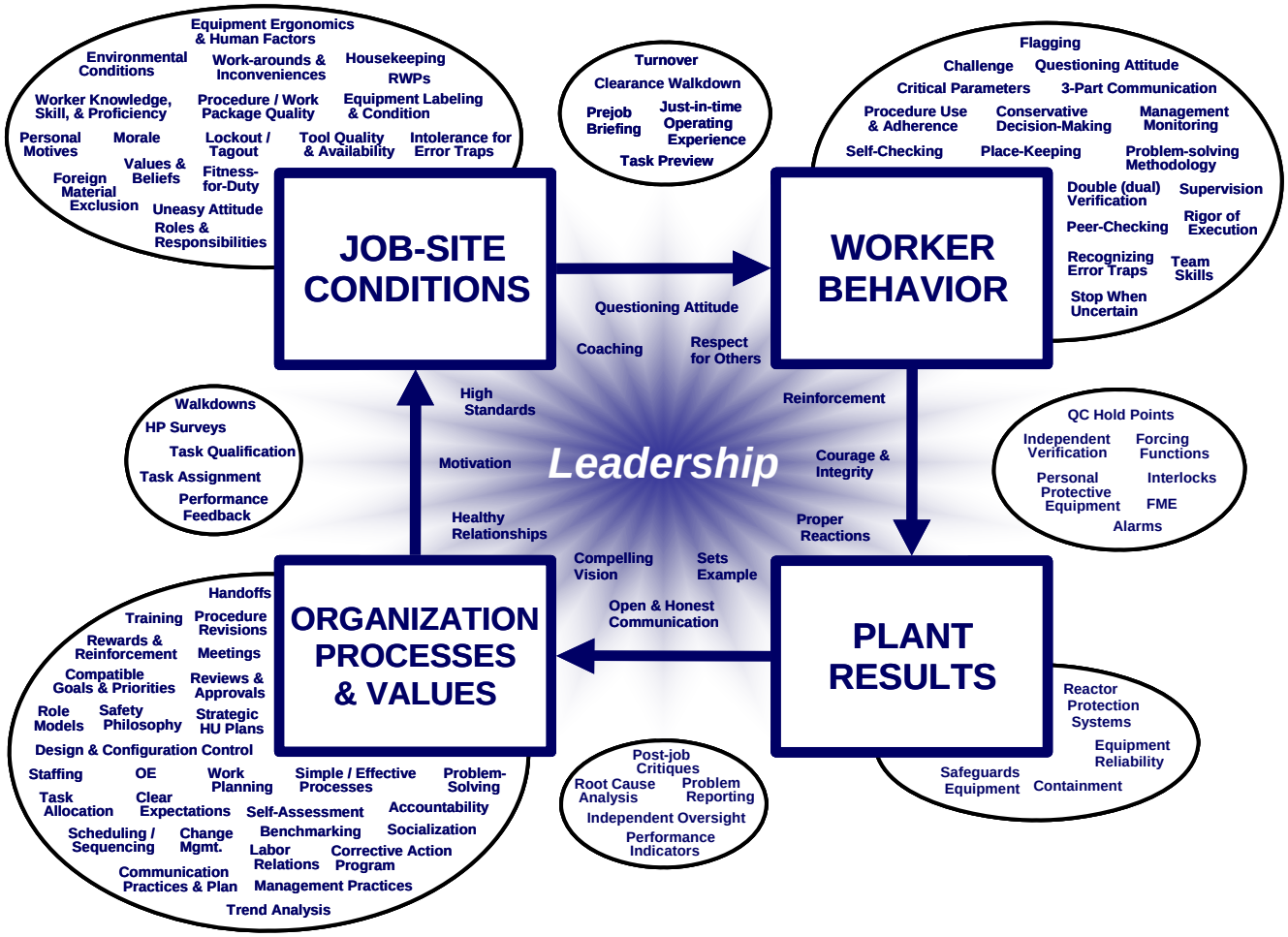
Organizational Processes and Values. These are processes and shared values that support work in the plant - for good or bad. Together, these set the stage for work in the plant through the planning of work and the preparation of human resources to perform work.

Job-Site Conditions. This is the unique set of job-related conditions associated with specific task and a particular employee.

Employee Behaviors. These are the actions by an individual employee at the job site during the performance of a task.

Physical Plant Results. These represent the outcomes to the physical plant, design bases, or personnel safety – value-added of unfavorable. Examples of plant results include capacity factor, heat rate, loss time accident rate, equipment reliability, outage effectiveness, and trips or transients. The effect of plant performance determines how well plant results achieve station objectives – organizational effectiveness.

Leadership. This refers to positions that influence employee beliefs, values, and behavior, but also plant performance and organizational processes. Anyone can take on the role of leader.

Defenses, Barriers, and Safeguards. These are intended to protect against hazards in the plant. A healthy set of defenses such as pre-job briefings, radiological postings and personnel protective equipment makes the plant immune to isolated errors.

ATTACHMENT 4(CONTINUED)
INPO HUMAN PERFORMANCE MODEL