



HUMAN PERFORMANCE TOOLS

The Human Performance Tool Box

This handout describes the bases for each of these tools, when each is to be used, the expected behaviors, as well as behaviors to be avoided when using each tool.

There are 14 tools in your basic HU toolbox:

1. Pre-Job Briefing
2. Two-Minute Rule
3. Three-Way Communication
4. Phonetic Alphabet
5. Procedure Use & Adherence
6. Place Keeping
7. Flagging/Operational Barriers
8. Self-Checking
9. Independent Verification
10. Concurrent Verification
11. First Check
12. STOP When Unsure
13. Peer Checking
14. Post-Job Review



HUMAN PERFORMANCE TOOLS



Pre-Job Briefing

Basis:

The Pre-job Brief is a human performance tool that allows the worker to think through a job and use his/her knowledge to make the job as safe and efficient as possible.

Workers actually involved with performing the work should prepare and lead pre-job briefs.

A supervisor or foreman should be present during verbal briefings for low hazard jobs to ensure that briefing standards are met. A supervisor or manager should be present during documented pre-job briefings for high hazard jobs to ensure that high standards are maintained during the briefing.

When to Use the Tool:

- Low Hazard Jobs require a verbal pre-job briefing.
- High Hazard Jobs require a documented pre-job briefing using the appropriate PJB form (see the forms center to find the form for each SBU).
- In addition, the JSA will be covered during the pre-job briefing.

Behavior Standard:

1. Employees will prepare for the pre-job briefing by reviewing job procedures, work packages, JSAs, etc.
2. Pre-job briefings must emphasize the expectation of procedure usage. This includes procedures, step text, job text, spec sheets, etc.

3. Supervisors, foremen, and employees will jointly decide if work can be performed safely.
4. While it is not practical to conduct an employee briefing for an employee working alone, supervisors and foremen will instruct these employees to consider the job steps, hazards associated with each step, and the precautions to take to avoid the hazards.
5. If significant changes occur during the conduct of a job that may affect the safety of employees or if a low hazard job changes into a high hazard job, an additional briefing is required.
6. Special precautions must be given to work activities that involve troubleshooting or discovery of equipment problems.

At-Risk Behaviors to Avoid:

- Lecturing rather than discussing the job
- A separate PJB for some workers
- Checking every item regardless of need
- No responsibilities for abort decisions
- Supervisor leading instead of lead worker
- Meeting in a noisy, distracting place
- Meeting more than 30 minutes
- Ignoring Operating Experience (OE) or worker familiarity w/task
- Covering OE irrelevant to the task



Two Minute Rule

Basis:

Recognizing abnormal conditions and Identifying Safety hazards is the first step to error-free and event-free performance.

Workers and supervisors cannot be so focused on what they are trying to accomplish that they do not see opportunities to avoid 'preventable' errors. The pre-job briefing offers supervision and assigned workers an opportunity to not only review what is to be accomplished but also what to avoid. This discussion prepares them mentally. However, an accurate understanding of the challenges offered by the work environment cannot be confirmed until workers actually see the physical job site with their own eyes.

The two-minute rule requires workers to simply take time before starting a job to become aware of the immediate work environment, to detect conditions unanticipated by work planning and the pre-job briefing, and to confirm those that were. Often, procedures do not contain important information related to the demands placed on the user by the job site, especially at critical steps. A brief review of the job site allows the individual time to detect abnormalities and hazards. If abnormalities, or error-precursors, remain undetected, they usually make performance either more difficult or contribute to injuries, errors, and, possibly, events.

When to Use the Tool:

- At the beginning of each task involving plant equipment

Behavior Standard:

1. Explore the job site the FIRST two minutes by walking and looking around at the work area (hands-on touch points) and adjacent surroundings to identify conditions such as:
 - Industrial safety and environmental hazards
 - Sensitive equipment in the area
 - Right unit, right component
 - Critical indicators (meters) needed for task success
 - Error precursors (at critical steps)
 - Work area conditions inconsistent with those listed in the procedure or discussed during the pre-job briefing.
2. Talk with coworkers or supervisor about unexpected hazards or conditions and the precautions to take.
3. Eliminate hazards, install appropriate barriers, or develop contingencies before proceeding with the task.

At Risk Behaviors to Avoid:

- Hurrying
- Thinking the job is "routine" or "simple"
- Believing nothing bad can happen
- Not talking about precautions with co-workers
- Not raising "gut feel" concerns with co-workers or supervision



Three-Way Communication

Basis:

Mutual understanding is essential to plant operation and maintenance. Therefore, responsibility for proper communication is assigned to the originator or sender, who must verify the receiver understands the message as intended. *Each message that is directive in nature must use three-way communication and begins when (1st)* the sender gets the attention of the intended receiver, using the person's name, and speaks the message. Then *(2nd)*, the receiver repeats the message in a paraphrased form, which helps the sender verify that the receiver understands the intended message. Finally *(3rd)*, the sender acknowledges that the receiver heard and understood the message.

When the receiver paraphrases the message, equipment nomenclature, identifiers, and data are repeated back exactly as spoken by the sender.

The third leg of the communication is often the weak link, since the sender is tempted to not pay attention to the receiver's statement, assuming the person heard their message. If the receiver does not receive acknowledgment from the sender, he/she should be assertive, and ask the sender to complete the third leg. Feedback is necessary to verify understanding of each spoken message.

When to Use the Tool:

Verbal information that is directive in nature is exchanged between people via face-to-face, telephone, or radio regarding one or more of the following:

- Status of plant systems, structures, or components
- Direction to perform action(s) on plant equipment
- Work instructions, limitations and cautions.

Behavior Standard:

1. Using the person's name to establish eye contact with the receiver, the sender states the message.
2. Receiver acknowledges sender by paraphrasing the message in his or her own words but repeating back equipment name, UNID, and data verbatim.
3. Sender verifies and acknowledges the receiver's response is correct.
4. If corrected, repeat the process.

At-Risk Behaviors to Avoid:

- Using slang terms instead of specific or standard terms
- Sender not taking responsibility for what is said and heard
- Not stating his/her name and work location (sender or receiver) when using a telephone/radio
- Receiver's name not used by the sender to get receiver's attention
- Attempting to communicate with someone already engaged in another conversation, i.e., "cross talk"
- Failing to verify receiver accepted and understood the message
- Message not stated clearly (such as not loudly enough or poor enunciation of words)
- Receiver not verifying understanding with sender; reluctance to ask questions in a group
- Speaking from behind the person intended to receive the message
- Conflict between what is said (content of message) and the nonverbal cues of the sender
- Skipping 3-way to speed up the task

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

Phonetic Alphabet

Basis:

When the only distinguishing difference between two component designators is a single letter, then the **phonetic alphabet form of the letter should** be substituted for the distinguishing character.

When to Use the Tool:

When communicating alpha-numeric information related to plant equipment noun names.

- For train, phase, and channel designations.
- When the sender or receiver feels there is a possibility of misunderstanding such as, sound alike systems, high noise areas, radio/ telephone communication where reception is poor, etc.
- Phonetics are unnecessary when referring to standard approved acronyms such as CCW.

This tool is used during verbal communication and is NOT used in written communication. When speaking, 'B' sounds like 'C' sounds like 'D' etc. Using the proper phonetic designator makes each letter sound distinctly different. When writing, each letter of the alphabet is visually distinct from all other letters so to write 'bravo' in place of 'B' would be a misapplication of this verbal tool.

Behavior Standard:

A = Alpha	N = November
B = Bravo	O = Oscar
C = Charlie	P = Papa
D = Delta	Q = Quebec
E = Echo	R = Romeo
F = Foxtrot	S = Sierra
G = Golf	T = Tango
H = Hotel	U = Uniform
I = India	V = Victor
J = Juliet	W = Whiskey
K = Kilo	X = X-Ray
L = Lima	Y = Yankee
M = Mike	Z = Zulu

At-Risk Behaviors to Avoid:

- Not using phonetics for equipment label designations
- Using phonetic words other than those designated, e.g., BAKER vs. BRAVO
- Using phonetic designators when writing
- Non-standard acronyms and abbreviations
- Similar words like *increase* and *decrease*
- Slang terms in place of standard terms
- Not using phonetics for equipment labels



Procedure Use & Adherence

Basis:

Procedures help users to perform activities correctly, safely, consistently, and in accordance with design requirements. Procedures direct people's actions in a proper sequence and minimize reliance on one's memory and the choices made in the field. When workers are forced to interpret a procedure's use and applicability, the chance for error is increased. *Procedure use* specifies the minimum required reference to the procedure during the performance of a task, such as continuous use (in-hand), reference use, and information use. *Procedure adherence* means following the intent and direction provided in the procedure regardless of the level of use.

Procedures incorporate the policies, operating experience, effective work practices and management decisions about how a task is to be performed. Technical procedures are written to direct desired behavior for the various complex and technical work activities that will affect plant equipment. However, experience has shown that technical procedures may not always contain sufficient information for the user. With turnover of the workforce, less experienced workers take the place of more experienced personnel. The quality of the procedure (technical content and usability) is paramount, especially if the task involves risk, significant systems or components. Therefore, feedback from the user on the quality of procedures and work orders is *highly desired*.

When to Use the Tool:

Procedures are to be used for activities that involve manipulation, monitoring, or analysis of plant equipment or physical work in the plant.

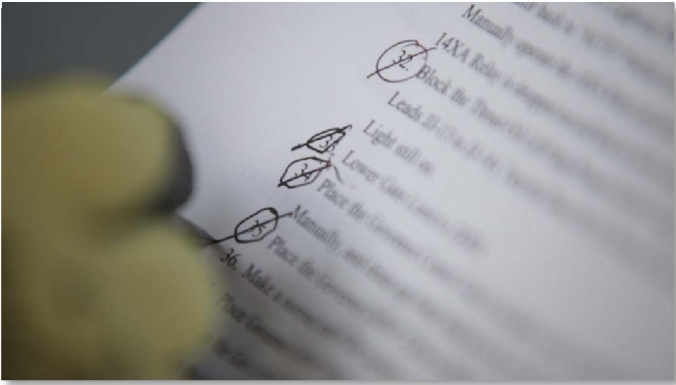
Behavior Standard:

1. Verify the procedure being used is the correct revision. Procedures are corrected and approved before use.

2. Review all Prerequisites, Limits, Precautions, and Initial Conditions before starting work.
3. An effective place-keeping method is used for procedures that do not require sign-offs. At least, initial or check each step complete, after the action is performed, before proceeding with the next step.
4. Procedures shall be followed as written without deviating from the original intent and purpose.
5. Do not deviate from the sequence of steps, unless approved.
6. Do not 'N/A' any step, unless approved.
7. If a procedure is incorrect, will result in damage to equipment if used as written, cannot be performed as written, will result in incorrect parameters or configuration, or is otherwise unsafe, then STOP the task and contact a supervisor.
8. If desired or anticipated results are not achieved, do not proceed, and contact a supervisor.

At-Risk Behavior to Avoid:

- Assuming a procedure is well-written and accurate
- Cook-book a step or procedure (blind compliance) without understanding its purpose
- Performing a task without knowing critical steps in advance
- Believing in the philosophy that, "Any operator worth his/her salt doesn't need a procedure."
- Skipping steps or segments of a "routine" procedure, since those steps have been unnecessary in the past
- Not rigorously following a procedure because of personal past success with the task
- Commencing a procedure without establishing initial conditions required by the procedure
- Using a procedure maliciously, knowing it has Flaws
- Not reviewing an unfamiliar procedure (or lacks proficiency) before performing a task
- Using a previous revision (superseded) of a procedure
- Marking steps "N/A" for those that are inadequately or improperly written
- Not submitting feedback on procedure problems (technical accuracy and usability)
- Not applying some form of place-keeping for continuous use procedures
- Using check marks instead of initials or signatures for continuous use procedures, unless the procedure specifically allows it
- Ditto marks ("")
- One set of initials followed with a line through remaining signoff blanks
- Signing off a step as completed before it is complete



Place Keeping

Basis:

Place keeping is used to mark the steps in a procedure or work document that have been completed or that are not applicable, so that steps are not accidentally omitted or repeated.

When to Use the Tool:

Use Place keeping when using a procedure or work document to perform critical activities as specified by the Pre-Job brief.

When suspending performance of a procedure, use place keeping to identify the last step completed.

Behavior Standard:

Place keeping is performed as follows:

1. IDENTIFY and clearly MARK (in a conspicuous manner) any *critical steps* during the pre-job briefing.
2. READ and understand the step in its entirety before performing the action
3. PERFORM the step as written.
4. MARK each step as it is completed using one of the following techniques:
 - When 'sign off blanks' are used, initial or sign the step or action in the space provide. Place the time and date if required
 - When 'check boxes' are used, check the box for each step or action
 - Use the 'circle slash' method when 'check boxes' and 'sign off blanks' are not used

Circle Slash

- CIRCLE the procedure step number or put a circle in the left margin of the procedure or work document step to be performed
- READ and understand the entire step

- PERFORM the step as written.
 - Do NOT Slash continuous steps
 - N/A IF/THEN steps if not needed
 - SLASH the Circle after step completion.
5. When resuming an activity that has been suspended, CONFIRM that performance conditions and requirements are met, and that any required approvals are obtained before proceeding.
 6. If a page is not completed, DRAW a line under the last step completed and WRITE "Completed to this step", sign and date.
 7. Once a page has been completed, CONFIRM all required steps are complete and INITIAL completion of the page in the margin.
 8. IDENTIFY the last page in the procedure or work document and conspicuously WRITE "Last Page" on the last page.
 9. It is permissible to USE coloured adhesive page markers (such as Post-It Notes ®), to help trace progress through the procedure or work document or to denote reference sections.
 10. HIGHLIGHT the flow path up to the next step to denote the path taken via decision boxes.

For steps that are 'not applicable'

- IDENTIFY and CROSS OUT steps that are "not applicable".
- HAVE your supervisor initial these steps to confirm that the proper approvals have been obtained.

At-Risk Behaviors to Avoid:

- Marking steps "N/A" for those that are inadequately or improperly written
- Not applying some form of place-keeping for continuous use procedures
- Using check marks instead of initials or signatures for continuous use procedures, unless the procedure specifically allows it
- Ditto marks ("")
- One set of initials followed with a line through remaining signoff blanks
- Signing off a step as completed before it is complete
- Circle/Slashing several steps together
- Not verifying the last step if interrupted



Flagging & Operational Barriers

Basis:

Flagging involves highlighting a component in such a way to improve the chances of performing actions on the correct component. Operational Barriers are used to mark or cover components that are not to be worked or manipulated during an evolution. Flagging & Operational Barriers is particularly helpful when there are several similar components in close proximity to those affected by the work activity. Several events have been attributed to an individual starting an activity on one component, taking a break or becoming otherwise distracted from the component, and performing manipulations on the wrong component.

When to Use the Tool:

- Performing two or more manipulations of several similar components in close proximity to those affected by the work activity
- Handling one of similar items nearby
- Multiple trains
- Multiple units
- Working near “trip-sensitive” equipment

Behavior Standard:

1. Identify the component that will have a flag or an operational barrier by using other HU tools such as self-check or peer-check. Be 100% certain that the device is identified

correctly before installing the flag or operational barrier. **Caution - Flag** the component that will be worked. Place **Operational Barriers** on components NOT to be manipulated or worked. Attach the flag or operational barrier to the designated component using devices that will remain securely in place, such as colored adhesive dots, ribbon, colored tags, rope, magnetic placards, colored electrical tape, etc.

2. While performing the work the flags or operational barriers are to remain in place only while work is in progress.
3. Remove flagging or operational barriers when work is complete.

At-Risk Behaviors to Avoid:

- Using similar flags for components to manipulate and for components to avoid touching
- Attaching a flag to a component to be manipulated only once
- Flagging both components to be manipulated and to be avoided during same activity
- Not self-checking or peer-checking the component before applying flagging or later in the activity
- Using flagging that is not securely attached to component; able to become unattached
- Not removing a flag after completion



Self-Checking (S-T-A-R)

Basis:

Self-checking helps prevent errors when ‘touching’ plant equipment to change its status or even when revising a document important for plant safety and reliability. Self-checking is particularly effective during skill-based tasks that could be performed without much conscious thought. This technique helps boost attention at important points in an activity before an important action is performed. If attention is not focused, error is likely. Once attention is focused, the object of your attention is touched, the individual then takes a moment to think about the intended action and its expected outcome. If uncertain, questions should be answered before proceeding. If visual or physical contact is broken, then self-checking should be repeated. When the performer is physically and mentally prepared, the action can be taken, followed by a review of the results of the action.

When to Use the Tool:

- Critical step identified during pre-job briefing
- Manipulation of plant control or component as directed by a plant procedure
- Identifying a component
- Time pressure – a hurried feeling
- Task interruption
- Impending change in system or equipment status (especially maintenance disassembly and reassembly)

Behavior Standard:

Caution: If at any time in the process the performer becomes distracted or loses physical contact with the device to be manipulated, then repeat the process to re-verify the proper component about to be manipulated (unless flagging used).

1. *Touch* – Physically touch the component or hover the cursor over the component you intend to manipulate, or the wording/value you intend to revise.
Caution: self-check again if contact is lost
2. *Stop* – Pause before performing the operation/manipulation, especially at critical steps, decision points, or touch points (DCS). Eliminate distractions, if necessary.
3. *Think* – Focus attention on the step to be performed. Verify the action is appropriate for equipment/system status. Anticipate expected result(s) of the action and its indications. Consider what actions to take should an unexpected result occur (contingency).
4. *Act* – Without losing physical contact:
 - Compare component label, etc., with checklist, procedure step, or drawing.
 - State the component name or UNID aloud (without distracting others).
 - Without losing physical contact established earlier, perform the action.
5. *Review* – Verify anticipated result obtained. Perform contingency, if expected result does not occur.

At-Risk Behaviors to Avoid:

- Not self-checking again, when distracted after initially self-checking or losing physical contact
- Talking on the telephone or conversing with another person during a manipulation or critical action
- Self-checking without the guiding document
- Attempting to perform more than one action at a time; two-handed operations
- Continuing with the action when questions or discrepancies occur
- Looking at something other than the component to be manipulated



Independent Verification

Basis:

Independent verification (IV) is the act of verifying the condition of a component, system, or document, etc., independent from the original act that placed it in that condition, to find errors by the performer. It is an act of checking a component's or product's status or quality independent of the person that established its present state.

IV has a higher probability of catching an error than peer-checking or second-party verification, since the second person is not influenced by the first person and has freedom of thought. However, IV should only be used when an immediate consequence to the plant or equipment is unlikely if the first action is performed incorrectly. IV catches errors after they have been made.

The individual performing the IV must physically check the condition without relying on observation or verbal confirmation by the initial performer.

True independence requires separation in *time* and *space between the individuals involved* to ensure 'freedom of thought.' In fact, the two individuals probably should not even walk to a room or location of the component together. True independence cannot be established if one individual is looking over the shoulder of the other, even from a distance.

When to Use the Tool:

- During important system alignments
- Placing and removing clearance tags
- Verifying calculations
- Restoring equipment after maintenance
- Aligning fire protection systems
- Installing temporary modifications

Behavior Standard:

1. Performer self-checks the component to be manipulated.
2. Performer performs the predetermined action and only that action.
3. Performer confirms the new configuration or condition agrees with the guiding document and documents the verification in the space provided in the guiding document.
4. At a separate time and not in the presence of the performer, the verifier self-checks the component that was manipulated to verify component identification matches the component required to be verified.
5. Verifier determines the as-found configuration or condition matches the condition required by the guiding document, without changing it, using one or more of the following means:
 - Hands-on Verification (e.g. manually checking valve position)
 - Observing remote indication
 - Observing correct system/equipment/component response
6. Verifier confirms new configuration or condition agrees with guiding document and signs his/her signature/initials in the space provided in the guiding document.
7. If the as-found configuration or condition is incorrect, report the condition to supervision immediately.

At-Risk Behaviors to Avoid:

- Performer and verifier in close proximity at the time the performer acts.
- Performer and verifier walk to component's location together.
- The performer is perceived by the verifier as experienced, as an expert, and unlikely to make a mistake.
- Performer is less attentive to the action thinking the verifier will "catch" any problems.



Concurrent Verification

Basis:

Concurrent Verification is used to **PREVENT** an error by the worker when changing the condition or status of a component.

Concurrent Verification focuses on the proper "verification" of the correct device, the expected operation, and the abilities of the person making the verification. Concurrent Verification is intended to address every aspect of the task before any manipulation of the device is made.

When to Use the Tool:

Concurrent Verification may be performed for critical or complex equipment, or as directed by controlling documents or as directed by the Supervisor. Critical or complex equipment includes:

- Components that, once operated, can't be independently verified to be in the desired position.
- Components that are confusing or difficult to operate and could have immediate safety, environmental or operational impact if operated incorrectly.
- Plant safety: Plant trip or reduction in power; equipment damage/property loss.

Behavior Standard:

- Both individuals must be qualified to operate the component.
- Before the verification, both individuals involved must determine who will fulfill the role of the performer and who will be the verifier. The individuals must rigorously adhere to these roles during concurrent verification.
- The performer and the verifier, using controlling documents individually identify

the component and review the intended action. Prior to component identification and the intended action, the verifier will take no physical or verbal cues from the performer.

The **performer** shall individually:

- LOCATE the component and IDENTIFY each unique identifier on the component label.
- REVIEW the intended action.

The **verifier** shall individually:

- LOCATE the component and identify each unique identifier on the component label.
- REVIEW the intended action.

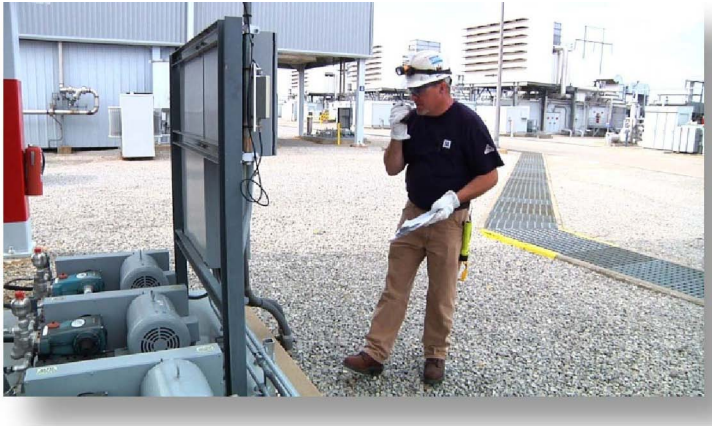
If the conditions are such that direct observation of the verification and actions are impractical (such as tight quarters); the desired component should be physically marked with tape or other suitable device by the verifier.

To manipulate the component:

- Each individual will physically TOUCH or POINT at what they have separately decided is the correct component.
- Both individuals DISCUSS the requested action to be performed and AGREE on the action.
- The performer will TAKE the action WHILE BEING DIRECTLY OBSERVED by the verifier.
- When the action is complete, then the verifier will VERIFY the desired action was performed correctly on the correct component and REMOVE any marking device placed as part of the Concurrent Verification process.

At-Risk Behavior to Avoid:

- A Verifier inexperienced with the task
- One reluctant to correct "senior" other
- Team mates don't Self-Check each other
- Using "Peer Checking" when Concurrent Verification is needed.
- Each person not performing their own individual verification
- The verifier taking physical and verbal cues from the performer
- Swapping roles of the performer and verifier in the middle of the evolution
- Not marking a device appropriately when the device in tight quarters
- The Performer and/or Verifier is not qualified to operate the component



2. **CONTACT** the Control Room or dispatching facility to validate, First Check, your location and component label information against the proper operational document. Also, validate, First Check, your assigned task.

3. After confirming your location and intended actions, **CONTINUE** with the assigned task, rigorously applying self-checking techniques throughout the completion of the assignment.

First Check

Basis:

First Check can be thought of as a remote peer check and is used to ensure the first component manipulation for a specific task is performed on the proper unit / channel / component. Simply put, First Check is used to validate you are in the right place before you begin working alone.

When to Use the Tool:

- Working alone, especially with multiple units, channels, trains, and components, presents multiple opportunities to manipulate unintended components.
- Use First Check as an additional barrier for this type of error-likely situation.
- Use this tool when you arrive at the location of an assigned task, when you are alone, and prior to the first manipulation of plant equipment.
- Call or radio back to the person that dispatched you for the task and review briefly where you are, specifically, and what you intend to do to ensure the proper equipment is to be manipulated.

Behavior Standard:

1. Before performing the first manipulation of an in-field evolution, use self-checking techniques to **VERIFY** the proper work document step intended to be performed, the proper unit, channel, and component about to be manipulated.

At-Risk Behaviors to Avoid:

- Failing to recognize 'First Check' opportunities when working alone.
- Assuming the task is simple.
- Believing it is not possible for you to get on the wrong unit/train/equipment.



Stop When Unsure

Basis:

When confronted with a situation that creates a question, a person is in uncharted (unfamiliar) territory—a knowledge-based performance situation (Remember, statistically, 1 of 2 Knowledge Based decisions will be in error). Whenever a question is encountered and what to do about it is uncertain, stop and get help.

Given the chances for error are particularly high in a knowledge-based situation, the best course of action, when unsure, is to take a time-out and get another person's 'mind' focused on the problem. For effective problem-solving to occur, people must recognize they are in a knowledge-based situation.

Get help from those who possess the expertise, not necessarily from those of higher rank. Also, when that "gut feeling" is telling you that something is not right, stop. This also applies when one experiences, "What am I doing here?" or "I'm here, but can't remember what I am supposed to do." Don't be embarrassed, stop and get help!

When to Use the Tool:

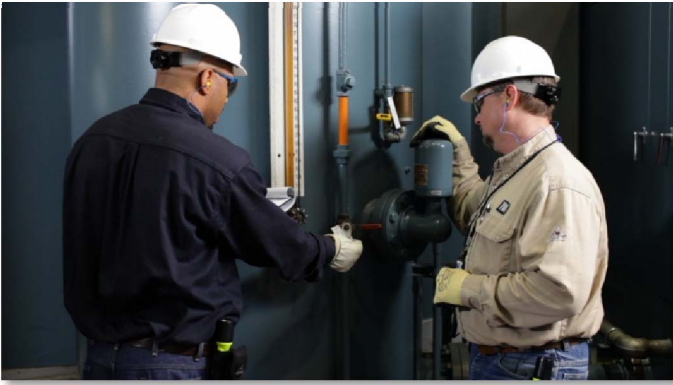
- Unexpected results
- Unfamiliar situations
- Confused: questions that have no answers
- Uncertain that you are in compliance with expectations, procedures, or regulations
- Uncertain what success is
- Observed work practices different from expected work practices

Behavior Standard:

1. Stop activity, when confused, or doubt remains concerning a procedure step, work package action, or process expectation.
2. Place system/equipment/component and job site in a safe condition.
3. If available, ask an experienced team member (qualified on the activity) to help.
4. Inform immediate supervisor of the problem.
5. Perform another pre-job briefing, if work conditions different from those discussed during initial pre-job brief.
6. Do not proceed in the face of uncertainty.

At-Risk Behavior to Avoid:

- Assuming
- Rationalizing an anomaly away
- Not asking for help
- Being too embarrassed to ask for help
- Thinking the task is 'routine' or 'simple'
- Believing nothing bad can happen
- Ignoring subtle differences
- Unaware of critical parameters



Peer-Checking

Basis:

Peer checking is an error-prevention technique involving a verbal agreement between two individuals prior to a specific action and/or task, such that one will observe or check the behavior of the other to prevent an error by the performer.

One person acts as the performer, and the second person, an experienced peer familiar with the activity, acts as the checker. The purpose of peer checking is to prevent error for a specific action. Peer-checking is merely two persons (performer and checker) self-checking in parallel, agreeing together that the action is the correct action to be performed and on the correct component. Peer checking augments self-checking, but does not replace it. This technique takes advantage of a fresh set of eyes not trapped by the performer's task focused mind-set. The checker may "see" hazards or potential consequences the performer does not see.

In most cases, workers can ask for a peer-check, especially when they feel the risk or conditions warrant it. The tool may be required by management for certain high-risk actions. If a person, other than the performer, anticipates an action by the performer may be unsafe, or at risk, he or she may question the performer to verify the intent and desired outcome before the action is taken.

Peer-checking can be confused with second-party verification. Although the purpose of both techniques is to prevent error for a specific

action, second-party verification has the added purpose of configuration control. That is why the second-party verification is documented in the guiding document and peer-checking is not.

When to Use the Tool:

- Error-likely situations with *critical steps*
- History of error or unfavorable operating experience with a particular action
- Installing similar components
- Comparing test data against criteria
- When misidentification, mis-operation, or improper installation or assembly can have undesirable impact on people's safety or plant equipment
- Pre-determined in the pre-job briefing
- Requested by a peer in the field

Behavior Standard:

1. Using 3-way communication, performer and peer agree on the action to take, on which component, and for what purpose, confirmed by the guiding document.
2. Using self-checking, the performer and peer individually confirm the correct component, label, etc. Flag the component if desired.
3. Performer performs predetermined action and only that action.
4. Peer watches the actions of the performer to verify the action is correct.

At-Risk Behaviors to Avoid:

1. Used in place of independent verification or for second-party verification
2. Checker not experienced with activity
3. Checker not paying close attention to performer
4. Believing performer will not err because of performer's experience or proficiency
5. Checker unable to view component to be manipulated
6. Checker not prepared to prevent an incorrect action by the performer
7. Asking for a peer-check without directing the request to a specific person by name
8. Swapping roles during the task



for resolving deficiencies in the post-job review section of the form.

6. It is the supervisor's/foreman's/employee's responsibility to ensure that corrective action is performed on identified problems/issues.

At-Risk Behaviors to Avoid:

- Not participating in the post-job briefing
- Believing that any changes or problems encountered are minor and do **not need any further correction**
- Not performing an adequate post-job briefing when it is needed
- Not documenting feedback after working on risk-important power system equipment
- No principal workers involved
- No time allotted for the Post-Job Critique
- Not done face-to-face
- No follow-up for high-interest issues

Post-Job Review

Basis:

Post-job reviews give employees that were involved in the work activity to provide feedback. A post-job review is conducted for high hazard jobs to determine if planning and briefings were effective.

When to Use the Tool:

- Post-job reviews are to be conducted after high hazard jobs using *TVA Form 40899 Post-Job Review Checklist*.
- Post-job briefs can be conducted for low hazard jobs if it is deemed necessary.
- After routing work that could be improved.
- After emergent and important work.

Behavior Standard:

1. The post-job review is performed with those who participated in the pre-job briefing and performed the work.
2. The post-job review will normally be conducted by the person who conducted the pre-job briefing.
3. Feedback will be solicited from all employees to identify any problems encountered during the task.
4. The results of the review are documented on *TVA Form 40899 Post-Job Review Checklist*.
5. When problems or issues are identified the supervisors/foreman/employee will record and establish the responsibility and method