



Your HP Tools

- ◆ Tailboards
- ◆ Two-Minute Rule
- ◆ Self-Checking (STAR)
- ◆ Stop When Unsure
- ◆ Questioning Attitude
- ◆ Procedure Use and Adherence
- ◆ Phonetic Alphabet
- ◆ Three-way communication

Don't Run the Ship Aground

If a cruise ship can run aground due to human error, do you think that the lessons learned may help us in the electric industry? Below is the story of the grounding of the cruise ship Royal Majesty on the Nantucket shoals 9 June 1995.

The Royal Majesty was returning to Boston harbor from a seven-day cruise to Bermuda. 1,200 passengers were enjoying an easy two-days at sea for the return passage. Royal Majesty was big, new, and equipped with all of the state-of-the-art technology – including an integrated bridge using a Global Positioning System (GPS). The new GPS technology was easy to use and did all that crew ever wanted – as a result the crew became dependent in total on the GPS for navigation. Then the Swiss cheese effect set in:

- A poorly routed and poorly secured cable came undone, resulting in loss of the GPS signal
- The failed GPS gave a meager fault signal such that crew did not realize the loss of the GPS signal
- The ship maintained a steady heading, however, wind and seas caused the ship to drift SW as the ship maintained heading
- Reliance on technology (the GPS) had long ago resulted in crew foregoing an independent determination of position
- Reliance on technology (the GPS) had long ago resulted in crew foregoing routine sweeps with radar while varying range



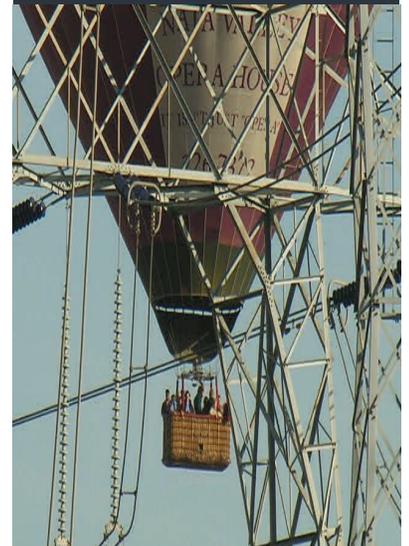
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Quote of the Month

“Predict Likely errors, apply multiple defenses.”

J.J. Mazulewicz, Phd.
Dominion Power, VA





“Operation Zero Newsletter”

DO YOU KNOW THE **FACTS**?

Foresee technical activities or tasks that involve one or more critical attributes.

Ask open-ended questions.

- Inputs
- Method(s)
- Outputs
- Priorities
- Awareness of situations that “don’t seem right”

Confirm knowns and unknowns (for critical activities).

- Identify and verify critical facts (their source and validity) with current conditions.
- Identify inconsistencies and unverified assumptions.
- Summarize critical parameters.
- Recognize work-related error precursors (risk factors).

Test the current situation.

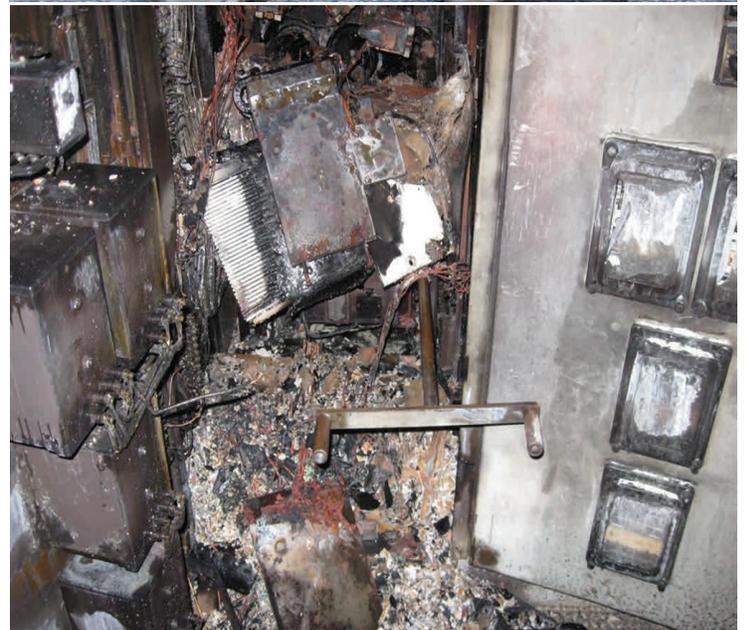
- Anticipate possible consequences with the current situation.
- Be receptive to the questions of others; use a devil’s advocate approach.
- Ask another qualified individual to check and verify the information (peer review).
- Compare the current situation with relevant facility documentation or engineering standards and codes.
- Consider testing, alternate analysis, and calculation.

Stop when unsure.

- Do not proceed in the face of uncertainty.
- Inform the responsible supervisor.

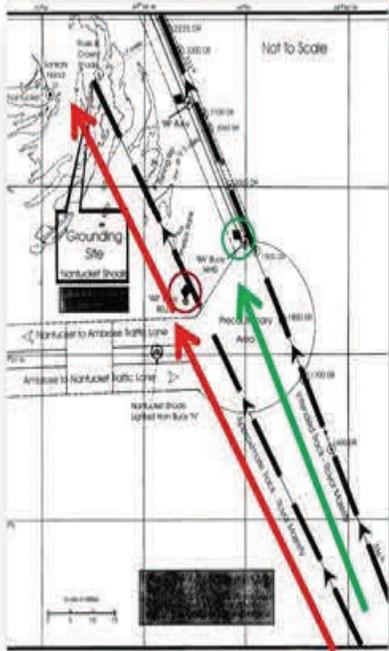
Why We Wear PPE.

Arc flash incident - South Carolina E & G Co.



What happened? There is speculation that the employee racked the breaker in live while the breaker was closed. There was no Arc Flash Hazard Analysis performed and the Incident Energy is unknown. The SCE&G employee was hospitalized for a one week period

Arc Flash PPE saved his life! **DO YOU WEAR YOUR PPE?**



- Lookouts reported seeing lights (from Nantucket island) where they expected only sea – and the reports were discounted

- The officer of bridge expected to see the first navigation buoy (“BA”) – and mistook the buoy marking the shoals (“AR”) as the navigation buoy

- The captain telephoned the bridge to check on progress – only to hear the ship was on course and the first buoy spotted!

The 32,396 ton ship was cruising at 20 knots when she struck the mud bank of the ultra-hazardous Nantucket shoals. Repeated forward and reversing of engines could not free the Royal Majesty from the mud bank. Even then, a passenger was the one to report the ship in distress to the United States Coast Guard (USCG) using a personal cell phone. Royal Majesty was later freed by a tug, repaired, and returned to service. There was no loss of life. At the time of the grounding, Royal Majesty was headed in the right direction... but over 15 miles off course!

Do you see any parallels in the cruise ship and what we see daily. Isn't the

GPS technology a lot like relays in our stations. Do we also have alarms in our stations and work day that are ignored? Think about other parallels in your daily lives.

So what are the lessons for electrical workers? Setting the right course is not enough. It's your ship when you are at the controls. You are at the controls when you write switching, perform switching, take a clearance, report off of a clearance, or perform other work. We must be constantly diligent as we switch in substations and work on lines. We must assure that those that are depend on us in the field have the correct course we have set via a Switchlog that is correct and has been checked. We must also assure that all switching is understood by switchmen in the field.

Questions we may want to consider as we perform our daily duties:

1. Having set the right direction in a tailboard with the GCC or a personal tailboard before we switch. Do we maintain a visual questioning attitude? If we are unsure do we **STOP** what we are doing and ask for help or clarification?
2. The cruise ship passengers are like our customers. When our customers are out of power isn't it like being stranded without the necessities that we all rely on in our daily lives that electric service gives us? Can we improve our work habits to assure that our customers do not get stuck, like the ship, without power?
3. Who are our lookouts and are we listening to them? Isn't a tailboard or a switching observer like a lookout? Do we work together as a team to assure that there are no errors?
4. Are we telephoning the bridge (the GCC) to ask if the ship is on course and nearing the next navigational buoy? Or, are we making regular trips to the bridge to see with our own eyes, with that discerning questioning attitude, so that we do not falsely only see what we expect to see?

Let us all try to keep our ship safe and on course by diligently using the Human Performance tools in all situations both here at work and in our daily home life.

HP Tool of the Month

Questioning Attitude

Proper planning of and preparation for work play a major role in prevention of error and avoidance of consequences. A questioning attitude fosters awareness of uncertainty, assumptions, risk factors, and the significance of a decision or action before proceeding. It helps a person make sure that planning, judgment, and decision-making are appropriate for the product in development. Questions, such as, “If... then?” “What if ...?” and “Why is this okay?” help improve recognition of actual or possible mistakes. A healthy questioning attitude will overcome the temptation to rationalize away a gut feeling that something is not right. To avoid dependence on unsubstantiated assumptions or subjective opinions, a structured approach promotes the discovery of facts.

A proper pre-job briefing enhances a person’s questioning attitude. From information discussed during the briefing, individuals will know the potential hazards, critical activities (steps), risk- important parameters, and error-likely situations and their potential consequences before starting the work activity. The pre-job briefing sensitizes personnel to what should and should not be.

“Cookbooking” of procedures (mindless compliance) and over-reliance on rules of thumb tend to promote an unthinking response to perceived simple problems and will eventually lead to rule- based errors. A questioning attitude will help prevent such at-risk practices.

Please submit comments, suggestions, or ideas for articles to RUSP@pge.com



How to use this Tool

- When uncertain – a gut feeling that something is not right
- When using previously approved evaluations, solutions, designs, or other approved guidance to address a current issue
- When unexpected results are obtained or unfamiliar situations are encountered
- When making a decision about an activity for which a mistake could have adverse consequences
- During the initial phase of the performance of a critical activity, regardless of how often it occurs
- When encountering unexpected information or instructions that conflict with other guidance or procedures
- When preparing and reviewing calculations
- When revising drawings, design criteria, or system descriptions