HPI Tools
Selection and Introduction

Improving Human Performance on the Grid - NERC Atlanta 2012
Scope

- Luminant / Fluor Alliance
- 5,500 Luminant plus 2,000 Fluor “base crew” employees
- Five lignite plants (11 units)
- Nine lignite mines
- Eight gas plants
HPI Tool Selection

Pre-Job Briefing (SPEAK)
Phonetic Alphabet
Three-Way Communications
Self Check (STAR)
Peer Check
Questioning Attitude
Procedure Use and Adherence
Post-Job Review (CLEAR)
Job Aids

Minimizing human error is absolutely essential to our continued success at Luminant. The tools in this handbook have been provided for your use. By using them uncompromisingly, you will minimize your potential for making a mistake and prevent HP events.
## Pre-Job Brief: SPEAK

### S-Safety Critical Steps

<table>
<thead>
<tr>
<th>Work Procedures/Permits</th>
<th>Discuss</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review JSA?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Inspected work area?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Is a clearance(s)/ LOTO</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>required?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Hot Work (cutting/welding/grinding)?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Live Work (electrical)?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Excavation?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Signs/Barricades needed?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Confined Space?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Fire Impairments (Need permit needed?)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Other/Comments</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

### Tools & Equipment

| Are tools in good condition? | [ ] | [ ] |
| Inspection current?         | [ ] | [ ] |
| Proper tools for the job?   | [ ] | [ ] |
| Trained to use tool or equipment? | [ ] | [ ] |
| Radio / Communication Tools?| [ ] | [ ] |
| Other/Comments              | [ ] | [ ] |

### Scaffolds/Ladders

| Is Scaffold/Ladder Needed? | [ ] | [ ] |
| Inspect before use?        | [ ] | [ ] |
| Scaffold properly tagged?  | [ ] | [ ] |
| Other/Comments             | [ ] | [ ] |

### Chemical

| Are unfamiliar chemicals present? | [ ] | [ ] |
| Review MSDS?                    | [ ] | [ ] |
| Special precautions             | [ ] | [ ] |

### Material Handling

| Rigging appropriate?           | [ ] | [ ] |
| Rigging inspected?             | [ ] | [ ] |
| Lift/load capacity             | [ ] | [ ] |
| Personal lifting technique     | [ ] | [ ] |
| Other/Comments                 | [ ] | [ ] |

### Hazards Associated with the job

- Electrical shock/ Arc flash [X]
- Fall potential [X]
- Slip/Trip potential [X]
- Weather [X]
- Heat or Cold Stress [X]
- Combustible Dust [X]
- Stored energy present (springs, pneumatic/hydraulic, steam etc.) [X]
- Sharp objects/Pinch points [X]
- Noise [X]
- Poor access/egress [X]
- Inadequate lighting [X]
- Housekeeping Issues [X]

### A-Anticipate

<table>
<thead>
<tr>
<th>What could go wrong or change during this activity</th>
<th>Discuss</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line of Fire?</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Safety Shower/Eye Wash Station</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Fire Extinguisher</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Review needed emergency procedure. (example: spill)</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Location of F/Aid Station</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Other/Comments</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

### K-Kinds of Defenses

#### Personal Protective Equipment

- Fall Protection [X]
- Eye/Face [X]
- Respirator [X]
- Foot [X]
- Hand [X]
- Hearing [X]
- Coveralls [X]
- Arc Flash Gear [X]
- Additional PPE needed (goggles, chemical suits, welding, leathers, etc.) [X]

### P-Prior Performance

#### Employee Qualifications / Training

- Have all personnel completed required training for task being performed? [X]
- Mobile Equipment Operator [X]
- Competent Person (lead, asbestos, excavations, hazardous material, scaffolds, electrical, etc.) [X]
- Discussed known hazards? [X]
- Other/Comments [X]

### E-Error Likely Situations

#### Top 10 Human Error Traps

- Time pressure? [X]
- Distractive environment? [X]
- High work load/multiple task? [X]
- First time to perform task? [X]
- First working day after days off? [X]
- Half hour after awake or meal? [X]
- Vague or incorrect guidance? [X]
- Overconfidence? [X]
- Unclear communication? [X]
- Work stress? [X]
- Other/Comments [X]

### Overhead Work

- Barricades/barrier [X]
- Signs/Info Tags [X]
- Toe boards [X]

### Communications

- Are employees ready and able physically and emotionally to perform the task? [X]
- Is communication necessary with Control Room, contractors, others? [X]
How to “Speak Clear”
Performing Pre- and Post-Job Briefs

Use these acronyms to guide your pre- and post-job briefings.

Pre-Job Brief: SPEAK
Safety Critical Steps: What are the safety critical steps?
Prior Performance: Have we done this task before?
Error likely steps: What mistakes might be made?
Anticipate: Are there special precautions required?
Kinds of defenses: Is energy source control needed?

Post-Job Brief: CLEAR
Changes: Do the task instructions need to change?
Lessons learned: What should others learn from this task?
Errors left uncorrected: Could human error occur during next task?
Adequate resources: Do the resources support the task?
Results not expected: Were the results unexpected?

Post-Job Brief
Complete this side after the job and return the form to the designated site location.

   __________________________
   __________________________
   __________________________

2. Job site cleaned up? Explain.
   __________________________
   __________________________
   __________________________

   __________________________
   __________________________
   __________________________

   __________________________
   __________________________
   __________________________

Reviewed by:
Supervisor:

Pre- and Post-Job Briefs
Completing Tasks Safely

Use this form to “Speak Clear” in your pre-job brief and post-job review.

For the pre-job brief, review each “speak” section that is applicable to your job inside this form and check the box if you discussed it with your team.

For the post-job review, answer the questions on the back of this form to be “clear.”

Team Leader: __________________________

Team:
   __________________/ __________________
   __________________/ __________________
   __________________/ __________________
   __________________/ __________________

Date: __________________________

Location of Task: __________________________

Task Description: __________________________

Luminant
Event Prevention Framework

Job-Site Conditions (Error Precursors)
- Task Demands
- Work Environment
- Individual Capabilities
- Human Nature

Organizational Processes & Values (Latent Organizational Weaknesses)

Task Preview
Before & During Pre-job Briefing

Pre-job Briefing Dialogue

Safety Critical Steps

Prior Performance

Error-likely Situations

Anticipate Consequences

Key Defense Analysis

Mgmt System Feedback

Post-job Review (CLEAR)

DEFENSES (effective or flawed)

S P E A K Dialogue

Worker Behaviors
- Phonetic Alphabet
- Three-Way Comms
- Self Check (STAR)
- Peer Check
- Questioning Attitude
- Pre-Job Briefing
- Post-Job Review
- Procedure Use & Adherence

Plant Results (Successes or Near Misses or Events)

Event Analysis
## Supervisor Job Aid

<table>
<thead>
<tr>
<th>Low Risk</th>
<th>High Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simple or Repetitive</strong></td>
<td><strong>Complex or Infrequent</strong></td>
</tr>
<tr>
<td>Examples: Housekeeping, visual inspections, plant walkdowns, etc.</td>
<td>Examples: Routine test on risk-significant equipment, work on energized equipment (steam, heat, hydraulic, etc.), valve replacements associated with stored energy, electrical breaker PMs, etc.</td>
</tr>
<tr>
<td><strong>S P E A K dialog</strong></td>
<td><strong>Pre-planned pre-job briefing form PLUS the S P E A K dialog</strong></td>
</tr>
<tr>
<td>At a minimum, the Supervisor should talk through S P E A K with individual assigned the task.</td>
<td>Completion of a customized pre-job briefing adapted to the task, workplace, and worker factors on that particular day.</td>
</tr>
<tr>
<td>Examples: Maintenance on out-of-service equipment, shipping hazardous wastes, pump rebuilds, bearing change-outs on fans, etc.</td>
<td>Any activity that places plant equipment in unusual configurations, require complex coordination or sequencing, or involve major changes to plant components, operating procedures, or test methods.</td>
</tr>
<tr>
<td><strong>Standard pre-job briefing checklist PLUS the S P E A K dialog</strong></td>
<td><strong>Next level oversight</strong></td>
</tr>
<tr>
<td>Completion of a standard pre-job briefing checklist, considering the task, workplace, and worker factors on that particular day.</td>
<td>Completion of an extensive, customized pre-job briefing adapted to the task, workplace, and worker factors on that particular day.</td>
</tr>
</tbody>
</table>

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**Consider the experience level of the individual or team involved.**
Supervisor Job Aid
Observations

- Random is best
- Unscientific is OK
- Provide a form
- HPI coaches can help
- Primary goal is to provide feedback to work groups and shape behaviors
- Secondary goal is to provide feedback to leaders on the rate of change
Observations

- HPI behaviors were integrated into Behavior Based Safety (BBS) program
- Provides an opportunity for leadership to engage workers at all levels
- Provides workers an opportunity to show their proficiency and commitment
Culpability Matrix

Revised HPI Toolbox & Job Aids
HPI Toolbox
Toolbox

“Positive Control”
“Expected behaviors”

One page per tool
When to use the tool
The behavior standard
Behaviors to avoid

References / job aids

Balance of “Nice to have” tools (TVA)
Questions?

James Morrison
jmorrisong146@gmail.com     858/449-6802