# ARW 2015
# Parallel Discussion Session A

# Human Factors

or something like that

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# Human Error is Rampant

- The good news is the MAJORITY of errors are benign OR stopped by "defense in depth", that is, nearly simultaneous errors are few in spite of existing precursors (error traps)

- Range of severity of errors
  - Less experienced  Operator **"hunt and peck"/trial and error**
  - Repair crew brakes adjacent equipment
  - Design Error
  - Software bug
  - Injured worker
  - ….

# discussion/questions

- How Does Your Facility track Human Error?

- What is the threshold  to classify a failure as Human Error at your facility? Machine stop?

- Are we honest with ourselves in identifying human error and **doing something** about it? **HARD = UNEXPECTED ADDITIONAL WORK!!!!**
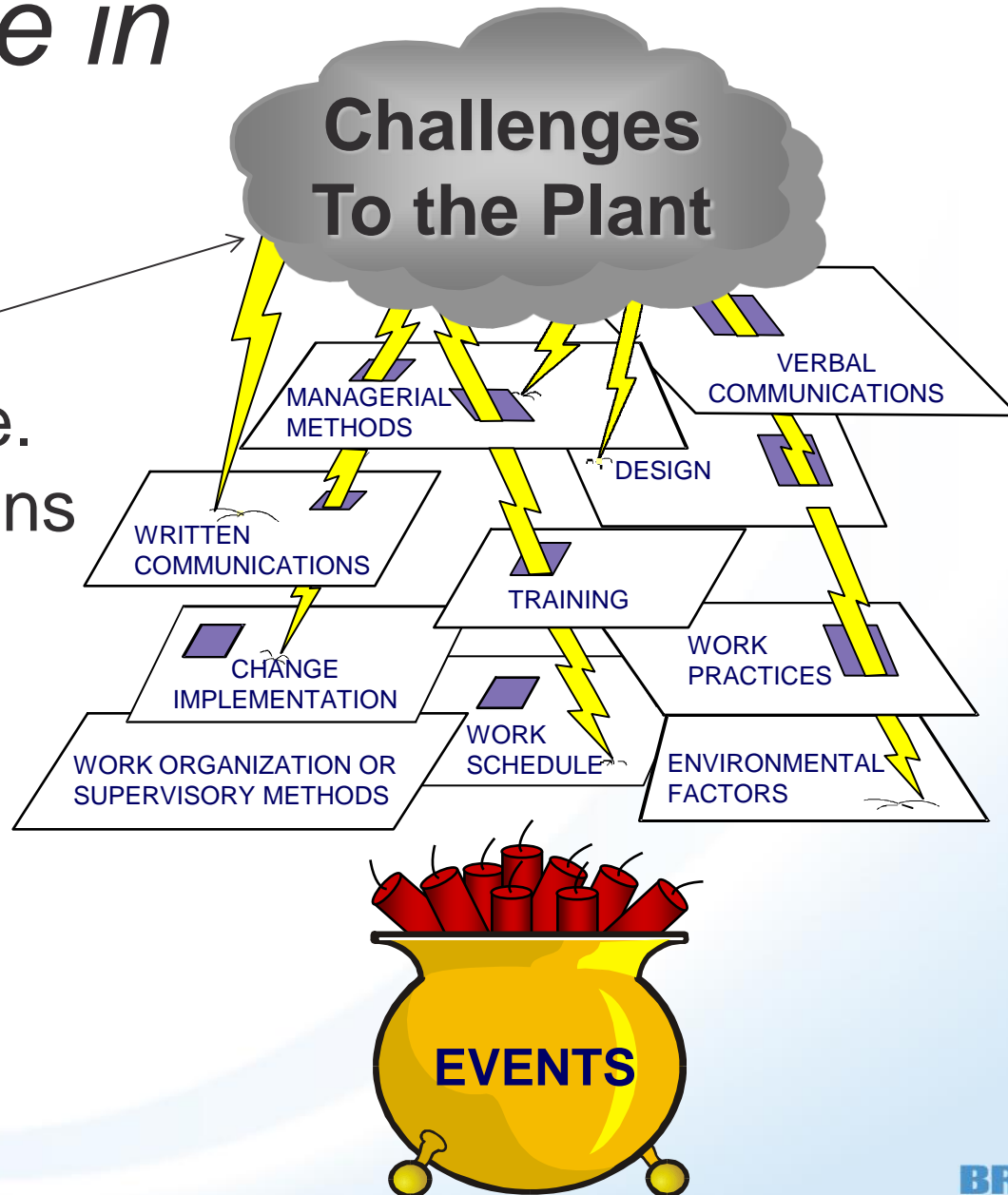
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# Error Traps or Error Precursors

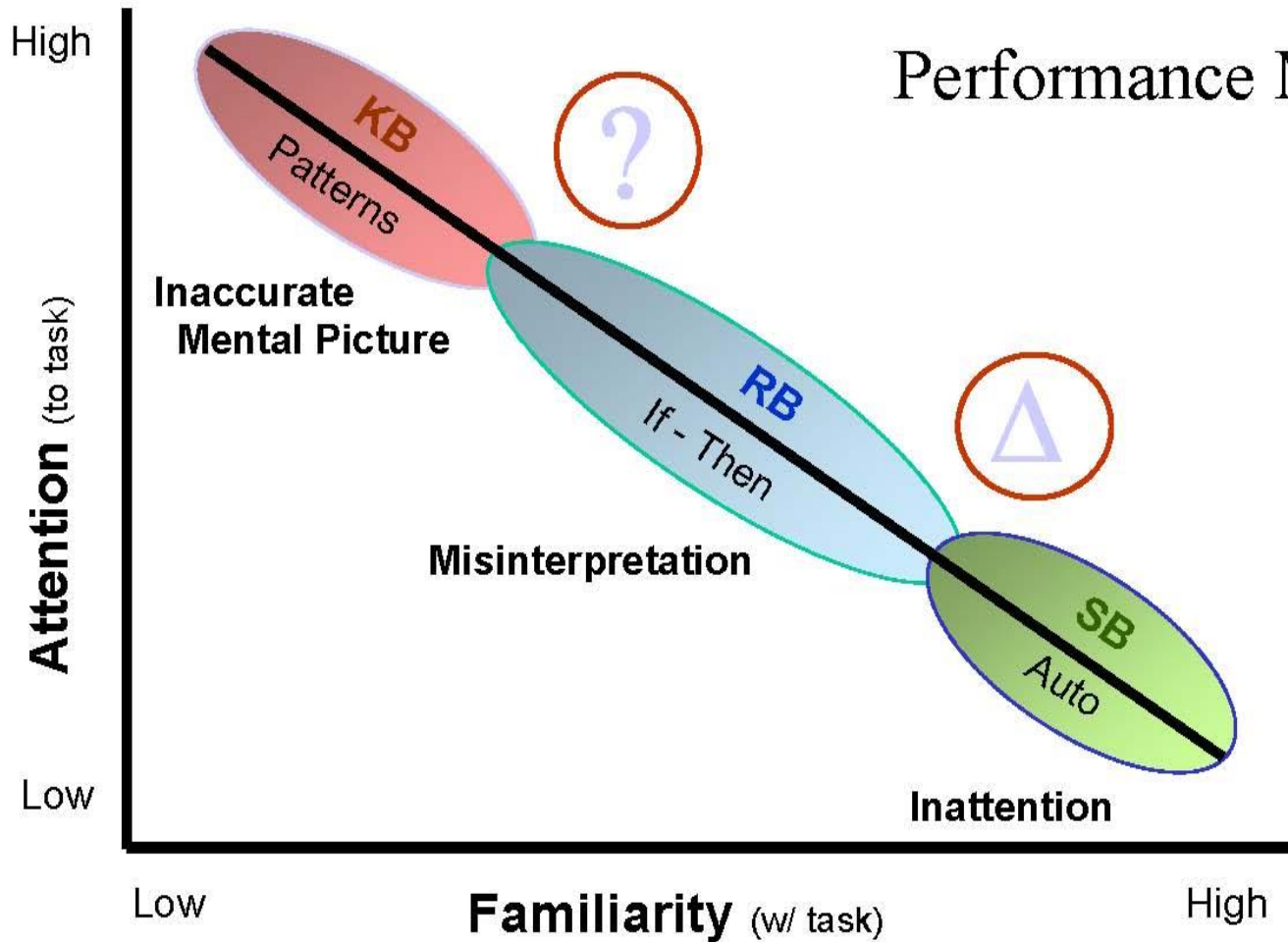characteristic of a **task** or **individual** that increases the probability for error

**TASK Related**

- Time Pressure
- Distractions
- High Workload
- First time Evolution
- First day at work after 4 or more days off
- Vague or incorrect guidance

**Related to the "Individual"**

- Overconfidence
- Poor Communications
- Work Stress
- Fatigue
- Peer Pressure
- Multi-tasking
- Off-normal Conditions

# Defense in Depth

**Challenges To the Plant**

Precursors i.e. initial conditions

MANAGERIAL METHODS

VERBAL COMMUNICATIONS

DESIGN

WRITTEN COMMUNICATIONS

TRAINING

WORK PRACTICES

CHANGE IMPLEMENTATION

WORK SCHEDULE

ENVIRONMENTAL FACTORS

WORK ORGANIZATION OR SUPERVISORY METHODS

**EVENTS**

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# Performance Modes

- **Attention** (to task): High / Low
- **Familiarity** (w/ task): Low / High

**KB** — Patterns — Inaccurate Mental Picture

**?**

**RB** — If – Then — Misinterpretation

**Δ**

**SB** — Auto — Inattention

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# "Conclusions"

- Good Participation – (almost) All were engaged
  - Thank you
- Backdoor method for me to try to raise consciousness
- Time spent defining Performance Modes and error rates for each mode
  - Knowledge Based  -- highest error rate
  - Rules Based
  - Skills Based – lowest error rate

# "Conclusions"

- Interesting to note at least one laboratory did not utilize a *Human Error / Operator Error / Operations Error* tag in their fault classification listing.

  - That is NOT to say they do not track it or respond to it – utilize a separate database

- Common practice to charge "human error" if it results in a machine/programmatic stop.

- Common practice to charge the responsible support group for human error in the course of repairing their equipment during an outage caused by their equipment.

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# "Conclusions"

- Discussed (D. Newhart) the importance of the way the manager responds to human error(s) made by staff members.
  - Non Confrontational
  - Assume that if one individual has a mis-conception, others may as well – corrective action then aimed at the group and not the individual
  - Corrective actions i.e. training, individual discussion, etc.
  - If habitual errors – then escalate          PIP (Performance Improvement Plan – SNS/BNL/DOE Labs?)

# FIN

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# EXTRA SLIDES

# Team Errors – Contributing Factors - I

- ## SOCIAL LOAFING

  because individuals are usually not held personally accountable for a group's performance, some individuals may not actively participate. People refrain from becoming involved believing that they can avoid accountability or "loaf" in team or "social" activities.

- ## HALO EFFECT

  - blind trust in the competence of specific individuals because of their experience or position in an organization.

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# Team Errors – Contributing Factors - II

- **PILOT/CO-PILOT**
  - A subordinate (co-pilot is reluctant to challenge the opinions, decisions, or actions of a senior person (pilot)

- **FREE RIDE**
  - If one person takes the lead in a group activity, the others may tag along without actively scrutinizing the intent or actions of the one doing the work

# Team Errors – Contributing Factors - III

- ## GROUPTHINK
  - The reluctance to share contradictory information for the sake of maintaining harmony in the work group.  Too much "professional courtesy".  Sugar-coating bad news so as to not displease managers

- ## RISKY SHIFT
  - Tendency to gamble with decisions more as a group than if each member was making the decision individually.  Accountability is diffused in a group.  Two or more people may agree that they have a "better way" and they may take the risk and disregard established procedure or policy