These few adjustments eliminate much of the wasted time and energy that bogs down RCAs and ACEs

These efforts substantially reduce the time it takes to conduct the overall analysis and increase accuracy and repeatability

LL#15: …to Facilitated Causal Analysis Sessions

- Conduct sessions with groups, not individuals (unless dealing with special topics)…groups self-correct and reach consensus sooner. It also prevents individuals from "steering" the team.
- Work on the final product (chart) from the start. Avoid taking copious notes and make the effort totally transparent to the groups.
- Don't separate the team…avoids bias from team members interpreting what was said and having to brief each other.

LL#16: Minimize how many SMEs you use on the RCA Team – use only as needed to participate in the analysis

Switch from placing SMEs on the team…

- Loading the RCA team with SMEs pulls them from their organizations, can bias the approach, influence where the team looks, and some SMEs actually try to steer the team.

…to having the SMEs as participants

- Involve SMEs only as needed to support the causal analysis sessions (~2 hrs each) and they can return to their daily work
- Reduces the size of RCA teams

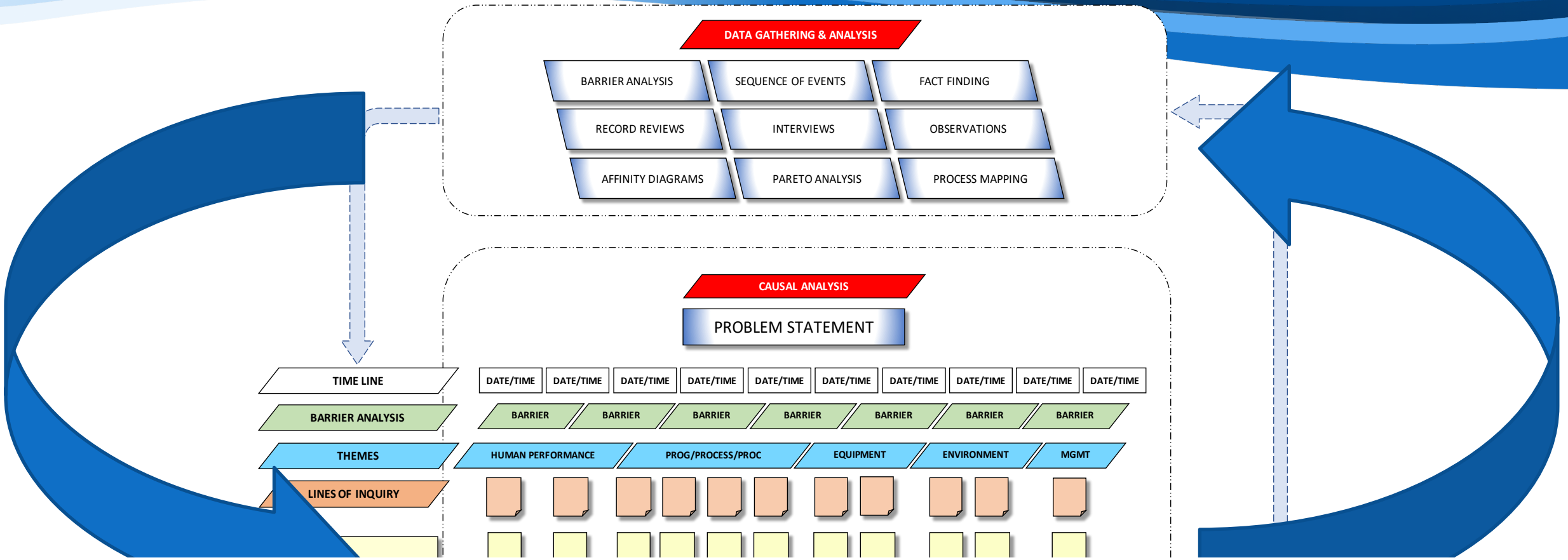
If there is no answer key, how do we know when we have identified the root causes?

- **RIGOR** gives us confidence in our Causal Analysis
- **RIGOR** must be commensurate with the significance of the event
- RCA Analysts must be able to demonstrate that a sufficient level of **RIGOR** was applied during the Causal Analysis
- The more **RIGOR** we apply, the more confidence we have that we identified the root causes and contributing factors

LL#17: one of the main reasons DOE and NNSA criticize our RCAs is because they lack sufficient rigor and we can't back up our causal analysis

LL#18: there is no Answer Key! So why do managers and regulators sometimes act as if they have an answer key?

In this flexible and scalable approach to RCA/ACE; we end it when the desired/required level of RIGOR is achieved



LL#19: The process should be flexible enough to accommodate any information that comes in at any time.

The most common corrective actions have a very short half-life and do not prevent recurrence

- One time training, memos, briefings, tailgates
- Reviewing and updating procedures
- Reinforcing or clarifying expectations
- Evaluating or researching other options
- Discipline, coaching and counseling of individuals

LL#20: IT'S OK to take these actions, but they should not be credited with preventing recurrence

LL#21: Corrective actions should focus more on Mistake-Proofing Strategies

Prevention (proactive):

- ❑ Make it harder to make an error (fail-safe)
- ❑ Make it possible to reverse the error
- ❑ Make the process pause or stop when there is an error

Detection (reactive):

- ❑ Use warning lights, sensors and indicators to make it obvious that there was an error that could lead to a defect
- ❑ Use signs and other visual aids to warn of potential risks

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Journey of Discovery:

Closing Thoughts

LL#22: A strong RCA/ACE Program based on critical thinking and complex problem solving skills can Transform an Organization

	BEFORE	AFTER
CHANGE IN PROBLEM SOLVING CAPABILITIES	• Weak causal analysis • Weak corrective actions • Repeat events • Loss of revenue (time and key resources) • Decreasing competitive advantage • Decreasing market share	• Strong causal analysis • Strong corrective actions • Avoiding repeat events • Avoiding loss of time and resources • Avoiding loss of competitive advantage • Avoiding loss of market share
CHANGE IN PERCEPTION	• Low regulatory confidence • An organization that can't manage its problems	• Improved regulatory confidence • A resilient problem solving organization
CHANGE IN PERFORMANCE	• Poorly performing Safety metrics / KPIs • Not meeting Safety Program targets	• Better performing Safety metrics / KPIs • Meeting Safety Program targets
CHANGE IN MORALE	• Decreasing morale due to repeat events • Anxiety from not really addressing issues	• Avoiding low morale due to repeat events • Getting to the real issues reduces anxiety

Take-Aways…

Root causes are identified by asking subject matter experts insightful questions that stimulate the organization's critical thinking capabilities, and by using those capabilities to conduct a rigorous causal analysis.

Our role as Root Cause Analysts is to GUIDE the organization's SMEs through an organized and disciplined process that leads to the root causes and contributing factors.

Take-Aways…

To make our root cause analyses and apparent cause evaluations as efficient as possible, integrate the data and causal analyses and replace the labor intensive interview process with facilitated causal analysis sessions.

As of today and in the near future, Artificial Intelligence cannot develop insightful questions and conduct root cause analysis as well as we can, using Critical Thinking and Complex Problem Solving tools and techniques

Quote from CEO of CNS (Pantex and Y-12)

"The identification of true root cause requires disciplined critical thinking. Causal analysis processes can help guide the collection and analysis of information, but the process can never replace the intellectual curiosity and focus required to achieve a deep and thorough understanding of the true root cause or causes."

– Morgan N. Smith
CEO, Consolidated Nuclear Security

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Questions?