Basic Root Cause and Data Analysis
Methodology Tools

This course is designed to help Maintenance Engineers evaluate equipment repair history or sudden failure facts to identify the root cause. This course builds the foundation of effective problem solving by providing intermediate knowledge and skills around Root Cause Analysis and provides practical instruction on the fundamental statistical tools used in modern process control methods. Course problems will be used to practice the techniques developed.

WHO SHOULD ATTEND
- All individuals who are expected to participate as a RCA team member
- Anyone who uses RCA’s as a troubleshooting tool
- Not limited to shop floor personnel, technicians, operators or mechanics
- Applies to all disciplines and functions of any business group within an organization
- Anyone else who seeks a basic understanding of SPC.

PREREQUISITE: No prerequisites.

LEARNING OUTCOMES:
1. Identify key points and helpful hints that will improve the efficiency of the RCA team
2. Apply fundamental SPC Concepts
3. Describe the purpose of SPC
4. How to clearly frame/define any problem
5. Identify the quality tools used to solve problems determined by SPC
6. How to be an effective RCA team member
7. Identify the importance of working in groups
8. Today’s failed strategies in RCA programs
9. Calculate basic statistical parameters
10. What are the gaps in your current RCA programs?
11. Elements of an effective RCA program
12. Methods for collecting different types of data and interpret the data collection process
   - Including effective interviewing skills
13. Construct and interpret variables and attribute control charts
14. Identify the differences between an event that requires a formal RCA and one that does not (what triggers and RCA?)
15. Basic RCA: Cause” charting:
   - Examples & Hands-on Exercises – Open Discussion
16. Where to find and how to capture the best solutions
17. How to develop appropriate recommendations to address root causes at various levels to avoid future incidents
18. Interpret process capability
LEARNING OUTCOMES: Day One

Students will learn how to:
- Avoid ineffective problem-solving.
- Differentiate between Issue Resolution & Issue Elimination.
- Clearly define any Problem.
- Develop a Cause & Effect Chart using:
  - Paper and pen.
- Identify Effective Solutions.
- Gather evidence or data.
- Facilitate a RCA team.
- Develop and Implement an Action Plan

It enforces the concept that RCA is a team based event and it is critical to include cross functional team members in the analysis. Most importantly it enforces that we are trying to seek effective solutions not placing blame to help prevent reoccurring problems.

Workshop Objective:
To provide the **knowledge** and **skills** necessary to:
- Perform Medium or High Level Analysis
- Understand the Apollo RCA™ Methodology
- Lead/Facilitate an Apollo RCA™ with a team of participants.

Who Should Attend?
- Any and all individuals, who lead, facilitate or get asked to lead RCA.
- Not limited to shop floor personal, engineers, technicians, or mechanics
- Applies to all disciplines, functions and organizations.

Workshop Exercises:
- Learning reinforced with “hands-on”exercises that allow students to apply the RCA process to real world problems.
- Client can substitute (optional) their own examples to be used during this workshop.
- A 4 hour final exercise to help student apply the entire RCA process.

CONTINUING EDUCATION UNITS: 2.4
(Duration: 24 hours)

**Location:** San Jacinto College
Central Campus
8060 Spencer Hwy
Pasadena, Texas 77505

**Date:** Feb 17th - 19th, 2014
**Time:** 8am – 5pm
**Cost:** $1175

**Registration Deadline:**
Tuesday, January 29th, 2015

More information contact or to Register:
David Lewis 281.542.2061 or
David.Lewis@sjcd.edu

Visit our website:
http://www.sanjac.edu/cpd/bp-training
**Basic Root Cause and Data Analysis Methodology Tools**

**LEARNING OUTCOMES: Day Two & Three**

- Describe the purpose of SPC
- Identify the importance of working in groups
- Identify the quality tools used to solve problems determined by SPC
- Interpret the data collection process
- Apply fundamental SPC concepts
- Calculate basic statistical parameters
- Construct and interpret variables and attribute control charts
- Interpret process capability

**Course Outline:**

- Introduction to SPC
- Data Collection
- Problem Solving Techniques – Critical Thinking, Brainstorming, Flowcharts, Fishbone
- Fundamental Statistical Concepts – Measurements of central tendency and variability
- Descriptive Analysis of Data
  - Pareto, Histogram
  - Scatter Plot
  - Run Chart
  - Pseudo Control Chart
- Control Charts for Variables Data
  - Average/Range charts
  - Average/Standard Deviation charts
  - Average/Moving-Range/Sigma charts
  - Run Tests
  - Individuals Charts
- Control Charts of Attributes
  - P Charts
  - Np Charts
  - C Charts
  - U Charts
- Preparing and Analyzing Charts
- Process Capability
  - Capability Ratio – Cr
  - Performance Ratio – Pr
  - Capability Index – Cp
  - Performance Index – Pp
  - Process Capability – CpK
  - Process performance - PpK

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