



# PROACT<sup>®</sup> Root Cause Analysis Methods

## 2-day Workshop

This course provides the participants with all the knowledge necessary to lead teams in solving the toughest industrial problems. PROACT<sup>®</sup> Root Cause Analysis (RCA) Methods were created by Reliability Center Inc. to improve industrial operations by eliminating root causes of major problems. These methods are:

- FMEA (Failure Mode and Effect Analysis) and OA (Opportunity Analysis) used to identify and rank undesirable events (typical candidates for RCA)
- PROACT<sup>®</sup> RCA used to uncover root causes of events
- PROACT<sup>®</sup> Action Plan used to implement solutions to eliminate root causes of events

These methods are ideally suited to solve equipment and process problems, but they can also be used to eliminate problems/deficiencies in any improvement effort.

### FMEA and OA

The objective of the FMEA and OA is to list the undesirable events in the organization and rank them by economic impact. The top 20% typically represent 80% of the losses. These analyses are generally carried out by 2 or 3 people and the method consists of:

- Defining “loss” and “area of concern”
- Listing main undesirable events (actual, not potential)
- Estimating business loss for each event
- Ranking events by economic impact to the organization
- Estimating how difficult and costly it is to eliminate each event
- Setting priorities for event elimination

### PROACT<sup>®</sup> RCA

The objective of PROACT<sup>®</sup> RCA is to uncover the root causes of any undesirable event utilizing a logic tree to carry out the analysis. The tree top consists of the definition and symptoms of the problem, the body of the tree includes all the envisioned causes of failure and the bottom of the tree includes the physical, human and latent root causes. The analysis is carried out by a multi-disciplinary team (typically 5-7 people) and the method consists of:

- Selecting the analysis team
- Writing concise definitions of the problem and symptoms
- Collecting failure data (position, people, parts, paper and paradigms – the 5 Ps)
- Listing the historical failures and searching for their correlation to maintenance interventions, operational parameters, equipment modifications, etc.
- Creating the logic tree includes:
  - Visualizing hypotheses for symptoms and causes and verifying or disproving the hypotheses
  - Deciding when to consider causes “best choice for elimination” – root causes
- Formulating recommendations to eliminate physical, human and latent root causes

## PROACT<sup>®</sup> Action Plan

The recommendations generally include changes in procedures and/or equipment design. The analysis team is also responsible for the elimination of the root causes; consequently they must lead the implementation process that consists of:

- Developing the recommendations
- Determining the cost and benefit of each major recommendation
- Preparing the Implementation Plan
- Implementing recommendations
- Tracking results
- Optimizing solutions

## Proven Methods

For the past 25 years, our former students have repetitively proven that when problems are solved with spectacular results, operations become more stable and emergency workload for hourly and supervisory personnel decreases. This generates enthusiasm, at all levels of the organization, to do additional analysis that lead to further improvements. This continuous improvement cycle is self-sustaining and provides exceptionally high Return-On-Investment.

## Workshop (8:00 AM – 5:00 PM, Continental breakfast, lunch and snacks provided)

The workshop is very interactive and includes:

- A clear presentation of the concepts and benefits of Reliability
- A thorough understanding of the three PROACT<sup>®</sup> RCA methods outlined above
- Several cases **facilitated by the instructor** that highlight the power of the methodologies and motivate the participants to achieve similar results
- Analyses of problems brought to the classroom by the participants, to be dissected and possibly even solved

**Every participant will receive: 1) a PROACT<sup>®</sup> Methods Manual that is an excellent reference for setting-up a Reliability program in your company, 2) a set of Job Aids that can be posted in job areas to encourage the use of these methods**

## Who should attend?

This workshop is primarily intended for Problem Solvers (engineers, technologists, analysts) involved in determining root causes of complex problems; they could be from any of the following functions:

Maintenance	Operations	Reliability	Engineering
Process Control	Quality Assurance	Environmental	Safety

Managers intending to set-up a reliability program would benefit greatly from the insights gained in this course

# Participants' Comments

**"PROACT® RCA Methods seminar ranks among the best training I have ever taken. It is excellent in terms of teaching practical techniques that can be applied as soon as you return to work"**

Peter Girard, Maksteel

**"Using PROACT® Root Cause Analysis at our site will pay huge dividends"**

Murray Culham, Honda

**"PROACT® RCA methodology is a valuable asset that can greatly reduce maintenance costs and increase production"**

Robin Gauthier, Toyota

**"Tony Rodriguez was truly excellent as a course leader, one of the best. He is positive, open minded, encouraging and very knowledgeable"**

Darren Holmes – Shell Canada

**"The workshop is excellent and provides all the necessary knowledge to initiate a Reliability Program"**

Robert Blain – Barrick Gold Corporation

## Participating Companies Include

Algoma Steel, ATCO Electric, Bruce Power, Cardinal Power, EnCana, Epcor, Husky Injection Molding, Iron Ore Company, Michelin, Moa Nickel, Nova Chemicals, Owens Corning, Pemex, Polinter, Praxair, PT Inco, Sherritt International, Sita Canada, Sykes Canada, Tetra Pack, Toronto Transit Commission, Waterville TG, WestJet, Weston Bakeries

## Instructor

Tony Rodriguez, P.Eng. has been solving industrial problems for over 30 years, the first 15 in maintenance and engineering positions and the last years working as a Management Consultant for Maintenance, Engineering and Production. He facilitates improvement programs based on PROACT® RCA, Reliability Centered Maintenance (RCM), Total Productive Maintenance (TPM) and UPTIME Maintenance Management; he also teaches these methods in public and in-house workshops. Tony is the founder of PEMMAX CONSULTANTS, a company dedicated to help asset-intensive companies in solving major process-and-equipment problems. Pemmax Consultants has an alliance with Reliability Center Inc. to promote, teach and sell their reliability courses and software in Canada.

## Reliability Center Inc. (RCI)

RCI was established in Hopewell, Virginia in 1972 as a Research and Development arm of a major US corporation. In 1985, RCI became an independent company under the direction of the late Charles J. Latino, whose goal was to spread the reliability message to companies all over the world. RCI teaches companies how to improve Equipment and Process Reliability using **PROACT® Root Cause Analysis** and **Human Error Reduction** methodologies. These methodologies and software are saving corporations millions of dollars every year. PROACT® is a registered trademark of Reliability Center, Inc.

**Make PROACT® RCA Methods the cornerstone of your  
Continuous Improvement Program!**

# Registration Form

## Fees – PROACT® Root Cause Analysis Methods Workshop

Individual participants: \$1,300.00 CAD + GST or HST

Multiple participants (same company): \$1,200.00 + GST or HST

**Register at least 6 weeks before the course and receive a Robert & Ken Latino “Root Cause Analysis” book**

Participant substitutions allowed anytime

### Participants:

Name (1) \_\_\_\_\_ Title \_\_\_\_\_ Email \_\_\_\_\_

Name (2) \_\_\_\_\_ Title \_\_\_\_\_ Email \_\_\_\_\_

Name (3) \_\_\_\_\_ Title \_\_\_\_\_ Email \_\_\_\_\_

Company \_\_\_\_\_ Division \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ Province \_\_\_\_\_ Postal Code \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Total amount payable \$ \_\_\_\_\_

### Workshop

- Toronto – June 2<sup>nd</sup> & 3<sup>rd</sup>, 2010
- Toronto – October 27<sup>th</sup> & 28<sup>th</sup>, 2010

### Preferred Payment Option

Purchase Order    Cheque

Payable to Pemmax Consultants, please mail to:

PEMMAX CONSULTANTS  
317 Amberwood Drive  
Waterloo, Ontario, Canada, N2T 2E9

### Alternative Payment Option – via PayPal

Visa    MasterCard    Amex

If you have a PayPal account you can pay directly on-line <http://www.pemmax.com/training.html>

If you do not have a PayPal account and wish to pay on-line, please contact Isabel at (519) 888-9970

### Contacts

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