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[www.hpcnet.com](http://www.hpcnet.com)

## Course Information Letter ---- OP405

# ROOT CAUSE FAILURE ANALYSIS

## OP405

Repetitive failures cost “real” time and money and are not limited to physical/mechanical equipment breakdowns. Administrative and procedural failures can also be found, analyzed and eliminated through “Root Cause Failure Analysis.” Obtain a thorough understanding of Failure Analysis by attending this two and a half day course.

### OBJECTIVES:

At the completion of this course the participant will be able to:

1. Identify "chronic" vs. "sporadic" failures.
2. Describe the difference between physical root cause and latent root cause.
3. Develop, use and interpret a logic tree.
4. Determine which failures should be analyzed and which shouldn't.
5. Determine how far to go with the analysis.
6. Develop and administer an analysis recommendation.

### COURSE OUTLINE

- I. **Overview:** Reason or Cause for Analysis; Failure Analysis Methods
- II. **Problems vs. Opportunities:**
- III. **Why Failure Analysis Works:** Order, Determinism, Discoverability
- IV. **Which Failures Should Be Analyzed:** Chronic vs. Sporadic, Chronic System Barriers, Identify Non-Value Added Work
- V. **The Logic Tree:** Use and Symbols
- VI. **Logic Tree “Top Box”:** Developing and Identifying the Elements of the “Top Box”
- VII. **Working Down the Logic Tree:** Using a Disciplined Approach Through Problem Solving
- VIII. **Where To Stop:** Ideas of Control and Influence
- IX. **Implementing Recommendations:** Involve Others With Implementation, Exercising Your Leverage for Implementation
- X. **Course Conclusion and Discussions**

### FREQUENTLY ASKED QUESTIONS

- Will HPC Technical Services bring this course to our location for our personnel only? YES, call or email Stephen Parker, [stparker@hpcnet.com](mailto:stparker@hpcnet.com) for a price quotation.
- Will HPC Technical Services customize the presentation at our site to suit our particular needs? Yes.
- Is HPC Technical Services' textbook available for purchase as a reference document? Yes.
- What is the cost for HPC Technical Service to deliver this course at our location? Well, of course that can vary, but generally speaking, if you're planning on having 6+ attend, when considering your T&L, it is to your advantage to perform the course at your plant (office). You gain from the customization and price.
- Can HPC Technical Services provide "Technical Assistance" in conducting functional checkouts or troubleshooting problems? Yes we can. Call or contact Harold Parker, [hparker@hpcnet.com](mailto:hparker@hpcnet.com) for our rate sheets and any further information required.

# OP405 Root Cause Failure Analysis

www.hpcnet.com

## SCHEDULE/LOCATION/COST:

For current dates / locations / prices, please see HPC's website, [www.hpcnet.com](http://www.hpcnet.com).

## WHAT YOU WILL RECEIVE:

1. 1 copy of HPC Technical Services' textbook, M405, Root Cause Failure Analysis. A "Certificate of Completion" with 1.6 CEUs, authorized for issue by the International Associate of Continuing Education/Training.

## INSTRUCTOR (S):

**Ray Militello** is the primary instructor for this course. Ray has approximately 40-years experience maintaining steam turbine generator equipment. He has worked as a Field Representative for GE Installation & Service Department, was employed as a Supervisor - Maintenance and Maintenance Planning with Southern California Edison Company. Ray also worked as Manager, Maintenance Training Services with HPC Technical Services for 4-years before deciding to become independent. Now back with HPC, Ray instructs and develops training, systems descriptions and operating procedures and is involved in the development of our eTraining products. Ray resides in Bradenton FL.

**Mr. Dana Elrod** has near 30-years experience in operating large electrical power plant facilities. From 1979 thru 2000, MidAmerican Energy Company in Council Bluffs IA employed Dana. Positions held include that of Operations Superintendent, Shift Supervisor, Training & Safety Supervisor and Environmental Specialist. From 1974 thru 1979 Mr. Elrod was employed as an Environmental Specialist for the State of Iowa Department of Environmental Quality. Mr. Elrod holds a BS in Management from Drake University, 1985

**Mr. Robert Hayes** instructs HPC's Balance-of-Plant O&M courses as well as our popular "Power Plant Blackout Preparedness" course. Mr. Hayes, prior to early retirement, held several positions during his long tenure at Illinois Power: (1) Results Engineer, Results Supervisor. Mr. Hayes had responsibilities, which included equipment performance testing, and rotating machinery vibration analysis and correction. (2) Supervisor Plant Operations. Mr. Hayes had responsibilities which included startup and checkout of new equipment, supervision of four operating shifts, and coal receiving and handling group. (3) Power Plant Operations Specialist. Mr. Hayes had responsibilities, which included frequent visits to all five fossil power stations, participation in control replacement projects, participation in development and implementation of clean air compliance plans, and served as an internal consultant for fossil power generation operations. He led several technical teams that identified and recommended protective system improvements to the large generating units. He conducted root cause analysis of several major equipment failures.

**HPC TECHNICAL SERVICES**  
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**REGISTRATION FORM**

Company: \_\_\_\_\_

Plant: \_\_\_\_\_

Address: \_\_\_\_\_

City/State/Zip: \_\_\_\_\_

Telephone: \_\_\_\_\_ FAX: \_\_\_\_\_

Course Number/Title: \_\_\_\_\_

Course Dates: \_\_\_\_/\_\_\_\_/\_\_\_\_ Thru \_\_\_\_/\_\_\_\_/\_\_\_\_

Course Location: \_\_\_\_\_ Course Fee: \_\_\_\_\_

**PLEASE ENROLL THE FOLLOWING INDIVIDUAL (s) LISTED BELOW:**

Student #1: \_\_\_\_\_ Email: \_\_\_\_\_

Student #2: \_\_\_\_\_ Email: \_\_\_\_\_

**Taking advantage of HPC's 3-4-2 Policy: Send 3, Pay for 2 when paying in advance.**

Student #3: \_\_\_\_\_ Email: \_\_\_\_\_

**ENROLLED BY:** \_\_\_\_\_ **Email:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**METHOD OF PAYMENT**

- Check to Follow: \_\_\_\_\_
- Check Enclosed #: \_\_\_\_\_
- MC/Visa/AMEX #: \_\_\_\_\_  
Expiration Date: \_\_\_\_\_ CV Code: \_\_\_\_\_
- Purchase Order #: \_\_\_\_\_

**Please advise how you found out about this course initially.**

- Website search
- Fax advertisement
- Magazine advertisement
- Familiar with HPC
- HPC mailing
- Other: \_\_\_\_\_