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www.hpcnet.com

Course Information Letter ---- B317

POWER PLANT CHEMISTRY FOR TECHNICIANS B317

Reduce hydrogen damage, reduce boiler tube failure, and improve unit reliability. Minimize corrosion deposition. Learn the proper response when chemical limits are exceeded. Understand the consequences of operation while boiler and feed water chemistry limits are being exceeded, proper laboratory QA/QC water (and fuel) testing methods, and how to calculate safe contaminant levels in boiler and feedwater.

This course is designed for fossil power plant laboratory technicians and supervisors. The course provides an understanding of the role of chemistry in a power plant, the effects of chemical excursions, and how to determine chemical limits. It also provides a discussion of testing methods, the need for a quality assurance/quality control program, and how to set up a QA/QC program.

A **topical outline** is as follows: Plant Systems:, Corrosion Types and Prevention, Raw Water Treatment, Feed Water Treatment, Boiler Water Treatment, Boiler Tube Leaks, Condenser Leaks, High Air In-Leakage, Phosphate Hideout, Start Up, Chemical Cleaning, Water Analysis, Coal Sampling and Analysis, Oil Analysis

OBJECTIVES: Upon completion of this course, participants will be able to:

1. Describe various chemical treatment programs
2. Determine chemical limits for a unit.
3. Respond properly to chemical excursions
4. Describe proper sampling and analysis methods
5. Discuss the components of a QA/QC program
6. Describe the mechanisms for various types of corrosion and how this corrosion is controlled.

COURSE DATES/LOCATION/FEE

For current dates / locations / prices, please see HPC's website, www.hpcnet.com.

- Other dates/locations are arranged as needed – contact Stephen Parker at stparker@hpcnet.com

RECENT CLIENTS:

AES Corporation, Alstom Power, BC Hydro, Central Power & Lime, Kauai Electric Corporation, Louisville Gas & Electric, Korea Midland Power, Mesquite Power, Ocean State Power, Omaha Public Power District, Pennsylvania Power & Light, Reliant Energy, SaskPower, Sierra Pacific Power, Sithe Energies, TransAlta Utilities, Vero Beach Municipal Utilities, Wisconsin Public Service

COURSE OUTLINE

- I. **Plant Systems:** Power Plant Technology, Steam Generation
- II. **Corrosion:** Material Structure, Corrosion Process, Types of Corrosion, Reduction and Prevention of Corrosion
- III. **Raw Water Treatment:** Impurities, Sources of Water, Chlorination, Clarification, Filtration, Demineralization, Reverse Osmosis, Electro Dialysis Separation, Technology Review and Evaluation
- IV. **Feed Water Treatment** Oxygen Removal, pH Control, Condensate Polishers, EPRI Recommended Condensate and Feed Water Chemistry Monitoring and Control Guidelines
- V. **Boiler Water Treatment** Properties of Water, Boiler Water Treatment, Carry Over, EPRI Recommended Condensate and Feed Water Chemistry Monitoring and Control Guidelines
- VI. **Plant Problems** Boiler Tube Leaks, Condenser Leaks, High Air In-Leakage, Phosphate Hideout, Start Up, Chemical Cleaning
- VII. **Water Analysis:** Gravimetric Analysis, Titrimetric Analysis, Potentiometric Analysis, Conductometric Analysis, Photometric Analysis
- VIII. **Coal Sampling and Analysis:** Identification of Coal, Rank of Coal, Coal Composition and Properties, Coal Sampling and Analysis
- IX. **Oil Analysis:** Proper Oil Sampling Techniques, Characterization and Analysis of Lube Oil, Environmental Issues, Air Pollution, Water Pollution, Soil Pollution, QA/QC Practices, QA/QC Manual, QA/QC Considerations, Instrument Performance and Background Checks, Control Charts, Out-of-Control Results, Evaluating Control Charts, Instrument Calibration, General Laboratory QC Practices

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 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? No, it is sold only part of the course presentation.
- What is the cost for HPC Technical Service to deliver this course at our location? Well, of course that can vary and it needs to be priced on an individual need basis. You gain from the customization and price.
- Is HPC Technical Services' consultants available for "technical advise" on the evaluation of your chemistry procedures, systems, tests? Yes. Call Harold Parker, hparker@hpcnet.com for a rate sheet.

WHAT YOU WILL RECEIVE:

1. 1 copy of HPC Technical Services' textbook, Power Plant Chemistry for Technicians, by Lee Ruby
2. A "Certificate of Completion" with 2.9 CEUs, authorized for issue by the International Associate of Continuing Education/Training.

INSTRUCTOR(S):

LeRoy Ruby Mr. Ruby provides chemistry training programs and laboratory procedures. His expertise is boiler water chemistry, cycling operations and plant chemistry instrumentation. He has provided expert witness testimony in the areas of coal sampling and analysis and boiler water treatment. For General Physics, 1987-95, Mr. Ruby supervised the development of chemistry training programs, laboratory procedures and conducted audits in both water chemistry and fossil fuel analysis. From 1948 to 1987, Mr. Ruby was employed by Dayton Power and Light and held the following major positions: Station Lab Manager, Laboratory Supervisor, and Chemist. Mr. Ruby served as a member on various task groups within ASTM, in the areas of sampling, laboratory QA inspections and method for instrumental analysis of coal and coke. Lee resides in the Baltimore MD area and has been employed part-time by HPC since 1996.

Elrod, Dana: Mr. 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.

Hayes, Robert: Mr. 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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Website: www.hpcnet.com

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: _____

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.

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|---|--|
| <input type="checkbox"/> Website search | <input type="checkbox"/> Familiar with HPC |
| <input type="checkbox"/> Fax advertisement | <input type="checkbox"/> HPC mailing |
| <input type="checkbox"/> Magazine advertisement | <input type="checkbox"/> Other: _____ |