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Course Information Letter ---- TG526

(GE) STEAM TURBINE GENERATOR AUXILIARIES O&M TG526

As we all know, the auxiliary systems, on any steam turbine generator, play a very important role in the overall availability and reliability of the operating unit. All too often, however, these auxiliaries are operated and maintained in a very “matter-of-fact” way. Operating and Preventive Maintenance Procedures are wonderful tools (and HPC can help development them, if needed), but it is very important that personnel understand (to various degrees) why the systems are operated and maintained the way they are. Operations personnel have a need to fully understand the interactions of all components. Maintenance personnel need to understand the relevance of those corrective and preventive maintenance procedures that are being implemented. Technicians need to understand why setpoints are what they are and what is their value to overall reliability and availability of this operating equipment.

HPC’s course is instructed by equipment experienced personnel. The equipment experience is often significant. Plant O&M personnel are guaranteed to benefit from the instructor’s practical experience and OEM education. This course benefits operations personnel, mechanical maintenance personnel, I&E technicians, and engineers.

Topics include: Steam Turbine Overview, Turbine Lube Oil System, Steam Seal System, Hydraulic Power Unit, Generator Overview, Seal Oil System, Hydrogen Control System, and the Stator Cooling Water System.

OBJECTIVES: The participant, upon completion of this course, for each system studied, should be able to:

1. State the purpose and design considerations (and evolution) that lead to current operation procedures.
2. State the designed purpose and function of each component.
3. Using control diagrams and P&IDs, describe normal and abnormal operation sequences.
4. State the function of each instrument.
5. State the cause and effect of operational malfunctions.
6. State OEM recommended preventive maintenance activities.
7. Describe typical outage maintenance activities.

COURSE DATES/LOCATION/FEE

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

WHAT YOU WILL RECEIVE:

1. 1 copy of HPC's textbook, Steam Turbine Generator (GE) Auxiliary System Operations & Maintenance, as drafted by Harold Parker.
2. A "Certificate of Completion" with 1.3 Continuing Education Units.

For those who volunteer to be members of HPC's Steam Turbine Field Engineering Certification Program, they will receive one comprehensive examination that is to be completed and returned to HPC under specific guidelines for that program. That participant will receive further accommodation for his/her accomplishment. This examination is at no additional cost.

COURSE OUTLINE

Day One

- **Steam Turbine Overview**
- **Turbine Lubricating Oil System:** Learn the purpose of this system, normal operations, instrumentation, alarm response, troubleshooting considerations, and preventive/corrective maintenance activities.
- **Turbine Steam Seal System:** Learn the purpose of this system, normal operations, instrumentation, alarm response, troubleshooting considerations, and preventive/corrective maintenance activities.
- **Hydraulic Power Unit:** Learn the purpose of this system, normal operations, instrumentation, alarm response, troubleshooting considerations, and preventive/corrective maintenance activities

Day Two

- **Generator Overview**
- **Generator Seal Oil System:** Learn the purpose of this system, normal operations, instrumentation, alarm response, troubleshooting considerations, and preventive/corrective maintenance activities.
- **Generator Hydrogen Control System:** Learn the purpose of this system, normal operations, instrumentation, alarm response, troubleshooting considerations, and preventive/corrective maintenance activities.
- **Generator Stator Liquid Cooling:** Learn the purpose of this system, normal operations, instrumentation, alarm response, troubleshooting considerations, and preventive/corrective maintenance activities

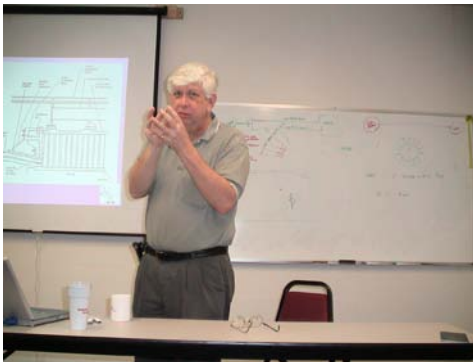
FREQUENTLY ASKED QUESTIONS

- 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? Yes. \$149 + S&H.
- 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 perform an audit of our operating procedures, or an In-Service Inspection? Yes we can. Call or contact Harold Parker, hparker@hpcnet.com for our rate sheets and any further information required.

INSTRUCTOR/CONSULTANT (S):



Art Hinch, P.E. Mr. Hinch has worked in the Power Generation industry for 30+ years. During the 1974-1980 period, Mr. Hinch was employed by GE and was responsible for the installation of multiple large steam turbine generators (fossil and nuclear) and for multiple steam and gas turbine generator outages. To 1992 Mr. Hinch worked as an independent consultant in the south and southwestern regions. During this time frame he worked many turbine-generator outages on GE, Westinghouse, and Siemens units. In addition he worked the start up of a 1300-MW turbine generator unit. In 1992 Art signed on with Arkansas Nuclear One as a senior engineer in the turbine group where he worked primarily in the planning and implementing of turbine generator outages (GE and Westinghouse units). In 2003, Art accepted an early retirement package and has again functioned as an independent engineer, an associate of HPC Technical Services. In this capacity Art has worked multiple steam turbine generator outages on a variety of manufacturers as well as being primary instructor on a number of courses that HPC offers. Art resides in Arkansas.



Harold Parker is the founder & President of H Parker & Company, Inc. Mr. Parker, along with Mr. Douglas Lemmo (see below) were significant contributors to the development of the Steam Turbine Generator Maintenance training program used by GE for the "advanced" training of their field engineering force. Mr. Parker has worked in the "Power Generation" industry for 36 years, 14-years with GE as a Field Engineer, Start-Up Engineer, Technical Training Specialist and Manager. In 1983 Mr. Parker resigned from GE and started a training company, Schenectady Learning Systems, in Schenectady NY, which evolved into H Parker & Company, Inc. today. During this post-GE period, Mr. Parker was briefly employed as Manager Turbine-Generator Services with General Physics (2-years) and as a Field Engineer with Mechanical Dynamics & Analysis (2-years). Mr. Parker is the primary contributor to the development of the text used in this course presentation. Mr. Parker holds a BSME ('69 from Lawrence Institute of Technology), a MBA ('81 from the State University of New York @ Albany) and is a member of ASME. Harold resides in Bradenton FL.



John Mitchell. John Mitchell is a multi-talented leader with over 33 years management, engineering, installation and maintenance experience in thermoelectric power plants. He is especially an expert in steam turbines, generators and their controls. Prior to June 2003 (when he accepted an early retirement package from GE), John was a Customer Training Specialist with the GE International Department. Other past responsibilities included being Manager, Engineering Services, Senior Application Engineer, Senior Service Engineer, Lead Training Specialist, Program Support Engineer, Instructor Technical Training, and Field Engineer. All of this on operation & maintenance of steam turbine generator hardware and controls. John resides in Schenectady NY.

Robert Johndrow. Bob Johndrow hired into GE as a field engineer on the same day as HPC's founder, Harold Parker. That was 36-years ago. Since that date, Bob Johndrow has been a GE Field Engineer specializing in many disciplines including Generator Maintenance and Testing. Bob completed GE's Generator Specialist Training Program early in his career. Since then he has been involved in the commissioning of several steam turbine generators where he was responsible for the turbine controls, auxiliaries, startup sequence and the generator. Bob earned a BS in Industrial Distribution from Clarkson University in Potsdam NY and also has GE Six Sigma Green Belt Certification. Bob accepted an early retirement package late 2003 and has worked as an independent as well as being associated with HPC Technical Services since then. He resides in Connecticut.

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: _____ **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: _____