



True North Consulting
2013 Training Courses

***“COMPREHENSIVE TRAINING SERVICES FROM
INDUSTRY EXPERTS”***

150 Merchant Drive
Montrose, Colorado 81401

(970) 252-1832 telephone
(970) 252-1837 fax

www.tnorthconsulting.com



Overview

True North Consulting offers a variety of training courses focused in the areas of Engineering Programs, Plant Thermal Performance, and supporting software tools.

This brochure provides an overview of available courses along with summary information addressing course content, philosophy, and logistical options associated with course customization and performance.

Contents of the brochure are ordered as follows:

- *Course Listing*
- *Course Content / Structure*
- *Course Delivery Logistics*
- *Synopsis for Available Courses*
- *Instructor Biographies*



Course Listing

ASME OM Code Related

- *Inservice Testing of Nuclear Power Plant Systems & Components*
- *OMN-1 / Appendix III Motor Operated Valve Program Transition*
- *OMN-12 / Appendix IV Air Operated Valve Program Transition*
- *OM Code – ISTD Snubber Program Transition*
- *Check Valve Condition Monitoring Program*

ASME Section XI Related

- *Inservice Inspection (IWA, IWB, IWC, IWD & IWF)*
 - *Interface with ASME Sections II, III, V, VIII & IX*
 - *Repair / Replacement (ASME Section V, VII, IX)*
 - *Pressure Testing*
 - *IWE / IWL Containment Inspection*

General Programmatic

- *10CFR 50 Appendix J – Containment Integrity*
- *Heat Exchanger Programs*
 - *GL 89-13*
 - *Eddy Current Testing*
 - *Preventive Maintenance / Visual Inspection*



Plant Thermal Performance

- *Comprehensive Plant Thermal Performance*
- *Electrical Aspects for the Thermal Performance Engineer*
- *Performance Software Applications (PEPSE)*
- *Performance Monitoring Tools*
- *Power Plant Thermodynamic Applications*
- *Power Plant Testing (ASME PTC-6)*
- *Component Specification Development*

EP-Plus+ and TP-Plus+ Software Tools Maximized

- *EP-Plus+ Engineering Programs Software Suite (TNC / Endeavor)*
- *TP-Plus+ Thermal Performance Program Software Suite (TNC)*
 - *Cycle Isolation Monitor – Secondary Valve Leakage (TP Plus - CIM)*
 - *Thermal System Monitor (TP Plus - TSM)*
- *Dynamic Restraint ASME OM-Code ISTD Code Case Selection Tool*



Course Content / Structure

Our training courses typically consist of three primary modules delivered independently, in combination, or as a blended comprehensive course. The three primary modules used as the comprehensive course foundation are as follows:

Engineering Module -- Program Ownership Responsibilities

Operations Module -- Program Implementation Responsibilities

Management Module -- Higher Tier Responsibilities (Funding, Regulatory Exposure, etc.)

Alternatively, we also provide custom course offerings addressing advanced concepts or topic specific activities within a given program area, both as stand-alone courses or as “add-on’s” to a comprehensive course.

Detail describing philosophy, content, and duration associated for our modular approach is provided below;

Engineering Module

The Engineering Module is structured to convey a thorough understanding of the subject Program. It is intended to provide a foundation for decision making related to all associated programmatic aspects. This module discusses philosophical decisions associated with program development, review of source documentation and its application, and awareness for common programmatic pitfalls. Typically a three-day minimum course.



Operations Module

The Operations Module is geared toward individuals tasked with Program implementation responsibilities targeting broad based program knowledge with detailed knowledge of program structure, purpose, and execution techniques. Completion of this module will provide a sound basis for understanding why tests are performed, when tests need to be performed, the basis for test acceptance criteria, and impact / interface with other plant programs. This is typically a two-day course.

Management Module

The management module is a higher tier course conducted over a shorter period. It provides a cursory Program overview and briefly discusses many of the aspects / issues identified in the Engineering Module. It focuses on managerial personnel requiring an understanding of program basis, conduct, and potential plant impacts as well as regulatory pitfalls. Source documentation, program philosophy, and interface with other plant programs are highlighted. Typically this is a half-day course.

Comprehensive Courses

Comprehensive courses, integrating the above three modules and additional program specific content are provided over four-five day period.

Topic Specific / Advanced Courses

Topic specific or advanced courses are normally conducted in a single day or afternoon session. These courses are often included as add-on sessions following a comprehensive course but are also available on a stand-alone basis.



Course Delivery Logistics

Courses can be provided through several available options.

Centralized Course Performance (multiple utility attendance)

True North offers courses from our Montrose, Colorado offices. These courses are advertised industry wide and typically offered in the January / February or July / August windows to minimize impact on plant outage requirements. Courses are attended by multiple utilities and are usually kept below 15 attendees. Lunches are catered.

Training Conducted at a True North Arranged Facility

We can also arrange for our courses to be conducted at an appropriately sized meeting room of a major hotel. Suggested locations include major hotels near Client facilities or corporate offices. This option can include beverage service for morning and afternoon breaks and an optional catered lunch for each day. Travel and accommodation arrangements typically remain the responsibility of the Client.

Training Conducted at Client Designated Facilities

Courses can also be provided specific for any client or utility at their corporate or site based facilities. Advantages of this approach include attendance of multiple personnel with varying program responsibilities, elimination of travel expenses, and the ability to add client specific customization to the course content. Class size is normally limited to 15 attendees.



Course Synopsis

ASME OM CODE

INSERVICE TESTING OF NUCLEAR POWER PLANT SYSTEMS AND COMPONENTS

The course is comprehensive with respect to Inservice Testing and addresses requirements of the U. S. Nuclear Regulatory Commission, ASME Section XI, and ASME Operations and Maintenance (O&M) Standards for the inservice testing of nuclear power plant systems and components. Specific emphasis will be placed on the ASME Code boundary classification process, Owner's responsibilities, test and examination plans, and detailed requirements for inservice testing of pumps and valves. Several examples will be used to illustrate the correct application of the technical requirements.

MOTOR OPERATED VALVE PROGRAM TRANSITION – OMN-1/APPENDIX III

This two-day course addresses adoption of ASME Code Case OMN-1/Appendix III. It consists of an MOV operational review, discussion of GL 89-10, GL 96-05 and RG 1.192 relative to OMN-1/Appendix III and its associated requirements. Several examples will be used to illustrate the correct application of the OMN-1 adoption requirements.

Course content & approach is structured for MOV/IST Program Owners focusing on the following key areas:

- MOV Regulatory Requirements
- GL 89-10/GL 96-05 Background Overview
- IST/MOV Requirements through the 2006 ASME OM Code Addenda
- Relief Request Overview
- Benefits/Comparison of MOV Programs
- Rules for OMN-1/Appendix III Adoption
- Application of Risk
- Continuing MOV Concerns (vibration, magnesium rotors, MC2 Testing, etc)
- Current issues and interfaces with emphasis on industry/code initiatives and solutions.



AIR OPERATED VALVE PROGRAM TRANSITION – OMN-12/APPENDIX IV

This course addresses adoption of ASME Code Case OMN-12/Appendix IV. It consists of an AOV operational review, discussion of Joint Owners Group (JOG) and AOV User Group (AUG) Program structure relative to OMN-12/Appendix IV and its associated requirements. Several examples will be used to illustrate the correct application of the OMN-12/Appendix IV adoption requirements.

Course content & approach is structured for AOV/IST Program Owners focusing on the following key areas:

- AOV Regulatory Requirements
- JOG / AUG Background Overview
- IST/AOV Requirements through the 2006 ASME OM Code Addenda
- Relief Request Overview
- Benefits/Comparison of AOV Programs
- Rules for OMN-12/Appendix IV Adoption
- Application of Risk
- Continuing AOV Concerns
- Current issues and interfaces with emphasis on industry/code initiatives and solutions.

PRESERVICE AND INSERVICE EXAMINATION AND TESTING OF DYNAMIC RESTRAINTS IN NUCLEAR POWER PLANTS—ASME OM CODE ISTD

The ISTD Snubber course is typically a one-day session but can be adjusted to accommodate the different experience levels of attendees. The course is formatted as a stand-alone session or as a follow-on course performed in conjunction with “INSERVICE TESTING OF NUCLEAR POWER PLANT SYSTEMS AND COMPONENTS.”

The objective is to establish a clear understanding of the purpose of the ISTD Program and its implementation in accordance with the requirements of the Nuclear Regulatory Commission, the ASME Operations and Maintenance (O&M) Standards and the ASME Section XI. Important evolutionary developments of snubber programs are reviewed and analyzed with focus on improvements and emphasis on the more recent boundary classifications, owners’ responsibilities, and examination, testing and monitoring plans.

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The course is divided into separate sections to concentrate on the unique requirements of and continuity between Examinations, Testing and Service Life Monitoring. Detailed and interactive discussion sessions during each section focus on correct and effective applications of technical requirements and efficiency to minimize excessive demands on resources. Also, discussion is held regarding the available ASME OM Code Cases for Snubbers (OMN-13 and OMN-15) and the most beneficial methodology based on station criteria.

The course concludes with an interactive group participation in analyzing a program for a fictitious snubber population and to utilize historical performance and trend analysis to establish an ISTA/ISTD snubber program within the IST program.

ASME SECTION XI CODE

INSERVICE INSPECTION - SECTION XI REPAIR REPLACEMENT AND PRESSURE TEST COURSE INCLUDING IWE AND IWL

The purpose of this course is to provide an introduction to the requirements of the U. S. Nuclear Regulatory Commission, ASME Section XI, and other related documents that are applicable to the development and implementation of an ISI, R/R and PT Program requirements for nuclear power plant systems and components. Specific emphasis will be placed on the following aspects:

- History of ASME Section XI
- Interface with NRC, Industry and Licensing Commitments
- Owners Responsibilities
- General Requirements of ASME Section XI
- ASME Code boundary classification process
- Examination Requirements of IWB, IWC, IWD, IWE, IWF, IWL
- R/R criteria and program development
- PT requirements by Code Class and Interval
- Applying ASME Section XI requirements to actual ISI, R/R & PT Program Development

Several examples will be used to illustrate the correct application of the technical requirements.



GENERAL PROGRAMMATIC

10CFR 50 APPENDIX J – CONTAINMENT INTEGRITY

Managing a power plant's Appendix J Program requires talents from various disciplines, combined with practical ability and a good understanding of the regulatory requirements. True North brings over 30 years of Appendix J experience to this training course. Designed as a practical application of Appendix J regulatory requirements, the True North course blends those regulatory requirements and specific plant activities emphasizing industry best practices in the following areas:

- Regulatory Requirements
- Program Plan and Program Notebook review and revision,
- Outage / Cycle Reports,
- Outage Scope Development and Review,
- Monitoring of LLRT Activities,
- Review Completed Work Packages and Completed Post Maintenance Testing,
- Long Range Planning, i.e., Next ILRT, etc.,
- Review of Plant Modifications,
- Review of Industry Appendix J Operating Experience,
- Interface of the Appendix J Program with the Following Programs:
 - AOV
 - MOV
 - SOV
 - Coatings
 - IWE
 - IWL
 - IST
 - Check Valve
 - Condition Monitoring
 - PRA

HEAT EXCHANGER COURSES - EDDY CURRENT TESTING, PREVENTATIVE MAINTENANCE & VISUAL INSPECTION

The Heat Exchanger Courses are typically held over a 1 -2 day period, dependent upon the level of experience and knowledge among attendees. The Eddy Current Testing training course is developed for and from the perspective of the Heat Exchanger Engineer. Specific emphasis is placed on making the best tube plugging decisions by improving the students



understanding of the defect indications presented in the eddy current test report, the degradation mechanisms that cause them, and limitations of the inspection technology. Additional detail is provided for tube plugging thresholds and tube plug selection. Examples and industry experience are used to illustrate the results to help the HX achieve maximum benefits from eddy current testing. A class exercise requires students to evaluate HX ECT data and determine tube plugging needs. Review and discussion of this exercise helps ensure the students understand and can apply the material.

Like the Eddy Current Testing training course, the training courses for Preventative Maintenance and Visual Inspections are developed for and from the perspective of the Heat Exchanger Engineer. Emphasis is placed on the EPRI heat exchanger PM templates with adjustments to reflect site and industry experiences. Visual inspection training focuses on familiarizing the student with degradation types and locations of particular interest, the performance of GL 89-13 inspections of SW system HXs, and the use of an inspection checklist. Examples and industry experience are used to illustrate the results to help the Heat Exchanger Engineer achieve maximum benefits from the training.

PLANT THERMAL PERFORMANCE

FOSSIL / NUCLEAR THERMAL PERFORMANCE TRAINING

Monitoring a power plant's thermal performance requires talents from various disciplines combined with practical ability and a good understanding of thermodynamic principles. The True North Thermal Performance Course brings these attributes together by combining excellent theoretical knowledge with significant plant experience. True North brings over 25 years of foundation in theory provides practical methods for thermal performance program development and explains how to detect and recover lost generation due to component or systemic problems. The course includes various workshops where the student uses tools to analyze plant problems. Interfaces with various departments are discussed along with how to integrate plant data into the decision making process. This course is held over a four-day period. Prerequisites and requirements are a calculator, Heat Balance Diagram and/or Thermal Kit for your plant.



PEPSE APPLICATIONS COURSE

The Performance Software Application Training provides specific applications of the PEPSE performance software to actual practical plant scenarios, assisting plant personnel to quickly find and recover lost generation due to component or systemic problems. True North brings these scenarios together by combining excellent theoretical and software application knowledge with significant plant experience. Requirements/prerequisites for this course are a calculator, Heat Balance Diagram and/or Thermal Kit of your plant, and a PEPSE Model of your plant.

ELECTRICAL ASPECTS FOR THERMAL PERFORMANCE ENGINEERS

The Thermal Performance Engineer (TPE) at a nuclear plant is usually a Mechanical Engineer by discipline. However, there are many electrical components that the TPE should understand to adequately perform his/her job. The TPE should be trained with those specific Electrical Engineering concepts and components that are pertinent to his/her job. The objective of this project is to develop and present a training course to help utility Thermal Performance Engineers and project managers understand and utilize the electrical engineering concepts that are important to the megawatt electrical production of a nuclear power plant.

The courses below require 2 days and the attendees must bring a calculator and a Heat Balance Diagram and/or Thermal Kit of your plant.

PERFORMANCE MONITORING SOFTWARE USE

This course offers detailed explanation and workshops on how to use thermal performance software to find lost generation, perform design analyses, generate reports and evaluate plant changes. Most major software packages are covered.

POWER PLANT TESTING

This is a complete course on power plant testing. It will enable an engineer to design and implement a full scale ASME PTC-6 test along with other component tests for feed-water heaters, condensers and cooling towers.

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FLOW MEASUREMENTS FOR THE POWER INDUSTRY

This is a course designed to inform the student regarding every aspect of flow measurements that are used in the power industry. The course covers all applicable flow measurement types from differential pressure to ultrasonic. All base calculation methods are covered with exercises on specific flow measurements. Also discussed are methods to improve existing flow measurement devices. The various Industry standards are reference for each applicable flow measurement.

POWER PLANT THERMODYNAMIC APPLICATIONS

This is an in depth course offering the study of thermodynamics as it relates to the analysis of power plant components and cycles. It will take you through the theory and application using many hands-on examples. All components of the power plant will be covered in detail.

TURBINE SPECIFICATION DEVELOPMENT

The aging fleet is looking at the new vendor turbine designs as a way of improving and extending the life of existing investments. This course will provide the necessary information to ensure that the generation purchased will be the generation delivered.

STATISTICS FOR THE POWER INDUSTRY

In our industry, and all around us, data is everywhere. We can find more data than we know what to do with. Unfortunately, all of this data is not useful. What we really need is information - something we can use to make correct decisions. This course provides students with practical ways to get the most information out of the data that they have. They will gain an understanding of statistical concepts. A practical discussion of uncertainty will provide students with the ability to calculate their level of confidence in their data. Students will also be presented with methods for validating data to ensure they can make effective decisions with it. The course is taught in the context of the applicable industry standards for test measurement and uncertainty.



SPECIALIZED SOFTWARE COURSES

True North offers informal courses for affected site personnel addressing the use of our engineering programs and thermal performance software products. These courses are typically conducted following site installation of the software but are also highly beneficial once some familiarity with the product has been obtained allowing for a deeper understanding of advanced features and capabilities. No formal test is required. Attendees will demonstrate proficiency to the satisfaction of the instructor and or designee. The post installation course is an informal introductory class and is intended to be a “hands-on” session that will walk users through the use of the various software features. At the request of the client, the introductory session can be re-categorized as “formal training” where enabling objectives and learning objectives are identified in addition to meeting other requirements as specified by the client. Subsequent courses can be tailored for use of specific features or to address more detailed application topics.

The proposed introductory session training is conducted as follows:

- 1) A 4-hour session is conducted in the morning to establish general software tool familiarization.
- 2) A 2nd 4-hour session is provided in the afternoon to demonstrate proficiency in use of the tools which includes making changes to the database(s) (i.e., data entry, data approval and changes to acceptance criteria/reference values, etc).

Training is typically a one day session and can be performed in conjunction (day before or after) any of our other courses.

Software Products covered include:

- EP-Plus+ Engineering Programs Software Suite (TNC / Endeavor)
- TP-Plus+ Thermal Performance Program Software Suite (TNC)
 - Cycle Isolation Monitor – Secondary Valve Leakage (TP Plus - CIM)
 - Thermal System Monitor (TP Plus - TSM)
- Dynamic Restraint ASME OM-Code ISTD Code Case Selection Tool



Instructor Biographies

ASME OM CODE COURSES

Ronald C. Lippy

All OM Code Courses

Mr. Lippy currently serves as Manager of the True North Engineering Programs Division. Ron has more than 35 years of professional experience in nuclear power plant operation, maintenance, inspection, and testing including over 30 years related to ASME Codes and Standards, regulatory requirements, and licensing and design basis activities. Ron is an active member on several ASME OM Code committees including the OM Standards Main Committee, Sub-Committee Pumps and Valves, Committee on general Requirements ISTA, and Committee on Valve Testing Requirements ISTC, and member of SubGroup OM-19 (AOVs and HOVs) responsible for developing the Appendix IV for transition from the OMN-12 Code Case to the Appendix IV. Additionally, Ron serves as Project Manager for development of the OM Code for New Reactors.

Ed Cavey

Air & Motor Operated Valve Program Courses

Mr. Cavey brings 25 plus years experience in the commercial Nuclear Industry that consists of utility program management in the areas of Motor Operated Valves and Inservice Testing. Ed held the role of Inservice Testing and Check Valve Program Manager for the last ten years at Detroit Edison Fermi 2. Additionally, for the past several years Ed has been the Chairman of the Inservice Testing Owners Group.

Ed has extensive experience in engineering program development, management and implementation. While in the positions of Fermi MOV Program Manager and chairman of the MOV Users Group (MUG), Ed led industry efforts in the area of PM optimization and MCC-based diagnostics. He has since been a key player in industry IST activities, most recently serving as chairman of the IST Owners Group (ISTOG). Prior to joining Fermi, Ed served in the US Navy aboard submarines for over 13 years with a final rank of Chief Petty Officer.



Shawn Comstock

Air & Motor Operated Valve Program Courses

Mr. Comstock is a versatile engineering programs manager with extensive experience across a wide array of Plant Programs. His experience encompasses significant roles in program and project management in both the mechanical and electronics engineering disciplines. Shawn has provided consulting for Program Engineering in the areas of AOV, MOV, Check Valves, Relief Valves, Valve Packing and Inservice Testing Programs.

Karl Asmundsson

Snubbers / ISTD

Mr. Asmundsson brings over 25 years of industry experience focused on collaboration with suppliers and service companies supporting utilities in power plant design, construction and operations in the US and internationally. Karl has a solid technical background and has been involved with components and component support activities throughout his career, ranging from design/application concepts to programmatic transition regarding the OM Code ISTD requirements. He has been an active member of The American Society of Mechanical Engineers Codes and Standards and the ISTD Subsection on Dynamic Restraints for over 17 years.

ASME SECTION XI COURSES

Glenn Perkins

Inservice Inspection - Section XI Repair and Replacement, Pressure Test, IWE/IWL Courses

Mr. Perkins serves as a Senior Consultant in our Engineering Programs Division with primary responsibility for ASME Section XI Programs. Glenn's 35 years of experience in the commercial nuclear industry has been heavily involved in the development and implementation of Engineering Programs and Engineering Management activities. Positions held by Glenn throughout his industry tenure have ranged from Program Owner to General Supervisor of Corporate Engineering Programs.

Glenn is an active member of ASME Section XI and has been involved with industry betterment initiatives including development, implementation, and standardization of program directives and procedures utilizing INPO, individual site, and peer utility best practices.

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Ed Anderson

Inservice Inspection - Section XI Repair and Replacement, Pressure Test, IWE/IWL Courses

Mr. Anderson has over 40 years of experience in the nuclear power industry encompassing the areas of program management in preservice / inservice examination and planning and inspection reports. Ed's involvement in the industry has been heavily focused in the areas of ISI Program development, preparation and implementation of ASME Section XI Code and regulatory required programs, plans and schedules.

GENERAL PROGRAMMATIC COURSES

Robert McGowen

10CFR50 – Containment Integrity, Appendix J

Mr. McGowen has over thirty four years of nuclear plant experience with primary expertise in the areas of Appendix J Option A and B. Robert is also very experienced in many other program areas including Inservice Testing, Section XI System Pressure Testing, IWE/IWL, Non-intrusive Check Valve Testing, Check Valve Condition Monitoring, AOV/MOV and the following Risk Informed initiatives; IST and Appendix J. Experience in these areas includes Program development, basis document and scope development, implementation, consultation, training, training course development and program ownership.

Robert holds a reactor operators license with experience encompassing reactor startup, operations, surveillance testing, local leakage rate testing, integration of non-intrusive testing methodologies into IST Programs, Engineering Program assessments, program administrative and implementing procedure development and maintenance.

Gregg Joss

10CFR50 – Containment Integrity, Appendix J

Mr. Joss's career spans over 35 years of commercial nuclear industry experience focused primarily in the development, implementation, and management of Engineering Programs.

Most recently, Gregg was Program Owner of Fleet Containment Leakage (Appendix J) and Inservice Test (IST) Programs for Constellation Energy. In this capacity he was responsible for the conduct of all phases of the Appendix J and IST Programs at Nine Mile Point, Calvert Cliffs

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and Ginna. Additionally, Gregg was instrumental in the development and success of several industry support groups including the Appendix J and Inservice Testing Owners Groups (APOG / ISTOG).

Iver Jacobson

Heat Exchanger Courses - Eddy Current Testing, Preventative Maintenance & Visual Inspection

Mr. Jacobson has 20 years of professional experience in nuclear power plant engineering, including engineering roles in the System Engineering, Engineering Programs, and Design Engineering organizations. Heat exchanger activities have involved specifications, replacements, repairs, eddy current testing, monitoring, thermal performance testing, performance analysis, program procedures, calculations, reports, preventative maintenance optimization, and training. Iver has worked closely with EPRI over his career. Related heat exchanger activities in conjunction with EPRI include:

EPRI Heat Exchanger Performance Users Group (HXPUG) past utility co-Chairman.

EPRI Technical Lead for "Heat Exchanger Program Guidebook", Technical Report to be published Feb. 2011.

EPRI Technical Advisory Group, for "Heat Exchanger Maintenance Guide" Technical Report 1018089, June 2009.

EPRI Technical Advisory Group, "Heat Exchanger Thermal Performance Margins Guideline" Technical Report 1012129, November 2005.

EPRI Technical Advisory Group, "Service Water Piping Guideline" Technical Report 1010059, September 2005

EPRI Technical Advisory Group, "Feedwater Heater Maintenance Guide" Technical Report 1003470, May 2002

THERMAL PERFORMANCE COURSES

Frank Todd

Thermal Performance

Mr. Todd possesses over 30 years of diverse technical experience in fossil and nuclear power plants. This background encompasses significant expertise in areas of engineering, construction, planning and scheduling, power ascension testing, startup testing, turbine testing,

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secondary leakage testing, flow measurement testing, heat balance analysis, plant walk downs, procedure writing, and software development both in fossil and nuclear power stations.

Frank is highly skilled in the use of analytical tools designed to evaluate thermal performance and improve plant efficiency and reliability. These tools include a variety of approaches using computer based plant modeling with strong emphasis on problem analysis and resolution. Additionally, Frank has developed a wide spectrum of test specification, procedure, and testing configurations in support of Thermal Performance improvements.

Greg Alder

Thermal Performance

Mr. Alder has extensive background in thermal performance theory, providing modeling and consulting services to electric generating utilities, both domestic and international, for the past 21 years. Greg has many years of experience using thermal performance software tools to evaluate performance of fossil, nuclear and combined cycle generating plants. Additionally Greg has been involved in evaluating plant uprates, re-powering projects, fossil boiler fuel modifications; vendor claims for plant component change outs, plant test results, environmental effects, and incremental heat rate studies and lost power troubleshooting. Greg is recognized as an expert in the field of thermal performance modeling providing many of the “firsts” in the growing area of thermal performance. He has developed over one hundred thermodynamic models of boilers, combined cycles and turbine cycles, including many customized applications. Greg has analyzed the performance of operating power plants using both off-line and on-line thermodynamic modeling systems for plants around the world.

Richard Duggan

Thermal Performance

Mr. Duggan is a senior consulting engineer on our Thermal Performance team. Rich has over 15 years of industrial experience centered around product and process improvements. Rich has extensive experience in the evaluation of data from a statistical point of view. He received a B.S. in Mechanical Engineering degree from Kettering University in Flint, Michigan, and is also a certified Six Sigma Black Belt.

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Brian Dodd

Thermal Performance

Brian Dodd serves as a senior consulting engineer in the Thermal Performance Division with primary responsibility for the area of plant thermal performance. He is currently involved in providing performance assessments, evaluating plant uprates, repowering projects, performing heat rate tests and performance software tool applications. Brian has 30 years experience in power plant operations, maintenance, project design/management and thermal performance related to fossil and combined cycle generating plants. He received a B.S. degree in Mechanical Engineering from Oklahoma State University.

SPECIALIZED SOFTWARE COURSES

Jeffrey Neyhard

Software Services

Mr. Neyhard serves as Software Services Manager for True North Consulting. His primary focus is development, update, and maintenance of our customized software products in support of our Engineering Programs activities. Jeff has over 39 years' experience working in the nuclear industry. His previous duties included plant startup, construction and Programs Management (IST, Pressure Testing, Appendix J, Section XI and OM Code).

Additionally, Jeff manages our Endeavor strategic alliance and is heavily involved in development / rollout of our new joint offering, Engineering Programs Software Suite (EP-Plus+).

Silas Rogers

Thermal Performance

Mr. Rogers is a member of our Thermal Performance team and was instrumental in the development of our TP Plus-CIM software for monitoring plant secondary leakage. Silas graduated with a B. S. in Mechanical Engineer from Grove City College, Grove City PA. Silas has been working for True North Consulting Thermal Performance group since 2006.

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