

ENGINEERING PROGRAMS

True North Consulting is an industry leader in the development, implementation, and maintenance of Engineering Programs. True North has extensive experience in regulatory driven, ASME Code based, and Maintenance Optimization related Programs. Additionally, True North staff is actively involved on numerous industry committees and initiatives including ASME OM, ASME Section XI, and ANS. Services and areas of expertise are listed below:

Services

True North has developed a comprehensive array of Program related services inclusive of the following:

- Program Assessment (Vertical Slice)
- Outage Scope Review/Assessment
- Basis Documentation (Development and Validation)
- Interval Update
- Program Implementation
 - Procedure Development/Upgrade
- Training (Site Based & Remote)
 - IST/ISI/Appendix J
 - Management Curriculum
 - Engineer Curriculum
 - Operations/Maintenance Curriculum
 - Topic Specific Workshops
- Site Based Support
- Offsite Consulting Support (Retainer Based)
- Customized Software Solutions
 - PV-Plus, Pump Curve, APPJ, CVCM
- Industry Owner's Group Facilitation Services

Areas of Expertise

ASME OM Code Programs

- Inservice Testing
- Check Valves (APP II - CMP)
- Motor Operated Valves (APP III/OMN-1)
- Air Operated Valves (OMN-12)
- Snubber Programs (ISTD)
- Relief Valve Programs

ASME Section XI Programs

- Inservice Inspection (Conventional /Risk Informed)
- Pressure Testing Programs
- Containment Inspection (IWE / IWL)
- Repair/Replacement

General Programs

- Flow Accelerated Corrosion (FAC)
- Buried Piping
- Heat Exchanger/89-13
- Welding Programs
- Containment Integrity - Appendix J
- Equipment Qualification
- Boric Acid Control
- Surveillance Testing

SOFTWARE SOLUTIONS

True North Consulting has developed software products supporting industry-related needs in both the Engineering Programs and Plant Thermal Performance areas. True North Consulting and Endeavor aligned skill sets to provide web-based engineering programs software using the Engage® platform.

Engineering Programs Software Suite

The True North Consulting | Endeavor web-based Engineering Programs Software Suite EP-Plus+® runs on the Endeavor Engage® platform and includes electronic import of the clients' test history and custom configuration. The software contains, for example, links to the Program documents, allows for data entry and trend analysis, assists with outage scope identification and has user configurable reports that are fully compliant with guidance and regulatory requirements.

EP-PLUS+		
IST ASME OM Code Pump & Valve Inservice Testing	RELIEF DEVICE Mandatory Appendix I Relief Device Management	CHECK VALVE Mandatory Appendix II Check Valve Condition Monitoring
CLRT (Appendix J) 10 CFR 50 Appendix J Containment Leakage Rate Testing	SNUBBER ASME OM Code ISTD Dynamic Restraint Examination & Testing	MOV Mandatory Appendix III Motor-Operated Valve Testing
AOV Mandatory Appendix IV Air-Operated Valve Testing	ISI ASME Section XI Code Inservice Inspection	HTEX Heat Exchanger Testing and Monitoring
PST (For New Reactors) ASME OM Code Pump & Valve Preservice Testing	PSI (For New Reactors) ASME Section XI Code Preservice Inspection	ENGAGE Expand all of your engineering software

<http://www.epplusengage.com>

Thermal Performance Software Suite

TP-Plus+ is a thermal performance engineering tool kit consisting of several powerful and unique calculation modules for use in the electric power industry to simplify and provide time-saving convenient methods of tracking thermal performance.

Available modules:

- Cycle Isolation Module (CIM)
- Secondary Leakage Analysis
- Thermal Systems Monitor (TSM)
- Cooling Tower Analysis

POWER SERVICES

True North offers a complete line of power related engineering and project management services with strong emphasis on plant system/equipment upgrades, and station power uprates. Services offered include:

Specialty Services

- Engineering Liaison Services (Utility/OEM Interface)
- Multi-Discipline Contractor Oversight
- Problem Resolution/Operational Expertise
- Manufacturing Facility Oversight

Turn-Key Project Services

- Multi-Disciplined Project Management
- Project Plan & Integrated Cost/Schedule Development
- Cost Benefit Analysis
- Project Controls (cost/schedule)
- Technical Specification/Bid Specification Development
- Contract Negotiation/Bid Evaluation
- Design Coordination/Oversight
- Integrated Test Plan Development & Test Services
- Implementation Oversight
- Technical Support

Multi-Discipline Engineering Support

Assembling project teams staffed with specific discipline requirements and scope-related experience, we are comfortable with all phases of the engineering support life cycle. Examples of areas in which we have specific expertise are listed below:

Major Plant Initiatives

- Power Uprate (Stretch and EPU)
- License Renewal
- Plant Life Extension
- Station Security System Upgrades
- Outage Optimization
- Power Train Equipment Replacement and Upgrades
 - HP/LP Turbines
 - Main Generator/Excitation Equipment
 - Turbine Generator Support Systems

Project Support Services

- Computer Aided Drafting/Drawing Upgrade Services
 - Auto Cad/Intergraph
- Database Management Services
 - Oracle/Sequel/Access
- Configuration Control Management
 - Plant Documentation/Design Basis/Q-List

THERMAL PERFORMANCE

The True North Consulting Thermal Performance group is focused on maximizing commercial advantage through increased efficiencies, increased reliability, and optimization of the power/fuel ratios. True North utilizes various tools combined with leading edge industry experience to analyze a power plants total ability to produce electricity reliably and efficiently. Our services range from plant assessment and modeling at the component or system level, to development or upgrade of an entire Thermal Performance Program. Thermal Performance Training is also offered, typically twice per year from our corporate offices, but can be tailored to meet specific site requirements as well.

Program Assessment/Development

- Thermal Performance Modeling
- Power Calculation Evaluation
- Secondary Valve Leakage
- Plant/Component Evaluations
- MWe Improvement Recommendations
- Monitoring Practices
- Instrument Modifications
- Procedural Support/Development
- PTC-6 Testing Support

Heat Balance Analysis

- Power Uprate Turbine Cycle Evaluation
- Model Development & Improvements
- Plant Condition Evaluation
- Plant Modification Studies
- Environmental Heat Rejection Studies
- Megawatt Loss Evaluations
- Steam Generator Replacement Studies
- Turbine Retrofit Evaluations
- Primary Temperature Changes
- Major Component Warranty Validations

Thermal Component Analysis

- Feed-water Heaters
- Turbines
- Cooling Towers
- Pumps
- Condensers
- Moisture Separators/Re-heaters

Thermal Performance Monitoring

- Develop/Enhance On-line Monitoring Capability
- Provide TP-Plus+ Software to Evaluate Performance
- Provide Remote Monitoring of Plant Performance



True North Consulting is headquartered in Montrose, Colorado with satellite offices in Nebraska, Louisiana, New Jersey, and Alabama. Address and contact information for our offices are listed below:

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The Next Level for Engineering Services

COMPANY PROFILE

True North Consulting is an Engineering Services company specializing in support for the electric power industry. Founded in 1999, True North has provided engineering-based consulting services to the majority of US utilities and to several abroad. Our services cover a wide spectrum within the power generation sector ranging from Engineering Programs related services in the nuclear power industry to plant Thermal Performance issues across the entire generation continuum. Additional areas of expertise include a complete array of Power Services associated with secondary plant equipment and a highly experienced Information Technology staff supporting our line of customized software products.

It is our goal and ongoing commitment to optimize these services with respect to cost, technical adequacy, and overall value to our clients. Towards this goal we continue to refine and update our staff and services through incorporation of technology and experience-based advancements.

Presented in this brochure is an overview of services offered by True North Consulting along with general information concerning our office locations and contact information.

We sincerely hope this provides a clear representation of our company and how True North Consulting might benefit performance at your facility.