True North Consulting, LLC

The Next Level for Engineering Programs

150 Merchant Drive
Montrose, Colorado 81401

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

www.tnorthconsulting.com

Company Profile
Engineering Programs

True North Consulting is dedicated to providing the highest level of support and software to the nuclear power industry regarding Engineering Programs. It is our goal to optimize the development, upgrade, and implementation of Programs with respect to cost, technical adequacy, and overall value to our clients. Towards this goal we have developed a unique combination of services, products and software incorporating both technological and experience-based advancements.

Presented in this brochure is an overview of services offered by True North along with a comprehensive experience profile listing clients and services performed on their behalf. A full description of our new web-based Engineering Programs Management Software Suite EP-Plus+ is available upon request. This widely used software provides an excellent software solution regarding administration and implementation of all your Engineering Programs. Also included is information concerning our managerial staff and programmatic resources as well as general information concerning our office locations and contact information.

We sincerely hope this provides a clear representation of how True North Consulting could benefit Programs activities at your Station. We look forward to hearing from you and the opportunity to propose our services.

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Montrose, Colorado 81401

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Engineering Programs

Areas of Specialization
Services/Capabilities
Company Experience Profiles
Core Staff & Resources
General Information

150 Merchant Drive
Montrose, Colorado 81401

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

Areas of Specialization

- *Program Management*
- *Inservice Testing*
- *Appendix J*
- *Pressure Testing Programs*
- *Check Valve Programs (APP II - CMP)*
- *Motor Operated Valves (APP III/OMN-1) & GL-96-05 Reclassification*
- *Air Operated Valves (OMN-12)*
- *Relief Valve Programs*
- *Snubber Programs*
- *Containment IWE/IWL*
- *Risk Informed Inservice Inspection Programs (RI-ISI)*
    - *Augmented Programs*
      BWRVIP
      Break Exclusion Regions (BER)
      MRP - 139
      Alloy 600
      Generic Letter 88-01
- *Flow Accelerated Corrosion (FAC)*
- *Buried Piping*
- *Reactor Coolant System Material Management Degradation Program (NEI 03-08)*
- *License Renewal Programs Interfaces*
- *Repair/Replacement*
- *Welding Programs*
- *Equipment Qualification*
- *Boric Acid Control*
- *Heat Exchanger/89-13*
- *Appendix R/Fire Protection (Conventional/NFPA 805)*
- *Surveillance Test*

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Montrose, Colorado 81401

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Services/Capabilities

Assessment
Training
Interval Update
Basis Documentation
Program Implementation
Site-Based Support
Engineering Programs EP-Plus+ Software Solutions
Inservice Testing Interval Updates

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Program Assessment

True North Consulting performs Full Scope Review, Vertical Slice, and Management Overview Program Assessments. Additionally, we have expertise in performing Lead responsibilities and coordination efforts associated with focused self assessments integrating selected industry into the assessment team.

Each of these assessment formats are designed to provide specific results as described below:

Inservice Testing/Valve Programs

The Full Scope Review assessment performs Design Basis and SAR reviews aimed at validating population of the Program under review. It is typically structured to ensure all required components are included within the Program. It can also be designed to perform a negative logic review to verify required Program components have not been excluded. In performance of a Full Scope Program assessment, we leverage our experiences at similar plants to quickly validate existing scope and then focus in-depth on plant areas or situations unique to that particular Station.

In contrast, the Vertical Slice Assessment typically reviews a population of three to five systems in an in-depth nature. This type of assessment is designed to provide a window into the overall health of the assessed Program. Generally, a vertical slice assessment will include a programmatic review of the selected systems which involves component safety function, test adequacy, test frequency, test methodology, acceptance criteria, cold shutdown justifications, refueling outage justifications, relief requests, and trending. It will also review administrative and implementing procedural interfaces and interface with other plant programs such as APPJ, repair/replacement, check valves, AOV's, MOV's, etc.

The Management Overview format is designed to provide a review of Program Implementation and Maintenance aimed at providing a responsible Manager confidence that his Program is being correctly implemented and maintained.

In summary, the full scope review is more superficial in nature aimed at ensuring correct population of the subject Program whereas the vertical slice assessment targets philosophy, structure, application, and overall health of the Program. The Management Overview approach addresses Program implementation and maintenance structured to identify and improve deficiencies in those areas.

As a general note, the Vertical Slice Program Assessment provides an excellent foundation or baseline prior to initiation of an interval update or any other significant Program Upgrade.

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Section XI Program Assessment
(ISI/IWE/IWL/Pressure Testing/FAC/BACC, License Renewal, RCS-MDMP, etc.)

Focused Assessment/Focused Self Assessment

True North performs a comprehensive assessment of the health and compliance issues related to development and implementation of the targeted program. Typically this involves a review against internal and external source documents, ie. Regulatory, Industry Guidelines, Codes and Standards, Plant Metrics, etc., and a detailed overall comparison to program documents and implementation processes regarding compliance. This includes preparation of a detailed assessment plan, interviews with program owners and site staff, and targeted drill-down into specific documentation processes. Overall length of this assessment including preparation, conduct, and final report preparation is typically three weeks with a staff of two to three senior personnel.

The focused self assessment process is similar with True North providing Lead and/or Coordination activities for an assessment team comprised of selected industry peers and True North staff.

Snap-Shot Assessment

A small scope assessment is generally performed on a specific area of concern, typically identified beforehand by the client. These assessments may be triggered due to an emergent industry issue, developing trends, or declining performance. This is generally prepared, conducted, and reported within a one week period with a staff of one to two personnel.

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Training

True North Consulting provides module-based training comprehensive with respect to most Engineering Programs. Our training courses consist of three primary modules delivered independently or in combination. Our modular approach targets the following:

- Engineering Module -- Program Ownership Responsibilities
- Operations Module -- Program Implementation Responsibilities
- Management Module -- Higher Tier Responsibilities (Funding, Regulatory Exposure)

Alternatively, we offer comprehensive courses relative to a given program as well as topic specific or shorter term advanced courses. Our approaches are defined 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. This is typically a three-day course.

Operations Module
The Operations Module is geared to provide those individuals tasked with Program implementation an overall knowledge of program structure and purpose. 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 issues identified in the Engineering Module. It targets managerial personnel requiring an understanding of the program basis, conduct, and potential plant impacts. Source documentation, program philosophy, and interface with other plant programs are highlighted. This is typically a one to one-and-a-half-day course.

Our comprehensive courses are provided over a three day period and consolidate topics from all three of the above modules. Topic specific or advanced courses are normally conducted in a single day or afternoon session.

Courses can be conducted at client facilities and coordinated with site training requirements and are also offered on an annual basis with attendees from across the industry.

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Interval Update

Inservice Testing

The typical scope for a True North Consulting Interval Update Project entails update of a Station's ASME OM Code Inservice Testing Program into its next 120-month interval. The update process is conducted in a manner ensuring compliance with 10CFR50.55a Latest Edition and Addenda. The update also reviews all aspects of the new interval update to any recently issued regulatory information regarding NRC exceptions or other pertinent requirements.

Specific parameters of this scope generally include the following:

- Development of an “NRC Ready” submittal package for the upcoming interval
- Revised/updated IST Program Plan
- Evaluation/revision of necessary program relief requests
- Development of Cold Shutdown and Refueling Outage Justifications necessary to implement the IST Program Plan
- Update of Component Population Tables as necessary
- Review and revision of IST Program Basis Documentation
- Review and Mark-up of IST administrative procedures
- Review and Mark-up of IST implementing procedures
- Interfacing Programs Review

Performance of the update scope can be conducted at site or performed off-site for the most part with site trips scheduled to obtain necessary documentation and conduct or participation in project meetings. It is always the intent of True North to conduct the update in a manner minimizing impact on Site staff and management.

Check Valve Condition Monitoring Program Option

Many of our clients opt to develop or upgrade a Check Valve Condition Monitoring Program in accordance with Appendix II of the ASME OM Code as an integrated component of their Inservice Testing 10 Year Interval Update. We have performed numerous such projects and are pleased to pass on the associated cost savings to our clients.

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Section XI Program Interval Update
(ISI/IWE/IWL/Pressure Testing)

- Development of an "NRC Ready" submittal package for the upcoming interval
Revised/updated ISI Program Plan and Inspection Schedule
- Evaluation/revision of necessary program relief requests
- Review/Update and inclusion of all Regulatory/Industry and License Renewal Commitments
- Review and inclusion of any supplemental 10CFR50.55a requirements
- Review of NRC acceptable Code Cases for inclusion in the Program Plan
- Review/Revise Code Class Boundaries and Class 2 & 3 pressure test boundaries
- Review/update P&ID's and system and component level isometrics
- Validate items subject to inspection and optimize selection to minimize outage support requirements where feasible
- Revise/update administrative site procedures to comply with new Code of Record

As part of the interval update process, True North includes information detailing how each code requirement is satisfied by Code Item and Number in the descriptive portions of the Program Plan Document. Additionally, listed are associated documentation or references such as regulatory, site licensing, and/or industry documents, and identifies how these sources were used relative to the Program Basis. Exclusions from code requirements are fully documented in the Plan as well as any augmented exam requirement details. Comprehensive weld, item, and component level listings are developed as part of the 10 Year Inspection Schedule. Every item subject to inspection is identified whether scheduled for examination or not. A sample of our Program Plan Format is available upon request.

Performance of the update scope can be conducted at site or performed off-site with site trips scheduled to obtain necessary documentation and conduct or participate in project meetings. It is always the intent of True North to conduct the update in a manner minimizing impact on Site staff and management.

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Basis Documentation

A True North Program Basis Document will typically provide an inclusion/exclusion basis for all related components along with detailed information concerning component safety function, testing requirements, frequencies, and applicable references. It will include as a minimum the following elements:

- The Basis for including or excluding components in the Program
- A description of specific required functions, ie. Open, Close, Fail-safe, minimum flow/differential pressure, etc.
- Acceptance criteria for the pumps and valves and their basis (reference calculation, UFSAR chapter, Technical Specification, etc.)
- Reference values for program components and the associated basis for the reference values
- Accuracy of associated instruments and instrument loops
- Review/evaluation and documentation of applicable industry information related to the Program, ie. NRC Information Notices, Information Bulletins, Generic Letters, NUREGs, etc., INPO, SOERs, SERs, Good Practices, etc.
- Review and evaluation of Program Technical Positions

The Basis Document will also normally document the following at the component level:

Component Number
Noun Name
Component Type (model/serial number)
P&ID Drawing
Implementing Test Procedure
Code Deviations (RR's, CSJ's, RFJ's)
Driver Information
Valve Category
Normal Position
Safety Position
System Description
Design Acceptance Criteria
Code Class
Safety Function
Test Requirements
Test Frequency

The True North Consulting | Endevor Web-Based Software – Engineering Programs Management Suite (EP-Plus+), serves as an electronic repository for a Station's Program Plan, Basis and Source Reference Information in addition to providing a Test History Forecasting and Trending function. A popular project option has been implementation of the EP-Plus+ Software Suite concurrent with development or revalidation of a Site Program Basis Document.

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Program Implementation

True North Consulting is adept at site procedure upgrades targeting effective, efficient transformation of Program administrative control and implementing procedures. This well refined process, for the most part, is a logical extension of the high number of program upgrade, assessment, and basis related activities conducted by True North. True North applies a variety of techniques aimed at optimization of procedure content, component testing approach, and component/system groupings in addition to standard procedure upgrade resulting from an interval update or similar program enhancement. True North Consulting | Endevor Web-Based Software tools from our EP-Plus+ Suite are integrated to the greatest extent possible to add value to our procedure optimization approach.

In general, our procedure optimization process is geared to minimize administrative burden and procedural overhead while emphasizing programmatic traits and procedural steps that add value concerning equipment reliability, plant safety, and cost-effectiveness.

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Site-Based Support

In many instances, True North is requested to provide Engineering Programs expertise working directly under the supervision of site utility personnel. Assignments of this nature include performing or supporting Program coordination activities to support roles for specific internal projects.

True North works closely with utility personnel to ensure our individuals are well versed in the particular support required. As an enhancement to traditional methods of this type of support, True North offers a company-based component at no additional charge. This company based support feature entails maximizing communications between our provided staff and our Engineering Programs staff at other sites, including our network of utility and industry support contacts. Any programmatic positions taken are thoroughly researched and discussed to ensure regulatory and code compliance is achieved. The primary focus of our efforts is standardization of programmatic positions combined with nuclear safety and cost effectiveness. Close coordination between our site-based staff and our Engineering Programs Manager facilitates disseminating information requests through our organization and provides any necessary feedback to our site-based resources.

This approach has significantly aided in standardizing programmatic positions across our staff, the industry as a whole, and has added long term value to our clients.

Outage Related Support

Other Program related support functions typically performed as site-based activities include:

- Outage Scope Review/Optimization for Program Testing Requirements
- Technical support/oversight of outage inspection/test activities
- ASME Code and Regulatory Expertise

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Customized Software Solutions

ENGINEERING PROGRAMS SOFTWARE SUITE EP-Plus+

The True North Consulting | Endevor web-based Engineering Programs Software Suite EP-Plus+® runs on the Endevor 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

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Inservice Testing Interval Updates

Wolf Creek Nuclear Operating Corporation (2013) (W-PWR)

Inservice Testing 10 Year Interval Update to 2009 Code Edition, OMb 2011 Addenda

- *IST Bases/Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *MOV OMN-1 Program (App III)*
- *AOV OMN-12 Program (App IV)*
- *Snubber Program transition to ISTD*
- *Relief Requests*

Ameren/Callaway (2012) (W-PWR)

Inservice Testing 10 Year Interval Update to 2009 Code Edition, OMb 2011 Addenda

- *Appendix II Check Valve Condition Monitoring Program*
- *MOV OMN-1 Program (App III)*

Entergy/Fleetwide

Inservice Testing Interval Update Support

- *MOV OMN-1 Program Development*

Exelon/Dresden Station (2012) (GE-BWR)

Inservice Testing 10 Year Update to 2004 ASME/OM Code Edition, 2005/2006 Addenda

- *IST Bases/Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *MOV OMN-1 Program*

Exelon/Oyster Creek Station (2012) (GE-BWR)

Inservice Testing 10 Year Update to 2004 Code Edition, 2005/2006 Addenda

- *Appendix II Check Valve Condition Monitoring Program*

Exelon/Quad Cities Station (2012) (GE-BWR)

Inservice Testing 10 Year Update to 2004 Code Edition, 2005/2006 Addenda

- *IST Bases/Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *MOV OMN-1 Program*

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Exelon/Three Mile Island (2012) (B&W-PWR)

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- *IST Bases/Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *MOV OMN-1 Program*

First Energy Davis Besse Station (2012) (B&W-PWR)

Inservice Testing 10 Year Update to 2004 Code Edition, 2005/2006 Addenda

- *IST Bases/Program*
- *ISTD Snubber Transition Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *OMN-1 MOV Program*
- *True North Engineering Programs Software Utilized*

NextEra/Point Beach Station (2012) (W-PWR)

Inservice Testing 5th Interval Update to 2004 Code Edition, 2005/2006 Addenda

- *IST Bases/Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *ISTD Snubber Program*
- *OMN-1 MOV Program*

SHAW-Luminant/Comanche Peak Plant (2012) (W-PWR)

Inservice Testing Interval Update to 2004 Code Edition, 2005/2006 Addenda

- *IST Bases/Program*
- *OMN-1 Program Support*
- *Snubber Program Transition/Update*
- *True North Engineering Programs Software Utilized*

South Carolina Electric & Gas/V.C. Summer Station (2012) (W-PWR)

Inservice Testing Interval Update to 2004 Edition, 2005/2006 Addenda

- *Appendix II Check Valve Condition Monitoring Program*
- *MOV Appendix III Program*
- *True North Engineering Programs Software Utilized*

Southern California Edison/SONGS (2002/2012) (CE-PWR)

Inservice Testing Program Interval Update to 2004 Edition, 2005/2006 Addenda

- *Appendix II Check Valve Condition Monitoring Program*
- *Basis Document Update / Validation*
- *Risk Informed IST Program Assessment & Implementation*

- *OMN-1 MOV Program*
- *Snubber Bases/Program*

PPL/Susquehanna (2011) (GE-BWR)

Inservice Testing Program

- *Check Valve Condition Monitoring Program to 1998 Code Edition, 2000 Addenda*

South Texas Project (2011) (W-PWR)

Inservice Testing Update for 3rd 10 Year Interval to 2004 Code Edition

- *Appendix II Check Valve Condition Monitoring Program*
- *CFR 50.69*
- *Snubber to ISTD Transition*

DTE Energy/Fermi (2010) (GE-BWR)

Inservice Testing Program Update to 2004 Code Edition

- *Appendix II Check Valve Condition Monitoring Program*

Xcel Energy/Monticello (2010) (GE-BWR)

Inservice Testing Program Update to 2004 Code Edition, 2005/2006 Addenda

- *IST Bases/Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *OMN-1 MOV Program*
- *Snubber Transition*

Constellation/Ginna (2009) (PWR-W)

Inservice Testing Interval Update to 2004 Code Edition, No Addenda

- *MOV OMN-1*
- *Appendix II Check Valve Condition Monitoring Program*
- *True North Engineering Programs Software Utilized*

Exelon/Clinton Station (2009) (GE-BWR)

Inservice Testing Interval Update to 2004 Code Edition, No Addenda

- *MOV OMN-1*
- *Appendix II Check Valve Condition Monitoring Program*

Exelon/Limerick Station (2009) (GE-BWR)

Inservice Testing Interval Update to 2004 ASME/OM Code Edition, 2005/2006 Addenda

- *MOV OMN-1*
- *Appendix II Check Valve Condition Monitoring Program*

First Energy/Perry Station (2009) (GE-BWR)

Inservice Testing Interval Update to 2001 Code Edition, 2003 Addenda

- *OMN-1 MOV Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *True North Engineering Programs Software Utilized*

PSE&G/Hope Creek Station (2009) (GE-BWR)

Inservice Testing 10 Year Interval Update to 2001 Code Edition, 2003 Addenda

- *Appendix II Check Valve Condition Monitoring Program*

PSE&G/Salem Station (2009) (W-PWR)

Inservice Testing 10 Year Interval Update to 2001 Code Edition, 2003 Addenda

- *Appendix II Check Valve Condition Monitoring Program*

Arizona Public Service/Palo Verde Station (2008) (CE-PWR)

Inservice Testing Interval Update to 2001 Code Edition, 2003 Addenda

- *OMN-1MOVs*
- *Appendix II Check Valve Condition Monitoring Program*
- *True North Engineering Programs Software Utilized*

Constellation Energy/Calvert Cliffs (2008)(CE-PWR)

Inservice Testing Program Development Support (2010)

- *IST Bases Project*

Inservice Testing Interval Update to 2004 Code Edition, No Addenda

- *Appendix II Check Valve Condition Monitoring Program*
- *OMN-1 Program Development*
- *True North Engineering Programs Software Utilized*

Constellation Energy/Nine Mile Point (2008) (BWR-GE)

Inservice Testing Interval Updates for Units 1 and 2 to 2004 Code Edition

- *OMN-1 MOVs*
- *Appendix II Check Valve Condition Monitoring Program*
- *True North Engineering Programs Software Utilized*

Entergy/FitzPatrick Station (2007) (BWR)

Inservice Testing Interval Update to 2001 Code, 2003 Addenda

- *IST Bases*
- *True North Engineering Programs Software Utilized*

Entergy/Grand Gulf Station (2007) (GE-BWR)

Inservice Testing Program Interval Update Support

- *OMN-1*

Entergy/Waterford 3 Station(2007) (CE-PWR)

Inservice Testing Program Second Interval Update to 2001 Code through 2003 Addenda

First Energy/Beaver Valley Station (2007) (W-PWR)

Inservice Testing 10 Year Interval Update to 2001 Code Edition, 2003 Addenda

- *Appendix II Check Valve Condition Monitoring Program*
- *OMN-1 MOVs*
- *OMN-12 AOVs*
- *True North Engineering Programs Software Utilized*

Southern Nuclear/Vogtle(2007) (W-PWR)

Inservice Testing Interval Update up to 2001 Code Edition, 2003 Addenda

- *IST Bases*
- *True North Engineering Programs Software Utilized*

Southern Nuclear/Farley (2007) (W-PWR)

Inservice Testing Interval Update up to 2001 Code Edition, 2003 Addenda

- *IST Bases*
- *True North Engineering Programs Software Utilized*

Tennessee Valley Authority/Watts Bar (2007) (W-PWR)

Inservice Testing Update for 3rd 10 Year Interval to 2001 Code Edition, 2003 Addenda

- *Appendix II Check Valve Condition Monitoring Program*

American Electric Power/D.C. Cook Station (2006) (W-PWR)

Inservice Testing Interval Update to 2001 Code Edition, 2003 Addenda

- *Appendix II Check Valve Condition Monitoring Program*
- *OMN-1 and OMN-12 Program*
- *IST Program Assessment and Testing Basis Document*
- *True North Engineering Programs Software Utilized*

Southern Nuclear/Hatch (2006) (GE-BWR)

Inservice Testing Interval Update up to 2001 Code Edition, 2003 Addenda

- *IST Bases*
- *True North Engineering Programs Software Utilized*

EDF/Sizewell B Station (2005) (W-PWR)

Inservice Testing Interval Update to1998 Code / 2000 Addenda

- *OMN-1 Program*
- *Appendix II Check Valve Condition Monitoring Program*
- *True North Engineering Programs Software Utilized*

Northwest Energy/Columbia (2005) (GE-BWR)

Inservice Testing Update to 2001 Code Edition, 2003 Addenda

- *Appendix II Check Valve Condition Monitoring Program*

Tennessee Valley Authority/Sequoyah Station (2005) (W-PWR)

Inservice Testing Update for 3rd 10 Year Interval to 2001 Code Edition, 2003 Addenda

- *Appendix II Check Valve Condition Monitoring Program*

Tennessee Valley Authority/Browns Ferry Station (2005) (GE-BWR)

- *Appendix II Check Valve Condition Monitoring Program to 1995 Edition, 1996 Addenda*

Progress Energy/Robinson Station (2002) (W-PWR)

Inservice Testing 10 Year Interval Update Support

- *IST Bases*

True North Consulting
Client Listing & Experience Profiles

Client Listing
Comprehensive Experience Sorted by Client

150 Merchant Drive
Montrose, Colorado 81401

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

Client List

- *American Electric Power*
- *Altran Energy Solutions*
- *Arizona Public Service*
- *Ameren Energy Corporation*
- *Appendix J Program Owners Group (APOG)*
- *British Energy*
- *Bruce Power*
- *Constellation Energy*
- *Detroit Edison*
- *Dominion Energy*
- *Duke Energy Company*
- *Energy Northwest*
- *Entergy Nuclear Northeast*
- *Entergy Nuclear South*
- *EPRI*
- *Exelon Corporation*
- *First Energy Nuclear Operating Company*
- *Florida Power & Light*
- *Iepson Consulting/Krsko Station*
- *Inservice Testing Owners Group (ISTOG)*
- *Luminant Energy Company*
- *Nebraska Public Power District*
- *NextEra Energy*
- *North America Energy Services*
- *NRG Energy, Inc.*
- *Omaha Public Power District*
- *Pennsylvania Power & Light*
- *PPL*
- *Progress Energy*
- *Public Service Electric & Gas Company*
- *Reliant*
- *Salt River Project*
- *SCANA Services Inc.*
- *Scientech*
- *Siemens Energy, Inc.*
- *South Carolina Electric & Gas*
- *South Texas Project*
- *Southern California Edison*
- *Southern Nuclear Operating Company*
- *Tennessee Valley Authority*
- *Texas Utilities*
- *Utilities Service Alliance, Inc.*
- *Westinghouse Electric Co.*
- *Wolf Creek Nuclear Operating Company*
- *Xcel Energy, Inc.*

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Experience Profile/Work History

(Client Sort)

The following represents a comprehensive listing of clients and associated work scopes for which we have performed Engineering Program related services.

Ameren Energy

Callaway Station

- *Containment Cooler Thermal Test Analysis/Support*
- *Self Assessment Review for IST 10 Yr Update*
- *IST 10 Year Interval Update with App II and App III*

Appendix J Program Owners Group (APOG)

San Onofre Station - Appendix J Programs Assessment
Browns Ferry Station - Appendix J Programs Assessment
Brunswick Station - Appendix J Programs Assessment
Calvert Cliffs Station - Appendix J Programs Assessment
Farley Station - Appendix J Programs Assessment
Ginna Station - Appendix J Programs Assessment
Monticello Station - Appendix J Programs Assessment
Palo Verde - Appendix J Programs Assessment
Nine Mile Point Station - Appendix J Programs Assessment
Facilitator, Treasurer, Website Maintenance

Arizona Public Service

Palo Verde Station

- *Inservice Testing Interval Update*
- *Appendix J Site based Support*
- *FAC Program Site based Support*
- *True North Software Installation*
  - *IPDAS Automatic Data Transfer Utility*
  - *IST Module*
  - *Check Valve Module*
  - *Appendix J Module*
- *Check Valve and Relief Valve Site based Support*
- *Heat Exchanger/GL 89-13 Support*
- *Root Cause and Apparent Cause Evaluations*
- *Various Program Assessments and Benchmarks*

- *Margin Management Program Gap Analysis*
- *Review of MIDAS and MOV Calculations*
- *Update Technical Positions in IST Program*
- *Maintenance Rule Program Support*
- *Locked Valve, Breaker, and Component Tracking System Support*
- *Surveillance Testing Program Support*
- *Service Water Program Support*
- *Program Bases Document Support for AOV and IST Programs*

American Electric Power

D.C. Cook Station

- *Inservice Testing Interval Update*
- *Development of CV Condition Monitoring Program*
- *Developed OMN-1 and OMN-12 Program*
- *Inservice Testing Program Assessment/Basis Document/Training*
- *Developed Inservice Testing Basis Document*
- *True North Software Installation*
  - *IST Module*
  - *Check Valve Module*
  - *Relief Valve Module*
- *Inservice Inspection Program Revalidation*
- *Review and Validation of Pressure Testing Program*
- *Review and Update of Appendix J Program*
- *Snubber Program Revalidation*
- *Heat Exchanger Training*
- *IST Training*
- *UPTI Program Support for NRC Phase 2 TI Inspection*

Babcock & Wilcox MPower

- *ASME OM Code Consulting*

Bruce Power

- *Flow Accelerated Corrosion Program Support*

Constellation Energy

Fleet

- *IST Program Support*

Calvert Cliffs

- *EP Plus Installation (IST, APPJ, Pump Curve & CV CMP Modules)*
- *Inservice Testing Interval Update (2004 Code); IST Training*
- *True North Software Installation (Fleetwide)*
  - *IST Module*
  - *Check Valve Module*
  - *Relief Valve Module*
  - *Appendix J Module*
  - *Pump Curve*
- *Check Valve Condition Monitoring Program*
- *OMN-1 Program Development*
- *Feedwater Flow Measurement Assessment*
- *IST Bases Project*
- *Containment Type A Test Interval Extension*

Ginna

- *Inservice Testing Assessment*
- *IST Update*
- *Containment Type A Test Interval Extension*
- *Appendix J Assessment / Training Support*
- *SIT / ILRT Review*
- *Outage Engineering Programs Support*
- *Check Valve Condition Monitoring Program Development/Support*
- *IST and Appendix J Program Support*
- *SFA Model Pass 2 Analysis and Wear Run Calibration*
- *IST Valve Support*
- *GL 89-10 Calculations*
- *IST/Appendix J Program Support*
- *IST Training (Fleetwide)*
- *True North Software Installation (Fleetwide)*
  - *IST Module*
  - *Check Valve Module*
  - *Relief Valve Module*
  - *Appendix J Module*
  - *Pump Curve*

Nine Mile Point

- *MOV OMN-1 Training*
- *AOV/MOV Outage Support*
- *IST Update*

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- *Containment Type A Test Interval Extension*
- *IST Training*
- *ISI Program Support*
- *Outage Engineering Programs Support*
- *Relief Request Support*
- *AOV/MOV Program Support*
- *True North Software Installation (Fleetwide)*
  - *IST Module*
  - *Check Valve Module*
  - *Relief Valve Module*
  - *Appendix J Module*
  - *Pump Curve*

Unistar
- *Review NRC-RAI Position and Response*

Dominion
- *MOV OMN-1 Training*
- *Inservice Testing Training*

Duke Energy
- *IST Program Update Review*
- *ILRT Test Interval Extension*

DTE Energy
Fermi
- *IST Program Update*
- *Review of GL 89-13 Program*
- *Develop Check Valve Condition Monitoring Program per Appendix II*
- *True North Software Installation*
  - *Check Valve Module*

EDF (Electricity of France)
Sizewell B Power Station
- *Development of Code Comparison Document*
- *Inservice Testing Interval Update (1998 Code/2000 Addenda)*
- *Inservice Testing Basis Document Development*
- *Risk Informed Inservice Testing Program Implementation*
- *Risk Informed/Updated Inservice Testing Program Training*
- *Inservice Testing Program Training*

- *IST Program Support*
- *True North Software Installation*
  - *IST Module*

Energy Northwest

Columbia Station

- *Developed Check Valve Condition Monitoring Program*
- *Performed IST Assessment and Interval Update Support*
- *True North Software Installation*
  - *Check Valve Module*
- *Check Valve Condition Monitoring Program*
- *GL 89-10 Calculations, Air and MOV Program Development*
- *Inservice Testing Program Training*

Entergy Nuclear Northeast

Fitzpatrick Station

- *Developed Inservice Testing Basis Document*
- *True North Software Installation*
  - *IST Module*
  - *Appendix J Module*
  - *Pump Curve*
- *Inservice Testing Interval Update*
- *IST and Appendix J Site Support*

Pilgrim Plant

- *Check Valve Condition Monitoring Program Development and Support*
- *Appendix J Support/LLRT Scope Reduction*
- *True North Software Installation*
  - *Check Valve Module*

Palisades Station

- *True North Software Installation*
  - *IST Module*
  - *Check Valve Module*
  - *Pump Curve*
  - *Appendix J Module*
- *Inservice Testing Training Course (Operations/Engineering/Mgmt Modules)*
- *Boric Acid Corrosion Control Program Assessment*

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Vermont Yankee
- *IST Program Assessment*

Entergy Nuclear South

Fleetwide (ANO, Grand Gulf, Waterford3, Riverbend)
- *Inservice Testing Interval Update Support*
- *GSI-191 RAI Responses and Program Reviews*
- *OMN-1 Program Development*
- *ANO 2R20-Review of Feedwater Heaters*

Grand Gulf Station
- *Supported Inservice Testing Program Interval Update*
- *Review/Validation of Inservice Testing Basis Document*
- *Review and Update of Inservice Testing Program Procedures*
- *Inservice Inspection Program Support (Procedures/Outages)*

River Bend Station
- *Developed Inservice Testing Basis Document*
- *True North Software Installation*
  - *IST Module*
- *Performed Second Interval Update of Inservice Testing Program*
- *Review & Revision of Inservice Testing Procedures*
- *Conducted Inservice Testing Training Course (Operations/Engineering Modules)*
- *Performed Numerous Drawing Upgrade/Revision Projects (ACAD R14)*
- *Maintenance Rule Assessment*

Waterford 3 Station
- *Developed Inservice Testing Basis Document*
- *Performed Second Interval Update of Inservice Testing Program*
- *Review & Update of Inservice Testing Procedures (Administrative & Control)*
- *Performed Second Interval Update of Inservice Inspection Program*

Electric Power Research Institute

- *Heat Exchanger Program Owner Handbook Development*
- *Risk Informed - Inservice Inspection Support*
- *Heat Exchanger Visual Inspection (GL 89-13) Training*
- *Heat Exchanger Training Course Development*
- *Feedwater Heater Condition Assessment Training*
- *Update Tube Plugging Calculator*
- *HX Partial Tube Blockage Guidance*
- *HX Design Specification*

- *Consulting to HX Operational Experience Project*
- *Service Water Engineer & Piping Training Material Revision*
- *Heat Exchanger Training at ESKOM/Koeberg*
- *Revision of FAC Program Owner Training Materials*

Exelon Corporation

Fleet
- *IST Program Support*
- *IST Training Course*

Limerick Station
- *Inservice Testing Program Assessment*
- *OMN-1 Program Development*
- *Check Valve Condition Monitoring Program*
- *True North Software Installation*
  - *Check Valve Module*

Clinton Station
- *Inservice Testing Program Assessment*
- *Inservce Testing Interval Update (2004 Code)*
- *Check Valve Monitoring Program*
- *OMN-1 Program Development*
- *Snubber ISTD Transition and OMN-13 Support*
- *True North Software Installation*
  - *Check Valve Module*
- *IST Check-in FASA Support*

Dresden Station
- *IST 10 Year Update*

Peach Bottom Station
- *Inservice Testing Program Assessment*

Quad Cities Station
- *Inservice Testing Program Review/Validation*
- *Inservice Inspection Program Review/Validation*
- *IST 10 Year Update*

Oyster Creek Nuclear Generating Station
- *IST 10 Year Update*
- *IST Program Consulting*

Three Mile Island Nuclear Generating Station
- *Inservice Testing Comprehensive Assessment & Recovery Project*
- *IST 10 Year Update*

First Energy Nuclear Operating Company

Fleet
- *Appendix J Support - Program Gap Analysis*

Beaver Valley Station
- *IST Ten-Year Interval Update (including CV, MOVs, AOVs))*
- *True North Software Installation (Fleetwide)*
  - *IST Module*
  - *Check Valve Module*
  - *Appendix J Module*
  - *Pump Curve*
- *Check Valve Condition Monitoring Program*
- *OMN-1 & OMN-12 Program Development*
- *ILRT Extension*

Perry Station
- *True North Software Installation (Fleetwide)*
  - *IST Module*
  - *Check Valve Module*
  - *Appendix J Module*
  - *Pump Curve*
- *OMN-1 Program Development*
- *Check Valve Condition Monitoring Program*
- *Inservice Testing Interval Update*
- *IST Training*

Davis Besse Station
- *IST 10 Year Update*
- *True North Software Installation (Fleetwide)*
  - *IST Module*
  - *Check Valve Module*
  - *Appendix J Module*
  - *Pump Curve*

Florida Power & Light

St. Lucie Station

- *Inservice Testing Program Assessment*
- *Inservice Testing Program Support*
- *Inservice Testing Training Course (Operations/Engineering/Mgmt Modules)*
- *Inservice Inspection Program Support*

Turkey Point Station

- *Inservice Testing Training Course (Operations/Engineering/Mgmt Modules)*
- *Review of Relief Request PTN-ENG-SEMS-08-05*
- *IST Program Support*

Point Beach Station

- *Performed Inservice Testing Training*
- *Inservice Testing Program Assessment*
- *Developed Inservice Testing Basis Document*
- *Supported Inservice Testing Ten Year Interval Update*
- *Inservice Inspection Program Support*
- *Pressure Test Program & Associated Procedure Update*
- *Developed Containment IWL Program*

Seabrook Station

- *Assist in Self Assessment of IST Program*

IEPSON CONSULTING

- *Comparison report of IEEE Standard No. 323 revisions*

ISTOG

Facilitator, Treasurer, Website Maintenance

Nebraska Public Power District

Cooper Station

- *Containment Type A Test Interval Extension*
- *Appendix J Site Based Support*
- *Welding Program Support*
- *Inservice Testing Program Assessment*
- *True North Software Installation*
  - *IST Module*
  - *Appendix J Module*

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- *Inservice Testing Program Support*
- *Inservice Inspection Program Support*
- *Developed Appendix J Option B Submittal*
- *Erosion/Corrosion (FAC) Program Assessment*
- *Check and Relief Valve Program Validation*
- *Snubber Program Support*
- *Integrated Leak Rate Testing Support*
- *EPG Gap Analysis and Assessment of Maintenance Rule Program*

NextEra

Point Beach Station

- *Power Uprate Project*
- *IST 5th Interval Update*
- *Main Feedwater Intake Valve Testing Review*

Omaha Public Power District

Fort Calhoun Station

- *Developed Inservice Testing Basis Document*
- *Installed Customized Version of Inservice Testing Software Package -- EP Plus*
- *Inservice Inspection Program Assessment*
- *IST Program Assessment*
- *Refueling Outage (2009) AOV & MOV Support*
- *True North Software Installation*
  - *IST Module*

PPL

Susquehanna

- *Check Valve Condition Monitoring Program Development*

Progress Energy

Crystal River Station

- *Inservice Testing Program Assessment*
- *Developed Inservice Testing Basis Document*
- *True North Software Installation*
  - *IST Module*
- *Inservice Inspection Program Support*

Robinson Station

- *Developed Inservice Testing Basis Document*
- *Update of Inservice Testing Procedures*
- *Supported Inservice Testing Ten Year Interval Update*

Brunswick Station
- *FAC Program Outage Support*

Public Service Electric & Gas
Hope Creek Station
- *Inservice Testing Program Assessment*
- *IST Ten-Year Interval Update*
- *Developed CV Condition Monitoring Program*

Salem Station
- *Inservice Testing Program Assessment*
- *IST Ten-Year Interval Update*
- *Developed CV Condition Monitoring Program*

SHAW-Luminant
Comanche Peak Nuclear Power Plant
- *Welding Program EPG Gap Analysis and Assessment*
- *Environmental Equipment Qualification Program*
- *MEQ and SPU Packages*
- *Power Uprate Support*
- *Heat Exchanger Program Evaluation*
- *IST Interval Update*
- *OMN-1 Program Support*
- *Snubber Program Update*
- *Development of IST Code Comparison Document*
- *True North Software Installation*
    - *IST Module*
    - *Appendix J Module*
- *IST / ISI / RR Assessment*

South Carolina Electric & Gas
V.C. Summer Station
- *Performed Interval Update to 1998 Edition, 2000 Addenda*
- *Technical Writing Support Services*
- *IST Update to 2004 Edition, 2006 Addenda (IST Basis/CVCMP, E{/PV+ Software, Section XI Pressure Testing)*
- *Performed Pressure Test Program Update*
- *Developed Inservice Testing Basis Document*
- *True North Software Installation*

- *IST Module*
- *Performed Inservice Testing Training Session*
- *Updated Inservice Testing Administrative & Implementing Procedures*
- *Support Resolution of NFPA805 Related Engineering Activities*
- *LLRT Programmatic Review*
- *CHECWORKS SFA Pass 2 Analysis/FAC Inspection Scope*

Southern California Edison

San Onofre Station

- *Check Valve Condition Monitoring Program (CMP) Evaluations*
- *Inservice Testing Training Course (Operations/Engineering/Mgmt Modules*
- *Inservice Testing Program Interval Update (1998 Edition, 2000 Addenda)*
- *Inservice Testing Program Basis Document Update/Validation*
- *Updated Inservice Testing Administrative & Implementing Procedures*
- *Risk Informed IST Program Assessment & Implementation*
- *True North Software Installation*
  - *IST Module (Stand-Alone Laptop Version)*

Southern Nuclear Operating Company

Hatch, Vogtle, & Farley Stations

- *Performed Inservice Testing Interval Update*
- *Inservice Testing Training Course (Operations/Engineering/Mgmt Modules)*
- *True North Software Installation (Fleetwide)*
  - *IST Module*
  - *Appendix J Module*
  - *Pump Curve*

South Texas Project

- *Performed IST Update for 3rd Ten-Year Interval (App II, App III, ISTD)*

Tennessee Valley Authority

Corporate

- *IST Program Support*
- *UPTI Program Procedure & Instruction Revision*

Browns Ferry Station

- *ISI Program Support (Risk Informed)*
- *Heat Exchanger Self Assessment Support*
- *FAC Outage Scope Review and Optimization*

- *UPTI Database Conversion*

Sequoyah Station
- *Develop Check Valve Condition Monitoring Program*
- *Performed IST Update for 3rd Ten-Year Interval*
- *UPTI Database Conversion*
- *True North Software Installation*
  - *Check Valve Module*

Watts Bar Nuclear Plant
- *Develop Check Valve Condition Monitoring Program*
- *Perform IST Update for 3rd Ten-Year Interval*
- *PSI Support*
- *UPTI Database Conversion*
- *True North Software Installation*
  - *Check Valve Module*

Westinghouse

China
- *PSI Plan Development*
- *PST Plan Development*
- *IWE Plan Development*
- *Snubber Plan Development*

Vogtle Station Units 3&4 (New Reactors)
- *PSI Program Support*
- *IWE Program Support*
- *Snubber Program Support*

VC Summer Station Units 2&3 (New Reactors)
- *PSI Program Support*
- *IWE Program Support*
- *Snubber Program Support*

Wolf Creek Nuclear Operating Company

Wolf Creek Station
- *IST Interval Update to 2009 Code Edition*
- *True North Software Installation (EP+)*
  - *IST Module*

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Xcel Energy

Prairie Island Station

- *Containment Type A Test Interval Extension*
- *Engineering Programs Support*
- *Review of IST Data - Programs Support*
- *PIV/IST Program Support*
- *Project Weld Engineering Support*
- *Support of Nuclear Oversight Assessment*

Monticello

- *Support INPO E&A Review*
- *NOS Engineering Programs Assessment*
- *ASME Section XI 2nd Interval IWE Program Development*
- *IST Background Document and Database Creation*
- *IST Program Update (OMN-1, OMN-12, IST Basis, AppII)*
- *Snubber Program Update*
- *Engineering Programs Support*
- *Welding Program Support*

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Core Staff & Resources

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True North Company Overview

Donald R. Horn, P.E.
President

Ronald C. Lippy
Manager
Engineering Programs

Staff
22 Senior Program Engineers

Specialization

Inservice Testing
Check Valves (App II- CMP)
MOV'S (APP III – OMN-1)
AOV'S (OMN-12)
Snubber Programs
Relief Valve Programs
Inservice Inspection
Pressure Testing Programs
Containment Inspection
Repair / Replacement
Flow Accelerated Corrosion
Buried Piping
Heat Exchanger / 89-13
Welding Programs
Containment Integrity -- APPJ
Equipment Qualification
Boric Acid Control

Frank D. Todd
Manager
Thermal Performance

Staff
5 Senior Engineers
3 Engineers

Specialization

Thermal Analysis / Modeling
Secondary Leakage Analysis
High Accuracy Flow Solutions
Thermal Performance Testing

Affiliations

Advanced Measurement & Analysis Group (AMAG)

R. T. Moore, Sr.
Manager
Power Services

Staff

4 Senior Engineers
2 External Consultants

Specialization

Major Secondary Upgrades
--Project Management
--Engineering Oversight
--Utility / OEM Liaison

Jeffrey A. Neyhard
Manager
Software Services

Staff

2 Senior Engineer
2 Programmers

Specialization

Custom Software Solutions
-- Engineering Programs
Software Suite (EP Plus)
-- Thermal Performance
Software Suite (TP Plus)
-- Cycle Isolation
-- Thermal Monitoring

Affiliations

Endevor / Engage Platform
Axis Inspect, LLC.

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Donald R. Horn, P.E
President/Owner

Overview

As founder, President, and owner of True North Consulting, Don's primary responsibilities regard ensuring adherence to the True North Consulting vision.

This vision consists of providing Engineering Programs support of the highest quality, technical merit, and usefulness while standardizing engineering program related positions across the industry. It is his goal and the goal of True North Consulting to provide a strong contribution towards success of the nuclear power industry through application of effective, efficient, Programs related support.

Inherent in this responsibility are managing day-to-day operations for the company, client relations, strategic planning, business development, and support for project management/staffing requirements.

Don applies his twenty–six years of energy industry related experience, both domestic and abroad, encompassing a wide spectrum of managerial and engineering responsibilities, towards accomplishment of this True North vision.

Managerial experience for Don has been steadily progressive, initiated with Engineering Lead responsibilities in fossil and nuclear power generation, expanding to multidiscipline project management, on to complete P&L responsibility for a company division, and currently as President and owner of True North Consulting.

Don's primary engineering expertise resides in the electric power discipline with extensive knowledge in the areas of power generation, electrical distribution, and power plant systems. He has a strong background in the nuclear power industry with experience in construction, start-up, power ascension testing, and commercial operation. Strong technical skills with a diverse engineering background provide a solid, common sense based foundation for accomplishing company objectives.

Don holds a Bachelor of Science in Electrical Engineering, BSEE, from Colorado State University and is a registered Professional Engineer.

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Ronald C. Lippy
Manager, Engineering Programs

Overview

As Senior Manager for True North Consulting's Engineering Programs, Ron has focused on advancing nuclear power through strengthening and standardization of Engineering Program positions at Utility Stations across the industry. He possesses over thirty-two years of diverse technical experience in nuclear power plants with fifteen plus years in ISI/IST Coordination. This background encompasses significant expertise in areas of engineering, construction, planning and scheduling, power ascension testing, startup testing, operations, outage management/coordination, maintenance, and operations support in both commercial and naval power stations. Ron is well versed in development, approval, performance, and evaluation of most Programs/Procedure approaches derived from experience in positions ranging from a Program Engineer with Program Ownership responsibilities to an Independent Assessor or Program Consultant.

Ron has provided consulting services to most facilities within the nuclear power industry, with emphasis on Inservice Inspection and Testing Programs. Ron's support is typically focused on oversight and project management duties for our *Programs Team,* striving for consistency, standardization, and overall effectiveness of our projects across the industry. He has performed assessments at both PWRs and BWRs and conducted numerous Basis Document and/or Program Update projects.

Additionally, Ron has conducted numerous Programs Based Training courses ranging from comprehensive four day sessions to topic-oriented afternoon sessions. Examples of those who have benefited from one of Ron's courses include Southern Nuclear Company, Exelon, Florida Power & Light, Southern California Edison, Consumers Power, and British Energy.

Ron has served on various ASME/OM Code Committees in the past and is presently serving as a member on the OM Codes Main Committee, the Sub Committee OM Codes (SCOMC), Subgroup of General Requirements (ISTA), the Subcommittee on Valves (ISTC), and as Chairman of the New Reactors OM Code Task Group. In addition, Ron supports our company facilitation of the Inservice Testing Owners Group (ISTOG) as the primary technical representative.

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(970) 252-1837 fax

General Information

Address/Contact Information

150 Merchant Drive
Montrose, Colorado 81401

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

Address/Contact Information

True North Consulting is headquartered in Montrose, Colorado. In addition to our Engineering Programs Division represented in this brochure, the company is comprised of Thermal Performance, Power Services, and Software Services Divisions.

Office and primary contact information for our Colorado headquarters and each of our Company Divisions is listed below:

Corporate Office
Primary Contact--Donald R. Horn

150 Merchant Drive
Montrose, Colorado 81401
970-252-1832 (telephone)
970-252-1837 (fax)
drh@tnorthconsulting.com

Engineering Programs
Primary Contact--Ronald C. Lippy

402-493-9562 (telephone)
402-490-5848 (cell)
rcl@tnorthconsulting.com

Software Services
Primary Contact--Jeffrey A. Neyhard

315-430-7218 (cell))
jan@tnorthconsulting.com

Thermal Performance
Primary Contact--Frank D. Todd

970-964-2753 (telephone)
609-202-7598 (cell)
fdt@tnorthconsulting.com

Power Services
Primary Contact--Ray Moore Sr.

302-740-5205 (cell)
rtm@tnorthconsulting.com