

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

NERC Balancing Authority (BA) Certification of the Midwest Independent Transmission System Operator (Midwest ISO)

Evaluation Site Visits
Were Conducted On

December 4-6, 2007 and February 5-7, 2008

to ensure
the reliability of the
bulk power system

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Introduction

This report presents the results of a tri-regional, Midwest Reliability Organization (MRO), ReliabilityFirst (RFC) and SERC Reliability Corporation (SERC), certification team that performed a Certification Evaluation of the Midwest Independent Transmission System Operator (Midwest ISO), to perform the function and meet the requirements of a Balancing Authority (BA). Representatives of the tri-regional certification team have provided this report as evidence that the Midwest ISO has processes, tools, procedures, agreements, training and protocols are in place. Additionally, the certification team verified that the applications are installed, and the operators are trained and are prepared to perform the BA function.

BAs work in tandem with their respective reliability coordinator (RC) and have a primary role and responsibility for maintaining the reliability of the interconnected bulk power system. They accomplish this through day ahead planning and real time control of generation and/or load resources to balance their actual interchange with their scheduled interchange, while continuously monitoring, regulating and stabilizing the alternating-current frequency of the interconnection. Acceptable reliability levels and system performance can only be maintained if the Balancing Authorities and other entities which make up and operate the interconnection work in accord with good operating practices and reliability criteria. The reliability criteria include planning and operating standards as defined by the North American Electric Reliability Corporation (NERC) Reliability Standards and Regional Entities. Good operating practices include, but are not limited to full compliance to the NERC and regional standards without regard to economic consideration, and operations that do not burden neighboring systems.

Certification Team

On April 16, 2007 the Midwest ISO notified NERC and the regional managers (MRO, SERC and ReliabilityFirst) a letter (dated 4-13-07) requesting NERC and the regions to certify the Midwest Independent Transmission System Operator (Midwest ISO) as a BA. This letter began the process for certification that is outlined in the NERC Rules of Procedure Section 500 and Appendix 5. Following receipt of Midwest ISO's request to be certified as a NERC BA, a certification team was formed. The team rosters for members of both the BA certification team and Midwest ISO team are listed in Attachment 1.

Objective and Scope

The objective of this evaluation was to assess if Midwest ISO and entities within the Midwest ISO BA area have the tools, processes, procedures, and training in place to operate as a BA. The scope of the certification included: (1) Interviewing Midwest ISO management and reviewing pertinent documentation for verification of basic requirements for BA operation; (2) Reviewing procedures, self certification forms, operating protocols, and other documentation developed by Midwest ISO to meet the applicable Standards requirements; (3) Interviewing Midwest ISO System Operations personnel to assess their understanding, knowledge and readiness to assume the role of a BA operator; (4) Assessing the physical facilities of the Midwest ISO control center, Energy Management System (EMS), communication facilities, operator displays, etc. and (5)

Performing other validation reviews as considered necessary. The on-site evaluation was conducted during two separate site visits; December 4-6, 2007 and February 5-7, 2008 at the Midwest ISO offices in Carmel, Indiana and the Midwest ISO backup control center.

The certification team also performed a review of those entities that are assigned BA requirements under the Joint Registration Organization (JRO) Application and Requirements Matrix and are designated as Local Control Centers (Midwest ISO LBA) by Midwest ISO. Twenty-three of the 26 Midwest ISO LBAs are currently registered and operating as a BA. Two of the proposed Midwest ISO LBAs, Consumers Energy Company (CONS) and Detroit Edison Company (DECO), are not currently registered as a BA but are performing a subset of BA requirements by agreement with Michigan Electric Coordinated Systems (MECS). One of the proposed Midwest ISO LBA, Montana Dakota Utilities (MDU), is not registered or operating as a BA. Because the 23 Midwest ISO LBAs are already recognized as a BA, registered as a BA, and will continue to perform a subset of the BA requirements, it was determined by the certification team that a further review and subsequent site visit of those BA entities was not required.

Since MDU has not been registered and operating as a BA, the team is evaluating and reviewing its capabilities. MDU will be performing a subset of BA requirements, as delineated in the BA Certification Matrix and perform the requirements assigned to the Midwest ISO LBAs. MDU provided the certification team evidence of their readiness to perform the requirements of the Midwest ISO LBA as assigned in the JRO Application and Requirements Matrix (documentation review only). A working group from the certification team will make a site visit to MDU (scheduled for April 8, 2008) to verify that MDU has the physical equipment in place to perform the assigned BA requirements as outlined in the JRO Application and Requirements Matrix and identified in the "Needed for Operation" section of this report.

Since CONS and DECO are being designated Midwest ISO LBAs under the Midwest ISO BA certification and are not currently registered as BAs, the certification team performed an additional review of their status. CONS and DECO were previously reviewed, evaluated, audited, and certified under the MECS BA certification with their site visits conducted in 2005. The certification team determined that since CONS and DECO will be performing functions and will be accountable for a subset of the requirements as they perform today, under the MECS BA, and as assigned and outlined in the Midwest ISO JRO Application and Requirements Matrix, that no further information or action was required by either of these two entities for purposes of the Midwest ISO BA certification.

The 26 Midwest ISO LBAs are depicted in the following table:

	Balancing Authority Name	Balancing Authority Acronym
1	Alliant Energy - CA - ALTE	ALTE
2	Alliant Energy - CA - ALTW	ALTW
3	Ameren Illinois	AMIL
4	Ameren Missouri	AMMO
5	Cinergy Corporation	CIN
6	City Water Light & Power	CWLP
7	Columbia Water & Light	CWLD
8	Consumers Energy Company	CONS
9	Detroit Edison Company	DECO
10	First Energy Corp.	FE
11	Great River Energy	GRE
12	Hoosier Energy	HE
13	Indianapolis Power & Light Company	IPL
14	Madison Gas and Electric Company	MGE
15	Michigan Electric Coordinated System	MECS
16	Minnesota Power, Inc.	MP
17	Montana-Dakota Utilities Co.	MDU
18	Northern Indiana Public Service Company	NIPS
19	Northern States Power Company	NSP
20	Otter Tail Power Company	OTP
21	Southern Indiana Gas & Electric Co.	SIGE
22	Southern Illinois Power Cooperative	SIPC
23	Southern Minnesota Municipal Power Agency	SMP
24	Upper Peninsula Power Co.	UPPC
25	Wisconsin Energy Corporation	WEC
26	Wisconsin Public Service Corporation	WPS

Overall Conclusion

The Midwest ISO BA certification team has concluded that the Midwest Independent System Operator (Midwest ISO) does have the tools, processes, and procedures in place to be NERC certified as a BA. Therefore, the Midwest ISO BA certification team recommends to the Regional Entities that they approve certification of the Midwest ISO to operate as a BA for the Midwest ISO Area. The Midwest ISO BA operation is currently slated to begin on June 1, 2008.

Needed for Operation

While the team recommends to the regions that Midwest ISO be granted certification, the following items shall be completed prior to Midwest ISO going operational:

- A sub-team of the certification team will complete a MDU site visit (scheduled for April 8, 2008). As a part of that site visit, but not limited to, the team will do the following:
 - Verify that all of the MDU and WAPA boundary metering points are installed
 - Verify that these metered points are agreed to and being sent to Midwest ISO and WAPA under the scan rate designated by Midwest ISO and WAPA
 - Interview the MDU operators to verify the readiness of the MDU operators and ensure that they have received training to perform the requirements as assigned in the JRO Requirements Matrix

Site Visit Open Items

During the certification process outlined in Attachment 2, there were several items that were discussed and outlined as required items. These items were discussed, noted and captured as part of the certification team's assessment and were listed in the presentations used by the certification team during the exit de-briefing sessions with Midwest ISO. They are provided as information and a list of the items that required further clarification during the certification team's site visits. All items that required further clarification have since been resolved to the satisfaction of the certification team through documentation revisions, modifications and or additions, less those items identified in the "Needed for Operation" section above. Each exit de-brief presentation is included as a part of the final report packet and is available for review at the ReliabilityFirst offices once proper clearance has been obtained (see file titled, "MISO De-brief December 6-2007.ppt and MISO Certification Team Exit 020708 R1.ppt").

Positive Observations

Several items were noted as positive observations during the certification process. These observations are included as an indication of the level of readiness of Midwest ISO to perform the BA function, which was demonstrated to the certification team throughout the certification process.

- Midwest ISO management and staff were very well prepared, acted professionally and addressed each issue that was raised in a clear and concise manner.
- Midwest ISO documentation (procedures, protocols and operating memos) was clearly written and addressed each BA requirement.
- Midwest ISO documentation was prepared and organized for the certification team in a fashion that was easy to use and reference, as validation and verification that the BA requirements were completed.
- Midwest ISO BA applications and tools were reviewed through demonstrations led by the Midwest ISO BA operators, which also provided the certification team with evidence of the training and expertise of the BA operators. It served as supporting evidence of their readiness of tools, ability and training that was provided to the BA operators.
- The Midwest ISO operating center and the Midwest ISO backup operating center were well organized, secure facilities with appropriate attention to managing the background environment for maximum awareness by the operations staff.
- The operators interviewed by the review team were highly qualified with a high level of relevant experience. They are clearly well trained in the usage of their technology tools, well before Midwest ISO is expected to begin operation as a BA.

Operator Preparedness

The certification team also interviewed a number of the Midwest ISO BA operators that will be responsible for performing the tasks of a BA in the Midwest ISO control room. The certification team interviewed each operator on the day to day and emergency tasks a BA could potentially face. It was noted that many of the BA operators had previous experience as a NERC certified operator prior to joining Midwest ISO. All positions in the Midwest ISO control room requiring NERC certified operators are staffed with NERC certified operators. The Midwest ISO also provided the certification team several demonstrations of their BA applications to further depict their operator readiness; these demonstrations are summarized in Attachment 2 under the Application Review section of this report. To further ensure a smooth and reliable transition, the Midwest ISO and its membership have opted to perform a series of operational tests. A description of these tests is provided in Attachment 2 under the Operational Tests section of Attachment 2.

Specific Findings

The certification team also gathered some specific details associated with Midwest ISO. The Midwest Independent Transmission System Operator, Inc. (Midwest ISO) is a non-profit, member-based organization committed to being the leader in electricity markets by providing their customers with valued service, reliable, cost effective systems and operations, dependable and transparent prices, open access to markets, and planning for long-term efficiency.

Generation capacity of the Midwest ISO exceeds 127,000 MW within their market area and 156,000 MW within the entire Midwest ISO reliability area. Midwest ISO has a peak load (set July 31, 2006) of 109,157 MW within their market area and an overall peak load of 129,647 MW across the entire area. The MISO has approximately 93,600 miles of transmission facilities at voltage levels of 500kV, 345kV, 230kV, 161kV, 138kV, 120kV, 115kV and 69kV. Geographically, the Midwest ISO regional area covers an area of 15 states and one Canadian province, which in all covers about 920,000 square miles.

The Midwest ISO built and continuously refines its extensive network computer model of the Midwest ISO interconnected reliability region and surrounding systems. Their Network Model (as of June 1, 2007) has 35,718 network buses, 243,467 SCADA data points, 5,189 generating units, and 27,895 loads. Included in their toolset for operation are a State Estimator that utilizes over 242,000 real-time measurements and Real Time Contingency Analysis that solves over 7,000 “what-if” contingencies on average in less than five minutes.

The Midwest ISO will calculate the area control error (ACE), which used to be done by 26 individual Balancing Authorities (BA). As such, the Midwest ISO BA area will interconnect or tie at more than 600 metering points. Some of these interconnections will be with companies of the Independent Electricity System Operator of Ontario, the Mid-Continent Area Power Pool, PJM, Southwest Power Pool and the Tennessee Valley Authority. The Midwest ISO has seams agreements or memorandums of understanding with each of these organizations to facilitate operations.

The Midwest ISO has two primary control centers which are located in Carmel, Indiana and St. Paul, Minnesota. All required support staff (administrative and IT) are located within the same buildings at each location. The Midwest ISO control system consists of an AREVA (formerly Alstom/ESCA) standard control system. The operation center contains numerous AREVA work stations with multiple head monitor screens (three workstations with five monitors per operator) at each operator’s workstation. Midwest ISO also has a video wall that can be accessed from any of the AREVA work stations to display control information. The video wall in the primary control room is 150 feet wide by 10 feet tall. The board is used to display a large dynamic transmission overview showing all 230 kV transmissions and above in Midwest ISO and surrounding areas. It includes the line MW and MVAR flows, lines out of service indication, high voltage and low voltage alerts. Also displayed on the video wall are a delta flow and delta generation displays, a flowgate monitoring tool, a frequency and frequency trends display, the ACE, ACE trends display, the ACE vs. BAAL, load, load trends, load forecast, net scheduled interchange, actual interchange, reserves, weather, and news.

Midwest ISO is staffed with NERC certified operators. Normal staffing consists of 16 operators per shift (12 hour shifts) and one shift manager. Staffing is adjusted as required during weather events and peak seasons.

Dual redundancy is provided in data communications, which uses frame relay connections provided by two separate nationwide communication providers. There are primary and secondary data communication paths from each LBA to the Midwest ISO for BA data. The data is also mirrored to their back-up site which is located in Indianapolis, IN remote from their primary site.

Midwest ISO's primary operator communication system is the AT&T and or Time Warner Telecom system. Telephone circuits can be "hard line" redirected or forwarded. Operators also have the option of accessing an ICP IQMX Turret Phones, replicating all of the stored numbers and features of their office phones in a disaster recovery environment. Cell phones are kept charged at all times, with all pertinent phone numbers loaded. Additional communications capability includes ICP IQMX Turret Phones at each operator position in the primary and backup operation center sites, and also in the St. Paul control room. In addition, Nortel phones, cell phones, voice over IP phones, and analog phones are available as backups. There is also a satellite phone at each site along with fax machines and email communications.

General Findings

Midwest ISO and all of the Midwest ISO LBA entities began the process to become a BA back in September 7, 2006 by approaching the various internal Midwest ISO and NERC committees with their proposed business model. Midwest ISO staff worked through the various internal groups and NERC groups, and obtained approval of the business model that the certification team reviewed.

Midwest ISO also worked internally with their membership, a total of 26 members, to sort out the most reliable, yet efficient, division of the responsibilities associated with the requirements assigned within the NERC Standards that are applicable to the BA function. Midwest ISO and its members elected to form a Joint Registration Organizations (JRO) and co-register for the BA requirements. As a member of the JRO, each member will be held accountable for the requirements that they mutually agreed to be assigned. The list of the Midwest ISO LBA's corporate names who have signed onto the JRO is provided below.

- Alliant Energy Corporate Services, Inc., on behalf of Wisconsin Power & Light Company and Interstate Power and Light Company
- Ameren Services Company, as agent for Union Electric Company d/b/a AmerenUE, Central Illinois Public Service Company d/b/a AmerenCIPS, Central Illinois Light Co. d/b/a AmerenCilco, and Illinois Power d/b/a AmerenIP
- City of Columbia Water & Light
- City Water, Light & Power (Springfield, IL)
- Consumers Energy Company
- The Detroit Edison Company
- Duke Energy Shared Services, Inc. on behalf of Duke Energy Indiana, Inc., Duke Energy Kentucky, Inc., and Duke Energy Ohio, Inc.
- FirstEnergy Service Company On behalf of American Transmission Systems Incorporated

- Great River Energy
- Hoosier Energy REC, Inc.
- Indianapolis Power & Light Company
- Integrys Energy Group on behalf of Wisconsin Public Service Corporation and Upper Peninsula Power Company
- International Transmission Company/Michigan Electric Transmission Company, LLC on behalf of Michigan Electric Coordinated Systems (MECS)
- Madison Gas & Electric Co.
- Minnesota Power
- Montana-Dakota Utilities Co.
- Northern Indiana Public Service Co.
- Otter Tail Corporation d/b/a Otter Tail Power Company
- Southern Illinois Power Cooperative, Inc.
- Southern Indiana Gas and Electric Company (d/b/a Vectren Energy Delivery of Indiana)
- Southern Minnesota Municipal Power Agency MN
- Wisconsin Electric Power Company
- Xcel Energy Services Inc on Behalf of Northern States Power Company, a Minnesota corporation, and Northern States Power Company, a Wisconsin corporation

The certification team found the Midwest ISO documentation to be in good order and well written. The documents were easy to read; they were clear, concise and should be readily understood by the Midwest ISO support staff and BA operators. Midwest ISO indicated that their operators have provided feedback and input in the maintenance, review and up keep of their documentation. Specific standard and requirement notation was included in several places throughout the Midwest ISO documentation.

The Midwest ISO is a reliability coordinator and has staff on site to perform that role. The Midwest ISO recently completed a compliance audit and no possible violations were uncovered.

Midwest ISO operators displayed that they are capable of performing the BA function through their demonstration of the operator toolset during the team's second site visit. Midwest ISO displays included: BAAL, CPS1 and CPS2, DCS status, ACE value, L₁₀, MW schedules into the BA, tie-line readings for the tie-lines, AGC status for the units, frequency, time-error status and one-line diagrams.

Primary notification of time error corrections will come from the Midwest ISO RC, which is the time keeper for the Eastern Interconnection.

Midwest ISO has been the tag authority for all of its members through NERC waivers and will continue to perform that role as their BA.

Documentation List

Copies of all of the supporting Midwest ISO documents were collected as evidence of Midwest ISO preparedness and will be kept as a record of evidence to support the certification team's recommendation and will be retained at the Reliability*First* offices in Fairlawn, Ohio for a period of three years.

The list below is a summary of some of the material collected during this certification process. None of the documents listed below are included with the distribution of this final report. Per the NERC Rules of Procedure and due to the confidential nature of this material, these documents are available for review at the Reliability*First* offices after proper authorization is obtained through the Regional Entity and NERC.

- The completed **Midwest ISO BA questionnaire**. The Questionnaire is hereby incorporated into this report by reference. A blank questionnaire is included with the information distributed with this report (see file titled, "NERC Cert – BA Application Questionnaire - Attachment 1.doc").
- The completed **neighboring BA questionnaires**. These Questionnaires are hereby incorporated into this report by reference. A blank questionnaire is included with the information distributed with this report (see file titled, "Neighboring BA - CA Certification Proc- Attachment 2.doc").
- Responses from the **neighboring RC Questionnaires**. These Questionnaires are hereby incorporated into this report by reference. A blank questionnaire is included with the information distributed with this report (see file titled, "Neighboring RC - BA CA Certification Proc- Attachment 3.doc").
- A **tracking spreadsheet** used for Midwest ISO, DECO, CONS and MDU to track the certification team document review where the evidence provided towards compliance to the applicable BA standards and requirements was logged (see file titled, "Attachment 3 – Master MISO BA Certification Matrix - 022808.xls, Michigan LBA Matrix 021508 with DECO comments.xls, MDU- NERC Joint Registration Matrix V1 1021908.xls, MDU Open Issues-022708.ppt & MDU Questionnaire-022708.ppt").
- A completed **BA application**, where Midwest ISO and its membership have agreed on a co-registrant JRO Application (see file titled, "MISO BA Certification Application-Final 02.27.08.doc").

- A copy of the **Midwest ISO BA Certification Requirements Matrix** that outlines accountability for each the BA requirements, requirement by requirement (see file titled, “Midwest ISO BA and LBAs NERC Joint Registration Matrix V3 021508.xls and Midwest ISO BA and LBAs NERC Joint Registration Matrix V3 021508-NERC Format.xls”).
- A copy of the Agreement (**excerpts from the Midwest ISO tariff**) between Midwest ISO and its membership that legally binds its members and Midwest ISO to the BA requirements (see file titled, “Amended BA Agreement v 02-27-08 clean.doc”).
- A copy of the **Operating Protocols** document that outlines responsibilities of the membership and Midwest ISO for the BA requirements (see file titled, “BA Agreement Operating Protocols V6 clean 02-27-08.doc”).
- A copy of the **Check List for Applications and Demonstration** worksheet that links the applications to the tools demonstrated. A copy of this worksheet is included with the information distributed with this report (see file titled, “Checklist for Applications and Displays Demonstration - 022608.xls and Application Demonstration Checklist.xls”).
- Copies of numerous Midwest ISO and LBA **operating procedures** demonstrating compliance to NERC standards and requirements. The above discussion is presented under private letter to the evaluated organization only and will not be included within the public version of the report.
- Copies of the **Midwest ISO Specification Documents** that outline the requirements to be a Midwest ISO LBA (e.g. ICCP protocol documents etc.) The above discussion is presented under private letter to the evaluated organization only and will not be included within the public version of the report.
- Table 1 titled, “**Table1 - BA Standards and Requirements as of 03-06-08**” was used to capture all the BA standards and their applicable requirements. Each requirement associated with BA operation was addressed. Procedure or process under the documentation review or practical application and demonstration during the application review were used to demonstrate to the certification team that the Midwest ISO was prepared to perform the requirements of a BA.

CIP Requirements and documentation were provided in the form of a self certification and document review. Midwest ISO and MDU provided the team a presentation and documents as evidence of their compliance to CIP-001. Midwest ISO and MDU provided a status update on their progress being made towards compliance to CIP-002 through CIP-009. Because of this review, the certification team has determined that there are no open CIP items or deficiencies that would hinder Midwest ISO or its LBAs from operating reliably as a BA. These documents however are not for public viewing; the above discussion is presented under private letter to the evaluated organization only, and will not be included within the public version of the report. Hard copies of these confidential updates will be retained at the ReliabilityFirst offices in Fairlawn, Ohio for a period of three years.

Evaluation of the BA Standards

Table 1 referenced in the Documentation List section of this report above, is the BA standards and requirements that the certification team reviewed as a part of the assessment process. This table is the current version of the standards and is subject to change. Midwest ISO provided examples and demonstrations of the tools, processes, procedures, and/or training for each of these requirements as evidence of their readiness to begin operation as a BA. Compliance to the CIP standards was provided in the form of a self certification and document review. Midwest ISO and MDU provided the team a presentation and documents of their CIP-001 compliance and a progress report for on going work toward compliance with CIP-002 through CIP-009, this information is contained in the confidential section of this report and will not be provided in the public rendition.

Attachment 1

The BA Certification Team

- Jim Hughes – NERC
 - Ted Franks – FERC
 - Richard Sobonya - FERC
 - Jim Burley – MRO
 - Paul Kure – RFC
 - Bob Goss – SERC
 - Dave Acton – ALT
 - Alicia Daugherty – PJM *
 - Tom Bowe - PJM
 - Larry Akens - TVA
 - Lloyd Linke – WAPA
 - Ben Deutsch - SERC
 - Jim Case - Entergy
 - Jim Uhrin – RFC - Lead
 - David Zwergel – Midwest ISO, ex officio
 - Peg Abbadini – Midwest ISO, ex officio
- * No longer an active member

The Midwest ISO and Membership Staff Personnel that Participated in the On-site Visits

- Roger Harszy – Midwest ISO
- David Zwergel - Midwest ISO
- Peg Abbadini – Midwest ISO
- Tom Jones – Midwest ISO
- Marc Keyser – Midwest ISO
- Mike Walsh – Midwest ISO
- Mike McMullen – Midwest ISO
- Terry Volkmann – Midwest ISO
- Steve Swan – Midwest ISO
- Terry Bilke – Midwest ISO
- Will Nichols – Midwest ISO
- Kevin Sherd – Midwest ISO
- Nick Browning – Midwest ISO
- Joe Gardener – Midwest ISO
- Jason Marshall - Midwest ISO
- David Espling – Midwest ISO
- Deb Lang – Midwest ISO
- Marcel Martin – Midwest ISO
- Ron Goins – Midwest ISO
- Ronald Arness – Midwest ISO
- Dede Subaki – Midwest ISO
- Joe Reddoch – Midwest ISO
- Rob Benbow – Midwest ISO
- Bob Taylor – Midwest ISO
- Steve Spesard – Midwest ISO
- Mike Anderson – Midwest ISO
- Tom Hofstetter – Midwest ISO
- Dave Francis – Midwest ISO
- Keith Mitchell – Midwest ISO
- Kyle Hart – Midwest ISO
- Kim Van Brimer – Midwest ISO
- Reid Parker – Midwest ISO
- Hernan Rodriguez – Midwest ISO
- Gretchen Frost – Midwest ISO
- Tabitha Hibbard-Hernandez – Midwest ISO
- Phil McGrath – Midwest ISO
- Dan Munson – Midwest ISO
- Todd Seanor – Midwest ISO
- Allen Phelps – Midwest ISO
- Bill Johnson – Midwest ISO
- John Williams – Midwest ISO
- Adam Van Bibber – Midwest ISO
- Matt Tackett – Midwest ISO
- Brian Carlson – Midwest ISO
- Kevin Larson – Midwest ISO
- Bryce Leppek – Midwest ISO
- Marc Keyser – Midwest ISO
- Doug Taylor - Midwest ISO
- Gary Markwart – MDU
- Mark Johnson – MDU
- Jeff DePriest – DTE

- Dan Herring – DTE
- Jerry Farringer – CONS
- Dean Fox – CONS
- Mike Moltane - MECS

- Dan Schmidt – DSA
- Alex Lago – ASM Consultant
- Alan Adams – ASM Consultant
- Doug Hils – Duke

Attachment 2

Certification Process Steps

Documentation Review

Due to the size and scope of the BA certification of the Midwest ISO, the certification team conducted two separate site visits in order to evaluate the capabilities of the Midwest ISO staff to perform the BA functions. The visits were made on December 4-6, 2007 and February 5-7, 2008 at the Midwest ISO offices in Carmel, Indiana.

The December 4-6, 2007 visit focused on documentation. The certification team reviewed Midwest ISO procedures, protocols and agreements to ensure that all of the applicable standards and their associated requirements were identified. The team also verified that all of the appropriate documentation to the requirements was in place to ensure that Midwest ISO has the tools, processes, procedures, and training to operate as a NERC BA. The team also reviewed agreements to ensure that each and every requirement associated with those that a BA is required to perform was accounted for, and that either Midwest ISO or one of its members (i.e. Midwest ISO LBAs), is accountable so that all the tasks and requirements needed to perform the BA function were met.

Specific findings associated with the document review and evaluation is detailed below. The certification team used a spreadsheet to catalog the documentation evidence provided by Midwest ISO. The spreadsheet contains all the applicable standards and associated requirements for an entity to be evaluated as a NERC Certified BA along with a document reference(s) where evidence was provided by Midwest ISO that met the requirements of all the applicable standards. The Joint Registration Organization (JRO) Application, the Joint Registration Matrix and the Midwest ISO Operations Protocol Document form a set of documents which specify entity accountability for each BA standard and requirement.

Applications Review

The February 5-7, 2008 visit focused on documentation follow up items, and review and evaluation of the BA applications and operator toolset that Midwest ISO will have available for their operators. The certification team reviewed Midwest ISO online applications that will be used to perform the requirements assigned to the BA. Midwest ISO developed a series of EMS demonstrations (list provided below) that were led by the BA operators. These demonstrations provided the certification team with an understanding of Midwest ISO applications, as well as demonstrate the operator readiness to assume the duties of the BA Operator. The following is a list of those demonstrations provided by Midwest ISO.

- Demo # 1: Manage ACE-Normal Operation
- Demo # 2: Tie Line Management

- Demo # 3: Physical Scheduling System (PSS)
- Demo # 4: Inadvertent Tracking and Manage Inadvertent
- Demo # 5: Monitoring Reserves
- Demo # 6: Responding to a Generation Contingency
- Demo # 7: Congestion Management
- Demo # 8: Summary Displays

Each demonstration provided the certification team with an overview of the Midwest ISO applications that are available to the Midwest ISO BA Operators.

Operational Testing

In preparation for the start of the Ancillary Services Market (ASM) across its current Energy Market footprint, the Midwest ISO has been conducting a series of operational tests with its stakeholders to simulate the Midwest ISO BA operations. Operational testing is primarily focused with testing two new reliability capabilities: Automatic Generation Control (AGC) and Contingency Reserve Deployment (CRD).

Throughout each test, the Midwest ISO is in constant communication with all market participants involved and the test is monitored closely. Each of the Midwest ISO operating regions (3) have a designated conference line set up that is hosted by the Midwest ISO along with a conference call for all neighboring Balancing Authorities (BAs) and reliability coordinators (RCs). The purpose of this call is to communicate reliability functions. The call is initiated at least 30 minutes prior to the start of the operational test and lasts for the duration of the test.

As of March 5, 2008, the Midwest ISO has successfully conducted three operational tests. During these tests, the Midwest ISO has properly calculated area control error (ACE), operated AGC, sent out dispatch instructions, and deployed regulation. The first test was 15 minutes in duration and has since increased to 30 minutes. Midwest ISO has also successfully demonstrated that market participants can cut-over to the ancillary services market (ASM) environment and follow combined energy and regulation dispatch instructions.

Going forward, there are plans to conduct weekly operational tests until BA and the ASM market begins, currently slated for June 1, 2008. The objectives of these tests will vary in duration and functionality. Over the next several weeks, the scope of the operational tests will include (a) A load drop off across the day; (b) An evening load pickup period; (c) The Midwest ISO AGC Demand Response Resources; and (d) A Morning Load pickup AGC period. To further enhance the reliability of these tests, Midwest ISO holds weekly conference calls with participants to discuss prior week's results and review the details of future tests.