

Allete, Inc. Bison 3 Wind Project
Construct 105 MW, 35 wind turbines in Oliver and
Morton Counties, ND

Construction Inspection - October 23, 2012

Case No. PU-11-162

Prepared for:

State Of North Dakota



NORTH DAKOTA PUBLIC SERVICE COMMISSION

PUBLIC UTILITIES DIVISION

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Executive Summary

The State of North Dakota, acting through its North Dakota Public Service Commission, Division of the Public Utilities, has acquired Keitu Engineers & Consultants, Inc. to perform consulting services to perform construction inspections applying engineering and science principles for the purpose of ensuring that energy conversion and transmission facilities authorized by the NDPSC are constructed in compliance with the siting laws (N.D.C.C 49-22) and rules (N. D. Administrative Code Article 69-09) and applicable Commission orders for Case No. PU-11-162. Prior to the inspection, Keitu review construction standards and issues, the case file, and then developed a PSC field construction inspection report to be completed for the construction inspection at Allele, Inc.'s Bison 3 Wind Project in Oliver and Morton Counties.

On September 23th, 2012, Keitu Engineers and Consultants conducted the construction field inspection on site. The PSC field construction inspection report was used to conduct the inspection. Due to the construction inspection, two concerns were found that require additional PSC review to assure compliance of Orders.

First, the nacelle, hubs, power units, and misc. materials were constructed in Denmark. In Section 6.2.3 Tower in the first paragraph (Page 6-2) of the Application for Certificate of Site Compatibility (Docket #8) it stated that all welds are made in automatically controlled power-welding machines and are ultrasonically inspected during manufacturing per American National Standards Institute (ANSI) specifications. Welds on the towers were ultrasonically tested during production according to Allele. The towers sections were manufactured in West Fargo, ND and ANSI specifications were followed. However, some of Siemens' tower parts were fabricated in Europe and to European norms. The technique used was according to EN1714 and the acceptance criterion was according to EN1712 standards for European parts. Allele should have the manufacturer of the wind turbine or a Registered Professional Engineer summarize the European weld inspection standards (EN1714 and EN1712) versus the American National Standards Institute specification to assure that the European standards meets or exceed ANSI standards pertaining to welding wind towers. This additional information should be submitted to the Commission to verify welds were properly inspected during manufacturing.

Second, Allele stated that no turbine locations were moved or relocated after construction started. No record was found in the case file of any turbines being relocated. During the construction inspection, seven as-builts locations were checked to verify turbines were not relocated. It was determined that the as-built locations for turbines 314, 319, 320 and 321 were not constructed in their proposed locations according to the turbine table coordinates of proposed locations on Drawing C-04 (Docket #47). Allele mentioned concerns with turbines 314, 319, and 321 during the inspection. Therefore, some turbine

locations were constructed in different location compared to the turbine table design drawing coordinates issued for construction. This will also affect the UG conductor/fiber route to these turbines. Appendix A graphic shows PSC application locations versus field check locations.

Coordinates from the final as built drawings should be compared to the turbine table coordinates in the drawing issued for construction to identify changes. The Post Construction inspection should verify more turbine location coordinates with a field check. The Commission may want to discuss this issue directly with Allete, Inc. as location discrepancies were found during the construction inspection.

The inspection looked at lay down locations, tower locations and design, access roads, transformers, the electrical collection system, and one meteorological tower. Also reviewed was the new bay within the 230 kV Bison Substation for Bison 3, a maintenance building, SCADA system, installation of wires in ditch, cover over wires, clearance between wires and fiber, backfilling, above ground components, major crossings, construction records, and PSC orders. Allete, Inc. conducted many best construction practices during construction. Allete personnel were very cooperative and helpful during the inspection.

Introduction

Enclosed are the field inspection notes from the construction inspection of September 23th, 2012 by Keitu Engineers and Consultants, Inc. Timothy F. Spilman of Keitu conducted the inspection and authored the field inspection report. Pictures are also part of the inspection and are enclosed as a supplement.

ND PSC Field Construction Inspection Report

Wind Project

Allete, Inc (Minnesota Power) Bison 3 Wind Project PU-11-162
105 MW 35 wind turbines in Oliver and Morton County, ND

Observers: Timothy Spilman, Project Manager, Keitu

Date of Field visit: October 23, 2012

Temperature and weather: Rain 46° F

Civil Contractor: Roads, foundations, collector system, SCADA, fiber: Michel's Wind Energy

Geotechnical Contractor: Braun Engineering

Tower Supplier and Erection Contractor: Siemens

Crane & Rigging subcontractor: Barnhart

Substation Design Contractor: Black & Veatch

Substation construction Contractor: Hooper

Substation foundation Contractor: Viet

Engineering Drawings: Barr Engineering

Land Agent: ARR

Survey, staking and GPS contractor: Ulteig

Restoration Contractor: Michel's Wind Energy

System Commissioning and testing Crew: Siemens

Minnesota Power (Allete, Inc. employees) involved during inspection:

Matthew Freudenrich, Construction Manager/Civil Engineer PE, Minnesota Power

Daniel P. McCourtney, Environmental Compliance Specialist II, Allete

Project construction start date: October 17, 2012 notified Commission on October 12, 2012 at preconstruction meeting.

Preconstruction meeting: October 12, 2011

Turbine erection completion date: October 20, 2012

The purpose of the field inspection report is to verify that construction is followed according to the PSC siting application and Orders issued by the PSC.

Has the siting applicant provided a tree count to the Commission prior to start of construction? Trees and Shrubs were counted prior to construction activity and were provided in the Bison 3 Natural Resources Report. Concern satisfied.

Was all equipment washed down before bringing it to the construction site to prevent outside weeds from being brought into the project area? Michel's Wind Energy of Brownsville, WI washes all equipment when it comes off a site and is inspected prior to it leaving its storage location. Minnesota

Power (MP) inspected all equipment prior to beginning construction activities to control the spread of noxious weeds. Concern satisfied.

Site Development

A. Turbine and Site Location

Is Bison 3 Wind Energy Project within the project boundary of?

Morton County

T140N R85W Sections 5 &6 and

T140N R 86W Sections 2,3,4,5,7,8,9,10,11,15,16,17,18,19, 20, 30 and

T140N R 87W Sections 2,3,4,5,9,10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 27 and

Oliver County

T141N R 85W Sections 29, 30, 31, 32, 33, 34 and

T141N R 86W Sections 25, 26, 35, 36 and

T141N R 87W Sections 35, 36

Yes. Turbine locations were erected within the project boundaries identified in the application. Concern satisfied.

Were Turbine sites located as on Drawing C-04 Miscellaneous Sections and Details of the proposed construction drawings for Bison 3 Wind Project on October 4, 2011 Docket # 47? Allete identified during the construction inspection that wind turbines 314, 319, and 321 as identified on Drawing C-04 have incorrect coordinates on the Rev.0 DWG provided to the PSC in the case file. Drawing C-04 coordinates (Docket #47) which was signed off on by a registered engineer in North Dakota are:

Turbine 314: N 468731.425555 E 1691950.476367

Turbine 319: N 472405.227254 E 1678663.043800

Turbine 321: N 472195.095733 E 1678612.995954

Coordinate System SPCS ND South NAD83 (US Feet)

Allete personal stated during construction that the coordinates on Drawing C-04 were incorrect but the proposed aerial photos sent in the exhibits are the exact location. Allete provided PSC inspector an email from Barr Engineering to Allete dated 10/10/2012. The following is the email that discusses the incorrect coordinates.

10/10/2012 Email from Barr Engineering to Matt Freudenrich, MP

Matt,

Just to recap our conversation. Turbine 314 coordinates are 470018.9429, 1692287.8483 as you mentioned. I was looking at a file that had historic coordinates and not the actual turbine coordinates. Turbines 319 and 321 have a typo in the easting coordinate. I have made the updates but am unable to

send you the revised sheets because Joel is out of the office and needs to review them and sign the revision. I will be out of the office the rest of the week but will leave it to someone else to get the drawing signed and uploaded to the website.

Regards,

Cristan A. Diaz, PE

Senior Civil Engineer

Minneapolis office: 952.832.2816

cdiaz@barr.com

A Trimble Geo XH was used to verify the as built coordinates of turbines 314, 319, and 321. The field check coordinates are not exact point location of the centerline of the turbine but is a point the inspector was standing against the outside base of the turbine. Using a Trimble Geo XH, the following coordinates were determined:

Turbine 314: N 470011.020219 E 1692281.09981 Keitu Field Check

Turbine 319: N 472411.25271 E 1678609.35436 Keitu Field Check

Turbine 321: N 472196.580798 E 1675563.46095 Keitu Field Check

Coordinate System SPCS ND South NAD83 (US Feet)

The coordinates for turbine 314 given in the Barr engineering email are about 10 feet from the field check coordinates. This is acceptable as the field check coordinates were at the outside base of the turbine.

Comparing proposed from the turbine table (Drawing C-04 Docket #47) to as-builts field check coordinates:

Tower 314 was constructed about 1322 feet southwest of the proposed.

Tower 319 was constructed about 54 feet northeast of the proposed.

Tower 321 was constructed about 3050 feet west of the proposed.

Turbines 314-317 and 319-321 were verified for proper coordinates during the construction inspection. As built field check coordinates matched the pre-construction coordinates for turbines 315-317. However, turbine 320 was determined to be constructed about 995 feet southwest from where it was proposed.

Turbine 320: N 472660.805696 E 1677038.124829 Proposed

Turbine 320: N 472394.493269 E 1676079.6524 Keitu Field Check

Coordinate System SPCS ND South NAD83 (US Feet)

Keitu has provided a drawing of the PSC application locations to the Keitu field check locations for turbines 314-317 and 319-321 in Appendix A. Based on seven field checks of turbine locations, turbine sites were not all located as on Drawing C-04 turbine table of the proposed construction drawings for Bison 3 Wind Project on October 4, 2011 Docket # 47.

Were any turbine location moved or relocated after construction started? Allete stated that no turbine locations were moved or relocated after construction started. No record was found in the case file of any turbines relocated. During the construction inspection, seven as built locations were checked to verify turbines were not relocated. It was determined that the as-built locations for turbines 314, 319, 320 and 321 were not constructed in their proposed locations according to the turbine table of proposed location on Drawing C-04 (Docket #47). Allete stated that the as built locations where the locations of the exhibit drawings sent to the Commission prior to construction and did not match the turbine table.

Keitu used Late-filed Exhibit 5 which was Figure 2 dated 9/21/2011 "The Overview Exclusion and Avoidance Areas Map for the Bison 3 Wind Project" to analyze a drawing compared to coordinates listed on Drawing C-04 (Docket #47). Reviewing the turbine table coordinates with plotted points on late-filed exhibit 5, point 314 is in a different location with the exhibit 5 locations matching approximately the Keitu field check location. As the late-filed exhibits did show some different locations compared to the turbine table, the turbine table was issued after the late-filed exhibits and were the design drawings issued for construction by a registered professional engineer on 9/30/11. Therefore, some turbine locations were constructed in different location compared to the turbine table design drawing coordinates issued for construction.

Coordinates from the final as built drawings should be compared to the turbine table coordinates in the drawing issued for construction to identify changes. The Post Construction inspection should verify more turbine location coordinates with a field check.

If the location was changed, was PSC approval granted before construction at the site started? No record of location changes were found in the case file. Turbines 314, 319, and 321 were identified by Allete during the construction inspection as having location changes but have no PSC approval.

B. Lay down Site Location:

The lay down site is located at: Michel's Wind Energy (contractor) had a lay down area located on a farmer's land that is a cultivated field. Allete stated that the contractor had a lease agreement with the owner. Most of the materials for the turbines were delivered to their exact erection site. A cultural resource investigation was conducted around all turbine sites prior to construction beginning. Concern satisfied.

Was an inspection of the lay down site/sites conducted? A field visit of the Michel's lay down site was visited and verification that it was located on a cultivated field was determined. Concern satisfied.

Were staging areas or equipment located on land owned by a person other than Allete that was not negotiated with landowners? No. Concern satisfied.

The staging area or lay down areas were not in wetlands or immediately adjacent to wetlands to the extent practicable? The contractor's lay down land and lay down areas around each turbine observed during the inspection were not in wetlands or immediately adjacent to wetlands. Concern satisfied.

C. Access Roads

Access Road and turbine site maps were part of Appendix B of Supplemental to the siting application.

Were access roads constructed of a 16 to 23 feet width and have aggregate surfacing, adequate to support the size and weight of maintenance vehicles under all weather conditions? Roads were constructed to a width of 20 feet with 6 feet shoulders of each side of the road. This design width was used so that the roads could be used for crane travel as much as possible. Adequate aggregate surfacing was observed during the construction inspection. The inspection was conducted during a rain day with wet roads present. No major ruts were observed in roads during construction inspection travel. Roads where crane travel had occurred were verified with no ruts in roads. Allete had road graders on site and one was operating the day of the construction visit. Concern satisfied.

Did access roads appear designed with curves and vertical grades to accommodate light and heavy loads required for transport of wind turbine components? Yes. Concern satisfied.

Were temporary improved access road surfaces up to 40 feet wide, and consist of compacted earth or aggregate depending on soil conditions, in order to accommodate cranes with a 33-foot track width on site? Yes. Concern satisfied.

Do access roads follow the typical Construction Access Road section drawings found on drawing no. C-03 of the proposed Construction Drawings issued to the PSC on October 4, 2011 (Docket #47)? Yes. Road widths were constructed to a width of 20 feet as in Drawing C-03. Shoulders were constructed to a width of 6 to 7 feet on each side as identified in the pre construction drawings. Concern satisfied.

Where new access roads intersect existing roads the turning radius must be increased for Crane travel. Are these intersections constructed as in the detail found on drawing no. C-03 and C-04 of the proposed Construction Drawings issued to the PSC on October 4, 2011 (Docket #47)? Yes. All turbine components were successfully delivered to site and crane movement between turbine locations was not restricted. Allete was reducing curves to a 50 feet final radius the day of the construction inspection. This was requested by the County Road Department and agreed to by Allete. Pre construction drawing C-04 (Docket #47) of 11/30/2011 did state that a permanent radii of 70 feet. Since the County requested the approved change, concern satisfied.

Do access roads appear to follow the road specifications identified on drawing no. C-06 of the proposed Construction Drawings issued to the PSC on October 4, 2011 (Docket #47)? Yes. Concern satisfied.

Were access roads designed so as to not impede proper drainage and were built to mitigate soil erosion on or near the access roads? During the construction inspection, all roads observed had proper culverts installed along drainage paths. Proper mitigation for soil erosion was found along roads. Drawing issued for construction had culverts designs as needed. Concern satisfied.

D. Design:

Were proposed construction drawings (Docket #47) issued prior to start of construction? Yes. Drawings were issued on October 4, 2011 to the ND PSC. Construction started on October 17, 2012. Concern satisfied.

Were the proposed construction drawings signed off on by a professional engineer (PE) in the state of North Dakota? Yes. All Civil siting drawings were signed and stamped by a PE in North Dakota. The proposed collector system drawings were signed off and stamped by an Electrical PE in North Dakota. Concern satisfied.

Are Siemens 3.0-MW turbine model SWT-3.0-101 used? Yes. Verified a turbine has a 3 MW permanent magnet generator, rotor-blade pitch regulation, a full-span aerodynamic braking system with hydraulic activation, and electromechanically driven yaw system. Concern satisfied.

Are 35 turbines used for this project? Yes. Concern satisfied.

Are the wind turbine design features as shown in Exhibit 12 of the application? Yes. Verified rotor consists of three blades mounted to a rotor hub. Hub attached to the nacelle within the house of the generator. Rotor diameter is 101 meters Blade Height at highest point 129 meters and lowest point 31 meters. The turbine hub has a height 80 meters. Concern satisfied.

Is Supervisory Control and Data Acquisition (SCADA) communication technology used to control and monitor the wind farm? Yes. The wind farm is controlled by a Siemens SCADA system and software. System hardware is in a separate room of the maintenance building with software to operate the wind farm from a computer terminal. Bison I, II, and III are operated by this system. The wind farm electrical system for Bison III is being constructed with switches such that one turbine can be shut down at a time. Concern satisfied.

Is there a computerized data network to provide information for each turbine? Yes. System hardware is a separate room in the maintenance building with software to operate the wind farm from a computer terminal. Bison I, II, and III are operated from this system. Concern satisfied.

Were Morton County Wind Turbine Performance Standards and Setbacks Rules followed: Yes.

- a) Occupied Residence: Distance of 1.25 x total height of the turbine or 1,320 feet, whichever is Greater.
 $1.25 \times (129\text{m} \times 3.28 \text{ ft/m}) = 529 \text{ feet}$, 1,320 feet is greater
Allete is maintaining a distance of 1400 feet as asked by the ND PSC. 36 residences are within 1 mile of the project. Standard met.
- b) Wind Energy Facility Perimeter: 1 to 1.5 times the rotor diameter of the wind turbine.
 $(101\text{m} \times 3.28 \text{ ft/m}) \times 1$ to $(101\text{m} \times 3.28 \text{ ft/m}) \times 1.5 = 331.28 \text{ feet}$ to 496.92 feet.
Allete is maintaining a distance of 400 feet. PSC would like 400 feet. Standard met.
- c) Road ROW- 250 feet from the centerline of the existing road ROW.
- d) Transmission Line - 250 feet from the centerline of the existing road ROW.
- e) Minimum Ground Clearance – 75 feet from blade tip, at its lowest point, to the ground.
 $31\text{m} \times 3.28 \text{ ft/m} = 101.68 \text{ feet}$ – Standard met.

ND Public Service Commission and Oliver County has no set standards and setbacks. Allete and the Commission agreed to a 1,400 feet setback. This standard exceeds the Morton County setback and was observed to be followed. Concern satisfied.

Tower Assembly and Machine Erection

What are the tower section lengths? The base section is a length is 54 feet, mid section is 89 feet in length, and the top section is 118 feet. Concern satisfied.

What are the turbine blade lengths? The turbine blade lengths are 161 feet. Concern satisfied.

How was tower and turbine materials transported? The Nacelle, hubs, power units, and misc. materials were shipped on an ocean going vessel from Denmark into Duluth, MN. They were then trucked from Duluth to the job site. Tower sections were transported from West Fargo, ND to the job site by truck. Blades were transported from Fort Madison, IA to the job site by truck. Semi tractor and trailers were used with trucks for transportation. Concern satisfied.

How were materials transported to the site? Using semi tractors and trailers. Concern satisfied.

How was turbine materials unloaded at the site? Crane or self offloading trailers (Schnabel). Concern satisfied.

Type of crane used for erection: Two major crane types were used for erection. They were:

1. Manitowac 16000- had two on site. They are the biggest cranes with a 440 ton capacity which were used to erect the middle section, top section, nacelle, and rotor.
2. Manitowac 999- used to offload materials and set the base of each turbine. This crane is a 275 ton capacity crane.

Other support cranes (Linkbelt Hc278, Grove 6250, Grove 890, and Linkbelt 80100 were also used at times. Concern satisfied.

Is the turbine site crane pad detail and temporary crane path followed from Drawing C-03 of the proposed Construction Drawings issued to the PSC on October 4, 2011 (Docket #47)? Various locations within the wind farm were visited during construction. The turbine site crane pad detail and temporary crane paths appeared to be followed. Restoration of crane paths was completed. Concern satisfied.

Was the crane within the corridor of the Class III Cultural Resource Inventory? Yes. Five acre areas around the turbine structures were inventoried. Crane path was marked on proposed construction drawings. The Class III Cultural Resource inventory report identified collector lines, access roads, and temporary crane paths were inventoried at a 250 foot corridor. Concern satisfied.

Does a Tower consist of three or four sections manufactured from certified steel plates? Three sections- a base, middle, and a top. Concern satisfied.

Are tower sections welds in field made by an automatically controlled power-welding machine? No. The tower sections had bolted connections between sections. Concern satisfied.

Are welds ultrasonically inspected during manufacturing per American National Standards Institute (ANSI) specifications? The nacelle, hubs, power units, and misc. materials were constructed in Denmark. In Section 6.2.3 Tower in the first paragraph (Page 6-2) of the Application for Certificate of Site Compatibility (Docket #8) it stated that all welds are made in automatically controlled power-welding machines and are ultrasonically inspected during manufacturing per American National Standards Institute (ANSI) specifications. Welds on the towers were ultrasonically tested during production according to Allete. Tower sections were manufactured in West Fargo, ND and ANSI specifications were followed. However, some of Siemens' tower parts were fabricated in Europe and to European norms. The technique used was according to EN1714 and the acceptance criterion was according to EN1712 standards for European parts. Allete should have the manufacturer of the wind turbine or a Registered Professional Engineer summarize the European weld inspection standards (EN1714 and EN1712) versus the American National Standards Institute specification to assure that the European standards meets or exceed ANSI standards pertaining to welding wind towers. This additional information should be submitted to the Commission to verify welds were properly inspected during manufacturing.

What fastening method (welding, bolted, etc.) is used to tie tower sections together in for field prior to erection? Tower sections were bolted flange connections. Concern satisfied.

What type of inspection method is conducted to ensure proper fastening? Allete had 8 personnel on construction site during construction with inspector responsibilities. Bolt connections were checked for proper torque. Concern satisfied.

Are wind turbines uniformly painted with a non-reflective white paint? Yes. The construction inspection verified turbines were uniformly painted with a non-reflective white paint. Concern satisfied.

Are the fastening of sections painted in the field prior to erection? Yes. Sections were painted at the factory including the flange connections. Sections were touched up and inspected prior to erection where paint was accidently removed. Concern satisfied.

Are four platforms connected with a ladder and a fall arresting safety system for access to the nacelle in place on a tower? Yes. Concern satisfied.

Are turbines equipped with a lightning protection system? Yes. Concern satisfied.

Is a turbine grounded and shielded to protect against lightning? Yes. Concern satisfied.

Are lightning receptors placed in each rotor blade and in the tower? Yes. Concern satisfied.

Are electrical components also protected in a turbine? Yes. Concern satisfied.

Turbines are to be lit per Federal Aviation Administration requirements. Are turbines lit with a white or red flashing light that is visible from nearby areas at night? Each turbine location requires a separate permit to the FAA. The FAA determines if lights are required or not at each turbine. Allete estimated that 85 to 88% of turbines required lights by the FAA. Basically all turbines on the perimeter

and inside turbines with higher elevations above the perimeter turbine lights are required to have lights. FAA reviews initial ruling after receiving as built. Turbines will be lit with a white or red flashing light. Concerns satisfied.

Are FAA lights placed at hub height on a turbine nacelle at the end of and middle of the turbine strings? Yes. Lights are on 30 of the 35 turbines in Bison 3 placed at hub height on the nacelle of the turbine as required by FAA determination. Concern satisfied.

Foundation Excavation and Foundations

Were foundations for the wind turbines a cast-in-place reinforced-concrete spread foundation? Yes. Concern satisfied.

Did the foundation construction look to include excavation, formwork, and placement of anchor bolts, reinforcing steel, and other embedded items in ready-mix concrete? Yes. Allete stated foundations were constructed using this technique and material cited in the question. Concern satisfied.

Was shoring required in a foundation excavation to work? No. Shoring was not required since excavation was sloped and in some instances was benched in accordance with OSHA standards. Concern satisfied.

Is a grounding system installed during foundation work? Should be designed for local soil conditions (resistance to neutral earth must be in accordance with local utility or code requirements). Braun Engineering was responsible for the geotechnical engineering for the project. They did soil resistivity testing. Allete verified that all turbines had a 1 ohm or less reading and that the total turbine installation had a 10 ohm or less reading as required by Siemens' (turbine manufacturer) installation standards. Concern satisfied.

Were bases grouted and tensioned as they were set? Yes. Bases were grouted within 3 working days of setting. Anchor bolts were post-tensioned within 7 days of erecting. Concern satisfied.

Bison Collector Substation Additions

Was Bison 3 Substation bay constructed according to Bison 230kV Substation Electrical Plan & Elevation Plan view proposed drawing ME-32815 proposed (Docket #47)? Yes. Cast-in-place reinforced-concrete foundations, erection of structural steel supports for electrical bus work and equipment, and installation of one transformer, a circuit breaker, switches, instrument transformers, and other electrical equipment were in place. The substation area was stripped on 11-06-11 and Class 5 rock added. Substation foundations for transformer and breakers poured on 12-11-11. All utility protection equipment is to meet MP and NESC standards for parallel operations. The Allete, Inc. design team was to ensure that proper interconnection protection is established. The construction inspection did not include inspection of utility protection equipment. Verification of the Bison 3 substation bay was determined. Bison 3 substation bay was energized the day of inspection. The Bison 3 substation bay was part of the Bison Substation. Concern satisfied.

Is the substation transformer rated to accommodate additional capacity of 105 MW? Yes. Verification of a transformer within the Bison 3 substation bay was determined. Allete stated that the transformer has sufficient capacity to handle the 105 MW capacity. Black & Veatch was the substation bay design company and Hooper was the construction contractor. Viet was the foundation contractor. Concern satisfied.

Is the substation area for Bison 3 fenced? Yes. Bison 3 substation area is part of the Bison Substation and is fenced and locked. Grounding of fence was examined. Concern satisfied.

System Commissioning and Testing

Briefly describe the commissioning and acceptance testing of the facility? Siemens (turbine manufacturer) establishes that each wind turbine generator has been correctly assembled and is functioning properly as they follow a Siemens checklist. After all wind turbine generators have completed the commissioning stage, Siemens performs specific tests to verify and demonstrate that the wind farm is operational. Some of these tests include remote shutoff, and also adjusting the wind farm power output to demonstrate the software can control the wind farm as a whole.

Each turbine is inspected in accordance with a mechanical completion checklist to ensure that the unit has been correctly assembled and erected. Each turbine is inspected in accordance with a commissioning completion checklist to ensure that it is functioning properly before acceptance by Allete (Minnesota Power). Concern satisfied.

What documentation is required for commissioning and acceptance testing of the facility? When Allete (Minnesota Power) has accepted commissioning completion for all units and Siemens has demonstrated proper functioning of SCADA system, Siemens prepares notice to Allete (Minnesota Power) specifying date on which project commissioning completion has been achieved. Allete will review notice and provide written acceptance or alternatively list conditions precedent for acceptance. Concern satisfied.

Electrical Collector System and Communication Installation

A. Excavating, Backfilling, Cover over Buried Cables

Was the 34.5 kV electrical collector system and fiber optic communication system installed in the same common trench? Yes. The collector system and fiber optic communication system was installed with a 12 inch separation horizontally within one trench. Concern satisfied.

Was survey staking used to position the collection system and communication system trench and above ground apertures for the project? Yes. Ulteig Engineers was responsible for surveying, staking, and GPS field coordinates on the project. Concern satisfied.

Were any locates observed along the collector system/communication route? No. The collection system/communication system was installed and restoration was completed the day of the construction inspection. Locates for power, fiber, telephone and water lines had to have occurred because there

were some crossings along the construction route. No damage claims were found in the case file. Allete stated they had obtained locates. Concern satisfied.

Does the 34.5 kV UG collection system appear to be adjacent to the Project access roads, ROWs, or easements along the 250 feet corridor of the Class III Cultural Resource Inventory? Yes. Easement areas were obtained for the collection system/ communication system and shown on proposed construction drawings. Concern satisfied.

What was the separation between the electric collection conductor and communication fiber in the ditch? The collector system and fiber optic communication system was installed with a 12 inch separation horizontally within one trench ditch. Concern satisfied.

What was the minimum depth to the closest conductor or fiber cable to ground surface? 48 inches is usually the minimum depth required. MP proposed 42" at September 15, 2011 Commission hearing and The Commission modified the depth to 42" due to paragraph 39 of the Findings of Fact. Allete installed the electrical conductors and fiber at a minimum depth of 42 inches. Concern satisfied.

How many collector system circuits were used for Bison 3? Five circuits. Concern satisfied.

Were any rock areas along the excavation area found during the site visit? If yes, identify locations. Yes. Allete found rock in site areas for turbines 310, 313, 316, 320, 322, 330. Concern satisfied.

Was backfill installed in such a manner that it prevents damage to the conductor from equipment or from the backfill material? Yes. Conductor was direct buried with large rocks removed from the backfill material prior or new soil material was used to backfilling. Conduits were install under roads that were directional bored. Concern satisfied.

B. Above Ground Components

Does each turbine have a step-up transformer installed at the base to raise the voltage to a collection-line voltage of 34.5 kV? Yes. Bison 3 also had switching pedestals for the collection system and fiber communication at some turbine site to assist with sectionalizing of the system as needed. Ground fault transformers were install also to prevent stray voltage on the electrical system. All enclosures observed were located in high elevations away from drain paths. Concern satisfied.

For transformers that could discharge oil that would flow to a wetland or waterway have containment berming? No. Each transformer is located on a transformer vault (pad) that has a containment volume large enough to contain most spills. Should a spill occur and overflow or not flow into the vault, the gravel around the base of the transformer would contain the spill. A damaged transformer causing a spill would affect the electrical system causing a possible alarm of the SCADA system at the turbine requiring a site inspection. No wetland or waterways were observed by the turbines during the construction site visit. Concern satisfied.

No above ground facilities are being located in wetlands? Correct. All enclosure observed were located in high elevations away from drain paths. No wetland or waterways were observed by the turbines during the construction site visit. Concern satisfied.

How often are line markers installed? Line markers were observed installed on both sides of road crossings. Allete (Minnesota Power) participates in the North Dakota One Call System and stated line marker signs were installed at each road crossing. Concern satisfied.

C. Crossing of Railroads and Roads

Is there any railroad crossings? If so, was permit followed? No railroad crossings were within this project site.

Is there any highway crossings? If so, was permit followed? Yes. State Hwy 31 was the only crossing. Directional boring of the road was completed. Line markers were installed on both sides of the road. Concern satisfied.

Was any conduit pipe installed for these crossings? Conduit was installed at all road crossings. Concern satisfied.

If conduit pipe is installed, it should be labeled on as-builts. All turbines are currently erected but not commissioned. Allete has 3 months after construction is complete to provide as builts to the Commission. Recommend that conduit be labeled on as builts.

Was the conduit at these crossings to be bored? Yes. Concern satisfied.

D. Clearance between Cables and Underground Structures

Were any other underground structures except drain tile exposed during the field visit? Yes. Allete stated that the project required fiber and telephone crossings. Concern satisfied.

Did the cables installed underground have at least 12" of clearance between the cable and the extremity of any other underground structure? Yes. Allete stated all crossing had a minimum of 12 inches of separation. Concern satisfied.

Has any damage to any underground facilities occurred during construction? If yes, was construction suspended in the vicinity of the damage until compliance with One-Call excavation Notice System requirements were met and clearance to proceed was given by the PSC Commission or Commission staff? Allete stated no underground utilities were damaged during construction. No damage notices were found in the case file. All contractors used the One-Call system and worked closely with local utilities. Concern satisfied.

Construction Records

Where are Construction records kept during this project? During construction drawings are kept in the construction trailer on site. Concern satisfied.

Where is construction records kept once construction is complete? A hard copy and electronic copy of construction will be kept in the O & M building on site. An as built book for each turbine is compiled by Michel's. It contains civil site information, Siemens unit commissioning checklist, and mechanical commissioning. A book is also assembled for the collection system, electric system, and fiber testing by Michel's Wind Energy. Electronic versions of documentation can be accessed by employees of the Allete/Minnesota Power online system at any time. Some records may be kept at the Duluth, MN office. Concern satisfied.

PSC Commission Orders

Rules and regulations of other agencies:

Was fill materials placed in rivers, streams, ditches, coulees, lakes, pond and their adjacent wetlands? No. The project site did not have any rivers, streams, coulees, lakes or ponds and adjacent wetlands. Drainage paths (ditches) were found within the project. Culverts were installed along the new access roads as needed. Concern satisfied.

Were measures used for fugitive dust? Yes. In April of 2012 800 tons of gravel was applied to Morton County roads for applying dust controls. Also, Allete stated that periodic magnesium chloride was applied to roads to minimize fugitive dust. Concern satisfied.

Do you have a ND Stormwater permit? Yes Docket #18 which was submitted to the PSC on 8/10/2011.

Were any observance of disturbance of stream beds and banks? No observances of stream beds or banks being disturbed were seen during the construction inspection. Allete stated that no stream beds or banks were disturbed. Wetlands were avoided to the greatest extent practical. Concern satisfied.

Any oil spills or grease spills during the project? If yes, did it get to a waterway or wetland? Allete stated that they did have some small oil spills. All spills were contained and did not contaminate any waterways or wetlands. All spills were remediated by soil removal and were disposed of properly. Concern satisfied.

Are there any measures in place to prevent an oil or grease spill reaching a waterway or wetland? All equipment had spill kits on board or within close proximity of the working equipment. Concern satisfied.

Was noise of equipment loud? No. Equipment had mufflers in good working order.

Normal work hours in a day are? Normal work hours were 7 AM to 7 PM. Some tower erection occurred during late hours to reduce wind hazard concerns. Concern satisfied.

Days worked during a week? Monday through Saturday. Concern satisfied.

Is erosion control measures used on site as needed? Yes. Drawings numbers C-05 and C-06 of the proposed construction drawings issued to the PSC on October 4, 2011 (Docket #47) documented erosion control details to be used for the project. Erosion controls were documented in the progress reports and were observed being used proper during the field inspection. Concern satisfied.

Erosion protection- usually installed in low areas after top soil is pulled back.

Is silt fence installed? Yes. Other erosion protections measures were also identified during the construction inspection. Concern satisfied.

Does any of the silt fences need repair? Give locations if needed. No observation of silt fences being in need of repair were observed during the construction inspection. Concern satisfied.

Will pesticides or herbicides be used near surface waters? No. Pesticides and herbicides have not or will not be needed during construction of Bison 3 project. Allete is utilizing a 2 phase approach to weed management after construction during the maintenance phase. After commissioning, herbicides will be used in upland areas and mowing in more sensitive areas. The majority of the land used for this project is cultivated agricultural land. Concern satisfied.

Is debris and solid wastes being removed from the site and impact areas being restored as nearly as possible to original condition? Yes. Debris and solid wastes were removed and properly disposed of timely. A final drive through inspection was conducted by Allete (Minnesota Power) and site contractors to verify debris and wastes were removed. Restoration was 80% completed on the project site the day of the construction inspection. No debris or solid wastes were observed on site and restoration appeared to be the same as original condition. Concern satisfied.

Any review for Amebus matalis (yellow bullhead) or any siting in area? No. ND parks and recreation identified this species just outside of the very north part of the project in T141N R 85W in Section 32 and asked Allete to watch work them. The yellow bullhead was not identified during the habitat assessment or the environmental review of the project site. Allete stated it was not observed during periodic site inspections and no records of any siting were in the case file. Concern satisfied.

During the inspection was it observed that minimization of habitat disturbance and disruption of nesting, feeding, migratory birds, and bats? Yes. Allete stated it looked to avoid and minimize disturbance and disruption. The majority of the construction was in cultivated area where nesting, feeding, migratory birds, and bats are not known to frequent. No nests, migratory birds or bats were seen during construction or during the construction inspection. Concern satisfied.

Was a Potential Impact Index (PII) analysis performed prior to selection of wind power turbine sites to minimize impacts to migratory birds? USFWS encourages siting applicant to conduct one. Allete performed an extensive analysis of habitat impacts along with consultations with the USFWS and North Dakota Fish and Game Department early in the planning stages of the project development. Allete determined conducting a site characterization study, wetlands analysis, and habitat assessment studies were the best way to obtain information to minimize impacts to migratory birds. Allete stated that the siting application had a written section of the site impact to migratory birds. A discussion about the Whooping Crane migration and time of year was discussed during the construction inspection. The Whooping Crane is most known to migrate on the east side of the Missouri River and this project is on the west side of the river. A discussion of how construction should be shut down should Whooping Cranes ever be seen until they move on during the migration process occurred. Concern satisfied.

Were pre-construction wildlife surveys conducted to quantify birds and bats? Yes. Surveys were part of the siting application. Concern satisfied.

Any existing grasslands affected? What is the plan for revegetation? Grasslands and plans for revegetation were spelled out in the siting application. Issues appear to be being followed based on the inspection. Allete stated they used the state recommended grass seed mix. Concern satisfied.

Will routine monitoring for avian and bat mortality be part of the facility maintenance plan? USFWS wants 3 years of post-construction collision monitoring studies and PSC Commissioner Kramer requested a copy of these studies for PSC records during the public hearing. After conducting site characterization studies and biological surveys it has been determined that the Bison 3 project has a low to moderate potential to impact avian and bat species. As a result, both the USFWS and Allete have agreed to 1 year of post-construction monitoring. WEST Inc. is the contractor that will be performing the monitoring and it is scheduled for 2013. Allete will share the results with the ND PSC and the USFWS. Concern satisfied.

Were or are there any wetlands to be disturbed? Allete filed with the PSC a Wetland Determination Technical Memorandum (Docket #27) on September 6, 2011. Appendix C of the siting application also addressed this issue. Jim Atkinson testified during the hearing about this issue also. Wetland disturbance was to be minimized with the design of the project. Wetland disturbance looked to be minimized based on observation during the PSC construction inspection. Concern satisfied.

Orders:

Did the siting applicant provide the landowners and/or tenant advance notice before beginning construction of the property? Allete stated that each landowner had an in person meeting with Allete project personnel to review how the project was going to impact their land specifically and answered any questions. Concern satisfied.

What educational material for landowners within the site boundary is available about the proposed energy conversion facility and any restriction or danger concerning the proposed energy conversion facility (Order #27)? ALLETE's conducted an extensive approach of notifying (person to person) and

educating landowners prior to beginning construction activities. No landowner requested additional educational materials occurred. Concern satisfied.

Did the placement of the turbines and UG conductor/fiber appear to be following the siting application? Turbine 314, 319, 320 and 321 had concerns with placement versus the siting application. Turbine 314 was located in a different location than the location mentioned in the siting application. For turbines 319 and 321, Allete stated that these turbines have typo errors in the easting coordinates in the siting application but were installed in proper locations based on an email from Barr Engineering on 10/10/2012. Keitu took field checks for coordinates of seven turbines with only three being located in locations listed in the siting application. The UG conductor/fiber appeared to follow the siting application. More detail about the four turbines with coordinate concerns need to be addressed before the UG conductor/fiber placement concerns can be satisfied. Appendix A graphic shows PSC application locations versus field check locations. Consideration to verifying all turbine locations should be given during the post construction.

Was top soil separated and bermed along the turbine base area (to 12" depth)? Allete stated top soil was kept segregated from the subsoil as the majority of the project site land used was crop land. Top soil appeared to be laid back in place when backfilling a trench occurred. Concern satisfied.

Fence and gates – Is any damage to fences or gates observed? Give locations if needed. Also note if new fence and gates installed. Most of the land used for this project was cropland. Gates were only required if cattle is in the area. Allete stated that only one gate is required to be installed yet. The location is the access road going into turbine 325. A final gate is to be installed at turbine 325's access road and should follow the gate detail on Drawing C-04 (Docket #47). Fencing and installation of gates is 95% complete. Temporary fencing around turbine locations currently exists and requires final removal before restoration can be complete. These fences are 300 to 400 feet in length. When construction of the wind facilities required removal of fences or gates, the affected landowners were contacted regarding replacement of the fence in kind or agreement to waive replacement. Concern satisfied. The post construction inspection should verify temporary fences are removed and a gate is installed on turbine 325's access road.

Is construction occurring during breeding season from February 1st to July 15th? Yes. The project footprint takes up less than 1% of the entire project area is on active agricultural areas which have lower biological significance than native prairie areas. Allete preformed habitat assessment and biological surveys prior to construction and it was determined that a low impact on the surrounding environment would occur. These factors indicate that the Bison 3 project will minimize biological impacts. The USFWS was aware of habitat assessment and biological surveys. Allete (Minnesota Power) on-site construction staff monitored activities of the contractor for compliance with environmental requirements. Concern satisfied.

If yes is there a biologist or environmental monitor on site? Allete had eight personnel on site during construction. These personnel were responsible for environmental monitoring. The SWPPP specified individuals responsible for inspection and maintenance of erosion control measures. Concern satisfied.

Who is the environmental monitor on site today? Tower erection was completed on October 20, 2012. Restoration activities were occurring on site. Allete/MP personnel were observed on site with restoration crews working on reduction of road radius activities. Concern satisfied.

Has the USFWS or the NDGFD been contacted as to what measures are to be in place while construction is occurring during breeding season? Both agencies were asked to comment in the planning stage of the project and their comments were incorporated into the projects design. No contacts during construction breeding season were made with USFWS or the NDGFD. It is recommended that they be contacted as to what measures are to be in place during breeding season construction. With the project being determined to have a low impact on the surrounding environment based on the siting application and Allete inspectors monitoring the contractors, Concern satisfied.

Any critical habitat of threatened or endangered species or of bald or golden eagles sited during construction to date? No. Allete stated that none were identified in the biological reports or found during construction to date. All towers are currently erected. Concern satisfied.

Were wetlands being crossed during construction (collection system)? Yes. Wetlands impacts during installation of the collector system were only temporary and the site was returned to its original condition as stated by Allete. The majority of wetlands were bored. Some mats were installed. Nationwide permit obtained. Concern satisfied.

Did it appear that where wetlands that are being crossed the shortest practicable route within the wetland resulting in the least amount of physical impact to the wetland was selected? Yes. Concern satisfied.

Did it appear that heavy equipment in wetlands appeared to be kept to a minimum extent practicable? Yes. Mats were used. Concern satisfied.

No temporary fill in wetlands was observed during the inspection (Must have USACE's written consent to have temporary fill in wetlands)? Yes. Allete also stated that no fill to wetlands occurred. Concern satisfied.

What mitigation measures are being taken by the siting applicant to protect wetlands? All wetland crossings were below 1/10th of an acre and there were no wetland measures required. Boring of most crossings and mats being used for crossing are sufficient mitigation measures. Concern satisfied.

If mats are used to cross wetlands, verify a Nationwide permit was obtained? Nationwide permit was shown to inspector. Concern satisfied.

What safety requirements are the siting applicant following on during construction? Allete used Minnesota Power company safety rules which meet or exceed OSHA CFR 29.1926. Concern satisfied.

What safety measures have been used for traffic control? The location is considered remote with minimum residential or commercial traffic. No residential or commercial traffic was observed during the construction inspection. Planting and harvesting season is when traffic was greatest. Maps and sticker

reminders for speed were issued for all project vehicles or personnel. Cones were used at times for delineators and to assist with one way traffic during transportation of the towers to the site. Wider radius roads were also installed. Concern satisfied.

Is a safety director on project site? Each contractor has a safety director on site and Allete (Minnesota Power) has a site-safety professional on site. Safety meetings were conducted by contractors. Concern satisfied.

Is restroom accommodations provided on site? Yes. Thirty portable bathrooms were available for construction of the Bison II and Bison III project sites. Portable bathrooms were observed throughout the project site during construction. Concern satisfied.

Is any major water crossing occurring during this project? If so, what are they? No. Concern satisfied.

What are the width of clear cuts through any wooded areas and shelterbelts (50 feet max.)? Allete/MP Construction Manager did not think Bison III cut through any shelterbelts. Allete stated there may have been one but the width through the shelterbelt was not 50 feet. Crossing of shelter belts were made to smallest width possible while still enabling construction. No shelterbelts were observed during the construction inspection. Concern satisfied.

Has construction ever been suspended due to weather to date on this project? When? Yes. Dates documented in weekly progress reports. The month of July 2012 had rain days and wind days occurred during the erection of the towers. Contractors worked some nights to erect due to wind during daylight hours. Concern satisfied.

Any cultural resource, paleontological resource, archeological resource, historical resource, or gravesite discovered during construction of the facilities? Was construction halted? Allete stated no archeologically significant sites were identified during construction. Concern satisfied.

Do pre-existing roads during construction appear to be damaged and need final restoration? No. Roads appeared to be well maintained. Allete has been working with the County Road Departments to make sure their concerns were satisfied. Two road graders were on site and were being used Monday thru Saturday from July to September. Currently on site one grader is being operated which is used to blade County and access roads. The grader was observed operating during the construction inspection and the second grader was observed on the project site. Concern satisfied.

Were temporary roads to be used for construction? No. Only crane paths were temporary. All roads constructed and used were to be permanent. Allete stated that all access roads and turbine locations have easements with the applicable landowners. Concern satisfied.

Did the siting company contact affected Landowners or tenants for their knowledge of drain tile locations prior to the excavating? Yes. Drain tile discussions were part of the land use agreements. Concern satisfied.

Was any drain tile found during construction prior to field visit? No drain tile was found during construction. Concern satisfied.

Is there any drain tile that the site applicant is aware of on this project? No. Landowners did not identify any drain tile within the project area to Allete and none was found during construction. Concern satisfied.

Was any waste or construction related debris observed along the site route? Material such as excess construction materials or litter generated by the construction crews are to be removed. Yes. Restoration is still occurring at the site. Storage containers at turbines and one construction materials site to be removed. See pictures. Concern satisfied.

Have trees that been cleared in the ROW been hauled away before site visit? Yes. Trees and scrubs were hauled away prior to July 2012. Concern satisfied.

Was any excess soil and rock removed from the site unless otherwise requested by the landowner? Yes. The project areas disturbed were contoured back to original shape. All rocks were removed from the site except for several large rocks at turbine 313. These rocks were left on site and aligned to prevent a vehicle from going over a steep incline in elevation change along the road. Reduction of road radius excess soil was being used for improvement of existing roads. No other rocks or excess soil were observed during the construction inspection. Concern satisfied.

The weekly progress reports of March 4 through March 18 described rock breaking by T313. Was this rock removed from site? Yes. The construction inspection included a visit to this site. The rock breaking on site was sandstone. No rock remained onsite other than for a road barricade. Rock at this site was contoured at the site under the subsoil and topsoil and was not visible during the construction inspection. Concern satisfied.

How is the site applicant disposing of waste or construction debris along the project? Examples trees, scrubs, excess materials, pallets, plastic wrap, etc. All debris was removed via Armstrong Sanitation Service. Concern satisfied.

What reclamation, fertilization and reseeding has been done to date by the siting applicant? The week of July 22, 2012 seeding and mulching along access roads occurred. Natural Resources Conservation Service recommendations should be followed. Initial restoration and seeding is 100% complete as of the date of the construction inspection. Allete still has some touch up seeding due to final tower crane erection. Final reclamation and reseeding is probably 80% complete. Concern satisfied.

Was compaction being done as part of the reclamation? No compaction was being required as part of the reclamation. However, de-compaction was required along crane paths. Crane paths were ripped to de-compact the soil. Crane paths along roads required gravel touch ups. Crane paths on roads and soil were observed during the construction site visit. Concern satisfied.

Did reclamation and clean-up along the ROW look to be continuous and coordinated with ongoing construction? Yes. Concern satisfied.

Was land with ruts restored to as near as practical to its pre-construction conditions? Yes. Concern satisfied.

Disturbed areas due to construction or clearing were re-graded to reflect pre-construction topography? Yes. Concern satisfied.

Was top soil and soil restoration completed to as near as practical to its pre-construction condition? Yes. Concern satisfied.

No fertilizers, pesticides, or herbicides were used in areas where prohibited by landowners or agencies with authority over the location? Yes. Fertilizers, pesticides, or herbicides were not used during construction. Concern satisfied.

Permanent restoration within wetland areas included the removal of all construction mats and restoration of all ruts and depressions left by mats that were greater than six inches deep? Yes. Concern satisfied.

Was fill from outside of a wetland area used for repair of ruts? No. All disturbed material was replaced with existing on site wetland materials. Concern satisfied.

Did seedbed preparation and seeding appear to have occurred immediately following completion of construction activities and site cleanup? Yes. 100% of the initial seeding was conducted prior to the construction inspection. Touch up seeding along some crane paths was still required. 80% of final seeding was completed the day of construction inspection. Concern satisfied.

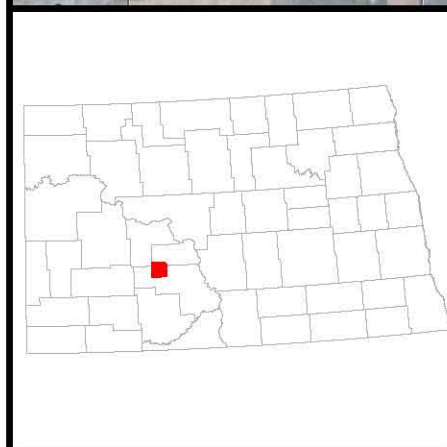
Were there any complaints from residents or landowners about radio or TV interference? Bison III had no complaints of radio and TV interference. Allete has satisfactorily addressed any landowner concerns about radio or TV interference on all of their Bison wind farm sites in the area. Concern satisfied.

How are complaints concerning the Project handled? All complaints during construction were given to both the project manager and the construction manager. Construction manager handled complaints with the project manager verifying handling of complaints. Concern satisfied.

Have any extraordinary events such as injuries, deaths, tower collapse, catastrophic turbine failure, death of any threatened or endangered species occurred on site during construction? If yes was it reported to the PSC within 5 business days? No. Bison 3 has experienced no extraordinary events. Concern satisfied.

Discuss that Order # 16 states that a depth of 48" is required. Preconstruction conference stated 42" acceptable based on finding of facts #39. PSC stated 42" was final approved minimum depth to top of power cable or fiber. Allete stated that they installed the electrical conductors and fiber at a minimum depth of 42 inches. Concern satisfied.

APPENDIX A BISON 3 WIND TOWER CHECKED LOCATIONS



Legend

- PSC App Locations
- Field Check Locations

N
↑

0 0.175 0.35 0.7
Miles

Bison 3
Wind Tower
Checked Locations
10/23/2012

Keitu Engineers & Consultants, Inc
Printed: 10/30/2012

APPENDIX B

PICTURES



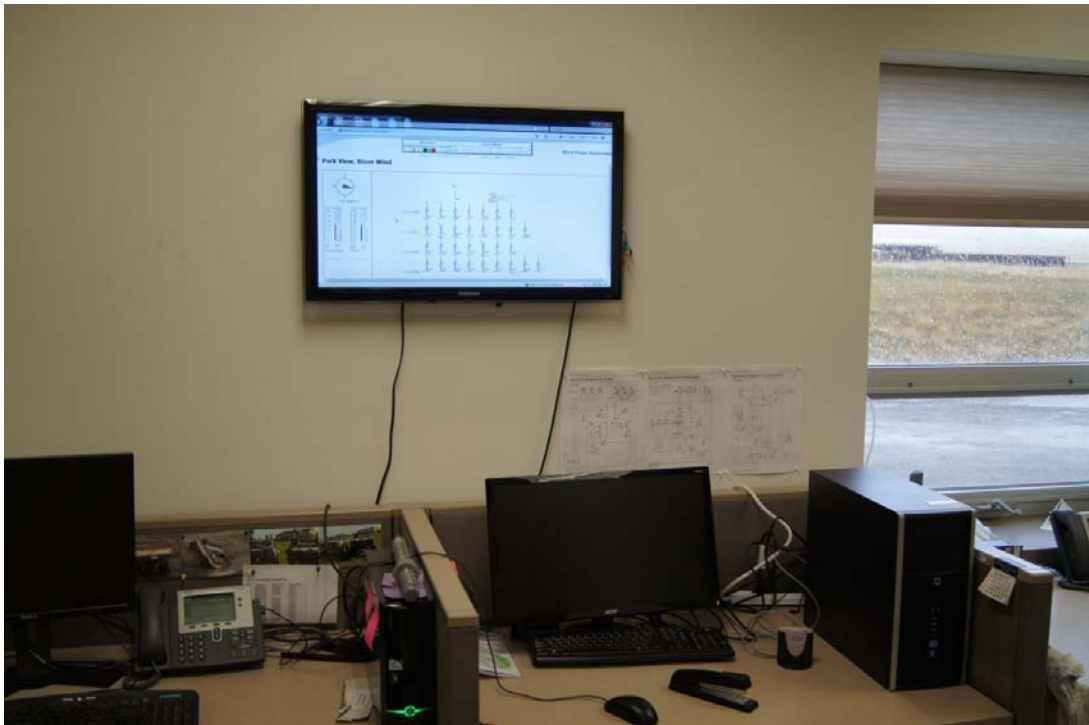
Bison 3 Substation Bay within Bison substation – fencing, Danger high voltage fence signs



Bison 3 Substation Bay within Bison substation – fencing and fence grounding



Bison O & M Building



SCADA control terminal within Bison O & M Building



SCADA control room hardware and network configuration



SCADA control room hardware enclosures



Bison 3 Meteorological tower



Access roads with shoulders



Turbine transformer, collector system switch pedestal, and communication switch pedestal



Turbine base with walkway entry



Construction related debris to be removed, portable bathroom.



Container storage by each turbine to be removed for final restoration



Erosion Control -Silt fencing



Erosion Control- Triangular containment fencing



Turbine site 325 where final gate is to be installed across road



Crane path route restoration



Line marker signs located at road crossings.



Michels lay down yard.



Road curves with proper shoulders



Construction crane tear down and removal



Turbine site 313 – sandstone rock area with final proper contouring



Rocks at turbine 313 used for road barricade



Turbine 313 located in sandstone rock



Road radius reduction at road corners, this road was a crane traveled road.



Turbine base bolting to foundation



Siemens 3.0 MW turbine model SWT-3.0-101