

## BORDER WINDS ENERGY PROJECT

### WEEKLY PROJECT REPORT

Weekly report no:	63
Report for week period ending COB Friday:	10/09/15
Calendar week no:	41

### Executive Summary

#### Week's Highlights

- The erection crew successfully completed the last turbine (T80) on Circuit 2 which completed WTG installation, achieving another mile stone for the Border Winds Project.
- RES Civil team continued to reclaim turbine sites and access roads on circuit 3 and Circuit 4.
- RES Cable team is working on levelling and installation of bollards for all junction boxes across the site.
- SCADA International completed the splice on Circuit 1A completing all splice work on site.
- Completed the installation of equipment on the met tower. Awaiting a cable from Vestas to connect to the VMET3000 inside the control building.
- Started the break down and shipping of LR 1600 Crane 1 at T80 on 10/8/2015 and will be completed by 10/12/15.
- RES, Vestas and WWS completed the punch list items on T33 which was isolated on Circuit 4. The turbine was connected when the substation was de-energized on 10/7/2015.

#### Week's Key Issues

- The site experienced 3 damages this week – one (1) property damage, one (1) equipment damage and one (1) vehicle damage.
- Ongoing BMP inspection and creating punch list items for the completion. Observed areas with erosion that needs to be cleared.
- WWS broke a fiber at T79 and performed the replacement on 10/9/15.
- Border Winds curtailed power to zero output on 10/7/15 @ 7 am to 12:00 PM on 10/7/2015. Vestas put all turbines into idle mode. All commissioning activities were put on hold during this period.



**Safety**

Type	Lost Time	Recordable Injury (Medical Aid)	Minor Injury (First Aid)	Equipment Property Damage	Near Miss	Safety Walks
Current Period	0	0	0	0	1	5
Project To Date	1	5	14	45	88	694

\*Full description of week’s Safety Log plus the formulas for TRIR and Safety index calculation in Exhibit 2.

**TRIR: Previous Week = 2.6 / Current week = 2.6**

**RES Safety Index: Previous Week = 0.48/ Current week = 0.48**

**Weeks Highlights:**

- The erection crew successfully completed the last turbine installation with no incident.
- RES verified and ensured LOTO procedures were followed regarding isolation at JB 2/5 to perform partial energization of Circuit 2.

**Weeks Issues:**

- The site experienced 3 damages this week – one (1) property damage, one (1) equipment damage and one (1) vehicle damage.
  - An employee backed a forklift over the emergency stop system for the fueling station while loading a trash bin on site.
  - An employee damaged the side rail of a flatbed trailer as he dropped a cribbing while trying to off load in the laydown yard. The employee was issued a strike.
  - An employee damaged another employee’s personal vehicle as he was backed a flatbed trailer piled high with old culverts.
- With site experiencing changing daily temperature, the crew was instructed to gear up for the weather and continue to remain hydrated.

**Project Work Hours:**

- Weekly Man-hours: 5,933.00
- Total Project Man-hours: 454,800.00
- Hours since Last Recordable Injury: 41,240.00



**Environmental**

Type	Major Incident	Minor Incident	Near Miss	Observation
Current Period	0	0	0	3
Project to Date	0	80	8	81

\*Full description of week’s Environmental Report and Rolling Incident Score formula in Exhibit 2.

**Rolling Incident Score: Previous week: 0.51 / Current Week: 0.50**

**Comments:**

- Xcel representative was on site to perform an audit of the project. He will return the next week to complete the audit and discuss the items he has identified. Al Jensen, HSQE Manager will be present as well.
- Complete the week with no spills/leak.
- Waste Management switched the waste bins on site to support the clean-up process.
- AMR switched out the recycling bins on site for plastic, wood, cardboard and aluminum.
- Ongoing BMP inspection and creating punch list items for the completion. Observed areas with erosion that needs to be cleared.

**Quality**

Type	RES Issued NCRs			Client Issued NCRs		
	Issued	Open	Closed	Issued	Open	Closed
Current Period	0	0	0	0	0	1
PTD	4	1	3	12	4	8

\*Full description of week’s Quality Report can be found in Exhibit 4

**Week’s Highlights:**

- Xcel representative continue to review the job books. Working on resolving any questions identified during the review.



## SCHEDULE STATUS

Project duration	68
No. of weeks into contract	67
Contract time passed (%)	99%

Key Activities (Construction)	Weighted %	Percentage Complete		
		Contract Schedule	Construction Schedule	Actual
Design Engineering	2.5%	100.0%	100%	100%
Roads & Crane Pads	20.0%	100.0%	98%	89%
Foundations	20.0%	100.0%	100%	100%
Collection System	21.5%	100.0%	100%	100%
Substation	15.0%	100.0%	100%	99%
O&M Building	6.0%	100.0%	100%	99%
WTG Delivery, Erection, & MCC	15.0%	100.0%	99%	99%
<b>Overall Actual Percent Complete</b>		<b>100%</b>	<b>99%</b>	<b>97.5%</b>

## PROGRESS REPORT

### PERMIT STATUS

Permit Type / Description	County / State	Responsible Group	Date Needed By	Status
FAA Part 2	Federal	RES	Final Height	OPEN

### CONSTRUCTION STATUS

Certificates	Total	Submitted	Signed
Foundation Completion Certificate	75	75	75
Mechanical Completion Certificate	75	74	70
Electrical Works Completion Certificate	1	0	0
Project Mechanical Completion Certificate	1	0	0
Project Substantial Completion Certificate	1	0	0
Project Final Completion	1	0	0

**ROADS AND CRANE PADS**

Item	Weighted %	Budget	Total Completed	Total Remaining	Percent Complete
Roads	70%	Roads			<b>83.0%</b>
Rough Grade	30%	137,622	152,837	(15,215)	111.1%
Sub Grade	30%	137,622	141,772	(4,150)	103.0%
1st Lift	20%	137,622	153,875	(16,253)	111.8%
Shoulders	10%	152,837	29,039	123,798	19.0%
Ditches	10%	152,837	29,039	123,798	19.0%
Crane Pads	30%	Crane Pads			<b>100%</b>
WTG Site Ready for Delivery	30%	75	75	0	100%
Cut & Subgrade Compacted	40%	75	75	0	100%
Material Placed & Compacted	30%	75	75	0	100%

**Road and Crane Pad Progress      89%**

**Comments:**

- Continue reclaiming turbine sites and access roads on Circuit 3 and Circuit 4.

**COLLECTION SYSTEM**

Item	Weighted %	Quantity	Total Received	Total Remaining	Percent Complete
<b>Deliveries</b>	<b>30.0%</b>	<b>Deliveries</b>			<b>100%</b>
MV Cable	50.0%	901,972	314,910	0	100%
Fiber	40.0%	335,107	336,590	0	100%
Junction Boxes	5.0%	28	28	0	100%
Grounding Transformers	5.0%	6	6	0	100%
<b>Installations</b>	<b>50.0%</b>	<b>Installations</b>			<b>100%</b>
Trench	40.0%	278,230	278,230	0	100%
MV & Fiber/Ground Cable	50.0%	297,945	297,945	0	100%
Junction Boxes	10.0%	28	28	0	100%
<b>Terminations</b>	<b>20.0%</b>	<b>Terminations</b>			<b>100%</b>
MV Cable at WTG switch gear	45.0%	75	75	0	100.0%
Junction Boxes	35.0%	28	28	0	100.0%
Underground MV Splices	20.0%	50	50	0	100.0%
<b>Collection System Progress:</b>					<b>100%</b>

**Comments:**

- Completed the termination of the grounding transformer and the last 2 junction boxes on Circuit 2.
- Working on levelling and installation of bollards for all junction boxes across the site.
- SCADA International completed the splice on Circuit 1A that was located after the de-energization of the circuit on 10/7/2015.
- Corrected the phasing at T10 on Circuit 4 during the de-energization of the circuit on 10/7/2015.
- Completed VLF testing for Circuit 2 on 10/7/2015.
- Continuing recycling the URD cables on site. Shipped out twenty four (24) empty cable reels.

**O&M BUILDING**

Item	Weighted %	Budget	Total Completed	Total Remaining	Percent Complete
Design	4.0%	100%	100%	0%	100.0%
Earthworks	8.0%	100%	100%	0%	100.0%
Septic System	4.0%	100%	100%	0%	100.0%
Water Service and Filter	4.0%	100%	100%	0%	100.0%
Delivery	5.0%	100%	100%	0%	100.0%
Foundation Floor slab	9.0%	100%	100%	0%	100.0%
Electrical prep, rough-in and trim out	5.0%	100%	100%	0%	100.0%
Plumbing prep, rough-in and trim out	8.0%	100%	100%	0%	100.0%
Building Erect and enclose	8.0%	100%	100%	0%	100.0%
Internal Walls & Ceiling	9.0%	100%	100%	0%	100.0%
HVAC	8.0%	100%	100%	0%	100.0%
Finishes prep, rough-in and trim out	12.0%	100%	100%	0%	100.0%
Grading, Drainage	8.0%	100%	97%	3%	97.0%
Cleaning and Shop Finish	4.0%	100%	100%	0%	100.0%
Security System	4.0%	100%	100%	0%	100.0%
<b>O&amp;M Building Progress</b>					<b>99.7%</b>

**Comments:**

- The backfilled area around the pipe connecting the well towards the building on the west side and the septic tank on the south side settled in after rains on 9/23/15. The area has been barricaded and will be compacted and fixed along with the final grading of the O&M building. The area will be graded along with the final grading of the O&M building on 10/14/15.
- Awaiting job books from AB Systems.



**SUBSTATION**

Item	Weighted %	Budget	Total Completed	Total Remaining	Percent Complete
<b>Engineering</b>	<b>10%</b>	<b>Engineering</b>			<b>100%</b>
IFC Drawings	100%	100%	100%	0%	100%
<b>Procurement and Delivery</b>	<b>20%</b>	<b>Procurement and Delivery</b>			<b>100%</b>
Foundation Rebar & Cages	5.00%	100%	100%	0%	100%
Breakers - Low and High Sides	15.00%	100%	100%	0%	100%
Reactors, Cap Back and Switchers	20.00%	100%	100%	0%	100%
MPT 230/34.5kV	10.00%	100%	100%	0%	100%
Grounding Transformer	5.00%	100%	100%	0%	100%
EEE - Control Building with DC Station	15.00%	100%	100%	0%	100%
Grounding Wire, Rods and Accessories	5.00%	100%	100%	0%	100%
Dead End and Static Mast	5.00%	100%	100%	0%	100%
Structural Steel and Bus	10.00%	100%	100%	0%	100%
MET Tower Foundation	5.00%	100%	100%	0%	100%
Chain Link Fence and Gates	5.00%	100%	100%	0%	100%
<b>Construction</b>	<b>70%</b>	<b>Construction</b>			<b>99%</b>
Site Preparation & Grading	3.00%	100%	100%	0%	100%
Site Aggregate and Finishing Rock	3.00%	100%	100%	0%	100%
Foundations work for substation	9.00%	100%	100%	0%	100%
Breakers, Switches, PTs, CTs	12.00%	100%	100%	0%	100%
Reactors, Cap Back and Switchers	8.00%	100%	100%	0%	100%
EEE - Energize and Finish	4.00%	100%	100%	0%	100%
Ground Grid, Conduits, Trenwa	12.00%	100%	100%	0%	100%
Structural Steel, Risers, Bus	12.00%	100%	100%	0%	100%
Collection Risers/Feeders and GTs	8.00%	100%	100%	0%	100%
EEE Wire Pull, Termination and Test	5.00%	100%	100%	0%	100%
SCADA Fiber Optic Cables Pull	4.00%	100%	100%	0%	100%
Chain Link Fence, Gates	4.00%	100%	100%	0%	100%
MPT Testing and Commissioning	4.00%	100%	100%	0%	100%
MET Tower Install, Wiring and Testing	4.00%	100%	99%	1%	99%
Substation Commissioning	6.00%	100%	100%	0%	100%
Handover of Job Books	2.00%	100%	100%	0%	100%

**Substation Progress                      99.9%**

**Comments:**

- De-energized the substation on 10/7/2015 to add T33 to Circuit 4 which was isolated prior to initial energization.
- Completed the installation of equipment on the met tower. Awaiting a cable from Vestas to connect to the VMET3000 inside the control building.
- Prepared for the partial energization of Circuit 2 which was postponed until 10/10/2015. The remainder of Circuit 2 (T76, T77, T78, T79 and T80) was isolated, locked and tagged out at JB2/5.



- MISO had issued directive on 10/6/2015 to curtail Borders Wind Farm to zero output from 10/7/15 @ 7:00 am to 10/7/2015 with possible curtailment until 10/9/15 @ 6:00 pm. This was to satisfy reliability requirements on the transmission system in the area.
- EPS completed the repair to the PT on Circuit 5 in the substation.

### TURBINES

	Weighted %	Budget	Total Received	Total Remaining	Percent Complete
<b>Deliveries</b>	<b>20.0%</b>	<b>Delivered to turbine pad</b>			<b>100.0%</b>
Base	15.0%	75	75	0	100.0%
Mid	14.0%	75	75	0	100.0%
Upper Mid	14.0%	75	75	0	100.0%
Top	14.0%	75	75	0	100.0%
Nacelle	14.0%	75	75	0	100.0%
Hub	14.0%	75	75	0	100.0%
Blades	15.0%	75	75	0	100.0%
<b>Erection</b>	<b>60.0%</b>	<b>Erection</b>			<b>97.1%</b>
Base	17.0%	75	75	0	100.0%
Mid	16.0%	75	75	0	100.0%
Upper Mid	16.0%	75	75	0	100.0%
Top	17.0%	75	75	0	100.0%
Nacelle	17.0%	75	75	0	100.0%
Blades	17.0%	75	75	0	100.0%
<b>Mechanical Completions</b>	<b>20.0%</b>	<b>Mechanical Completions</b>			<b>88.5%</b>
Walk downs	33.3%	75	73	2	97.3%
MCC Submitted	33.3%	75	74	1	98.7%
MCC Signed	33.4%	75	70	5	93.3%
<b>Turbines Progress</b>					<b>99.3%</b>

### **Week's Highlights**

- The Erection crew installed the final tower (T80) on 10/6/2015. The erection crew installed three (3) upper mid-sections, tops and nacelles and four (4) blade sets.
- Vestas ramped up commissioning teams on site and commissioned thirteen (13) turbines on Circuit 4 and Circuit 1A.
- MC crew completed (5) mechanical completion walk downs of WTGs on Circuit 2.
- Started the break down and shipping of LR 1600 Crane 1 at T80 on 10/8/2015 and will be completed by 10/12/15.
- RES, Vestas and WWS completed the punch list items on T33 which was isolated on Circuit 4. The turbine was connected and energized when the substation was de-energized on 10/7/2015.

### **Week's Issues**

- WWS broke a fiber at T79 which was replaced on 10/9/15.
- Border winds curtailed power to zero output on 10/7/15 @ 7:00 am to 12:00 PM on 10/7/2015. Vestas has put all turbines into idle mode. All commissioning activities were put on hold during this period.

**Exhibit 1 – Site Photographs**



**Site View**



**Reclamation at T16**



**Substation**



**Shipping connex and cleaning laydown yard**



## Exhibit 2 – Safety Log

### Formulas for TRIR and RES Safety Index calculation:

$$\begin{aligned}
 \text{TRIR} &= ((\text{Lost Time} + \text{Medical Aid}) * 200,000) / \text{Total Project Man Hours} \quad ((1+3) * 200,000 / \text{Total Project Man Hours}) \\
 \text{RES Safety Index} &= ((\text{Lost Time} * 64) + (\text{Injury} * 16) + (\text{Minor Injury} * 4) + (\text{Damage} * 1) + (\text{Near Miss} * 0.25)) / \text{Man Hours} * 1000 \\
 &= ((1 * 64) + (3 * 16) + (14 * 4) + (40 * 1) + (85 * .25)) / \text{Total Project Man Hours} * 1000
 \end{aligned}$$

#	Date:	Incident Observed During:	Incident Type:	Company Involved:	Incident Details:	Corrective Action Details:	Actions Taken to Prevent Reoccurrence:
894	10/8/15	Normal Work Activities	Damage	RES Erection	Ken Harris was attempting to load some trash into the dumpster with the forklift when he back over the emergency stop post and button, Ken States that he did not see the post	Ken was given a drug screen, he was also instructed that he cannot continue to work when an accident has occurred, he must report to his manager and Safety Supervisor, which he failed to do so.	It was communicated to Ken that he cannot cover up an incident once it occurs; work must stop and reported so the investigation can be conducted.
895	10/8/15	Normal Work Activities	Near Miss	RES Erection	Ken Harris was attempting to off load cribbing brought into the yard by a flatbed trailer, Ken did not stop trying to off load the cribbing when his spotter motioned him to stop, which resulted in the cribbing falling off and breaking half of the rail that is used to tie the load down, Ken continued to work after the equipment foreman said to stop working.	Ken was taken in the Presentation Hospital for another drug test since his onsite test was not conclusive, he was also suspended for two day for not following stop work authority, and this was his 2nd accident in one day, A disciplinary action will be written up On Mr. Harris one more incident and he will be dismissed from the Border Wind Project.	Ken was suspended from the project until D/A results are returned, disciplinary action has been taken, site management is still deciding if Ken Harris will be removed from Border Winds.
896	10/8/15	Safety Walk	Hazard Observation	Trendy Trucking Co.	One of our RES employees asked the truck driver 3 times to put on his PPE he ignored our employee, he came and got the Safety Supervisor I went out and talked to the drive why he would not wear his PPE, his reply I cannot wear that stuff.	I instructed the driver to get into his truck and leave the site and never return, he then got into his truck and left the site, no stake given because I removed him from the project.	Removed driver from the project for failure to comply with RES PPE policy.



#	Date:	Incident Observed During:	Incident Type:	Company Involved:	Incident Details:	Corrective Action Details:	Actions Taken to Prevent Reoccurrence:
897	10/8/15	Safety Walk	Safe Work Observation	RES Civil	Three RES employees were performing work on the side of the road the parked there work truck in safe location and had cones and warning sign out to alert other drivers, good job.	None required at this time.	None needed.
898	10/8/15	Safety Walk	Safe Work Observation	RES Erection	Res Crew removing crane from pad 60 had road block properly, approached safety supervisor with JHA and work plan for demobilizing crane, good job.	None required at this time.	None needed.
899	10/8/15	Safety Walk	Hazard Observation	RES Civil	T-71 large open pit with no barricade.	Reported open pit to the Civil Foreman, he had one of his crews go out and barricade the pit.	I talked to all civil and cable crews once they are finished working in an area where a pit is left open it must be barricade.
900	10/8/15	Safety Walk	Hazard Observation	Hancock Trucking	The Hancock driver did not have the proper foot wear for the job, driver was wearing tennis shoes.	Driver said he fly in from Chicago and this was not his truck, driver was instructed to stay in his truck and the RES crew loaded him, Safety Supervisor informed him not to return unless he has all required PPE, Safety Supervisor called his company not to send these drivers unless they have all the required PPE, no strike was given verbal warning	Drivers company was called and informed them not send drivers out unless they bring all the required PPE.



#	Date:	Incident Observed During:	Incident Type:	Company Involved:	Incident Details:	Corrective Action Details:	Actions Taken to Prevent Reoccurrence:
901	10/8/15	Safety Inspection	Hazard Observation	RES	3.2 House Keeping, around the trailer and laydown yard, there is loose trash all over, need to have it cleaned up.	Talked to all our foreman and crew's to set a time to get yard cleaned up.	Safety Supervisor has talked to the site management team to have a few workers go around and get laydown yard cleaned up before it starts blowing into the land owners fields.
902	10/9/15	Normal Work Activities	Damage	RES Civil	Ed Brown was attempting to back a flatbed trailer in the laydown yard when Ed stuck a workers personal vehicle causing damage, Raul Cortes was his passenger at the time of the incident, Ed did not ask Raul to be a spotter and Raul did not exit the vehicle to spot Ed, both workers will receive strikes for not following RASOP-011 Section 6.7.1 (4)	Safety Supervisor talked with both workers about why they chose not to use a spotter, from their statement they were being complacent and both will receive a strike.	Again we covered following RES policy and what happens when you don't, everyone in our daily all hands meeting have been talked to about not getting complacent and focus on their job and safety, they both work hand in hand.



### Exhibit 3 – Environmental Log

#### Formula for the Rolling Incident Score =

$$((\text{Major Incident} * 16) + (\text{Minor Incident} * 4) + (\text{Near Miss} * 0.25) + (\text{Observation} * 0)) * 1000 / \text{Total Man Hours}$$

#	CLASS	SUB-CAT	CONTR ACTOR	DATE	INCIDENT DETAILS	ACTION TAKEN TO CORRECT SITUATION	ACTION TAKEN TO PREVENT REOCCURANCE
131	Observation	Information al	RES	10/6/15	Switched 2 waste bins from the laydown yard to keep up with the trash onsite and support the final cleanup on site.	No action required	No action required.
132	Observation	Information al	RES	10/7/15	2 filled bins for mixed material (plastic and cardboard) and 1 bin of aluminum to be recycled has been removed off site.	No action required	Requested vendor to switch bin frequently.
133	Observation	Information al	RES	10/8/15	Switched 2 waste bins from the laydown yard to keep up with the trash onsite and support the final cleanup on site.	No action required	No action required.
134	Observation	Wildlife	RES	10/11/15	Spotted a single bald eagle on a tree next to a dwelling near 106st and Hwy 30 away from construction activities. The eagle flew away safely and unharmed.	No action required. Documented on RAEMT 05.	No action required.



**Exhibit 4 – Quality Log**

- Incidents - None
- CPARs - 1
- NCRs - 14

NCR log

Description of Material	NCR Opened	NCR Closed	Total NCR Open	Total NCR Closed
	(Current Week)	(Current Week)	(As of this Week)	(As of this week)
Totals		1	4	9
NCR-2015-035 Not having 220VAC outlet in the nacelle			X	
NCR-2015-034 Turnover 75 climb assist pendants			X	
NCR-2015-026 Not having 115V outlets at work locations per page 1 exhibit I of the Purchase and Sale Agreement.			X	
NCR CPAR 23053-004 Sent to Vestas concerning the high rate of damage to the turbine blades during shipping.			X	
NCR-2015-031 Service loop not verified at Junction boxes and splice pits			X	
NCR-2015-037 Water ponding for access to T1.			X	
NCR-2015-035 Not having 220VAC outlet in the nacelle			X	
NCR-2015-034 Turnover 75 climb assist pendants			X	
NCR-2015-026 Not having 115V outlets at work locations per page 1 exhibit I of the Purchase and Sale Agreement.			X	



**Exhibit 5 – RFI Log**

**Outgoing RFIs**

	Generated By	Company	Sent To	Company	Subject	Date Sent	Response Requested By	Type: Civil, Electrical, etc.	Status / Comments	Date Closed
23053-105	Kyler Leen	RES	Kyle Louis	REI	Feeder Fault Clearing Time	07/27/15	07/29/15	Substation		
23053-113	Kyler Leen	RES	Ritchie Farmer	Vestas	WTG Nacelle transformer current rating	10/02/15	ASAP			10/08/15
23053-114	Shabeeb Khader	RES	Chris Ayika	Xcel Energy - Transmission	Substation Interconnect Data	10/03/15	10/07/15	SCADA		



**Exhibit 6 - Change Order Request Log**

CO No.	Date Identified	Date Submitted	Date Executed	Description	Value of CO	Comments
1	06/11/15			Change in the landscaping design - larger trees for windbreak at O&M	\$ 3,176.00	RES and Xcel agreed to split total cost of \$6,352.00
2	06/11/15			Storm shelter changes at O&M	\$ 11,907.00	RES to request additional information from ABS on who directed the changes
3	06/11/15			Changes in final design vs specification of electrical layout at O&M	\$ 2,300	RES is still working through the changes
4	06/11/15			Changes in security system at O&M	\$ 8,936.00	Xcel requested breakdown of changes and the delta
5	06/11/15			Changes in the Control Building - Increasing the station service transformer, additional switch requests, and additional landings at entrance doors	\$ 36,141.00	<p>Station Service transformer sizing – Original station service transformer sizing was done at 50kVA. This was based on historic numbers initially and was later proven by station service calculations. Xcel requested to change this to 100kVA, since that is the Xcel standard (was requested at the 90% design review meeting). RES reviewed the Xcel standards provided and did not see this requirement anywhere in the standards provided. This increase in station service size also required upgrading multiple disconnect and safety switches from 200A to 400A rating in order to meet the requirements of the 100kVA station service transformer to be installed per the Xcel direction/request.</p> <p>Additional switch requests - Xcel requested during the 90% design review meeting that safety disconnect switches be moved from inside the control building to the outside. This requires the installation of waterproof cabinets for the switches. Xcel also requested an additional yard cabinet to connect and supply larger equipment from the AC system.</p> <p>Addition of landings at entrance doors – this was added at the 90% design review meeting per Xcel request and was not evident for the provided Xcel specifications.</p>



CO No.	Date Identified	Date Submitted	Date Executed	Description	Value of CO	Comments
6	06/11/15			Upgrade from SEL351 to SEL421 relay and bus relays at the substation	\$ 163,789.00	Industry standard for wind farm collection circuits are to install SEL351 relays (O/C & G/F) relays to protect the collector systems. Collection systems (although balanced) are considered distribution circuits, since they are four wire systems, with a ground reference transformer connected to each circuit. The collection circuits are insulated to 150kV BIL, which is further evidence that they are considered as distribution feeders (compared to the 200kV BIL insulation levels typically associated with transmission lines/circuits). Xcel identified the requirement to install SEL 351 relays on Distribution feeders. During design review meetings, Xcel classified these as transmission lines and required the installation of step distance protection (SEL421 relays). This resulted in additional cost. The 34.5kV bus differential relays subsequently were also upgraded from distribution bus relays to transmission class bus diff relays with 100% redundancy
7	06/11/15			Addition of three additional shield masts at the substation	\$ 73,838.00	The original substation design utilized a combination of shield masts and shield wires in order to establish a lightning shielding system for the substation equipment. During the 60% design review meeting Xcel indicated they do not allow shield wires to span over top of equipment and requested that the shield wires be removed and that lightning shielding protection be done with shield masts. This requirement is not seen in any of the supplied specifications. This required the addition of 3 additional shield masts and thus additional cost.
8	06/11/15			Addition of anchor/rigging points for the oil containment based on the change to above ground containment system at the substation	\$ 36,907.00	Xcel required an above grade containment system with a removable wall and built in rigging/anchor points in the containment system. This was not evident in any of the provided specifications or the contract agreement. The above grade construction as such does not add cost, but the inclusion of the removable wall and the addition of the anchor/rigging points that is integrated into the oil containment system does add cost
9	06/11/15			Addition of separate relay/plc controller to control the capacitor banks at the substation	\$ 23,510.00	Typical capacitor bank controls on wind farms are done by the wind farm controller through the SCADA system. Xcel requested during the 90% design review not to control the equipment through the SCADA system, but rather have a separate relay/plc controller to control the capacitor banks. This required the installation of an additional relay in order to have a dedicated controller for the capacitor banks. This was not evident from any of the supplied specifications, since Xcel does not have a standard specification for 34.5kV capacitor banks.



CO No.	Date Identified	Date Submitted	Date Executed	Description	Value of CO	Comments
10	06/11/15			Upgrade to the capacitor bank interlock system	\$ 10,846.00	Typical interlocks for capacitor banks only include a time delay after opening the associated capacitor/circuit switched to release a key that will unlock the ground switch and lock the switcher in the open position. Xcel requires a much more elaborate system, which in turn costs more. This was not identified in any of the supplied standard and was determined as designs progressed.
<b>TOTAL</b>					\$ 379,294.00	