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February 20, 2013

—Via Electronic Filing and Federal Express—

Darrel Nitschke
Executive Secretary
North Dakota Public Service Commission
State Capitol, 600 E. Boulevard
Bismarck, ND 58505

RE: SHERBURNE COUNTY GENERATING STATION UNIT 3
RESTORATION UPDATE (CASE NO. PU-12-12)

Dear Mr. Nitschke:

Northern States Power Company, doing business as Xcel Energy, provides this update to the North Dakota Public Service Commission on restoration activities at the Sherburne County Generating Station Unit 3 (Sherco 3). On November 19, 2011, Sherco 3 experienced a significant failure during turbine testing while returning to service from a scheduled maintenance overhaul. In our December 6, 2011 letter describing the event, we indicated we would continue to provide periodic status reports to the Commission. Our last update was submitted on November 19, 2012.

Given the complexity of this project and the technical nature of the information provided in this update, we would be happy to arrange an informational meeting at which we would make available the Sherco plant manager to present information on the restoration work and answer any questions the Commission and Staff may have.

This update is organized in the following sections:

- *Overview*, describing the scope of the repair work to date and providing updated information on the expected return-to-service timeframe;
- *Restoration Project Details* highlighting four specific repair activities that illustrate the size, scope, and complexity of the project;
- *Progress Update by Major Component*, providing a status summary and completion percentage for each major component affected by the event; and

- *Replacement Power Costs*, providing estimated replacement power costs through March 2013.

A. Overview

In previous updates we identified three phases of work for the Sherco 3 restoration project:

- Phase 1: Documentation and Evidence Collection
- Phase 2: Clean up, Disassembly, and Damage Assessment
- Phase 3: Repair and Restoration

Phases 1 and 2 are complete. Phase 3 repair and restoration activities are well underway, and many individual projects have been completed. Later in this report, we provide updates to the information in our November 19, 2012 filing on the status of each of the major components affected by the event.

As we are now well into the repair and restoration phase and have gained additional knowledge and experience, we believe it would be helpful at this point to provide an overview of the process to date. Providing this additional information may be helpful as this is the largest unit restoration that we have ever performed, and industry-wide, there are no equivalent restoration projects against which it can be compared. We also provide in the next section a description of some of the repair activities that are underway or have been completed, illustrating some of the complexities of this project.

Our restoration strategy has been to ensure that the unit will return to reliable and safe service for long-term operation. We have focused our efforts on minimizing temporary repairs that may serve to speed the return of the unit to service, but would ultimately require additional future repairs. Throughout this process, we have continued to develop repair solutions to avoid the cost and schedule implications of complete replacement of the turbine and generator components, while at the same time ensuring the unit will be restored to pre-event conditions.

Our assessment of the schedule, costs, and scope of repair work supports our initial decision to repair Sherco 3, as we expect to bring this unit back on line well in advance of the projected return-to-service had we placed orders for all new steam turbine generator components immediately following the event. As with any large, complex project, we have updated our initial schedule as we have learned more about the extent of the damage and the scope and nature of the necessary repairs. In our last update to the Commission, we reported that we expected

Sherco 3 to return to service by the end of first quarter 2013. However, while we expect Unit 3 to return to service in 2013, based on current information, the return-to-service date for Sherco 3 will be delayed beyond first quarter 2013.

The most significant factor contributing to this delay is the additional damage discovered during the repair process itself. While the initial Phase 2 damage assessment was completed during the summer of 2012, we were not able to schedule many of the repairs until months later because contractor shop space and personnel were unavailable to begin repairs immediately. In many instances, it was during the actual repair process that the extent of the damage became fully known as we gained access to hidden layers of equipment and structures that could not be observed during the initial damage assessment. For many of the repairs, both at offsite repair facilities and at the plant, the damage was more extensive and the repair work more involved than initially anticipated.

In addition, many of the techniques required to repair various components were not known in the early phases of the project and, in some cases, had to be developed during the repair process. Likewise, there is no equivalent restoration project that could be used as a roadmap for this project. The unique nature and extent of the damage resulting from the event meant there was limited industry information to provide guidance on expected repair cycle times. As such, expectations could not be validated against prior industry experience.

Because we are still in the process of performing repairs and certain components being repaired offsite have yet to be returned to the plant, we currently do not have a specific return-to-service date. Once the remaining major components are returned to the plant, we will be at a point in the process similar to where we would be after a major overhaul or when preparing to start up and commission a new generating unit. At that time, we will have more specific information, will be able to reassess the remaining restoration, reassembly, and start-up work, and expect to provide an updated return-to-service date. We will file this information with the Commission in our next update later this spring.

B. Restoration Project Details

In this section, we discuss four specific repair activities that illustrate the size, scope, and complexity of the Sherco 3 restoration project.

- *Generator Stator Restack*

Repair of the generator stator (see Picture 1) was completed at of the end of January 2013, which was later than the October 2012 date originally anticipated.

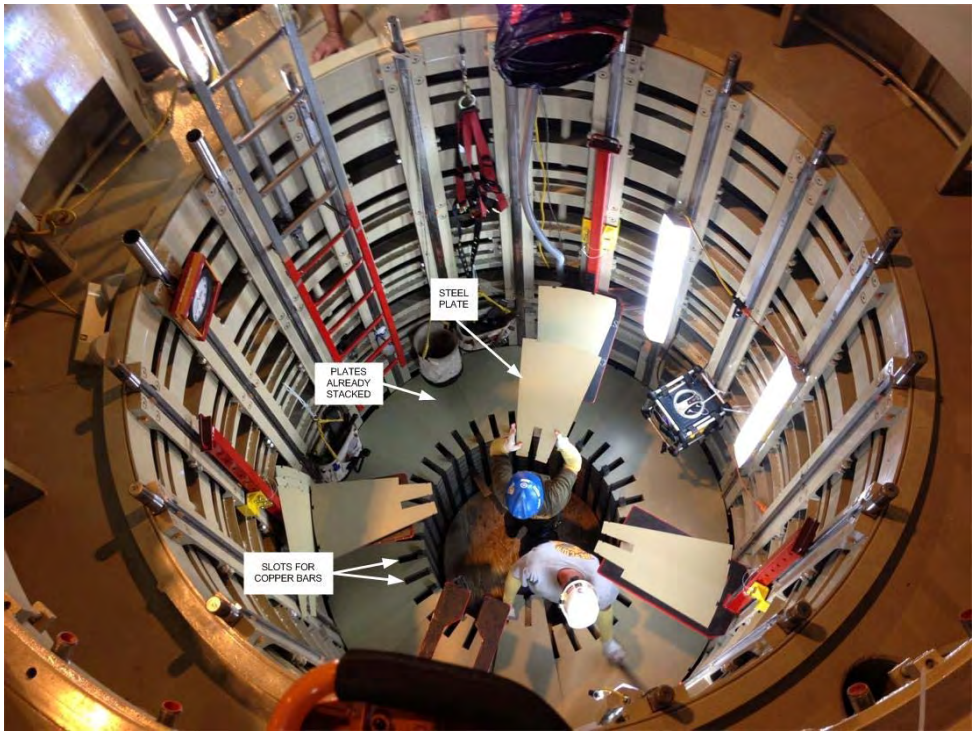
We had to complete significant portions of the process twice due to alignment issues that occurred during the first restack. This restacking and alignment work was challenging due to the limited industry experience for generators of similar design and size, or extent of damage as Sherco 3.

Restacking the generator stator required first lifting and rotating the generator from its usual horizontal position to a vertical position. It took several weeks of planning and preparation and about two weeks to set up the equipment necessary for the lifting process. The actual lift took about two days.

Picture 1: The generator stator being lifted to a vertical position for restacking.

Once the generator was in its vertical position, there were two shifts of workers inside the generator each day for approximately seven weeks, rebuilding the core of the machine by stacking approximately 400,000 thin pieces of steel plate segments by hand one on top of another like bricks in a circle.

After restacking of the steel plates was complete, the generator (now weighing about 390 tons) was lifted and rotated back to the horizontal position. Then, copper stator bars were slid into the 24-foot long by 1¾-inch wide slots formed by the steel plates.



Picture 2: Internal stacking of the generator stator, and the slots where the copper bars need to fit.

After we completed our initial restacking process, we determined there was an alignment problem between the stator bars and the steel plates. Although there were alignment checks performed throughout the entire restacking process, the room for error was approximately 1/32 inch, and the contractor was unable to get the proper fit needed to complete the reassembly process.

As a result, we again lifted and rotated the generator back to the vertical position, removed the majority of the steel plates, and repeated the restack, performing additional alignment checks throughout the process. At the conclusion of this second stacking process, the stator bars fit into the slots with the proper clearances and tolerances.

- *High Pressure (HP)/Intermediate Pressure (IP) Turbine Rotors*

We knew from our initial assessment that the newly installed HP/IP turbine rotors sustained significant damage, and were therefore sent offsite for repair. However, we did not know the extent of the damage or how long the process would take until the complete disassembly, assessment, engineering, and repair process was completed. In the case of these rotors, the turbine blades were not damaged, but the shrouds – the metal bands encircling the ends of turbine blades – sustained significant damage. In contrast to the low pressure turbine rotors, where the blades can be easily removed and replaced if necessary, the blades in the HP and IP turbine rotors are integral with the shrouds, thus the shroud cannot be easily

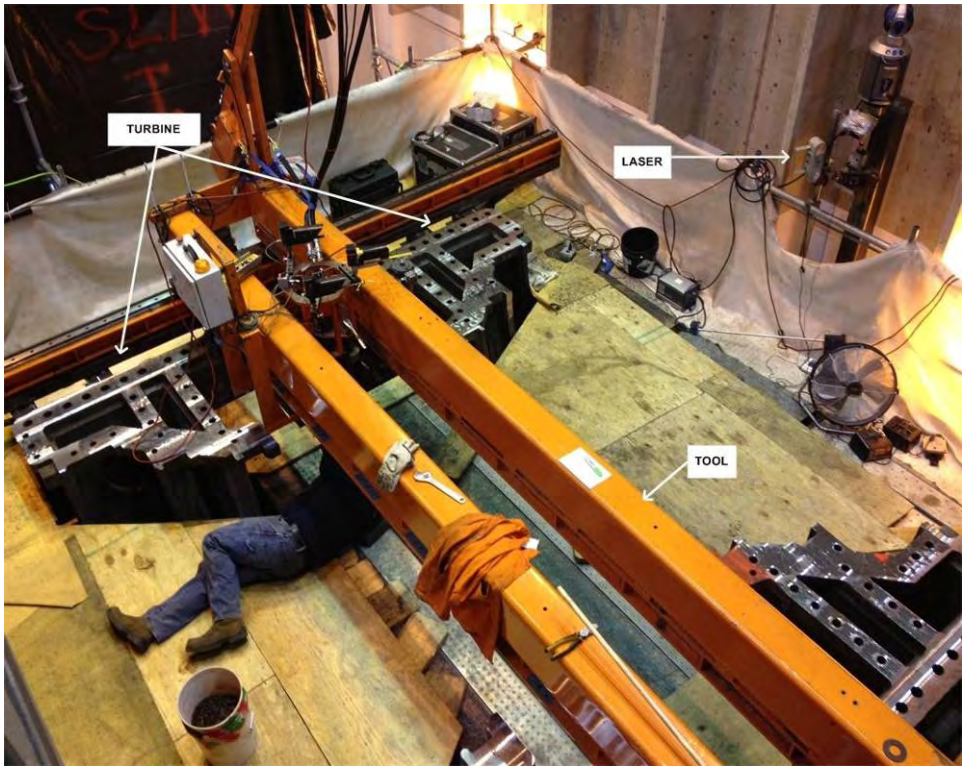
removed and replaced. As a result, the repair technique selected to repair the blade shrouds was to remove damaged material by careful machining until only clean (undamaged) material remained. The HP/IP rotors were not able to be repaired to a like-new condition due to the amount of material that had to be removed to clear all damaged material from the components.

The manufacturer of the rotors established limits regarding how much material could be removed. Removal of material beyond these limits would result in unacceptably high stress levels during operation. After removing material to these limits on several sections of the HP and IP rotors, it was determined the manufacturer could not remove all the damage. While the damage that remains is relatively minor and the rotors can be safely operated, these rotors will require monitoring and detailed inspections on a 2½-year inspection interval instead of the expected 10-year interval. Plans are being developed to purchase new rotors, expected to be covered by insurance, which would restore the unit to the 10-year inspection interval.

- *Onsite Turbine Repairs and Machining*

The onsite turbine repairs consist of detailed visual non-destructive examinations, dimensional inspections, engineering assessments, detailed repair plans, welding, and machining. The type of damage on the turbines was more severe and went deeper than expected, and thus required considerably more time to perform each of the activities than anticipated. For example, one type of damage observed on the equipment was machine surface self-welding. This phenomenon occurred on many flat and curved surfaces where machine parts are in contact with each other. The horizontal joining surfaces are the most obvious location where this phenomenon was observed, but it was also found under the feet of the turbine after the turbines had been completely lifted from their foundations to replace the damaged foundation system, which was not expected. This damage required repairs to restore the machined surfaces to their proper form, fit, and function, and the additional damage found meant additional time was required to complete the work.

In addition, this was not routine maintenance type work, but instead required innovative engineering and technology development and specialized repair technique creation as the details of the damage were discovered. One of the techniques used to repair the damage to the machined horizontal joint surfaces of the LP turbines required the use of large laser guided machine tools that were custom designed and fitted for the Sherco 3 turbines (see Picture 3). The installation of these tools and procedures to apply them required extensive engineering and set-up time that occurred as the work progressed.



Picture 3: A laser-guided specialty tool brought in to repair the surfaces of the turbines.

- *Front and Mid Standards*

The front and mid-standards support the HP and IP turbines. These standards could not be removed for inspections until all the other turbine components were removed. The high energy piping systems had to be temporarily restrained and then cut to allow the turbine shells to be removed. After the standards were exposed, more damage became apparent. The standards were then sent offsite for a thorough evaluation and assessment with repair recommendations. The examinations and assessments revealed additional damage. After the repair recommendations were approved, the repair work was completed. However, during the repairs additional damage was noted, potentially caused by the residual stresses in the standards as a result of the event. We note that this process, assessment, and repair requirements were similar for the generator end shields. Specialized repair strategies and techniques had to be developed to restore the standards and the generator end shield to serviceable condition.

C. Progress Update by Major Component

Attachment A is a visual summary of our progress to date by component. Below we provide a summary of the status of each major component.

- *Generator Rotor and Stator (65% complete)*

As discussed above, the generator stator was repaired (restacked) on site. The stator restacking is complete and the generator stator has been returned to a horizontal position. This portion of the project was completed at the end of January 2013 and the stator bars have now all been successfully installed.

The generator rotor was repaired offsite. The windings have been installed in the rotor, including the retaining rings. The final machining steps are complete and high speed balancing is complete. The generator rotor will be returned to the plant site in the next two weeks.

- *High Pressure and Intermediate/Reheat Turbines (75% complete)*

The high pressure and reheat steam turbines outer casings were repaired onsite. The internal parts were repaired offsite. As reported in our in our last update, we expected the repaired high pressure turbine rotor to be returned to the plant in November 2012 and that timeline was met.

There was additional related repair work for both HP and IP outer shells that was performed on-site. This was final surface machining work that was required to insure proper fit of the components during reassembly. This additional machining work will result in completion of the repairs in February 2013 instead of December 2012 as we had previously anticipated.

The reheat steam turbine repairs are nearly complete and all reheat turbine components are expected to return to the site in February. .

- *Low Pressure Turbines (LP-A and LP-B) (65% complete)*

The low pressure turbines sustained substantially more damage than the other turbine sections during the event. Similar to the other turbine sections, some major components of these turbines were repaired on site while some were sent offsite for repairs.

The onsite repairs are nearing completion. However, due to the extent of the damage to the LP turbine components there was additional repair time required. Repairs for these components are anticipated to be completed in April 2013. Minor onsite repairs will continue through unit assembly as additional necessary work is identified as the parts are fully assembled with each other.

The offsite repairs are also nearing completion and most critical turbine parts are expected to be returned to the site in April. The low pressure rotors are the most

significant components that are currently offsite, and they are expected to be returned to the plant in late March.

Picture 4: Damaged LP turbine blades.

Picture 5: A new LP turbine blade.

- *Main Condenser (95% complete)*

The on-site repair (re-tubing) of the main condenser is complete. Final testing will be performed during system start-up and commissioning. This repair was completed according to our previous schedule and expectations.

- *Generator Exciter (55% complete)*

The off-site repair of the generator exciter is complete. While the exciter enclosures and cabinet repairs were completed as scheduled, additional time will be

required for the reassembly of the exciter. We anticipate return of the exciter to the plant for assembly in February, followed by installation on the unit.

- *Balance of Plant Systems and Components*

As described in our previous updates, many miscellaneous components and plant systems were affected by the steam turbine failure. All balance of plant systems and components have been evaluated for event-related damage, and those that required replacement or repair are in progress.

D. Replacement Power Costs

Using the estimation methodology we discussed in our November 19, 2012 update in this docket, the estimated replacement power costs through March 2013 related to the Sherco 3 outage are approximately $33.2 million. The North Dakota jurisdictional portion is approximately five percent of the total, or about $1.7 million.

We also note that the MISO resource adequacy tariff requirements do not require the Company to procure replacement *capacity* while the Sherco 3 facility is on extended outage.

CONCLUSION

We appreciate the opportunity to update the Commission on our work to restore Sherco 3 to service. We will continue to provide periodic updates to the Commission, with our next report expected to be filed later this spring. We would be happy to work with Commission Staff to schedule a progress update presentation to the Commission as well.

Please contact me at dave.sederquist@xcelenergy.com or (701) 241-8632 if there are any questions regarding this update.

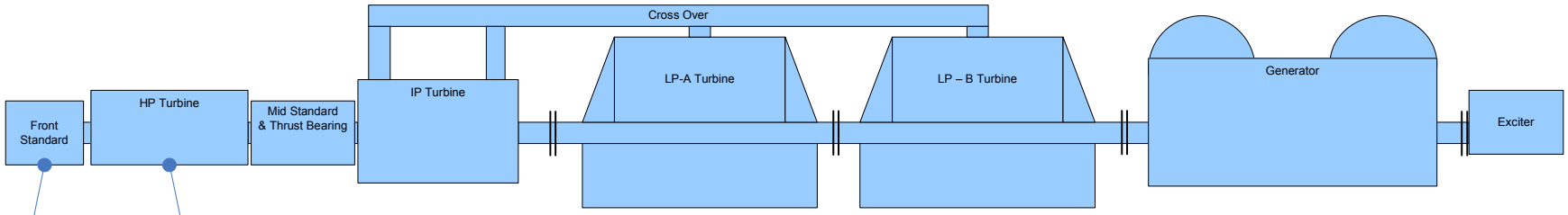
Sincerely,

/s/

DAVID SEDERQUIST
SR. REGULATORY CONSULTANT
XCEL ENERGY – NORTH DAKOTA

c: Mike Diller
Pat Fahn

Xcel Energy SHERCO 3 Restoration Project Update: Feb. 12, 2013



	Standards	HP Turbine	IP Turbine	LP Turbine - A	LP Turbine - B	Generator	Exciter
SHOP REPAIR WORK	90%	100% Complete	99%	90% Rotors/Diaphragms	90% Rotors/Diaphragms	75% Generator End Shields 95% Generator Rotor	99% Stator/Frame 100% Rectifiers
SITE REPAIR WORK	N/A	100% Complete	98%	99%	95%	100% Restack Complete 5% Rewind	100% – Doghouse Body 95% – Doghouse Electrical 0% - Alterrex Assembly
ASSEMBLY	5% - Fixators Set	0% - Waiting for standards	2% - Waiting for standards	5% - LEH's set and aligned	5% - LEH's set and aligned	2% - baseplate set	2% - baseplate set
STARTUP	Not Started	Not Started	Not Started	Not Started	Not Started	Not Started	Not Started
Percent Complete	***71%***	***75%***	***73%***	***67%***	***65%***	***68%***	***58%***

Notes:
1. BOP Mech/Electrical/Controls/Instrumentation/New Parts orders work not represented here, however, all is on track to support the re-assembly and startup of unit.