



**Southwest Power Pool
SYSTEM PROTECTION AND CONTROL WORKING GROUP and SPP UFLS
Standard Drafting Team Meeting
MINUTES
November 12, 2010
9:00 a.m. – 11:00 a.m.
Net conference**

Item 1 – Administrative:

Shawn Jacobs, Chairman, called the System Protection and Control Working Group (SPCWG) meeting to order at 9:00 a.m. The agenda was approved (Attachment 1 – Agenda).

Following members were available for this meeting:

Shawn Jacobs	: OG&E
Heidt Melson	: SPS
Tim Hinken	: KCPL
Ken Zellefrow	: SPRM
Ron McIvor	: OPPD
Bud Averill	: GRDA
Mathew Thykkuttathil	: SUNC
Brent Carr	: AECC
Lynn Schroeder	: WERE
Steve Wadas	: NPPD
Louis Guidry	: CELE
Jason Speer	: SPP Staff

Other meeting attendees were:

David Kelley	: SPP Staff
Charles Hendrix	: SPP Staff
Travis Hyde	: OG&E
John Pasierb	: GDS Associates

Item 2: Crossroads Interconnect SPS

Shawn Jacobs led the discussion on the Crossroads Special Protection Scheme (SPS). The SPS states that if the Tatonga – Northwest 345kV line trips, then the Crossroads Windfarm would have to be curtailed. Bud Averill made a motion that the Crossroads SPS be approved for 3 years. Lynn Schroeder seconded the motion which was passed unanimously. (Attachment 2 – Crossroads SPS)

The SPCWG also talked about the Generation Interconnection SPS policy. The policy was discussed and was conditionally approved by the SPCWG based on the following changes to the policy document.

- 1) Rename the title to “Generation Interconnection Special Protection Scheme Policy” – just to make it clear that this policy does not apply to all SPS’s.

- 2) On point #1, add the word “new” so that the policy starts with “Any new Special Protection Scheme...” – emphasizes the fact that already approved SPS’s are not subject to this policy.
- 3) On point #2, need to add verbiage to allow a possible re-approval of the SPS after the three year timeframe is over.
- 4) On point #11, it needs to state that the TWG and the ORWG need to approve the SPS as well as the SPCWG and MOPC which are already listed. It needs to stay consistent with the SPP criteria.

Lynn Schroeder made the motion to conditionally approve this SPS policy with the following changes. Steve Wadas seconded the motion which was approved unanimously. (Attachment 3 – Generation Interconnection Special Protection Scheme Policy)

Item 2a: PowerTech UFLS Study

The Standard Drafting Team talked about the addendum to the previous UFLS study that was conducted by PowerTech. It was decided that PowerTech would perform a 30% generator deficiency study with all load shedding and circuit tripping relays operating with 30 cycles tripping time and 6 cycle breaker time delays. All generator under-frequency tripping relays will be set according to Attachment 1 in the latest PRC-006-SPP-01 standard.

PowerTech will perform a second study as detailed above with 40 cycles relay tripping times provided that the 30 cycle study results identify secure system operation. In case that the 30 cycle study results identify an unsecure system operation, PowerTech will perform the second study with 20 cycles relay tripping times.

Item 3: SPP UFLS Standard

This agenda item was not discussed at this meeting.

Item 4: Closing Administrative Duties

The next net conference has been scheduled for November 16 (2pm-4pm).

The net conference was adjourned at 11:00 a.m.

Respectfully submitted,

Jason Speer, Secretary

**SOUTHWEST POWER POOL
SYSTEM PROTECTION AND CONTROL WORKING GROUP and SPP REGIONAL
STANDARD DEVELOPMENT MEETING**

**November 12, 2010 (9:00 a.m. till 11:00 a.m.)
Net Conference**

- AGENDA -

Item 1 – Administrative

- Call to order
- Proxies
- Approve agenda

Item 2 – Crossroads Interconnect SPS (Shawn)

Item 2a – PowerTech UFLS Study (Shawn)

Item 3 – SPP UFLS Standard (All)

- Homework Assignments (Measures and Violation Severity Levels)
- 4th Draft
- Responses to comments received for 3rd Draft

Item 4 – Closing Administrative Duties

- Next meeting place & date
- Upcoming meeting topics
- Adjourn meeting

Crossroads Wind Farm Special Protection System (SPS)

The Problem

Tatonga Substation is going to be expanded to a three-breaker ring, 345KV switching station, located northwest of Oklahoma City. Presently, there is one 345KV transmission line to Northwest Substation in Northwest Oklahoma City and one 345KV transmission line to Woodward District EHV Substation in Woodward, Oklahoma. Both lines are protected by primary and back up relaying and breaker failure. An SEL-311L relay is used for primary relaying utilizing DCB and an SEL-421 relay for backup relaying using a POTT scheme. Two frequency wave trap and Power line carrier type UPLC are installed on each line for relaying communication. A third 345KV breaker is being installed in the ring bus to provide for termination of the 345KV Crossroads Wind Farm Line. The transmission line to Crossroads Wind Farm is equipped with OPGW shield wire and an SEL-311L for primary relaying utilizing DCB and Line Differential and an SEL-421 for backup relaying utilizing a POTT scheme.

If the 345KV Northwest to Tatonga Line breakers (PCB 319 and PCB 381) trip automatically or manually while the Crossroads Wind Farm is generating and with other wind farms such as OU Wind Spirit, Centennial and Keenan Wind, which are already installed and in operation in Woodward, it will cause the 138KV voltage to collapse in the Woodward area. For this contingency, the Crossroads Wind Farm will have to be curtailed immediately.

Proposed Remediation

For a fault on the 345KV Northwest-Tatonga Line the primary and the backup line relays will trip all three 345KV circuit breakers (PCB 311, PCB 319 and PCB 381) at Tatonga Substation. To provide redundancy, the primary and backup line protection on the Tatonga – Crossroads line will send a Mirrored Bit Direct Transfer Trip (DTT) to trip and latch trip the 345KV breaker at Crossroads Wind Farm. If PCB's 319 and 381 are both opened manually during maintenance or otherwise, it will automatically trip PCB 311 and initiate DTT to Crossroads Wind Farm.

Tatonga Substation will go through its automatic reclosing sequence. PCB 381 will reclose twice automatically on Hot Woodward District EHV Line-Dead Northwest Line. If the reclosing is successful and Northwest Line is picked up through PCB 381, PCB 319 will reclose on Hot Northwest Line-Dead Crossroads Wind Farm Line, a mirrored bit will be sent to Crossroads to unlatch their trip allowing the Wind farm to re-synchronize into the system. PCB 311 will reclose on Hot Crossroads-Hot Woodward District EHV Line in-phase. The substation RTU will monitor and report any operation at Tatonga, including the Mirrored Bit (DTT) to Crossroads, to the Control Center in Oklahoma City. OG&E understands that this is a temporary solution during that contingency. The plans are in place to expand Woodward District EHV Substation to breaker and a half and construct new 345KV transmission lines out of this substation to facilitate the operations of all the wind farms presently connected to the system. This includes new 345KV lines to Hitchland and Kansas.

Scheme Summary

- This special protection scheme (SPS) will eliminate the voltage collapse on the system caused by the outage of 345KV line to Northwest Substation. The scheme will be monitored and reviewed with any improvement to the area transmission system including construction of every new transmission line. Load flows will be run to determine if the scheme is needed to be in service.

- We project this scheme will be in place for maximum of three years. The expansion of Woodward District EHV Substation and construction of the new transmission lines to Hitchline and Kansas will remedy this problem and will eliminate its need.

Special Protection Scheme Policy

1. Any Special Protection Scheme (SPS) that affords the in-service date of a Generating Facility that is the subject of a Generation Interconnection Agreement (GIA) or an Interim Generation Interconnection Agreement (IGIA) to be accelerated ahead of the in service date of its required network upgrades shall be offered on a non-discriminatory basis to any Interconnection Customer under the SPP OATT who meets the following criteria -
 - 1.1. Interconnection Customers who(se)
 - 1.1.1. Have requested a Limited Operation Study under GIA 5.9 and have found that Limited Operation is not available until the required network upgrades in the GIA are placed in service; or have requested an IGIA under the OATT and have found that Interim Interconnection Service cannot be granted until the Impact Study required network upgrades are in service; and
 - 1.1.2. Have had a study completed by Transmission Provider that shows the SPS will be able to facilitate the interconnection of the Generating Facility.
2. SPS will be a temporary measure, not to exceed three years, until such time that the Interconnection Customer's required network upgrades under their GIA can be completed.
3. SPS configurations that will be considered for evaluation will be limited to the items following
 - 3.1. Removal of Customer's generation from the Transmission System following a disturbance that causes the outage of a transmission line or transformer that terminates at the point of interconnection substation facility (or within a reasonable physical distance from that facility – less than 0.25 mile).
 - 3.2. Tripping and removal from the Transmission System of a transformer or transmission line that terminates at the point of interconnection substation facility.
4. SPS operation shall not cause the removal of other generation from the Transmission System unless agreed to by the affected generator owners; subject to queue priority listed in Item 10.
5. Operation of an SPS cannot cause the disruption of service to Native Load Customers.
6. Installation of an SPS cannot inhibit the use of the Transmission System for future use (i.e. prevent the addition of points of delivery for Native Load Customers).
 - 6.1. SPS can be re-evaluated at later time to ensure adherence to this criteria.

7. SPS will not be considered after the execution (or unexecuted filing) of a GIA unless Transmission Provider has determined that the in service date of the required Network Upgrades under the GIA will be delayed.
8. SPS does not relieve Customer from obtaining applicable transmission service or from curtailment under applicable SPP processes.
9. SPS will not be considered in the processing of short term or long term transmission service requests.
10. SPS does not relieve Customer from risk associated with Interim Interconnection Service under the IGIA or Limited Operation under the GIA (i.e. subject to future studies that may require a reduction or pre-emption of service when higher or equally queued customer come on-line)
 - 10.1. A Customer with higher or equal queue priority proposed SPS and Generating Facility may be accommodated by the removal of a lower queued Customer's SPS and Generating Facility or the pro-rated reduction in service of a Customer with equal queue priority.
11. SPS must be approved by the System Protection and Controls Working Group (SPCWG) and the Market and Operations Policy Committee (MOPC)