



Open Phase Detection and Protection



NRC Public Meeting

November 1, 2013



Open Phase Detection and Protection

■ “Meter as Relay” Solution

- Standard pickup; low level processing

■ Modified Solution

- Dual level sensors (excitation and power ranges)
- Low power level alarm; high power level trip
- “Redundant” packages (SPV and reliability)
 - ❖ 2 sets of sensors
 - ❖ 2 sets of relay cabinets (to be installed adjacent to transformers)



Plant	Unit	Transformers				Comments						
Brunswick	1	Main	SUT									
	2	Main	SUT									
Catawba	1	1A Main	1B Main				New SUTs at Catawba are not included. OPD will be addressed in the SUT project if it proceeds.					
	2	2A Main	2B Main				New SUTs at Catawba are not included. OPD will be addressed in the SUT project if it proceeds.					
Crystal River	3	OPT	BEST				Skip if fuel is in final storage?					
Harris	1	Main	SAT 1A	SAT 1B			Skip Main if we never backfeed?					
McGuire	1	1A Main	1B Main									
	2	2A Main	2B Main									
Robinson	2	Main	SUT 1	SUT 2			Skip Main if we never backfeed?					
Oconee	1-3	CT1	CT2	CT3	CT4	CT5	Skip CT4 and CT5 if designated as safety power supplies?					
	1	Main					Outage backfeeds are typical					
	2	Main					Outage backfeeds are typical					
	3	Main					Outage backfeeds are typical					
Totals							22 Transformers minimum.					
							24 Transformers likely (including the HNP and RNP Mains).					
							28 Transformers possible.					
We want redundant systems for SPV and reliability.												



Open Phase Detection and Protection

■ Project Concerns:

- Final scope (number of transformers to be protected).
- Multi-site, multi-plant, short, integrated schedule.
- Available suppliers.
- Verify that LAR will not be required or schedule LAR for Tech Spec updates.