

Project 2012-13 Nuclear Plant Interface Coordination (NUC-001-2)
Five-Year Review Position Paper on NUC-001-2 R7 and R8
7/08/2013

NUC-001-2: Requirements R7 and R8 – Protection Systems

Position: The NUC-001-2 Five Year Review Team recommends deletion of "Protection Systems" in requirements R7 and R8 since it is a subset of the "nuclear plant design" and "electric system design" elements currently contained in R7 and R8 respectively. The use within R7 and R8 of the capitalized term "Protection Systems" as defined in the NERC Glossary of Terms extends the scope of changes that must be communicated between the Nuclear Plant Generator Operator and the Transmission Entities beyond the scope intended by the original NUC-001 SDT. The focus of the original SDT was on communication of the protective setpoint changes that could impact nuclear plant safe operation and shutdown. The communication and coordination of protection system changes beyond those that are unique to nuclear plants is addressed in NERC Standard PRC-001.

Background:

R7. Per the Agreements developed in accordance with this standard, the Nuclear Plant Generator Operator shall inform the applicable Transmission Entities of actual or proposed changes to nuclear plant design, configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs. [*Risk Factor: High*] (Capitalization of "Protection Systems" approved by the SC but not yet filed at FERC.)

Definition of Protection System (FERC approved 2/3/2012):

Protection System –

- Protective relays which respond to electrical quantities,
- Communications systems necessary for correct operation of protective functions
- Voltage and current sensing devices providing inputs to protective relays,
- Station dc supply associated with protective functions (including batteries, battery chargers, and non-battery-based dc supply), and
- Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.

R8. Per the Agreements developed in accordance with this standard, the applicable Transmission Entities shall inform the Nuclear Plant Generator Operator of actual or proposed changes to electric system design, configuration, operations, limits, protection systems, or capabilities that may impact the ability of the electric system to meet the NPIRs. [*Risk Factor: High*] (Capitalization of "Protection Systems" approved by the SC but not yet filed at FERC.)

Discussion:

Requirement R7:

Protection systems are a subset of the nuclear plant design and represent only one of numerous nuclear plant systems that could be changed that may impact the ability of the electric system to meet the NPIRs. Discussions with members of the original NUC-001 SDT identified that inclusion of protection system changes was meant to be an example of the type of change to the nuclear plant design that could potentially impact the ability of the electric system to meet the NPIRs and was used in reference to those protection systems unique to nuclear plants such as those associated with reactor coolant pumps, reactor protection systems, and emergency bus degraded grid relays. These nuclear plant protection systems can impose unique frequency and voltage requirements that can impact the NPIRs, however they are all just a subset of the overall nuclear plant design that can impact the NPIRs.

With regard to the capitalization of "Protection Systems", the use of protection systems by the original SDT was not intended to refer to a specifically defined term that is overly broad in application here, and that has other NERC compliance implications. The SDT use of protection systems was focused on the attributes that could impact the NPIRs such as frequency or voltage set points (i.e. relay settings) and not the expanded five elements of "Protection Systems" as defined in the NERC Glossary of Terms.

Protection system changes other than those unique to the nuclear plant design discussed above are coordinated between the Nuclear Plant Generator Operators and the applicable Transmission Entities in accordance with the requirements of NERC Standard PRC-001, or those PRC-027-1 requirements which may succeed the following PRC-001 requirements. Specifically PRC-001 requires coordination as follows:

R2. A Generator Operator or Transmission Operator shall coordinate new protective systems and changes as follows.

R2.1. Each Generator Operator shall coordinate all new protective systems and all protective system changes with its Transmission Operator and Host Balancing Authority. *[Violation Risk Factor: High][Time Horizon: Operations Planning, Same-day Operations, Real-time Operations]*

R3. Each Transmission Operator shall coordinate Protection Systems on major transmission lines and interconnections with neighboring Generator Operators, Transmission Operators, and Balancing Authorities. *[Violation Risk Factor: High][Time Horizon: Operations Planning, Same-day Operations, Real-time Operations]*

The NUC-001-2 Five Year Review Team recommends based on the above that "Protection Systems" be removed from R7 since changes to protection systems are already addressed in "changes to nuclear plant design" and for those protection systems in the scope of the NERC PRC standards, coordination between the Nuclear Plant Generator Operator and the Transmission Operator is addressed in PRC-001. The NUC-001-2 Five Year Review Team recommends that the parenthetical clause (e.g. protective setpoints) be added to R7 following "nuclear plant design" to keep an awareness of the importance of this design subset.

Requirement R8:

Protection systems are a subset of the electric system design and represent only one of numerous aspects of the electric system that could be changed that may impact the ability of the electric system to meet the NPIRs. Discussions with members of the original NUC-001 SDT identified that inclusion of protection system changes was meant to be an example of the type of change to the electric system design that could potentially impact the ability of the electric system to meet the NPIRs.

Similar to R7, with regard to the capitalization of "Protection Systems", the use of protection systems by the original SDT was not intended to refer to a specifically defined term that is overly broad in application here, and that has other NERC compliance implications. The SDT use of protection systems was focused on the attributes that could impact the NPIRs such as frequency or voltage set points (i.e. relay settings) and not the expanded five elements of "Protection Systems" as defined in the NERC Glossary of Terms.

Transmission Entity protection system changes within the scope of NERC Standard PRC-001 are coordinated between the Nuclear Plant Generator Operators and the applicable Transmission Entities in accordance with the requirements PRC-001.

Similar to R7, the NUC-001-2 Five Year Review Team recommends based on the above that "Protection Systems" be removed from R8 since changes to protection systems are already addressed in "changes to electric system design" and for those protection systems in the scope of the NERC PRC standards, coordination between the Transmission Operator and the Nuclear Plant Generator Operator is addressed in PRC-001. The NUC-001-2 Five Year Review Team recommends that the parenthetical clause (e.g. relay setpoints) be added to R8 following "electric system design" to keep an awareness of the importance of this design subset.