V. Design, Application, Maintenance & Operation Technical Requirements

V.F PJM Design & Application of Air Disconnect Switchers

1.0 Specifications

1.1 As a minimum requirement, all switches should be specified to meet the requirements of all applicable industry standards, including but not limited to ANSI, IEEE, NEMA, and ASTM.

1.2 Switches must also be designed with adequate electrical and mechanical characteristics for the specific electrical system on which it is installed and for the application for which it is intended. These include, but are not limited to continuous current rating, Peak-Withstand (short-circuit) rating, interrupting current rating (charging & magnetizing current only), operating voltage, BIL, and environmental conditions.

1.3 Switches should be designed for an in-service operating life, considering normal routine maintenance, comparable to other electrical apparatus in the system to which it is applied.

1.4 The following minimum ratings apply to switches installed on the PJM system:

Nominal	69 kV	115 kV	138 kV	230 kV	345 kV	500 kV	765 kV
Maximum	72.5 KV	121 kV	145 kV	242 k V	362 kV	550 kV	803 kV
BIL*	350 KV	550 kV	650 kV	900 kV	1300 kV	1800 kV	2050 kV
Min 60 Hz Withstand Dry, 1 min Wet, 10 s	 175 kV 145 kV	 280 kV 230 kV	 335 kV 275 kV	 465 kV 385 kV	 610 kV 525 kV	 810 kV 710 kV	 940 kV 830 kV
Opening/Closing Capability	¾” ice	¾” ice	¾” ice	¾” ice	¾” ice	¾” ice	¾” ice

* BIL values may be reduced when coordinated with line entrance arresters and when acceptable to the affected Transmission Owner. If a reduced BIL approach is considered, an appropriate insulation coordination study is required to ensure the proposed reduction is acceptable.

1.5 If disconnect switchers are expected to interrupt line charging or transformer magnetizing current, an appropriate switching analysis is required to demonstrate the current magnitude as they compare with switch capability.

2.0 Application

2.1 Switches should be used in applications for which they were designed.

2.2 Switches should be applied in such a manner as to facilitate proper, safe, and reliable operation of the switch, as well as switch maintenance.

2.3 Switches should be applied such that they are not the limiting component in the normal or emergency operating rating of a circuit or bus.

2.4 Installation of grounding switches should be used in order to provide a safe work environment for maintenance personnel and to facilitate equipment and line maintenance.

3.0 Rating Beyond Nameplate

3.1 Emergency and Load Dump current ratings of electrical system apparatus, including disconnect switches, are critical to the reliable operation of the PJM system. Ratings of disconnect switches applied to the PJM system should be determined using the PJM TSS guide "Determination of Air Disconnect Switch Ratings", latest version.

4.0 Maintenance

Disconnect switches shall be maintained in order to preserve their function during their operating life. Refer to Section V.L.2.F