



# METROPOLITAN WASHINGTON AIRPORTS AUTHORITY

## IFB-19-13298 Breaker and Relay Testing Services, Dulles Airport

September 3, 2019

### Questions and Answers

**Notice:** Questions may have been edited for clarity and relevance.

1. **Question:** Appendix A has over 700 Low Voltage Breakers and Appendix B has over 90 Medium voltage breakers and relays to test. Spreadsheet shows 135 as an estimated quantity. Are all items on Appendix A and B to be included on the Annual testing quotation?

**Answer:** See Amendment 002. Dulles Airport has a total of 675 protective devices that requiring testing. Our program requires each relay to be tested once every three (3) years. That being the case, we will test 225 devices per year over the term of this contract.

2. **Question:** REFERENCING: II. Low Voltage (480V) Breaker/Relay Electrical Testing 6. By means of primary current injection determine proper operation of all functions of each protective relay. NETA MTS 7.6.1.2(9) allows test functions of the trip unit by means of secondary injection as an option for Low voltage power breakers with trip units. Is this general requirement primary injection only?

**Answer:** Yes, Primary Injection is required, secondary injection will not be accepted. See Amendment 002.

3. **Question:** Please clarify Item II. (6) of the Statement of Work for IFB-19-13298. "By means of Primary current injection determine proper operation of all functions of each protective relay." The wording of this item of the SOW could lead to a large discrepancy in the calculation of the time required and the resulting price. This statement was also the exact S.O.W. wording that was found in the very recent past work under 1-18-C095: Breaker and Relay Testing Services. In that case the testing of Low Voltage breakers was performed by the method of Secondary Injection which may or may not have been valid based on the interpretation of this SOW statement. The ambiguity is caused by the words; Primary Current injection and protective relay in the same sentence under the Low Voltage breaker testing SOW. The industry standard for Primary Injection of Low Voltage breakers requires that the breakers be tested with a Primary Current Injection Test Set at typical current magnitudes of tens of thousands of amps directed through the entire breaker including; bus connection fingers, internal current transformers and contacts. The Primary Injection method also requires a power source of typically 480V/100amp in the same area as the breakers to be tested or have the breakers transported to a testing location. Primary Injection does require more time. The Industry standard for Secondary Injection testing of circuit breakers can be performed with a Hand held device that sends trip signals directly into the Circuit Breaker's

**Trip Unit.** This alternate method is used when outage requirements are restrictive or lower costs are preferred.

**Answer:** See Amendment 002. Primary injection will be required to on all low voltage circuit breakers listed.

4. **Question:** If Primary Injection method of circuit breaker testing is required please consider using NETA standard wording or similar to; "Determine Long-time pickup and delay by means of primary Injection, Determine short-time pickup and delay by means of primary injection, Determine Ground-Fault pickup and delay by means of primary injection, and Determine Instantaneous pickup by means of primary injection." If this SOW item only refers to relays and not circuit breaker trip-units then it would be clearer to have the relay SOW separate from the circuit breakers SOW. Typically Relay preventive maintenance in performed with secondary current by means of a relay test set. If primary injection is required then the Switchboard bus Current Transformers (C.T.s) will need to be primary injected with a High Current Primary injection test set, the C.T.s would then provide secondary current to the relays for trip pickup and delay. Primary injection of relays instead of secondary injection is a significantly more involved process.

**Answer:** See Amendment 002.

5. **Question:** On the Price Schedule, Estimated quantity reads 135. There are far more than 135 individual items. Not sure what information you would like here or how that affects the calculations.

**Answer:** See Amendment 002.