Customer Name: _____ Date: _____

Tester Name: _____ Test Equipment: _____

Utility Isolated? Y / N Equipment Serial #: _____

Load Box Test Form

Form Instructions

1) The load box test is set forth in ARSD 20:10:39:47 through 20:10:39:52.
2) The test shall be performed at the same time of day as the time of the highest cow contact voltage found in the 48 hour test.
3) Each of the following five steps of the test shall be conducted for at least two minutes:
   - STEP 1) the load box is de-energized, the dairy remains on, and the data is recorded;
   - STEP 2) the load box is de-energized, the dairy is shut off, and the data is recorded;
   - STEP 3) the load box is set to half load, the dairy is shut off, and the data is recorded;
   - STEP 4) the load box is set to full load, the dairy is shut off, and the data is recorded; and
   - STEP 5) the load box is set to full load, the dairy is turned on, and the data is recorded.
4) For dairies with 3-phase balanced primary service, only steps 1) and 2) need to be performed.
5) The test requires the recording of eight data points (either measured or calculated) during each of the five test steps as follows:
   - i) primary line to neutral voltage (Vpri),
   - ii) load box current (Ilb),
   - iii) voltage at load box connection to secondary system (Vlb),
   - iv) transformer current as calculated by multiplying Ilb by Vlb and dividing by Vpri,
   - v) voltage from primary neutral at the transformer to remote reference electrode (Vp),
   - vi) voltage from secondary neutral in the service panel serving the area of cow contact to remote reference electrode (Vs),
   - vii) voltage from primary neutral at the transformer to secondary neutral at the service panel serving the area of cow contact (Vps), and
   - viii) cow contact voltage (Vcc) or cow contact current (Icc) at the same points used in the 48 hour test.
6) On this form, record the location of each test point and the required data points for each of the five steps listed above. The data points are measured or calculated.
7) Calculate the K Factor: the K factor is a calculated ratio of cow contact voltage (Vcc) divided by secondary neutral to reference voltage (Vs) and should be less than one. If the K factor is greater than one, then there is contribution to cow contact voltage from a source other than secondary neutral to reference voltage.

	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5
	Farm ON	Farm OFF	Farm OFF	Farm OFF	Farm ON
Load Box Condition	Off	Off	1/2 Load	Full Load	Full Load
Time:					
Vpri	V	V	V	V	V
Ilb	A	A	A	A	A
Vlb	V	V	V	V	V
Itxfmr	A	A	A	A	A
Vp	V	V	V	V	V
Vs	V	V	V	V	V
Vps	V	V	V	V	V
Vcc or Icc	V/A	V/A	V/A	V/A	V/A

K-Factor Calculation = $K = \frac{Vcc\ (step\ 4)}{Vs\ (step\ 4)} = \frac{\_\_\_\_\_\ V}{V} =$ [ ]