

Test 17 & 19

2 Bundles: four wires each (three BMS 42/1/1-20; one 3 BMS 42A/8/1-18)

Metal Shaving: Two steel shavings placed ~1 apart between bundles

Circuit Resistance: 1 Ohm

Generator: 3 phase, 400Hz, 120 line to neutral (208 line to line), 10 kVA.

Observations	Test 17	Test 19
Flash	Yes	No
Strong Arcing	No	No
Circuit Breakers Tripped	No	No
Damage Length	0	0
# Wires Failing Wet Dielectric Test	2 of 8	2 of 8

In both of these tests the steels shavings did damage to the insulation that exposed the conductor. In the case of Test 17 the shaving was arranged so that the movement of a shaving between the bundles caused a steady abrasion of the insulation (Figure 40) over the course of an hour. However, before the damage reached to the conductor the shaving was disrupted slightly (by an ohmmeter probe) which caused the shaving to move via the motion of the bundles to a new location. Here, the shaving chaffed through the insulation and caused a flash in a matter of minutes (Figure 41). The flash did not turn in to strong arcing and the shaving then moved to a new location where it continued to chaff the insulation. The test was ended before the sample could flash again.

The oscillogram shows 6 current peaks of up to 75 amperes that occurred during the flash event. Examination of the sample showed severe abrasion damage and a little soot near there point where the wire flashed (Figure 42).

In Test 19 the shaving used was thinner (49 mils by 18 mils) and the abrasion patterns were more like short cuts in the insulation (Figure 43). There were no flashing events during the 4 hour duration of the test. However, two of the eight wires failed the wet dielectric test. The points of failure on these wires were at cuts that were deeper than they first appeared. From the location of the cuts it appears that different shavings made the cuts and therefore they could not cause a flash event.