# Incident Summary #II-863230-2018 (#13186) (FINAL)

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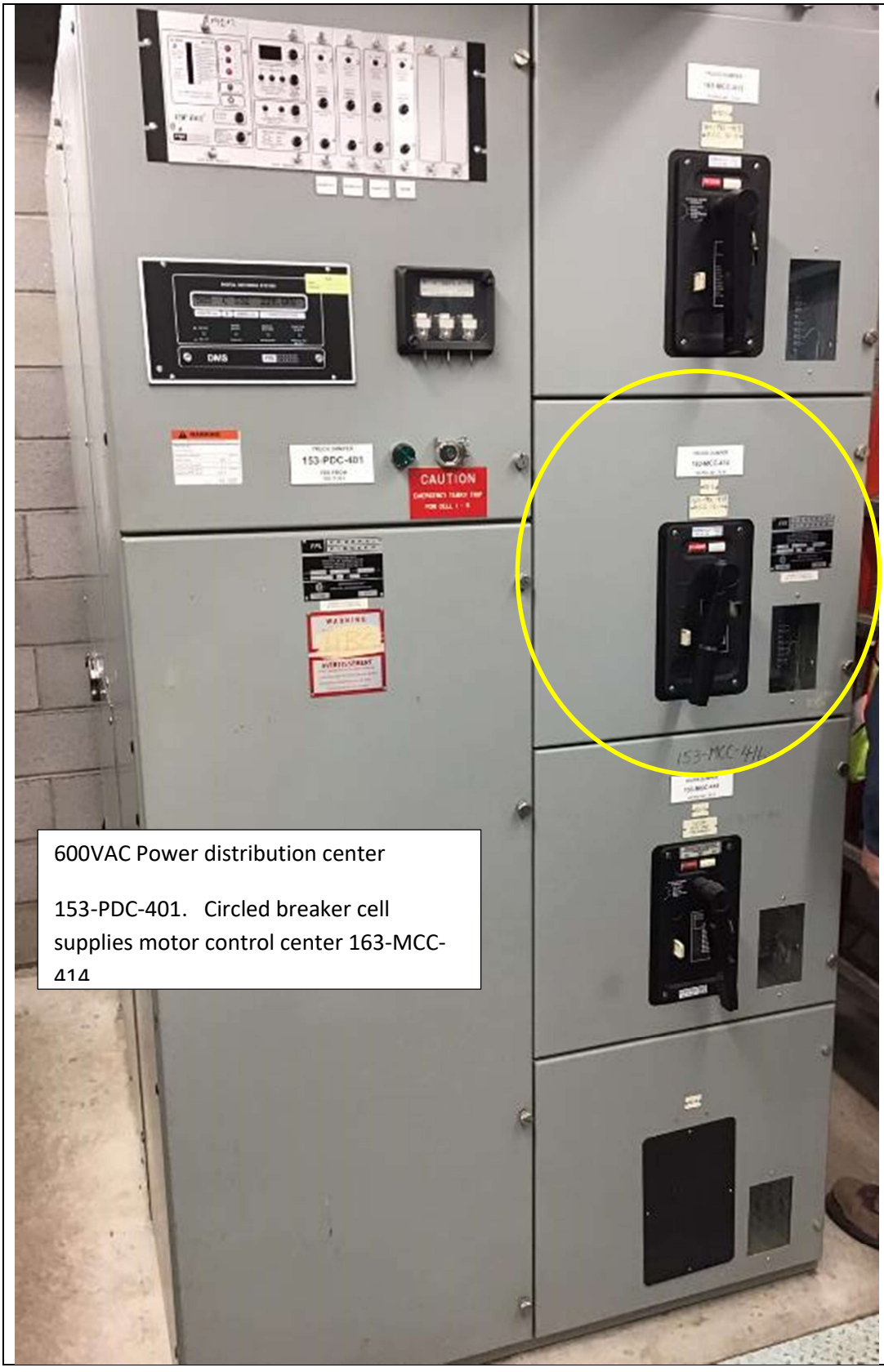
| SUPPORTING INFORMATION | Incident Date | | June 7, 2019 |
| | Location | | Castlegar, BC |
| | Regulated industry sector | | Electrical - Low voltage electrical system (30V to 750V) |
| | Impact – Injury | Qty injuries | 1 |
| | | Injury description | Individual sustained minor burns from fingers to elbow, numbness and tingling to right side of face |
| | | Injury rating | Minor |
| | Impact – Damage | Damage description | 600V 3phase motor starter internal components, chassis and door damaged from an unintentional contact between energized fuses and a door latching component |
| | | Damage rating | Minor |
| | Incident rating | | Minor |
| | Incident overview | | A component of a door latching mechanism that secures the door of a motor control center motor starter dislodged when the starter control switch lever was closed. The dislodged component contacted energized components inside the motor starter enclosure creating an electrical incident. |
| INVESTIGATION CONCLUSIONS | Site, system and components | | Motor control starter enclosures typically incorporate a door latching interlock mechanism that prevents the enclosure door from opening when the control switch is moved to the ‘closed’ position. The door latch engages as the control switch is operated. |
| | Failure scenario(s) | | A qualified individual had completed scheduled maintenance and re-energized equipment by operating and ‘closing’ the control switch of a 600vac motor starter. While the control switch was operating, a component of the door latching interlock that secures the door to the starter chassis dislodged from the control switch mechanism and contacted the line-side section of two motor protection fuses. |
| | Facts and evidence | | A retainer pin keeps the door latching interlock secured to the control switch mechanism. Examination of the control switch identified the retainer as missing. The missing retainer permitted the door latch interlock to fall out of the switch mechanism. |
| | Causes and contributing factors | | Restructuring and examination of the damaged equipment indicated that an electrical short circuit was created by unintentional contact between energized fuses and bonded-to-ground equipment. The magnitude of the incident energy was limited by the neutral impedance grounding device installed on the 600vac section of the power distribution. |

Photos or diagrams (if necessary)

1.33MVA 3PH

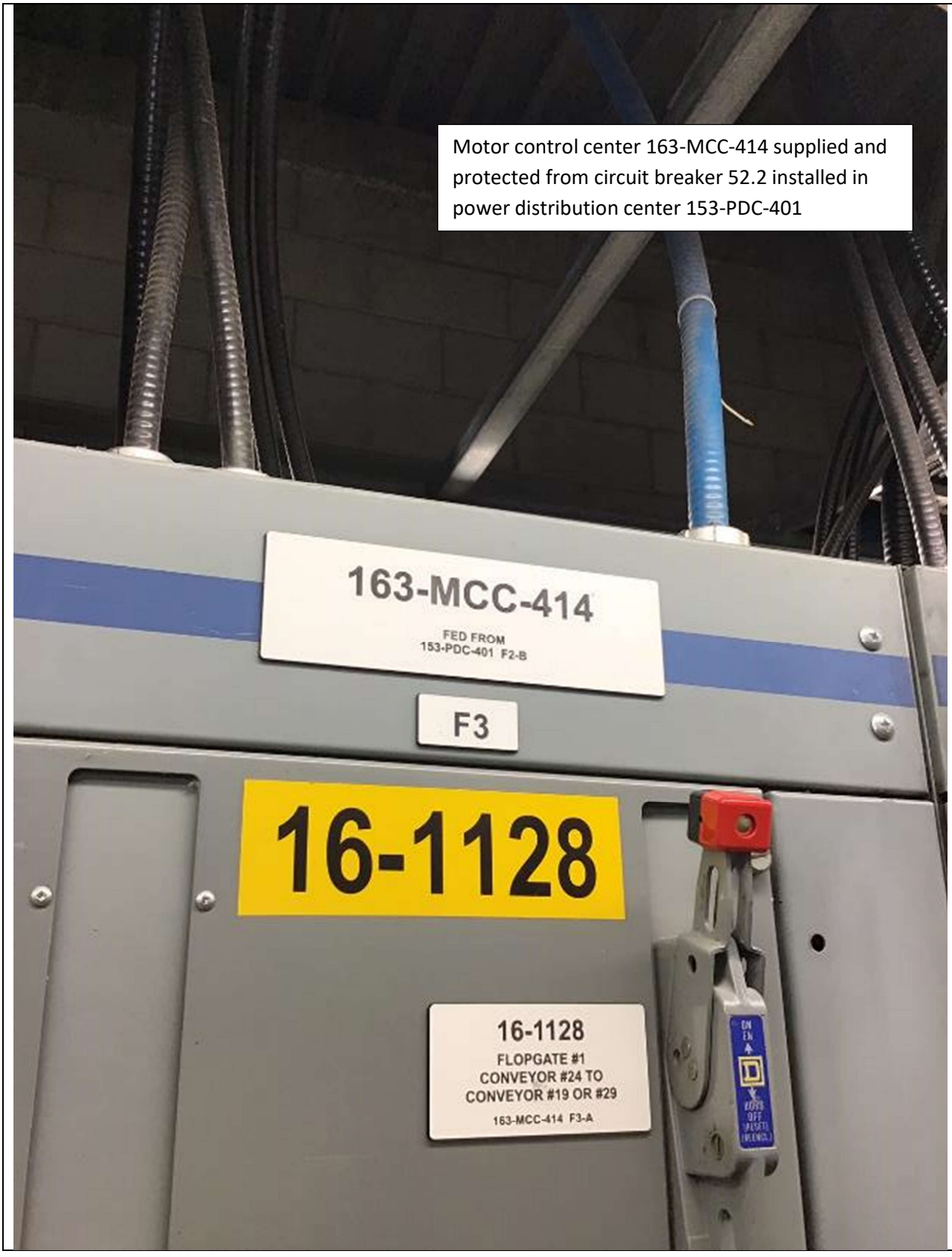
13800/600VAC Transformer supplying Chip Truck Dumping power distribution center 153-PDC-401 and motor control centers installed in Truck Dumping ehouse.



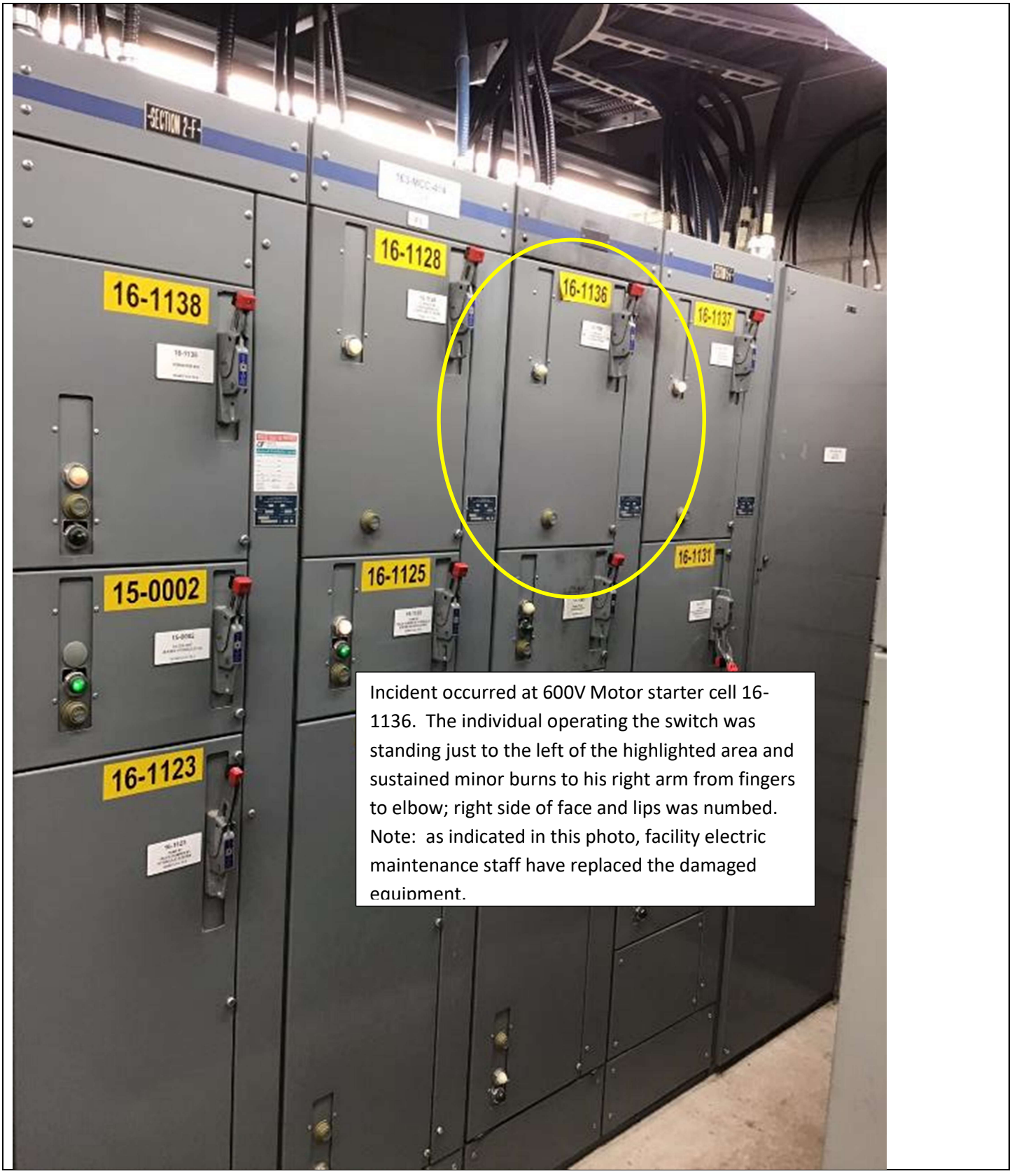

600VAC Power distribution center

153-PDC-401. Circled breaker cell supplies motor control center 163-MCC-414


1600A 600V circuit breaker supplying motor control center 163-MCC-414 fitted and tested with a 800A trip setting. This circuit breaker tripped open when the incident occurred.



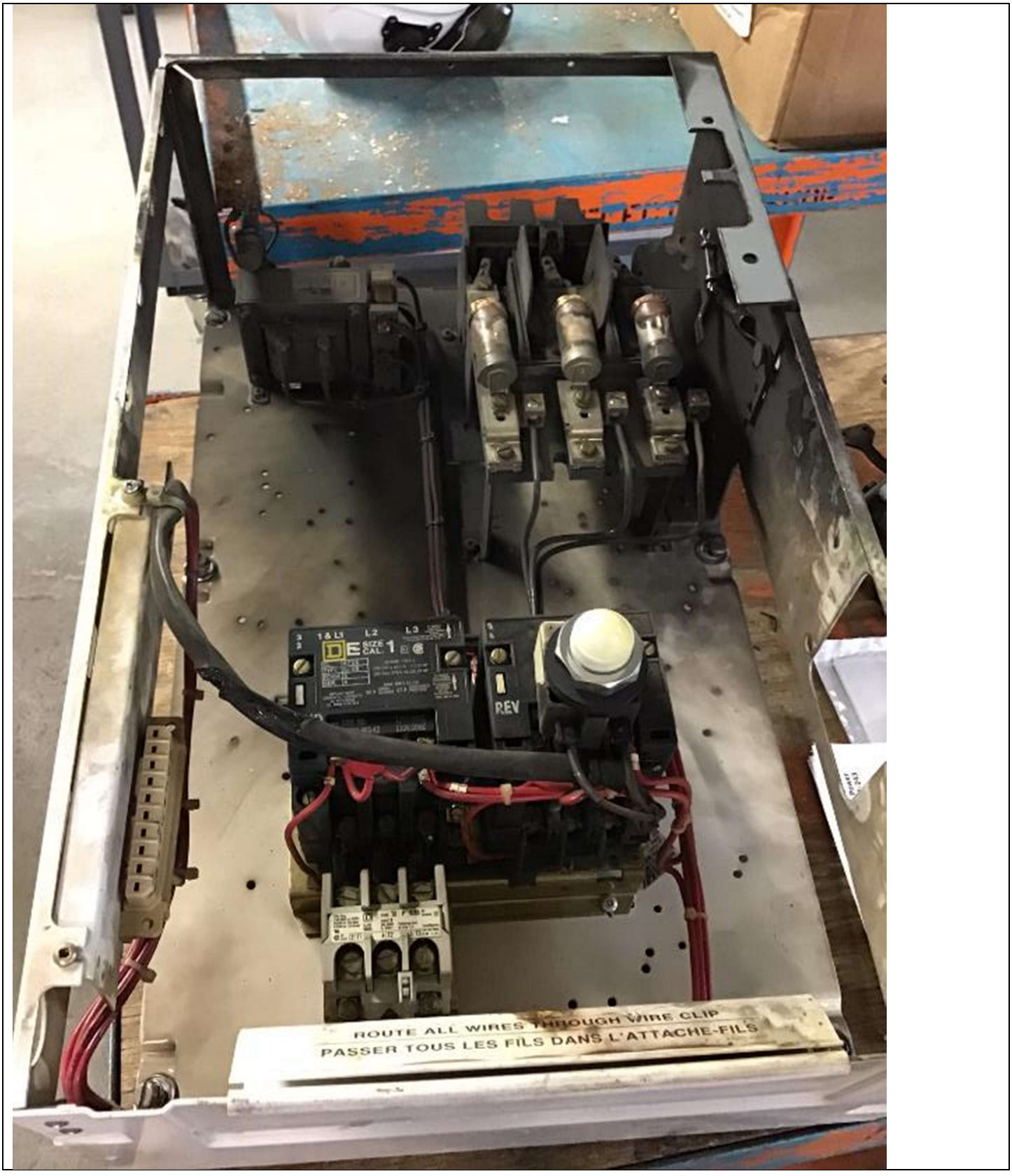

Motor control center 163-MCC-414 supplied and protected from circuit breaker 52.2 installed in power distribution center 153-PDC-401

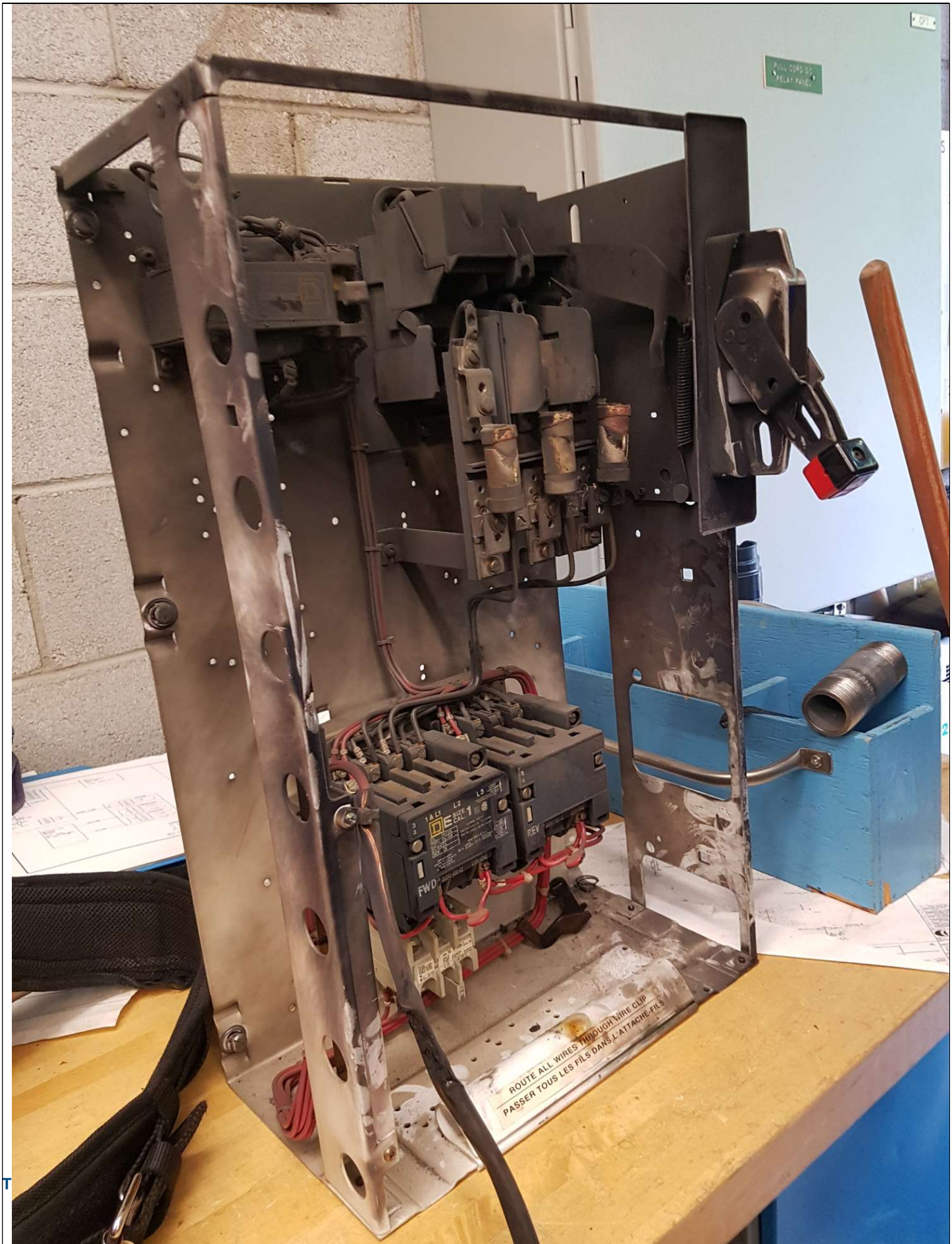



Incident occurred at 600V Motor starter cell 16-1136. The individual operating the switch was standing just to the left of the highlighted area and sustained minor burns to his right arm from fingers to elbow; right side of face and lips was numbed. Note: as indicated in this photo, facility electric maintenance staff have replaced the damaged equipment.


SECTION 4-F
16-1136
16-1136
PLOW #16-1
CONVEYOR #28
TO CONVEYOR #29
163-MCC-414 F4-A
ON
EN
HORS
OFF
(RESET)
(REENCL)
READY
RESET
16-1163
Sump Pump
Truck Dumper #1
163-MCC-414-F4

Damaged motor starter 16-1136. Incident occurred in highlighted area. All evidence and indications point toward a failure in the switch mechanism which resulted in an unintentional contact between a component of the switch mechanism and the line side of the fuses. Because the contact occurred on the line side of the fuses, upstream circuit protection initiated at circuit breaker 52.2 in power distribution center 153-PDC-401. The magnitude of damage and fault current levels was limited by the impedance grounding feature of the 600VAC power distribution.


REV
ROUTE ALL WIRES THROUGH WIRE CLIP
PASSER TOUS LES FILS DANS L'ATTACHE-FILS


ROUTE ALL WIRES THROUGH WIRE CLIP
PASSER TOUS LES FILS DANS L'ATTACHE-FILS
FWD
REV


Switch door latching component is retained in the door handle by a retainer pin. Note that the retainer pin is missing. The missing retainer resulting in the door latch component dislodging and contacting the fuses when the switch was closed creating short circuit faults between the fuses and the bonded to ground switch enclosure.


Dislodged door latching component contacted line side of fuses when switch was closed. The latching arm contacted two fuses creating both phase to phase and phase to ground faults