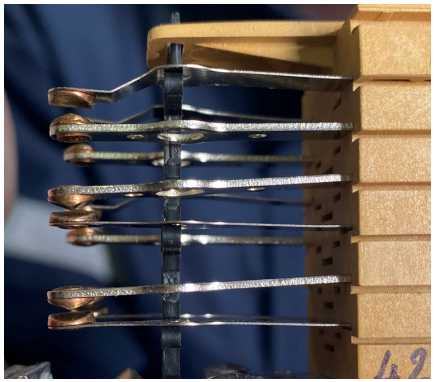
ILOC Faulty Trip Supervision Relay

HOL011 ILOC DEF/OOC during Feeder OCEF Injection
Dated 14/07/2023

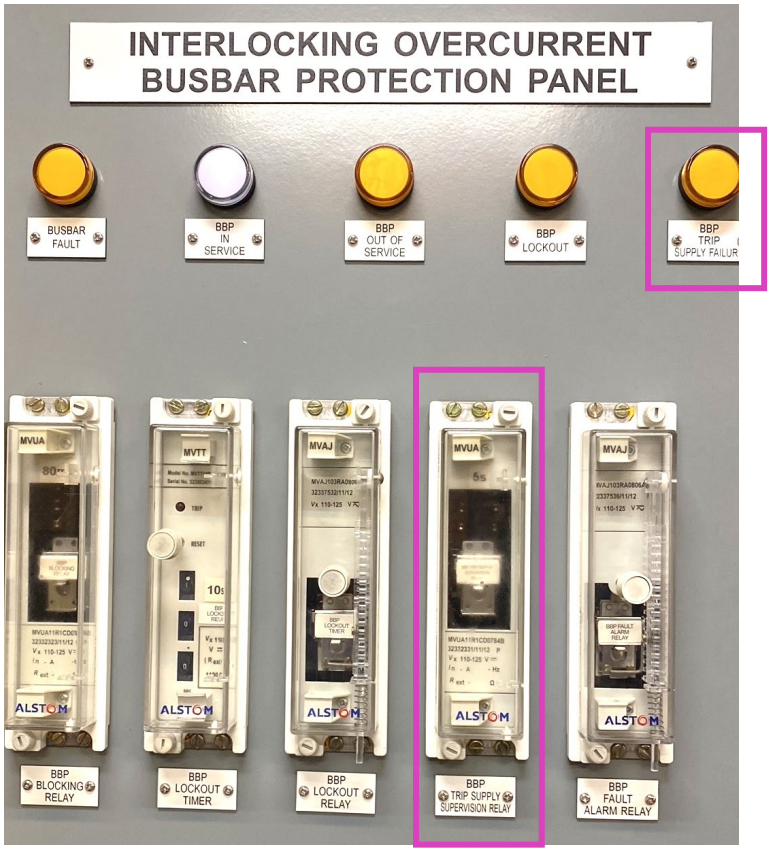
Karl M.H. LAI

Background

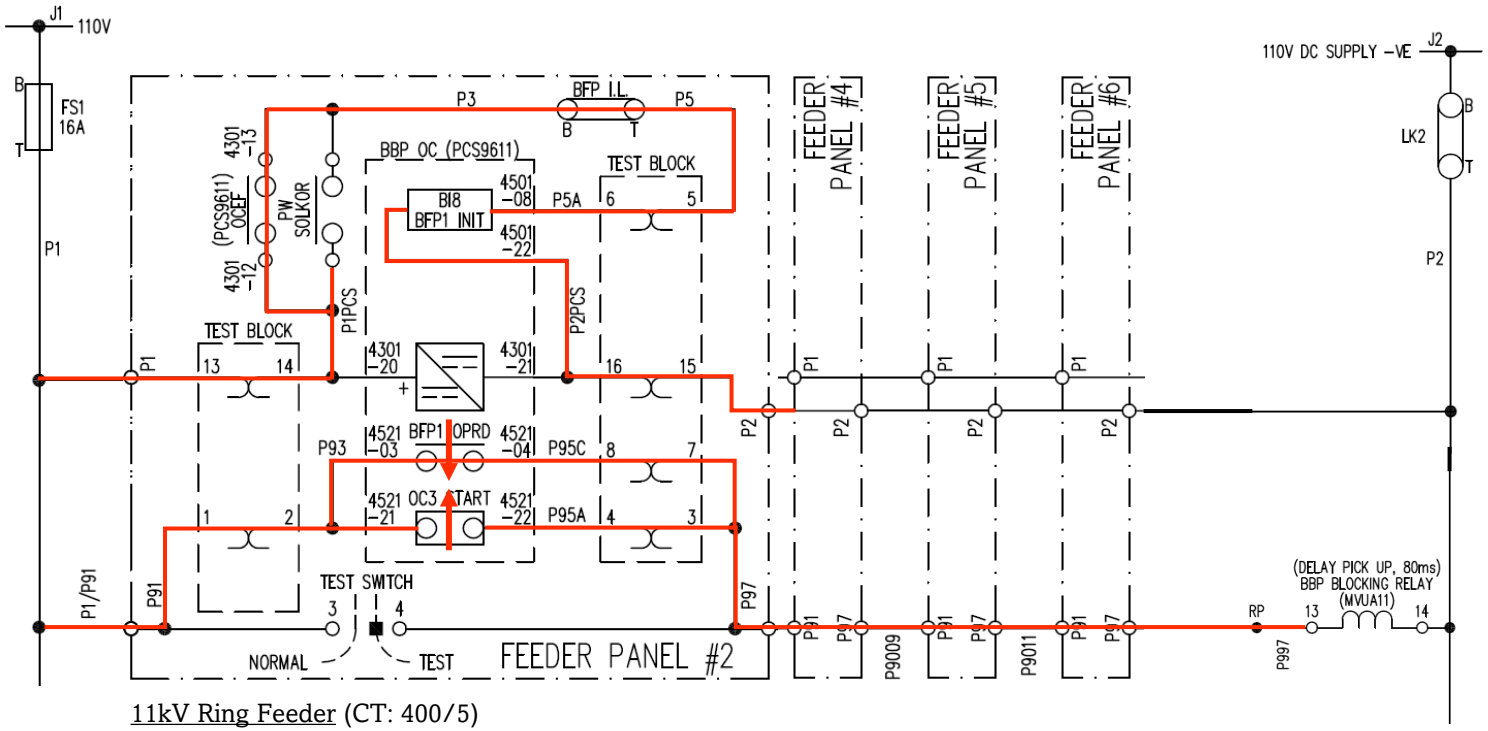
- On 14/07/2023, SCE informed that **ILOC DEF/OOC alarm** was activated during **11kV Feeder OCEF Injection Test**.
- The alarm was NOT activated with **10s delay** (for BBP lockout relay) due to prolonged injection.
- After site investigation, it was discovered that **BBP Trip Supply Supervision LED blinked** when site engineers (NR) performed OCEF timing test.
- There was **NO lockout** activated during the injection.
- The ILOC DEF/OOC alarm was activated due to **bad contact** of trip supply supervision relay MVUA11.



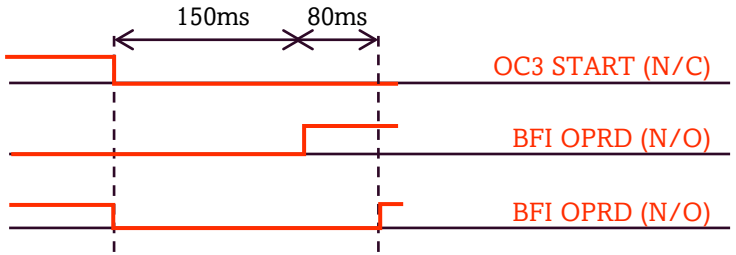
Bad Contact of MVUA11 Relay
(Contact 5-7, 9-11 in Closed Status)



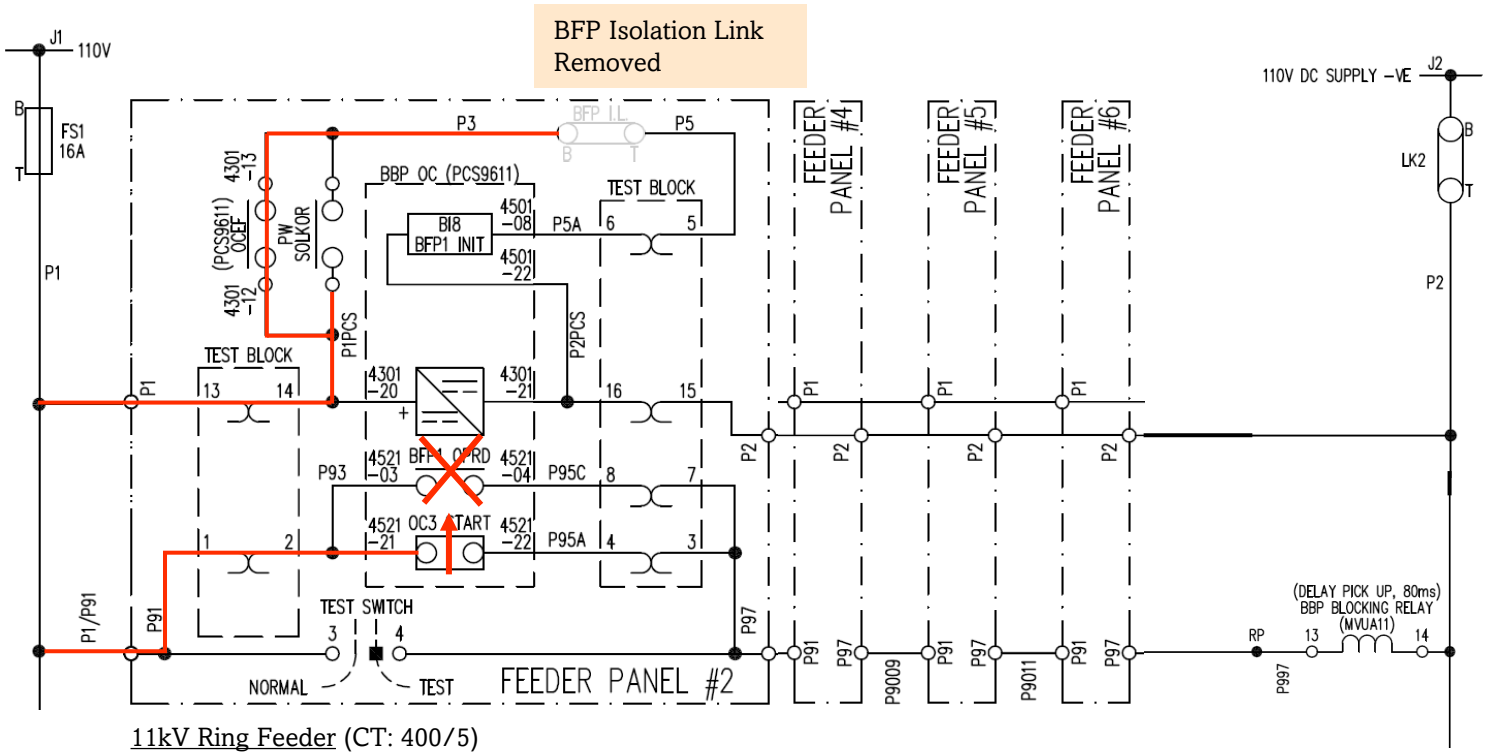
ILOC Normal Condition with Feeder OCEF Activated



11kV Ring Feeder (CT: 400/5)
OC3 START: 7.5A, 0s
BFP1: 5A, 0.15s



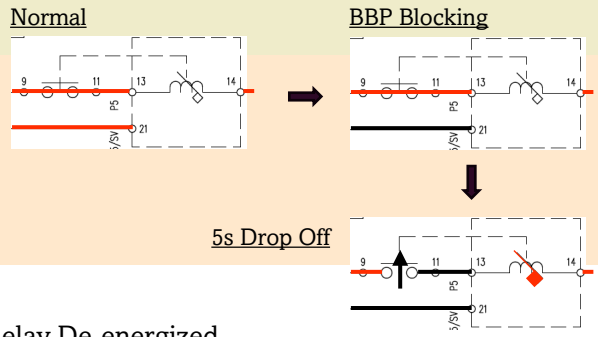
ILOC with Feeder OCEF Injection



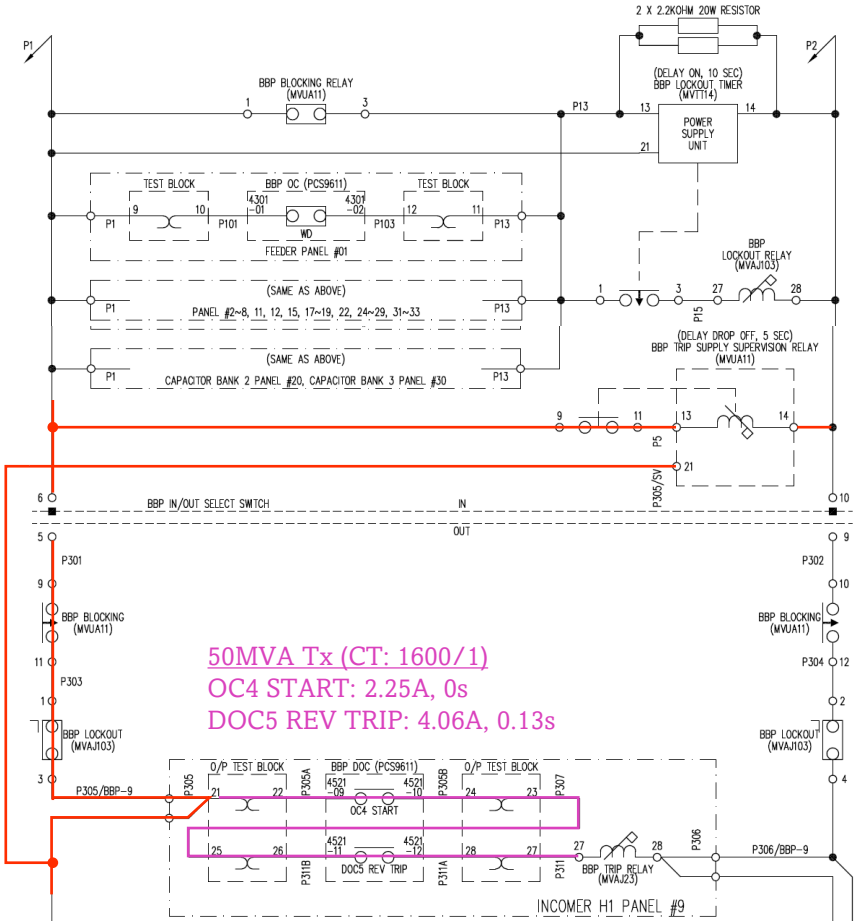
11kV Ring Feeder (CT: 400/5)
OC3 START: 7.5A, 0s
BFP1: 5A, 0.15s

After **OC3 START** operated, no contact will be reconnected for BBP Blocking Relay.
→ Breaking of P91 – P97 path

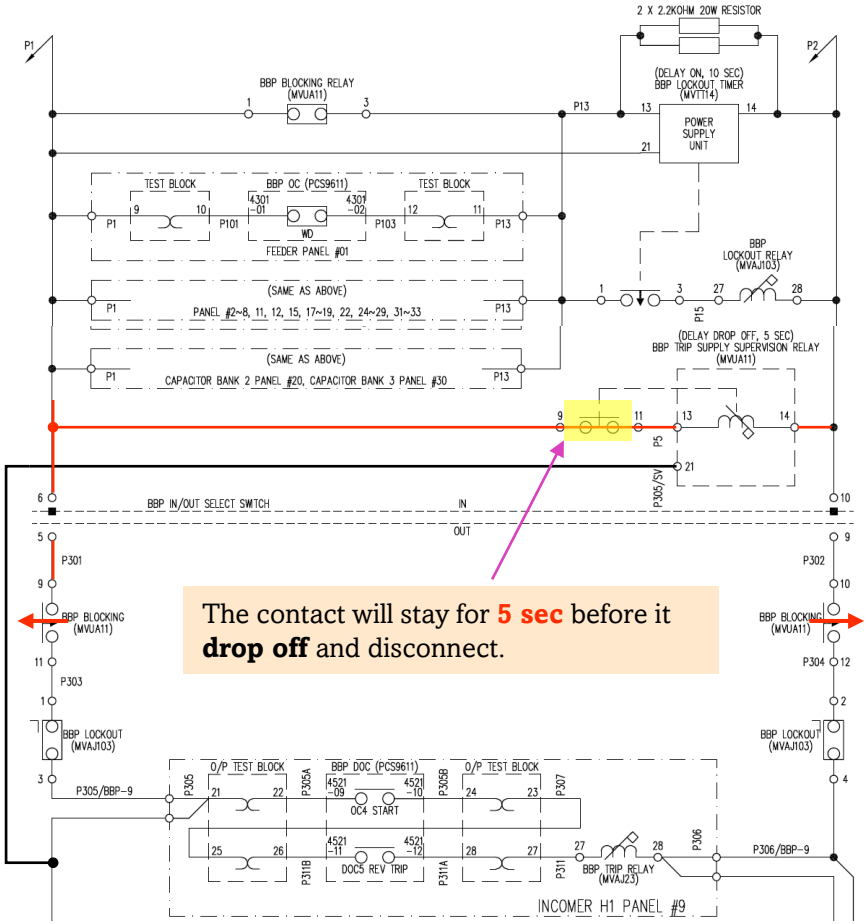
ILOC with Feeder OCEF Injection



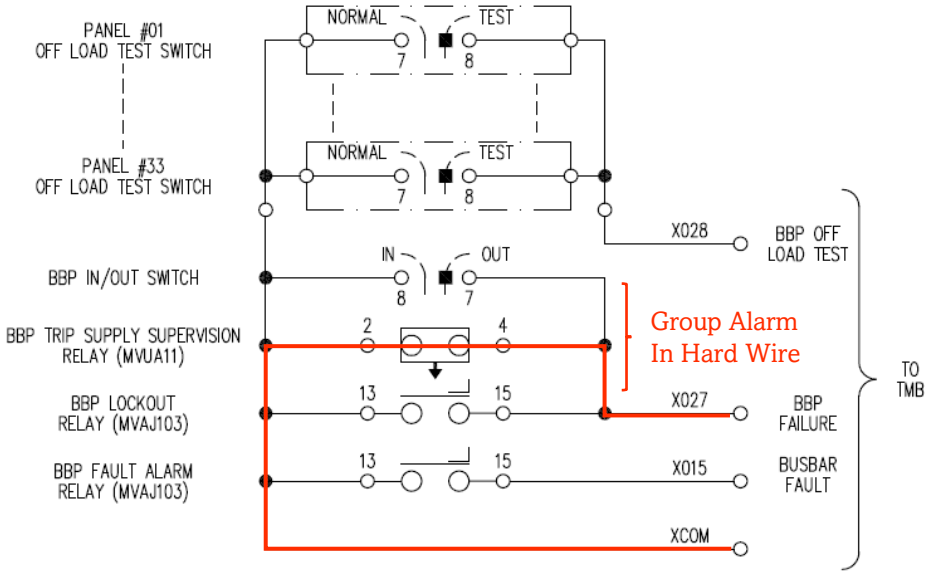
Before BBP Blocking Relay De-energized -

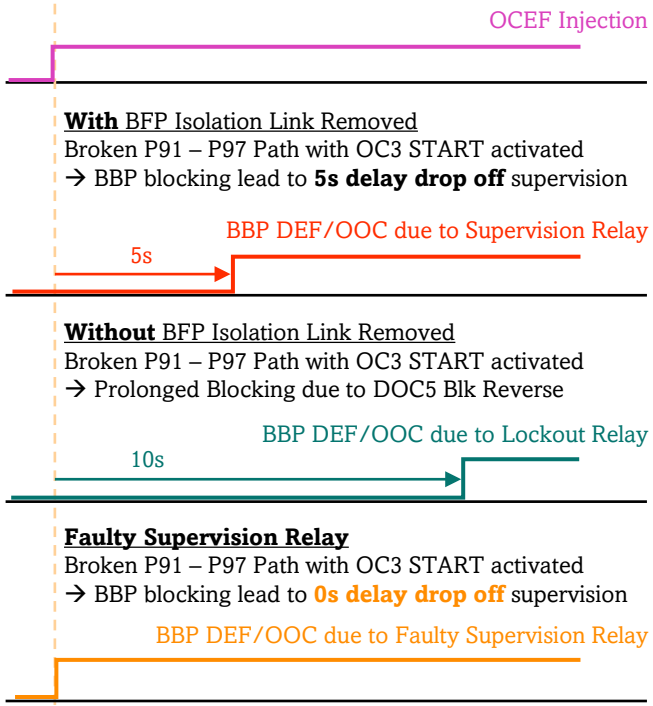


After BBP Blocking Relay De-energized -



ILOC with Feeder OCEF Injection





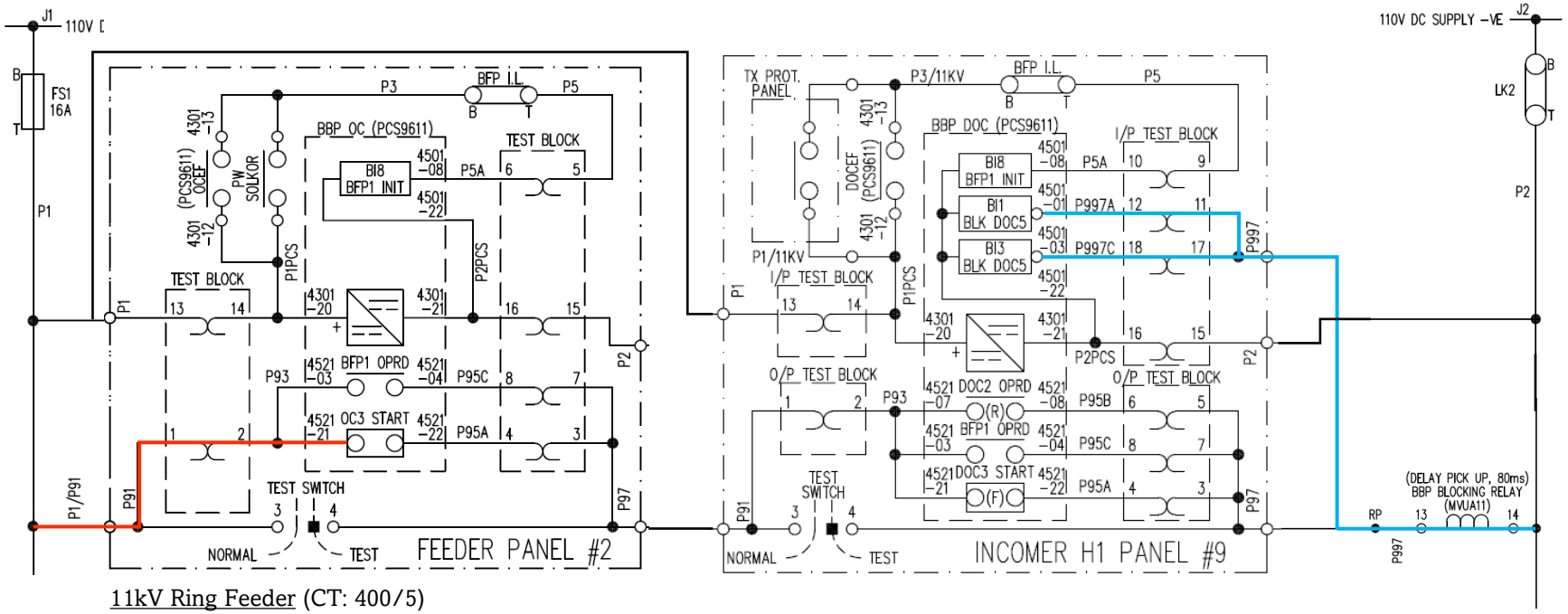

```
* 01, 69534    011 BB _BBP                          RTS              / DEF/OOC
               Composite ID: HOL.019.BB._BBP        STATUS: C
               Area : Dist+Tuen Mun      Default : PD   Picture : HOL
             RTU 260     DI POINT 197      comments :
G              1. PROTN SUPPLY FAIL
G              2. LOCKOUT
G              3. OOC
```

Lockout Possibility –

1. BBP Blocking Relay (Broken P91 – P97)
2. WD due to faulty OCEF relay
3. VTS / DOC5 BLK REV TRIP

- **BBP DEF/OOC** due to **supply supervision** (only alarming purpose) does NOT affect the actual function of ILOC.
- It does NOT lead to lockout (from 5s to 10s).
- It just blinds the actual lockout alarm if any.

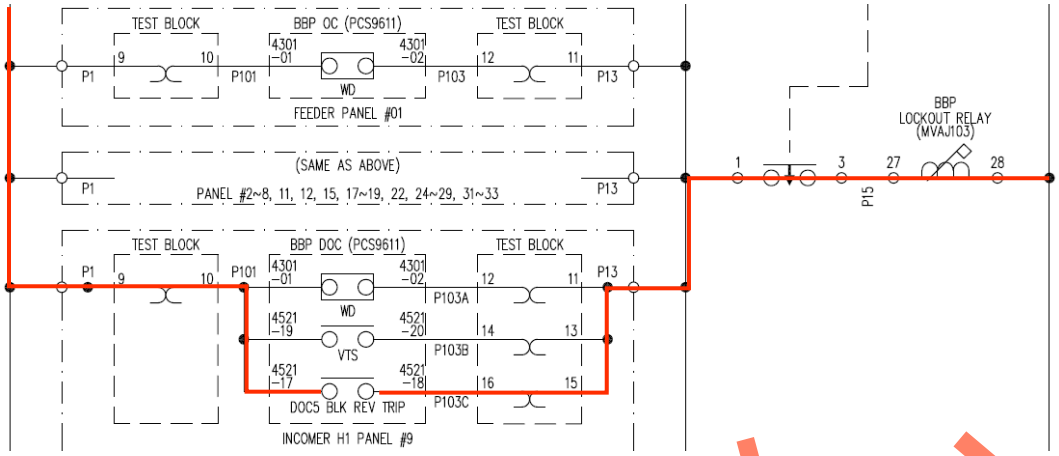
ILOC with Prolonged Injection



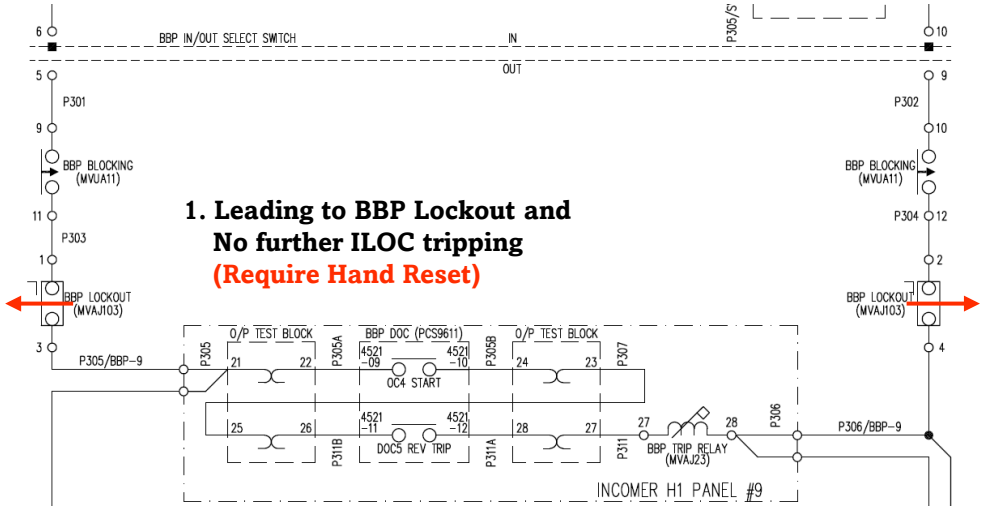
11kV Ring Feeder (CT: 400/5)
OC3 START: **7.5A**, 0s
BFP1: 5A, 0.15s

After **OC3 START** operated, no contact will be reconnected for BBP Blocking Relay.
→ Breaking of P91 – P97 path
→ BI1 & BI3 for **Blocking DOC5 REV** will be initiated.

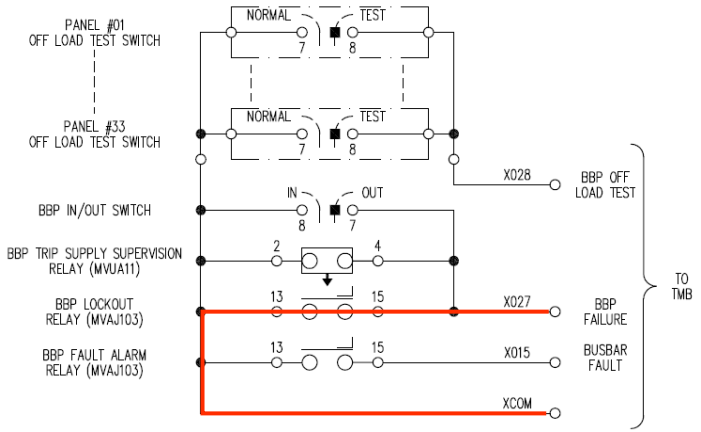
ILOC with Prolonged Injection



DOC5 BLK REV TRIP
(activated with broken P91-P97 path)
in the **LOCKOUT** circuit will lead to lockout
if it was activated continuously for **10s**.



1. Leading to BBP Lockout and No further ILOC tripping (Require Hand Reset)



2. Leading to BBP DEF/OOC alarm