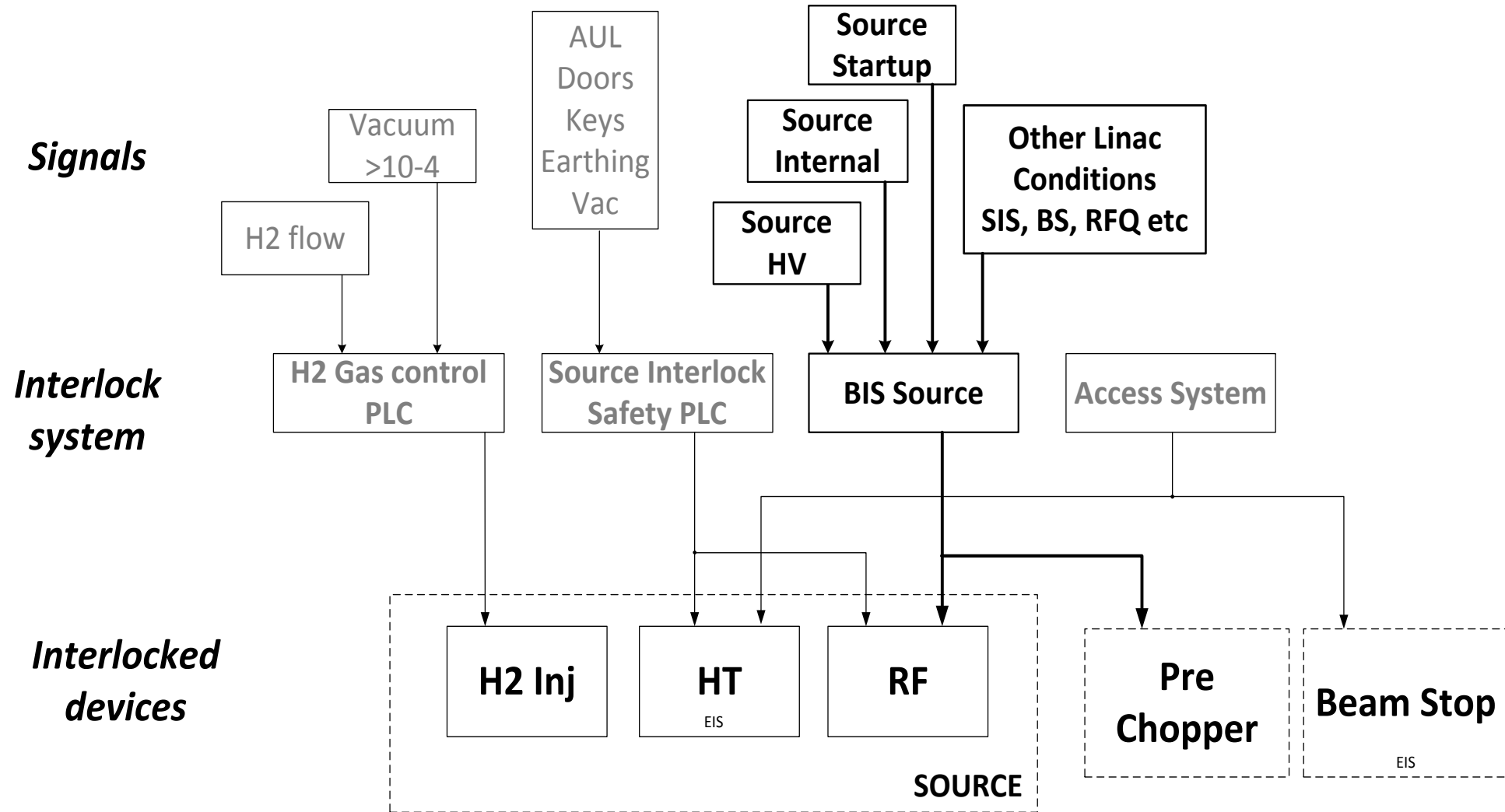


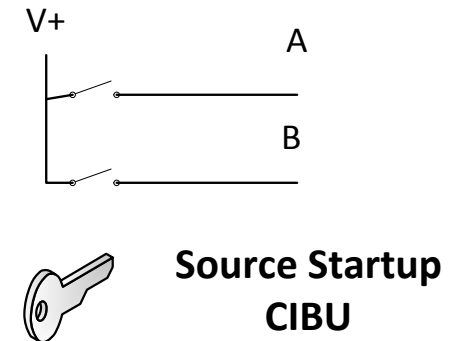
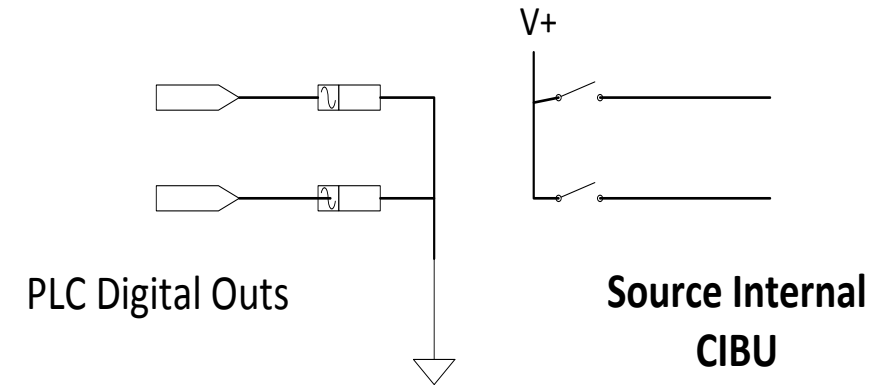
# Linac 4 Source Interlocks



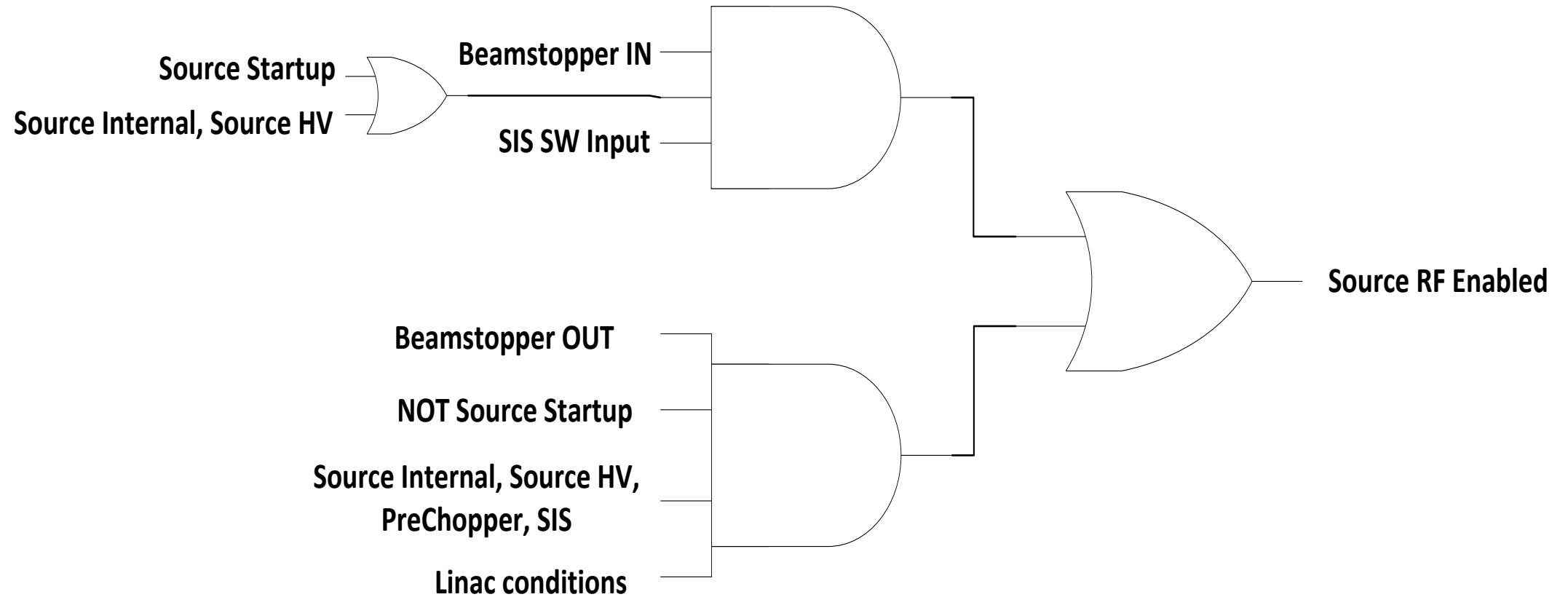
# Linac 4 Source BIS Inputs

- “Source Internal”. Standard S7-300 PLC driven relay contacts. True when source control PLC is operating correctly. Future possibility to allow extra logic.
- “Source HV”. Unused, so set always true. ‘Bouchon’ fitted at CIBU/BIS.
- “Source Start-up”. Electrical key switch. Allows override of “Source Internal” and “Source HV” for operation of source when beam stopper is in.

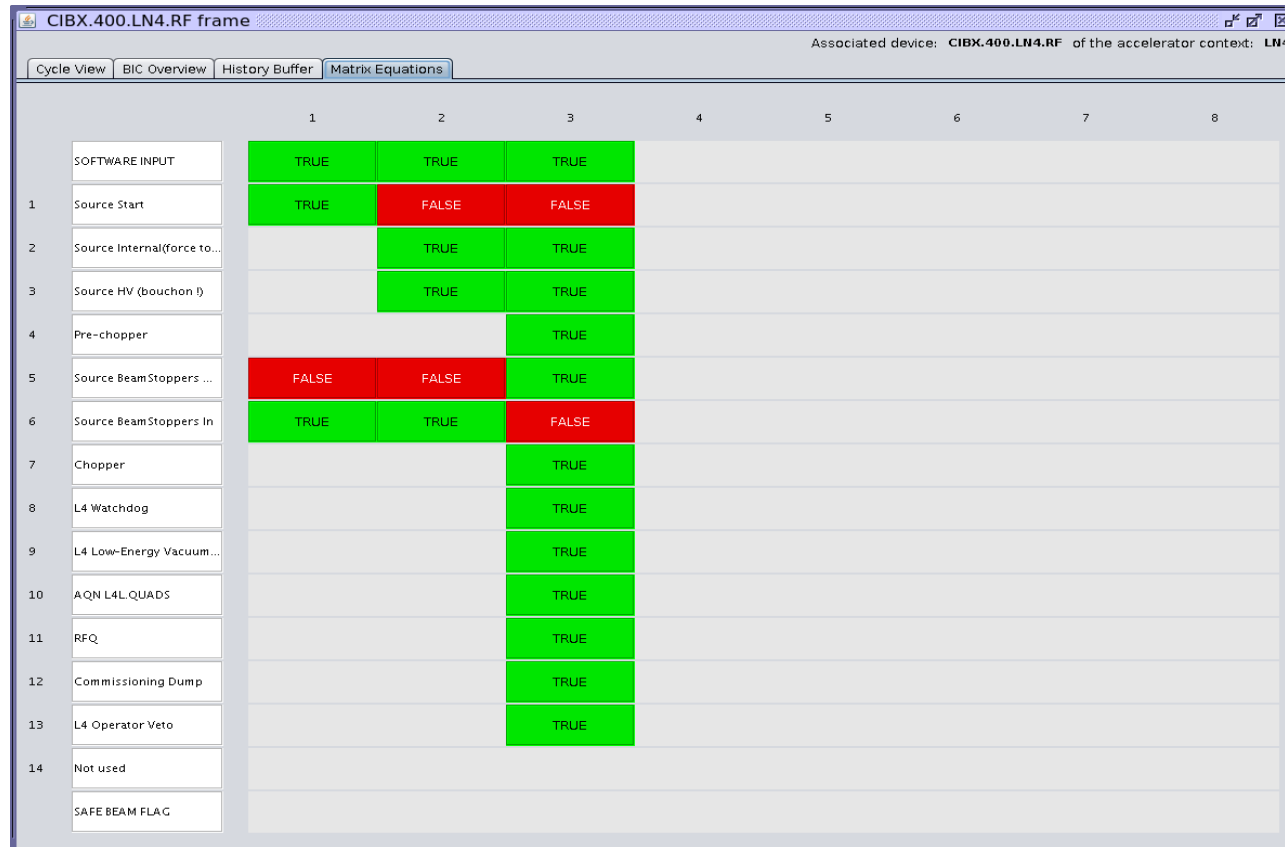
CIBU inputs “Source Internal” & “Source Start-up” described in **EDMS 1538576**. Commissioned 15/10/2015 and not modified since this date.



# Linac 4 Source BIS logic



# Source BIS logic.



Associated device: CIBX.400.LN4.RF of the accelerator context: LN4

	1	2	3	4	5	6	7	8
SOFTWARE INPUT	TRUE	TRUE	TRUE					
1 Source Start	TRUE	FALSE	FALSE					
2 Source Internal(force to...		TRUE	TRUE					
3 Source HV (bouchon I)		TRUE	TRUE					
4 Pre-chopper			TRUE					
5 Source BeamStoppers ...	FALSE	FALSE	TRUE					
6 Source BeamStoppers In	TRUE	TRUE	FALSE					
7 Chopper			TRUE					
8 L4 Watchdog			TRUE					
9 L4 Low-Energy Vacuum...			TRUE					
10 AQN L4L QUADS			TRUE					
11 RFQ			TRUE					
12 Commissioning Dump			TRUE					
13 L4 Operator Veto			TRUE					
14 Not used								
SAFE BEAM FLAG								

If the **beam stopper is in** then the source can run for conditioning (Source Start-up mode).

If the **beam stopper is out** then the source must not be in start-up mode and all the other Linac conditions must be true.

The SIS must always be true.

# Summary

- Source BIS inputs are unchanged since they were commissioned.
- No changes foreseen with the source BIS inputs for half sector test.
- We need to confirm that the BIS equation of the other Linac conditions when the beam stopper is out is still valid for these tests.
- Verify the operation of the SIS.

# Other Source Interlock Systems

- Access System. Acts upon the HT and beam stopper in the event of a forced door. Source HT is an EIS. DSO tests EDMS 1146640.
- Source Cage HT Interlock. S7-300F Safety PLC.
  - Test procedure EDMS 1314944, Test results EDMS 1321824 10/2013
  - System Description EDMS 1212106
- Gas system. S7-300 PLC, H<sub>2</sub> flow rate or high source pressure ( $>10^{-4}$ ) will stop gas injection and hence source.