Linac4 report

Week 9

FR for the L4 team

(next week LINAC supervisor : Giulia Bellodi)
Availability 98.2%

Monday to Monday

- Availability: 98.2%
- Blocking Faults: 7
- Total Faults: 7
- Fault Duration (overlap excluded): 3.1h
Events

- **Wed 02-Mar (~20min)**: **MEBT sector valves closed** (exit of RFQ ↔ DTL1 entrance)
  - Correlation among valves closure, vacuum spike and chopper off,
  - Not clear what caused what. Very rare event, possibly happened once xx years ago

- **Fri 04-Mar (~60min)**: **assessment of the source 2MHz RF amplifier saturation level**
  (required LEBT beam stopper IN → no beam in the LINAC)
  - RF tube amplifier gain to be re-adjusted few times in the last 2 weeks.
  - Plan/proposal
    - Monitor/re-assess the situation for the next 1-2 weeks. It takes form 5 to 30 min, propose to do it on Fri mornings
    - If degradation continues: plan the tube replacement as soon as time slot agreed (it takes 3-4 hours)

- **Sat 06-Mar (~90min)**: **DTL1 fault**
  - 2 x over – voltage. RF Piquet checks needed before second (successful) re-start.

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N.B.: Source delivered and is delivering requested \(\geq 35\text{mA},\) flat pulse
More-4-MPC
More Details Event 1

Wed 02-Mar (~20min): MEBT sector valves closed (exit of RFQ <-> DTL1 entrance)

- Correlation among valves closure, vacuum spike and chopper disabling, but what caused what is not clear

Could not identify any other correlation that explains the event.

Feedback from VSC:
‘These valves are so fast that the spike and closure are simultaneous. The system is redundant (interlock from gauges and ion pumps), the spike was seen by all the components and it is that what triggers the valves. Maybe the chopper was the origin sending beam to an area that could produce high outgassing, i.e. a wire.’
Proposal: archive this as ‘other’
Fri 04-Mar (~60min): assessment of the source 2MHz RF amplifier saturation level (required LEBT beam stopper IN →)

- Amplifier gain changed 3 times this year
- 7kW margin lost in two weeks
- As stated: check end of this week and re-assess situation

The tube in operation was installed in Nov. 2019 and operated about 16’000 hours. Normally those tubes last for at least 30’000 hours. Degradation is ~surprise.

- A tube exchange will take about 3-4 hours.
- After the last exchange the amplifier could deliver the requested power but it tripped a few times but could be reset remotely.
More Details Event 3

Sat 06-Mar (~90min): DTL1 fault
  • 2 x over-voltage. RF Piquet checks needed before second (successful) re-start.

- Sequencer started 4 times
  1. By OP with command ‘query’ (diagnostics mode)
  2. By OP with command ‘query’ (diagnostics mode)
  3. By OP with command ‘On’
     • DTL1 restarted by tripped again after few shots
  4. By RF Piquet with command ‘On’
     • DTL1 restarted and stayed On

Trips == 2 times DTL1 overvoltage
Other

• Tuesday 1.03: Richard:
  Transparent to operation, specifications to be approved and then circulated but system already in place (to allow LEBT MDs if needed)

• Yesterday: Piotr re-checked SFC

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