Science & Technology Facilities Council

VC 1st June 2017

Project Manager's Report

+ DC/MoM Report

Schedule - Liquid Hydrogen

HAZOP 16th and 17th May.

- Successful analysis of system ‘from bottle to absorber’
- Several actions created
  - most now completed
  - remainder are in progress.

Liquid Neon

- Very useful operational period.
- Significant progress in controls
- Proved performance at below 27K
- Held liquid in absorber over several days
- Shifters monitoring H2 system.
- Next step after data-taking will be:
  - repeat cool-down
  - quench of FC in flip-mode – use as ‘training’ quench. Required to prove H2 absorber support structure for operation.

Schedule - Liquid H2 - Next

Move FC off beamline

Substitute 2nd Turret

- New heat sinking internal to turret
- New internal pipework – complete
- New indium joints
- Lots of leak checking

Upgrade vacuum/quench line.

New vent valves – delivered for next week. Requires rearrangement of equipment in Hydrogen shed.

New internal pipework – x-ray tested - to be fabricated.

Look to restart H2 testing with Neon 3rd week June.

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Tracker

Service of cold heads for cryos 1&2 complete.

•Sunday 2nd April (not April 1st) cryo 4 cold head failed.

•Sumitomo services cryos 3 & 4 on 27th April.

•Extensive precautions with integrated pumping system to ‘dry’ cryo2

•Cryo 2 cooled down – cassettes show 12% & 28% ‘dead’ channels - reduced track finding efficiency.

RGA measurement of cassette volume show ‘lots’ of water.

- –Measurement not considered reliable as water and air fractions were exceptionally high
- –Tried both direct and sampling techniques – same answer.
- –Measurement is problematic due to relatively high leak rate of cassettes coupled with high vacuum requirements of RGA.

A Bross and cold trap arrive for shifts.

Problems compounded by failure of turbo backing pumps

Tracker

Cold-trap verifies ‘lots’ of water diagnosis.

Switch to scroll pump positioned close to port on cryostat for cassette evacuation (diaphragm pump are at least an order of magnitude poorer in ultimate vacuum, plus removal of pressure drop due long line should improve pressure by 2 orders of magnitude minimum)

Increased heater temperatures in cassettes to 320K.

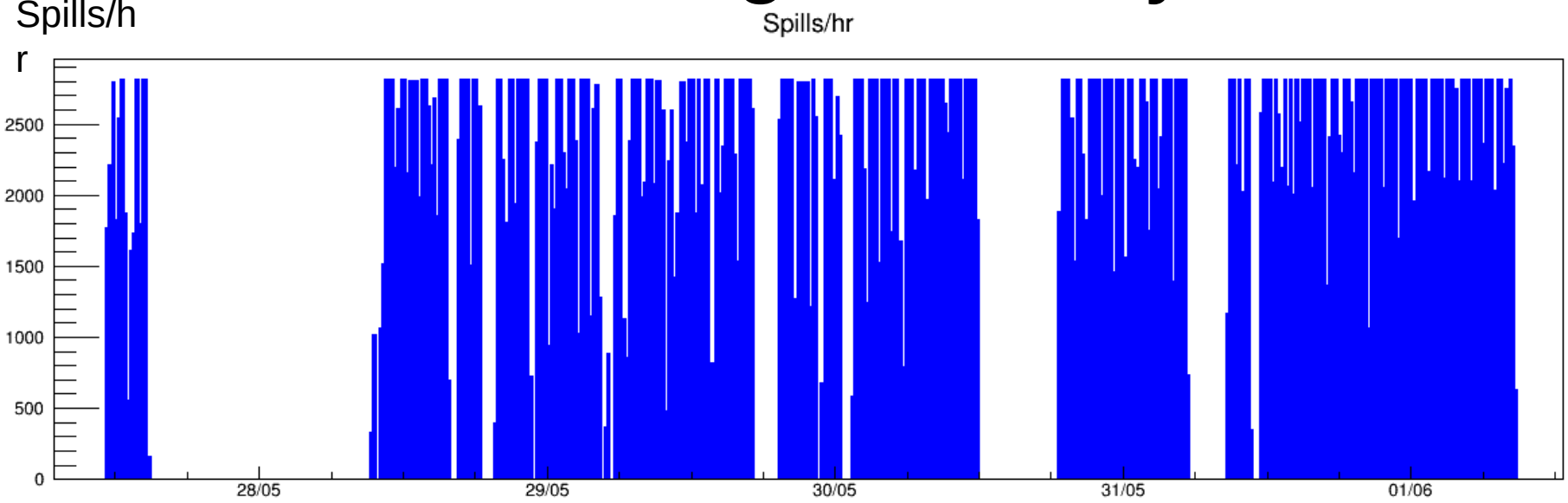
Many days of pumping/purging/cold trapping/leak checking and fixing later

- All cryos cold Sunday 28th May
- Channel loss is 7.4%
- Recovered many channels from Cryo 2
- Optimisation will be required and should recover some channels by moving connectors away from bad channels.
- Lost likely diagnosis is that one batch of helium used to keep cryo cassettes under positive pressure was contaminated with water.

DC Report

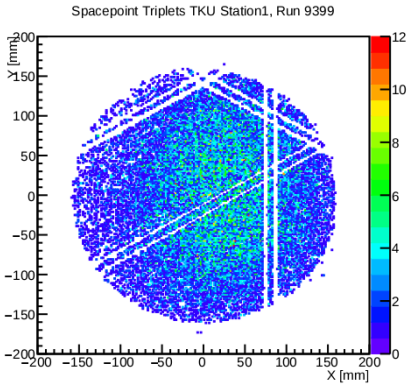
- Currently have 3 DCs + 1 reserve
  - Myself, Craig Macwaters and Alan Young with Victoria Blackmore in reserve
- Just about enough people to cover commissioning requirements over next few months
- Last month has been Mixed operations and commissioning
- Past week saw very smooth running with straight tracks (no field) and Neon in the absorber/empty absorber
- Long shutdown beginning Friday 2nd June
- ISIS user run starts 19th September
- 13 weeks to commission Liquid Hydrogen system and ensure the Spectrometer magnets are fully operational

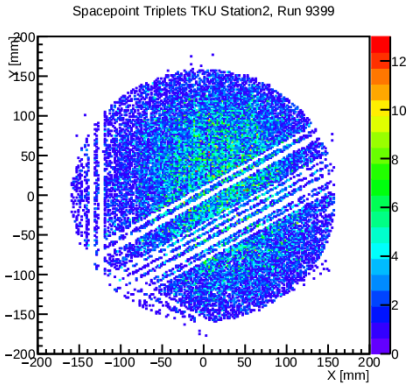
Data taking summary

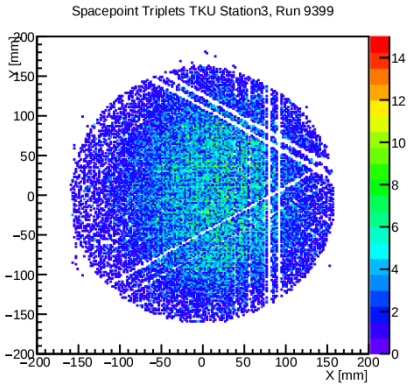


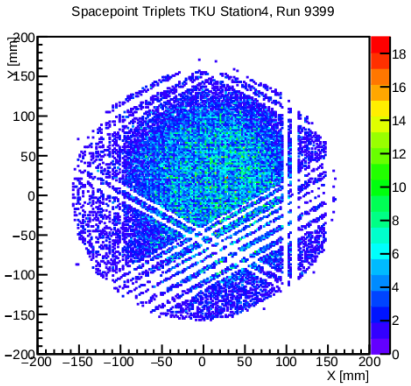
Absorber	Tag	Time(Min)	Dips	P.Trig(k)	TOF2(k)
G Ne	3-240+M3-Test1	249	11707	1032	88
G Ne	ToF-Calib+300	24	1158	78	14
G Ne	PionReference-DS	53	2523	197	51
G Ne	3-200+M3-Test1	315	14784	953	129
G Ne	400MeV+pi_pa82	306	14359	1029	343
G Ne	3-170+M3-Test1	457	21410	950	180
G Ne	300MeV+pi_pa82	227	10675	1020	262
G Ne	3-140+M3-Test2	716	33545	914	166
VAC	3-240+M3-Test1	271	12704	1121	96
VAC	3-170+M3-Test1	495	23217	1002	193
VAC	3-140+M3-Test2	703	32960	1097	210
VAC	3-200+M3-Test1	391	18358	1103	148

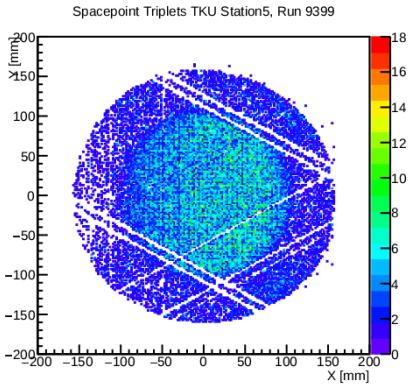
Data taking summary

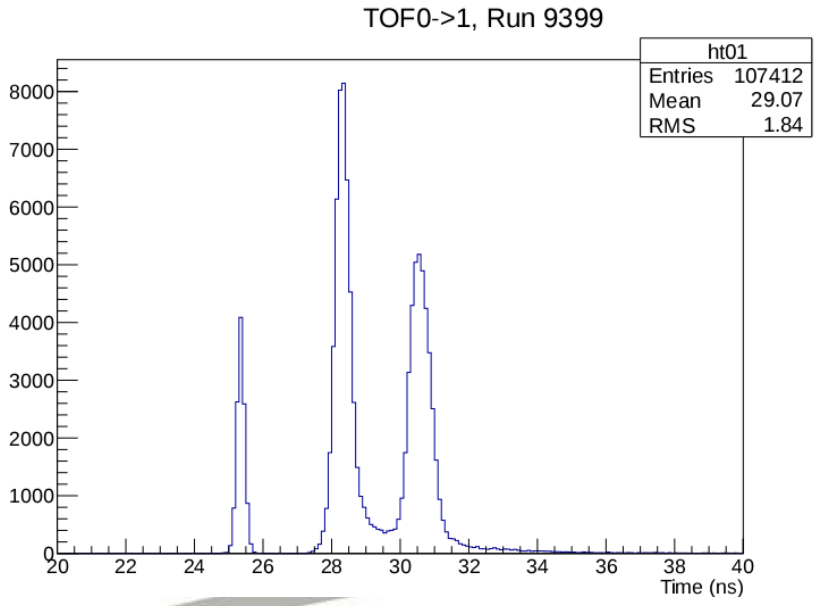












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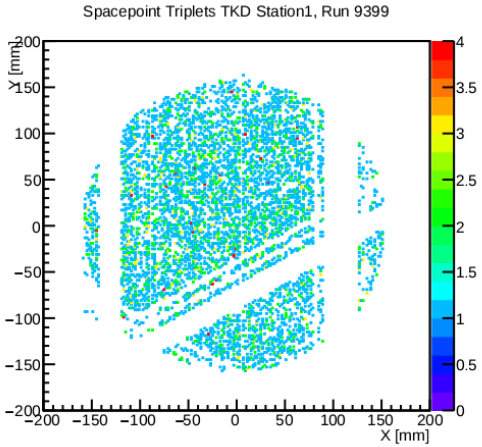
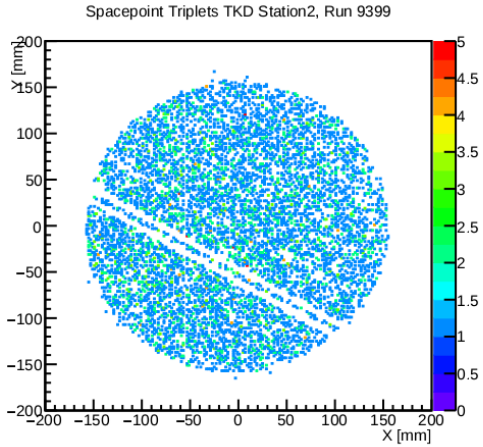
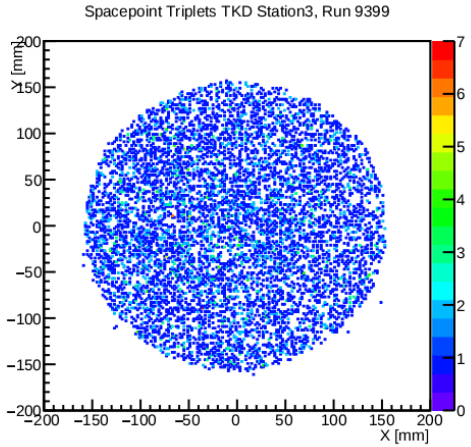
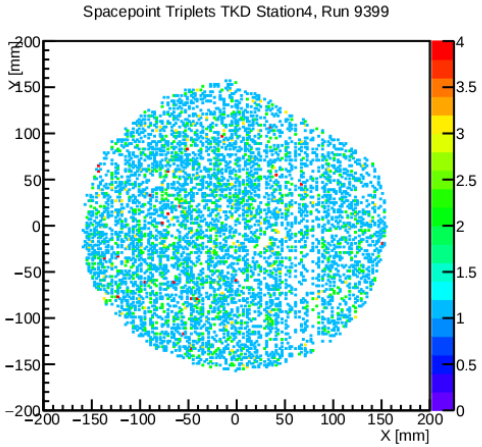
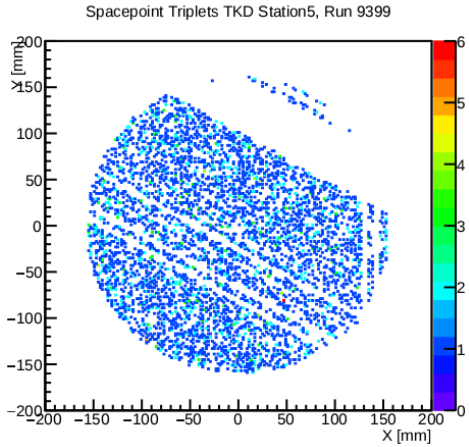
Data taking summary

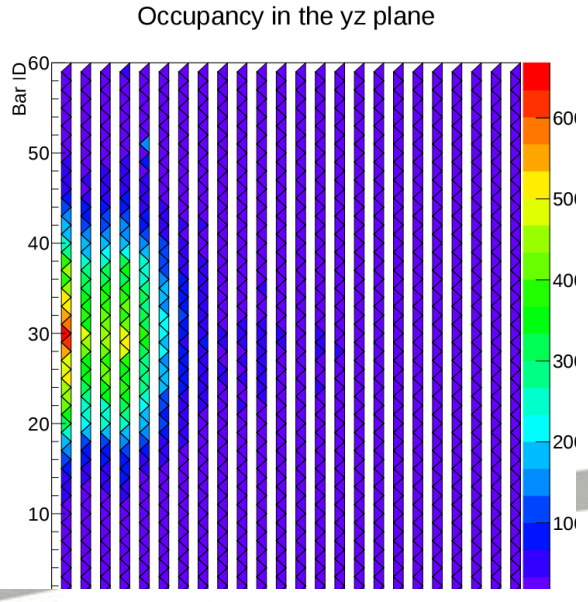












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DC Report

General Outline of Shutdown tasks

- Ensure the LH2 system is fully operational
  - Main priority
- Ensure SC magnets are in good shape for running
  - Needs a visit from magnet experts, QPS tune, full power tests
- Check the installed Target
  - possible replacement, have spare if needed
- Finalise C&M changes
  - Major progress but some work to complete
- Finish Alarm Handler changes
  - Still some spurious alarms
- Shifter task list from Henry
  - Assembled from shifter comments during running