

DPG QA & RCT

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For DPG QA

Alice Offline Week 31, March 2017

Based on Detector QA & RCT flags:

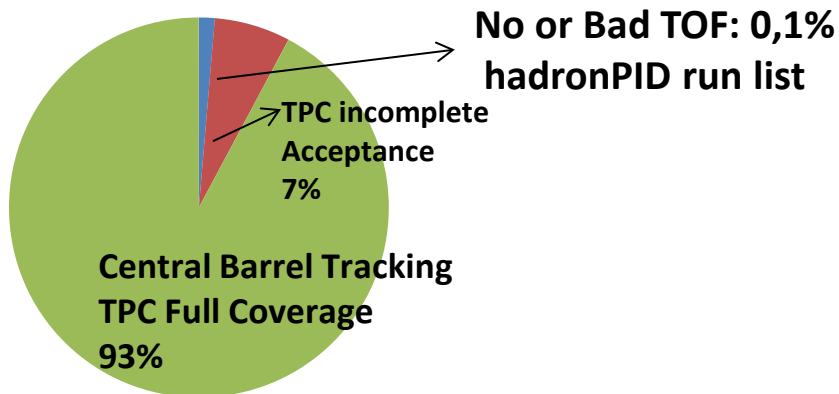
- ❑ Lists of good runs in AliDPGtwiki based on QA output: **five lists** created requiring: **QA good for detector+ full acceptance** (i.e. RCT flag 1)
 - Tracklets: (ITS + V0 + ZDC)
 - Central Barrel tracking (ITS+V0+TPC + ZDC)
 - Central Barrel Tracking hadron PID: (ITS+V0+TPC +TOF+TO+ ZDC)
 - Central Barrel Tracking electron PID: (ITS+V0+TPC +TOF+TRD ZDC)
 - Central Barrel Tracking calo: (ITS+V0+TPC +EMC+ ZDC)

- ❑ Additional list provided for the “Central barrel tracking” case including runs for which the TPC is **good but with incomplete acceptance** (RCT flags 1 || 19)

- ❑ Available lists of good runs:
 - **2016 pp 13 TeV**: LHC16l pass1; LHC16k pass1; LHC16f pass1
 - **2016 p-Pb periods** (LHC16q,r,s,t)
 - 2015 pp 5 TeV: LHC15n pass2 and pass3
 - 2015 PbPbLowIR: LHC15o pass3_pidfix, pass4_pidfix_cookdEdx, pass5 (ongoing)
 - 2015 PbPbHighIR: LHC15o pass1 and pass1_pidfix

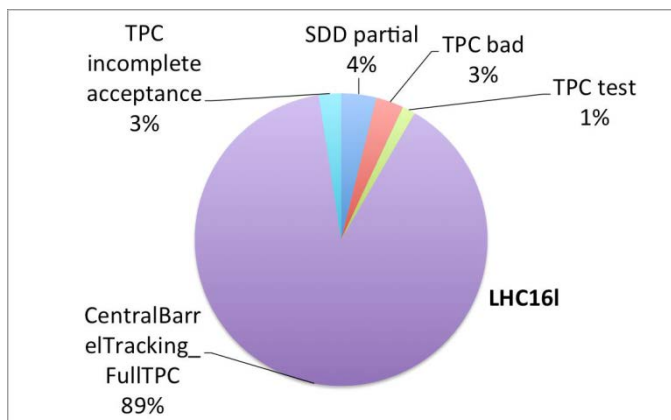
LHC16k

Interaction rate: ~120 kHz
213 runs reconstructed



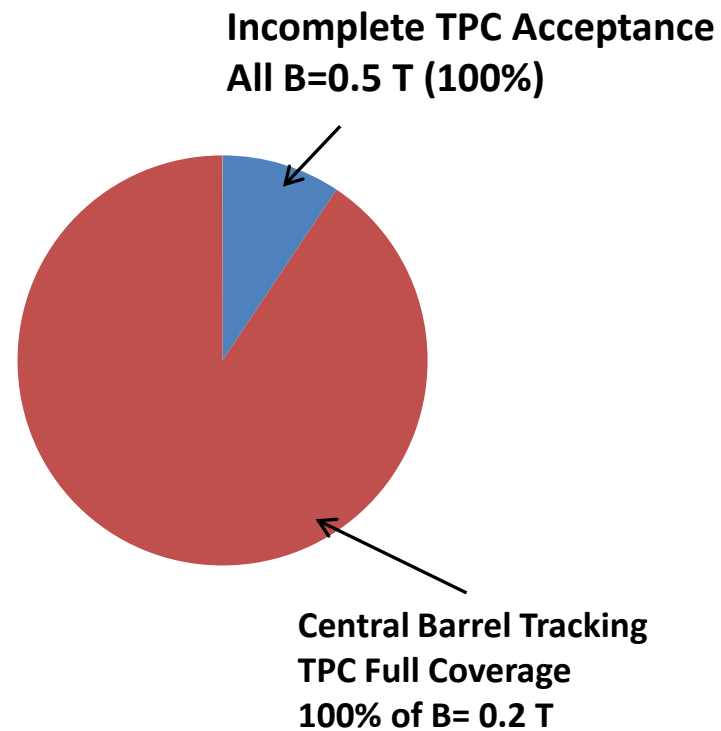
LHC16I

Interaction rate: ~120 kHz
89 runs reconstructed



LHC16f

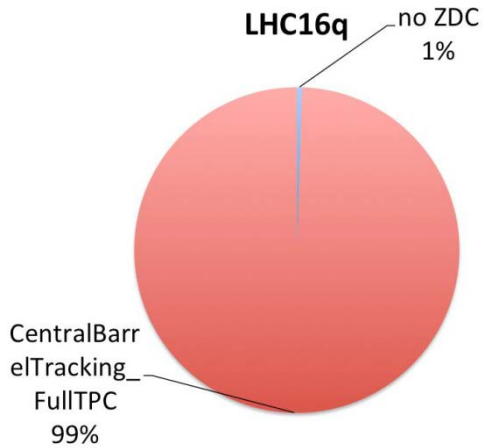
Interaction rate: ~5-70 kHz
2 Magnetic field: 0.5 T & 0.2 T
24 runs reconstructed



LHC16q pPb

Interaction rate: ~16~20 kHz

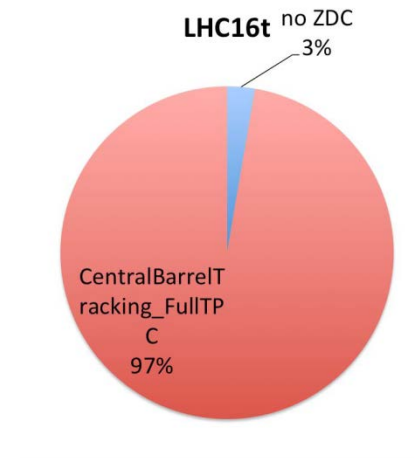
35 runs reconstructed (1 without SDD)



LHC16t Pb-p

Interaction rate: ~30 kHz

5 runs reconstructed (1 without ZDC)



LHC16r pPb

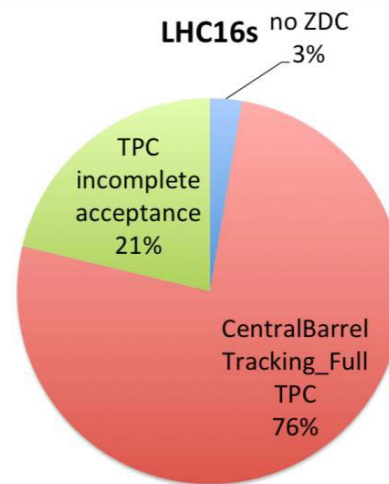
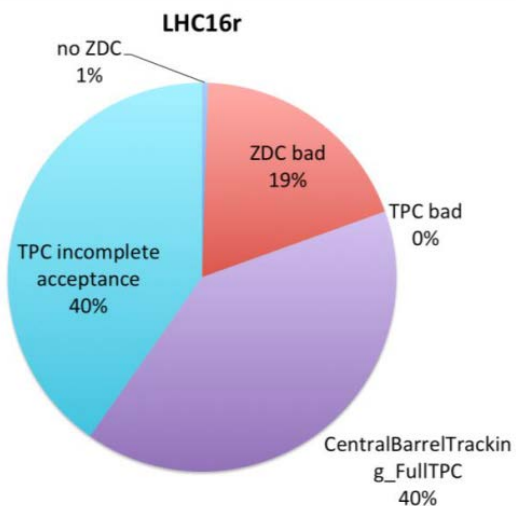
Interaction rate: 100-400 kHz

53 runs reconstructed (1 without ZDC)

LHC16s Pb-p

Interaction rate: 150-250 kHz

25 runs reconstructed (1 without ZDC)



- LHC16p : pp 13 TeV
IR: 120 kHz
24M kINT7 events
- LHC16i : pp 13 TeV
IR: 200-600 kHz
38M kINT7 events
- LHC15l : pp 13 TeV
IR: ~400 kHz

RCT flagging used to create Runlist

Discussion started October 2016 to improve it and make it more understandable for users

➤ Need of make it more readable for analysers

- Clear defined rules for flagging
- Uniformise flagging
- Backward compatibility

RCT flagging used by detector experts and run coordination to store information

- Need to keep granularity on information stored
- Backward compatibility

The screenshot shows a table with columns for Run#, Bunches, Scheme, Fill #, Energy per beam, Intensity per bunch, Mu, Bunches (B, B, B, A, B, C), MB Interaction, Rate (Hz), MB Beam-Empty, MB Empty-Empty, Muon Interaction, High multiplicity trigger, EMCAL Calibration, Global quality, Muon quality, Physics Selection Status, Comment, Field, and Detectors configur. The table contains 20 rows of data. Callouts point to specific cells: 'Global quality flag' points to the 'Global quality' column, 'Muon quality flag' points to the 'Muon quality' column, 'Detector status flags' points to the 'Detectors configur' columns, and 'Phys Sel status flag' points to the 'Physics Selection Status' column.

- ❑ RCT relates to a reconstruction pass:
 - Need of muon_calo_passes RCT page: done
- ❑ No default propagation of detector status flag from 1 pass to next/other pass
 - Except predefined flag for “unrecoverable data”
- ❑ **Detector Flags:** filled by detector QA experts (includes Phys Selection)
 - Need to uniformise flags for all detectors and define new common convention
 - Need of a trigger Column for detector concerned : EMC, MUON, PHOS, AD
 - Need of a PID Column for detector concerned : TOF,TPC,ITS,TRD)
 - **Backward compatibility**
- ❑ **MUON status Flag:**
 - ❑ Filled by MUON on their QA of muon_calo_passes
 - Could be displayed only for muon_calo RCT pages
 - Need to propagate the RCT flags of muons from pass x to muon calo passes
- ❑ **Global Quality Flag:** filled by DPG QA
 - Global quality based on Central Barrel Runlist selection
 - ❑ (to ensure backward compatibility)

Thanks to Costin

Detector Column General convention:

- Flag "1": GOOD
- Flag < 0 : data not usable: bad data for this pass
- Flag ≥ 100 : Limited acceptance: data are OK BUT incomplete coverage

Same convention should be used for:

- **Detector Trigger Column:** 1, negative (<0) , acceptance(≥ 100)
- **Detector PID column:** 1, -1

Caveat:

Extension of number of column & displaying

Constraints: backward compatibility

- Was asked to detectors to propose a remapping with respect to those conventions;
- Few answer in 2016, decided to postpone after QM;
- First iteration of remapping proposal in backup /detector
- This remapping will enforce us to use still quite a large number of flags to preserve the granularity of the information stored
- **We expect for the future to reduce the nb of flags to its lower values by adding run/run comment**

Det	ACO	AD	EMC	EVS	FMD	HMP	MCH	MTR	PHOS	PMD
#flags (actual)		3	47	11	14	8	13	7	19	
# flags		3	13 +5T	11	13	6	10	6	11 +T	
status		OK	OK	OK	OK	OK	OK	OK	OK	

Det	SPD	SDD	SSD	TOF	TPC	TRD	T0	V0	ZDC
#flags (actual)	12	6	6	12	20	7	5	8	10
#flags	7 +1T	5 +PID	4 +PID	11 +PID	?	9 +PID	5	7	8
status	OK	OK	OK	OK		OK	OK	OK	OK

This is to preserve granularity of previous flagging
But most of them will be reduced in future usage to mainly 3 if comment implemented

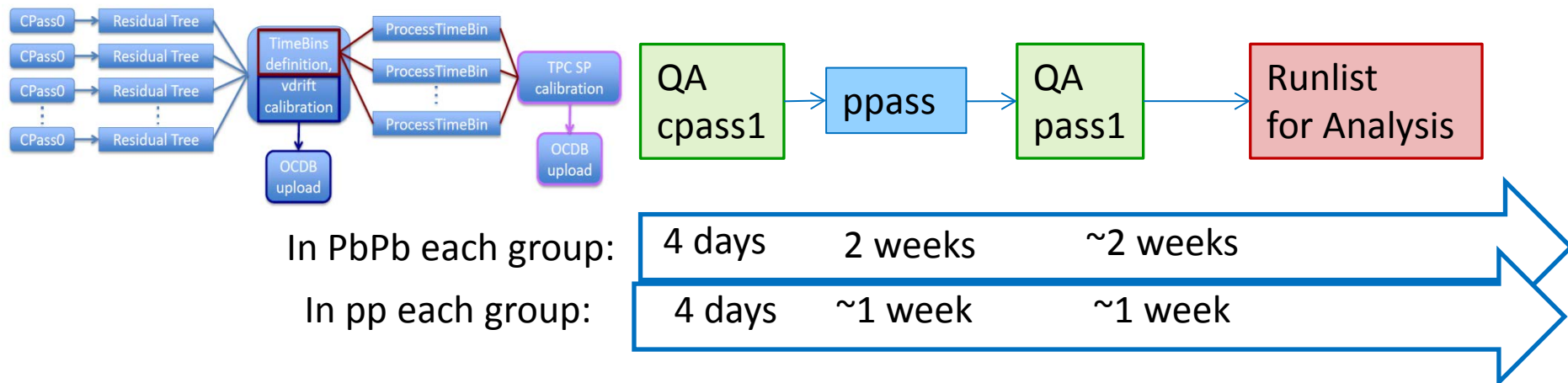
DPG QA activity:

- Lots of parallel productions in the last months;
- Few delays in QA with respect to the 4 days target but progressing and only few outliers

RCT improvement:

- 1st proposal of remapping almost ready for discussion of details in view of implementation
- Deadline should be set to end of month 31 March to collect all detector suggestions
- Aim at implementation after Eastern
- Other activities:
 - Interaction with Run coordination for keeping track of all problems seen during QA
 - Improving the automatic alerts -> see QATools talk

Backup



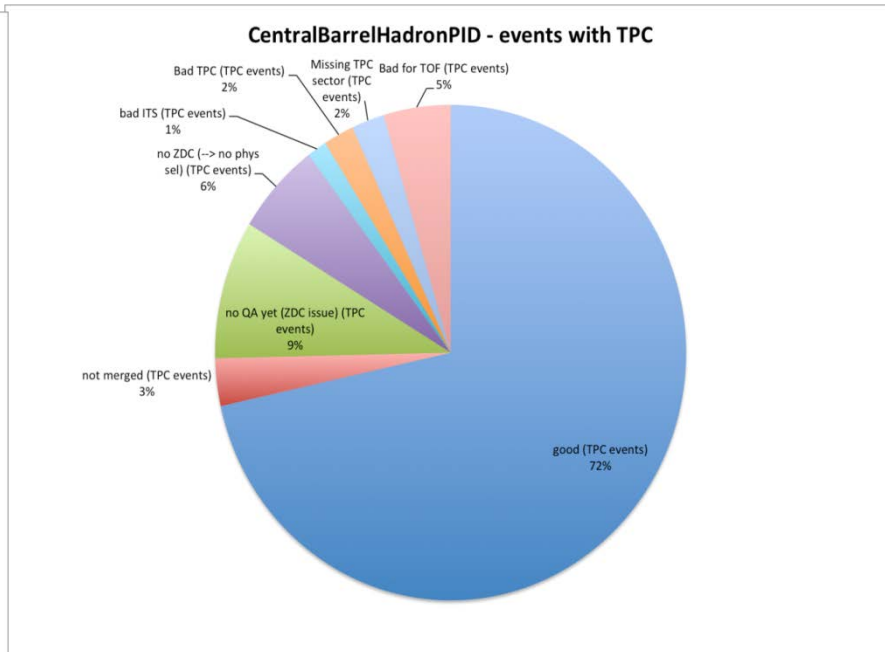
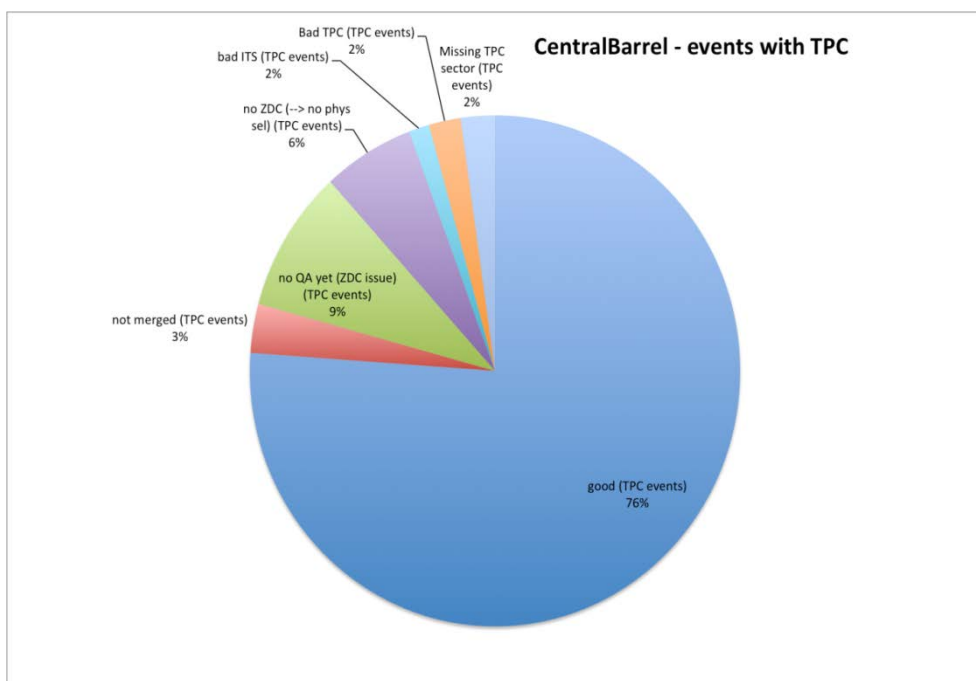
5 runlists are provided by DPG: ([twiki](#))
Based on RCT flagging from detectors

Extension	Detectors (+in PbPb)
Tracklets	ITS + V0 +(ZDC)
CentralBarrelTracking	ITS+V0+TPC (+ZDC)
CentralBarrelTracking_hadronPID	ITS+V0+TPC +TOF+T0 (+ZDC)
CentralBarrelTracking_electronPID	ITS+V0+TPC +TOF+TRD (+ZDC)
CentralBarrelTracking_Calo	ITS+V0+TPC +EMC+TRD (+ZDC)

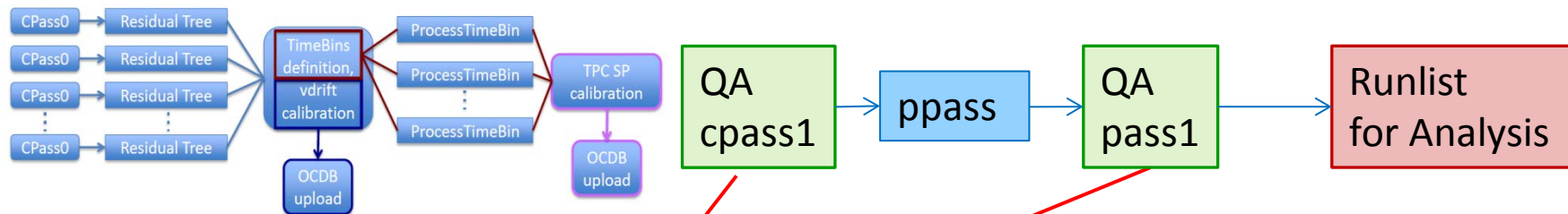


Thanks to Chiara

From 3 first groups: runs to be recovered



Process of QA



ALICE Repository

My jobs | My home dir | Catalogue browse | LEGO Trains | Administration section | ALICE Reports | Alert XML Feed | Firefox Toolbar | MonaLisa GUI

Select production type RAW and the tag LHC15o pass1

QA status of RAW data production LHC15o pass1

Run#	Merged QA	No. events	Date	ADD	EMC	FMD	HMP	MCH	MTR	PHS	PMD	SDD	SPD	SSD	T00	TOF	TPC	TRD	V00	ZDC
245683	Y	8,337,159	26 Jul 2016 20:59	Done	Done	Done	Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245692	Y	4,729,516	12 Aug 2016 12:23	Done			Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245700	Y	2,684,742	12 Aug 2016 01:52	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245702	Y	464,174	12 Aug 2016 04:25	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245705	Y	1,164,358	12 Aug 2016 09:50	Done	Done	Done	Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245729	Y	2,262,264	04 Sep 2016 03:48	Done	U.I.	Done	Done	Overdue	Overdue	Done		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done
245731	Y	6,666,980	05 Sep 2016 15:14	Done	U.I.	Done	Done	Overdue	Overdue	Done		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done	Done
245738	Y	4,266,114	05 Sep 2016 16:14	Done	U.I.		Done	Overdue	Overdue	Done		U.I.	U.I.	U.I.	U.I.	Done	U.I.	U.I.	Done	Done
245752	Y	2,805,455	05 Sep 2016 13:37	Done	U.I.		Done	Overdue	Overdue	U.I.		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done	Done
245759	Y	3,521,388	05 Sep 2016 09:06	Done	U.I.		Done	Overdue	Overdue	U.I.		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done	Done
245766	Y	3,271,289	05 Sep 2016 19:31	Done		Done	Done	Overdue	Overdue	U.I.		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done	Done
245775	Y	5,797,034	06 Sep 2016 02:39	Done		Done	Done	Overdue	Overdue	U.I.		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done	Done
245785	Y	2,045,698	05 Sep 2016 03:38	Done	U.I.	Done	Done	Overdue	Overdue	U.I.		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done	Done
245793	Y	3,198,387	03 Sep 2016 20:28	Done	U.I.	Done	Done	Overdue	Overdue	Done		U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	U.I.	Done	Done
245829	Y	4,607,159	03 Sep 2016 00:19	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245831	Y	5,251,472	03 Sep 2016 00:30	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245833	Y	1,046,536	03 Sep 2016 21:39	Done	Done	Done	Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245923	Y	649,597	03 Sep 2016 12:40	Done			Done	Overdue	Overdue	U.I.		Done	Done	Done	Done	Done	Done	Done	Done	Done
245949	Y	1,501,616	01 Sep 2016 13:14	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245952	Y	8,682,149	01 Sep 2016 08:10	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245954	Y	6,228,553	31 Aug 2016 17:33	Done	Done	Done	Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
245963	Y			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
246001	Y	7,324,300	31 Aug 2016 15:34	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
246003	Y	1,530,914	31 Aug 2016 01:15	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
246012	Y	2,107,185	31 Aug 2016 01:38	Done			Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
246036	Y	474,723	31 Aug 2016 20:12	Done			Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
246037	Y	3,071,216	01 Sep 2016 00:40	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
246042	Y	8,607,523	30 Aug 2016 21:37	Done	Done		Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done
246048	Y	732,612	29 Aug 2016 23:58	Done			Done	Overdue	Overdue	Done		Done	Done	Done	Done	Done	Done	Done	Done	Done

Running jobs trend

40000 50000 60000 70000 80000

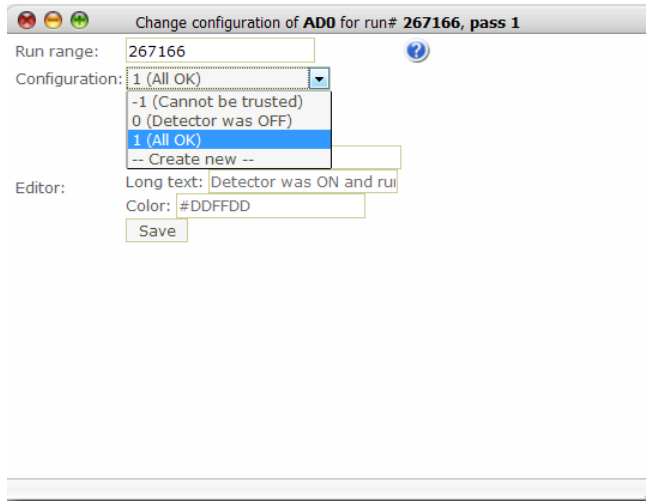
30000 20000 10000 0

Jobs

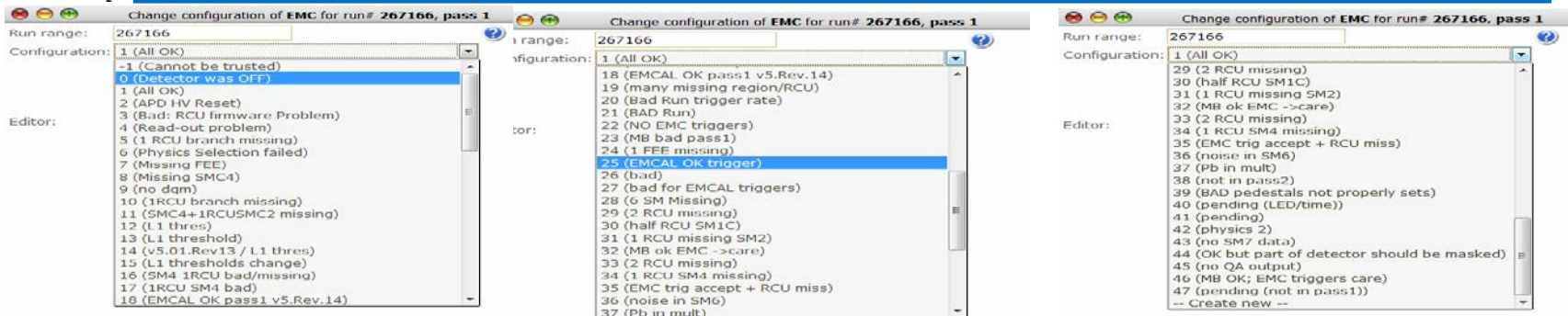
Running jobs trend

24h 12h 6h 1h

QA feedback table
Thanks to Costin



No remapping needed :
OK



2,3,4 -> -1*flag

37 -> -5 ,39 -> -6 , 40-> -7, 41-> -7, 42-> -10

5,10 8,11,16,17,29,30,31,33,34,43,44 -> 100 (no specification of part missing)

6, 38,47,9 : obsolete

7, 18 ,24,25 -> 1: OK

19,28 -> -100 (acceptance but too much for usage)

20,21, 23, -> -1

26 -> -30: issue in L1phase (PAR)

12,13,14,15 -> 1 OK but EMCALTrigger -2 (change of trigger threshold)

27->1 but EMCALTrigger -1

22 -> 1 but EMCAL trigger column 0

32-> 1 + EMCAL trigger column 2

35:->100 + EMCAL Trigger Column 100

36-> -100

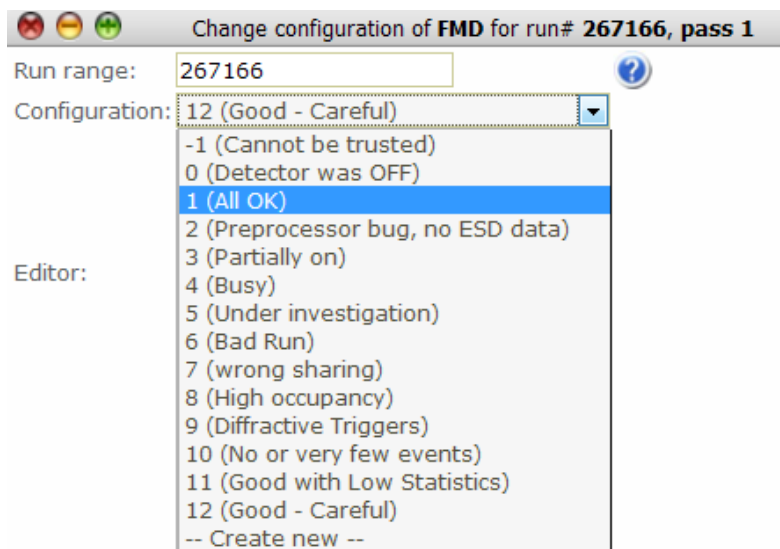
45-> -20: pending

46-> 1 + Trigger column 2

- 1 Good
- 2 no ZDC
- 3 no V0
- 4 no SPD
- 5 vdm scan
- 6 bad SPD
- 7 bad V0
- 8 large rate jumps
- 9 high pileup
- 10 high background



- 1 Good
- 1 no V0
- 2 no SPD
- 3 bad SPD
- 4 bad V0
- 5 vdm scan
- 2 no ZDC
- 3 large rate jumps
- 4 high pileup
- 5 high background



Probable mapping

```
-----
- -1 _Cannot be trusted_   -> -1
- 0 _Detector was off_    -> 0
- 1 _All good_            -> 1
- 2 _Preprocessor bug_    -> -10
- 3 _partially on_       -> 100
- 4 _busy_                -> 20
- 5 _under investigation_ -> -20
- 6 _bad run_             -> -1
- 7 _wrong sharing_      -> -11
- 8 _high occupancy_     -> 21
- 9 _Diffractive triggers_ -> 22
-10 _no or few events_   -> -12
-11 _good with low statistics_ -> 10
-12 _Good - careful_     -> 11
```

val <= -20 Currently bad, but could be recovered

val <= -10 Bad for a specific reason

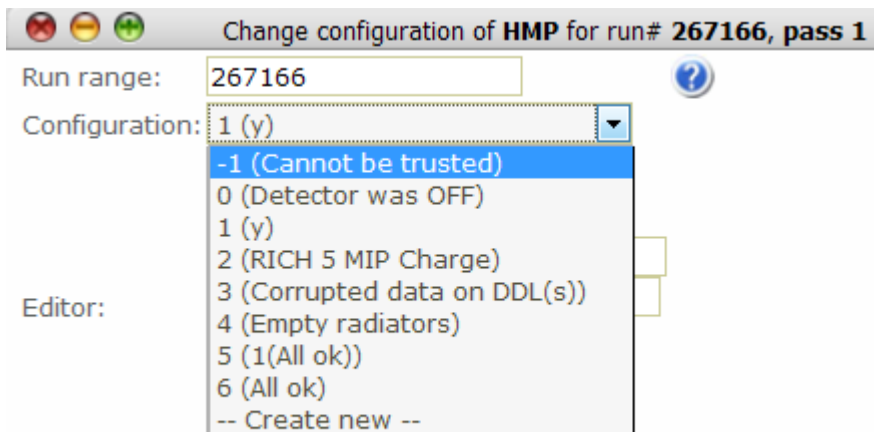
val < 0 Bad for no particular reason

val == 0 Not on

val < 10 Good

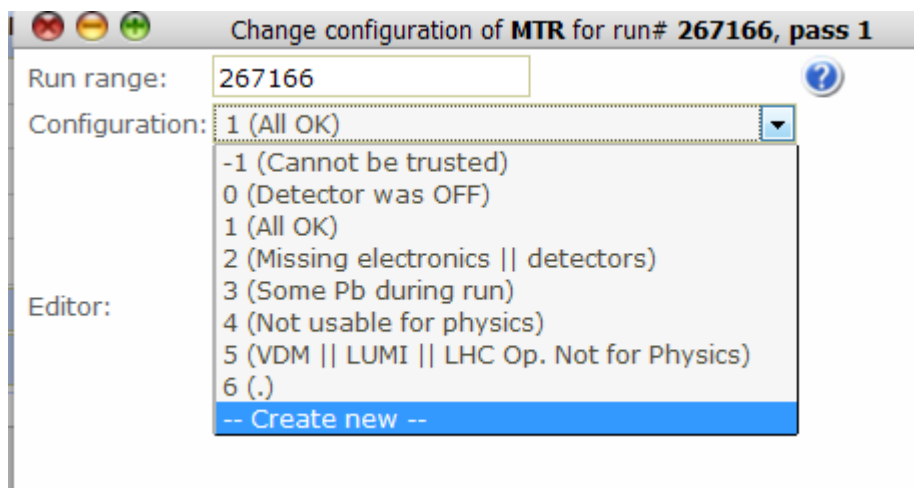
val < 100 Good, but be careful

otherwise Limited acceptance



1,5,6 -> 1

All others -> -1*flag



MTR:

(-1) cannot be trusted [P]

(0) detector off [P]

(1) Detector was ON and running according to nominal specifications

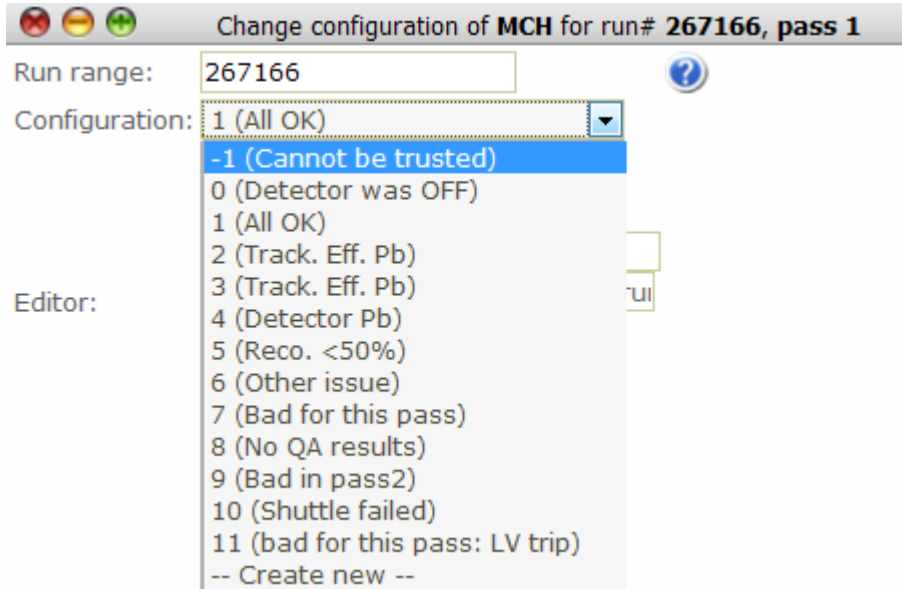
(2) Some electronics || detectors missing || MASKed.(See MTR-logbook) ==> Part of detector missing or masked (101)

(3) Some problem during run (see MTR e-logbook) ==> Pending (-101)

(4) Not usable for physics, new threshold test ==> New threshold test (-2) [P]

(5) VDM || LUMI || LHC Op. Not for Physics ==> obsolete, we want to put this information at the global quality level, flag to be remapped to (-201)

(6) . ==> obsolete, REMOVE (never used)



MCH:

- (-1) cannot be trusted [P]
- (0) detector off [P]
- (1) Detector was ON and running according to nominal specifications
- (2) Run can be used. Small problem ==> (101)
- (3) Run can be used but with caution ==> (102)
- (4) Run should not be used for Physics ==> obsolete, remap to (-1)
- (5) Less than 50% of the chunks reconstructed ==> obsolete, we want to put this information at the global quality level, flag can be remapped to (-201)
- (6) Other issues: Not for Physics (lumi scan, too few events, missing det, pedestal issue,...) ==> obsolete, we want to put this information at the global quality level, flag to be remapped to (-201)
- (7) Bad for this pass (reco. issue) ==> obsolete, REMOVE (never used)
- (8) No QA results: QA has to be run/rerun for final answer ==> obsolete, REMOVE (never used)
- (9) Bad in pass2 (reco. issue) ==> obsolete, remap to (-201)
- (10) Shuttle failed ==> (-103)
- (11) bad for this pass: LV trip ==> LV trip (-104)

New flags to be added:

- ==> cannot be trusted but recoverable in other pass (-102)
- ==> Pending (-101)

MUON Quality

- (1) Good run
- (2) Bad run ==> Bad run (-1) [P] ->
- (3) Pending ==> Pending (-101)
- (4) Bad for this Pass ==> Bad for this Pass (-102): **OBSOLETE (-1)**
- (5) Short run ==> Low statistics (-2) [P]
- (6) Waiting for this Pass ==> Not reconstructed (-103) : **OBSOLETE: no remapping**
- (7) no QA output ==> no QA output (-104)
- (8) under investigation ==> obsolete, remap to (-101)
- (9) MTR or MCH missing ==> obsolete, remap to (-1)
- (10) Not reconstructed ==> obsolete, remap to (-103): **OBSOLETE -> no remapping**
- (11) Only MB trigger ==> Only MB trigger (101) : **SHOULD be remapped (why related to acceptance)**

New flags to be added:

- ==> cannot be trusted but recoverable in other pass (-101): **(-1 means by default this)**
- ==> Not for physics (Lumi scan, ...) (-3) [P]

SDD:

-1	-1
0	X, automatic
1	1
2	101
3	-1
4	-1
5	-3
6	-3

+ PID flag to be added from new runs

SSD:

old flag	new flag
-1	-1
0	X, automatic
1	1
2	101
3	-1
4	-3
5	-3
6	101

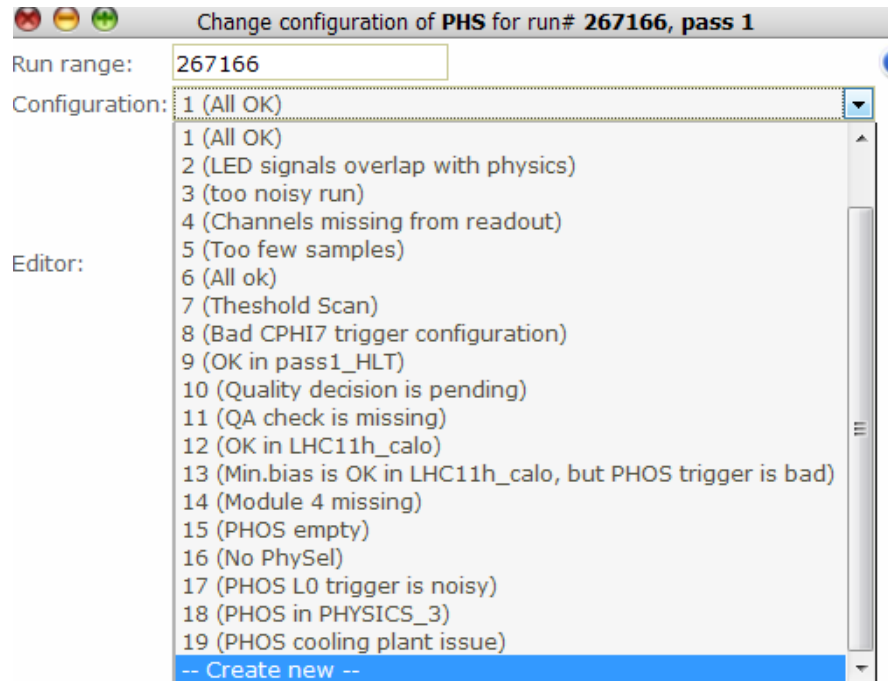
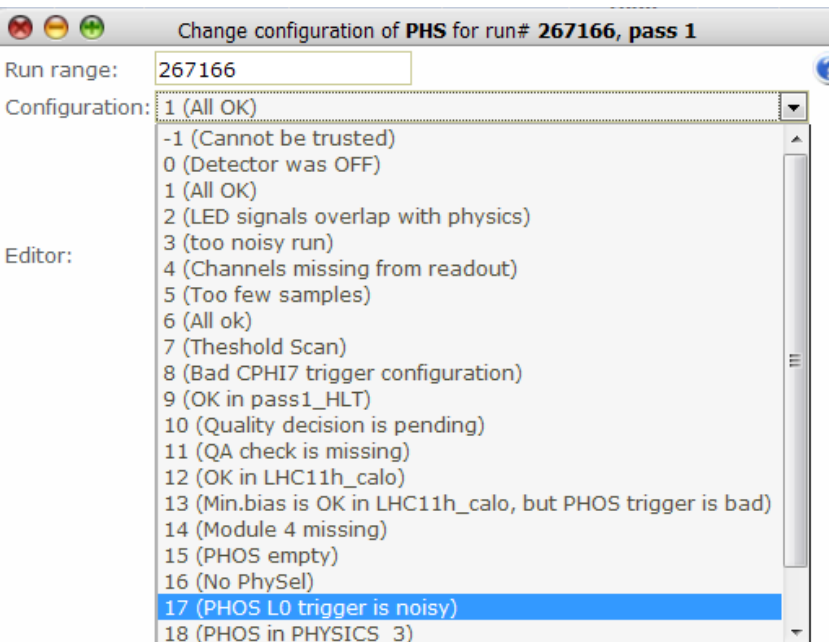
+ PID flag to be added from new runs

SPD:

-1	-1
0	X, automatic
1	1
2	-2
3	-2
4	-1
5	---> detector trigger flag = -1
6	-2
7, 12	-3
8, 9	-1
10, 11	-2

reduced acceptance flag: from 2017

two different thresholds for SPD1 (101) and SPD2 (102)



1,6,9,12, -> 1

2,3,7,8 -> -1*flag

5->-5

13: to cross check with a trigger column

15-> -15

18-> 2

19-> -19

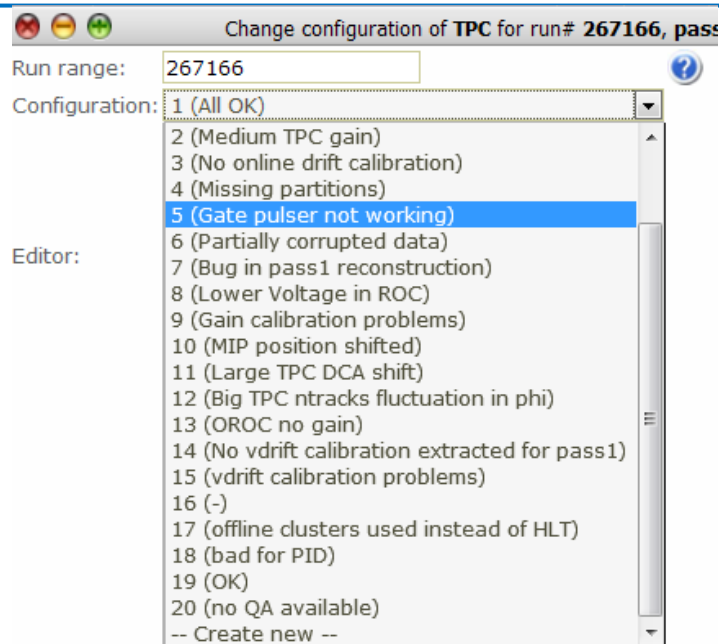
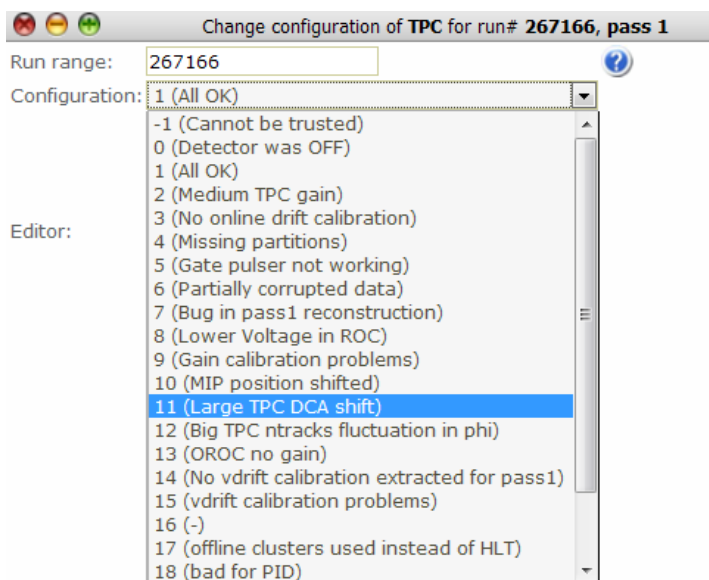
14 -> 104

4-> 100

TOF flags review – proposed mapping

- 1 (Cannot be trusted)
- 0 (Detector was OFF)
- ✓ 1 (All OK)
- 2 (not TO fill subtracted, data cannot be trusted, recoverable)
- 3 (no OCDB entry)
- 4 (Bad - double peak t-texp)
- 5 (Bad - wrong channel maps in OCDB)
- 6 (TOF not calibrated)
- 7 (Failed cpass1 TOF calibration)
- 8 (Bad TOF trigger OCDB map (CCUP7))
- 9 (BAD - Electronics efficiency below threshold)
- 10 (BAD - Electronics problem (firmware): event misalignment after PAR)
- 11 (Electronic problems: event misalignment after FAST SOR command)
- 12 (Pending (not in pass1))
- Create new --

- Detector OFF mapped to 0**
- All OK mapped to 1**
- BAD & unrecoverable:** (5, 6, 7, 9, 10, 11) **mapped to -1.*flag**, e.g. -5...
 - Current 10 = 11, to be cleaned up
- BAD but recoverable in next pass or analysis:** (2, 3, 4) **mapped to -1.*flag**
- Trigger issue but data ok (8) mapped into a 1.*flag**



4,19 -> 104, 119?

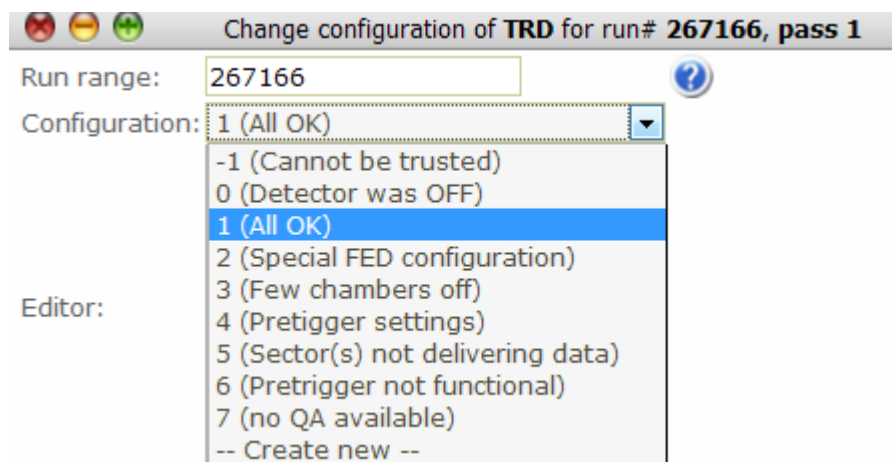
Others -1*flag except 20

What about gain?

200 flags

OK but not for PID to define

To be confirmed by experts



-1: bad run

0: detector not read

1: good

3,5 -> 100

2,4,6: several codes for various problems being cross checked with experts

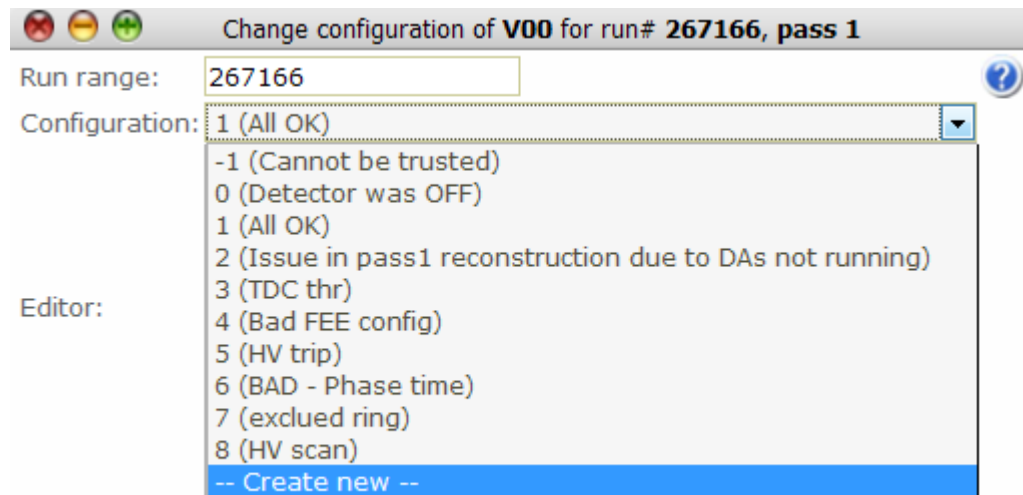
For future

100 + 1: some chambers missing (note that for TRD this is always the case)

100 + 2: 1 TRD sector missing

100 + 3: 2 TRD sectors missing

100 + x: x-1 TRD sectors missing



2,3,4,5,6,8 -> -1* flag

7-> 100?

Change configuration of ZDC for run# 267166, pass 1

Run range:

Configuration:

Editor:

- 1 (Cannot be trusted)
- 0 (Detector was OFF)
- 1 (All OK)
- 2 (ZDC Timing Problem)
- 3 (Collimators closed)
- 4 (Wrong TDC reco)
- 5 (Different ZDC time A+C mean)
- 6 (ZNs problem)
- 7 (Old HV)
- 8 (C side shadowed by injection collimator (large crossing angle))
- 9 (Pedestal residual)
- 10 (Anomalous signals in ZDC)
- Create new --

1 -> 1

2-> -2

3,8 -> -3, -8;

4 -> -1

5-> 2: with same comment (if possible from offline (otherwise: keep 5)

6,7: -> -1

9-> 3 (if OK otherwise keep it at 9):

10-> 4 (if ok otherwise keep it at 10)