

All Experimenters' Meeting

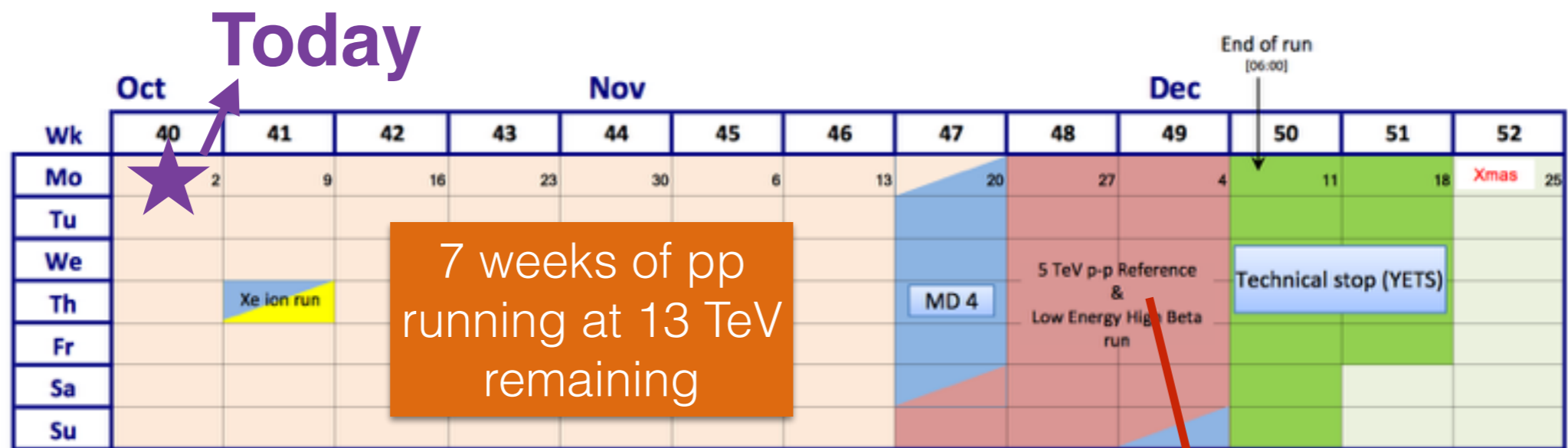
CMS and LHC report

Nadja Strobbe (Fermilab)

October 2, 2017



LHC schedule

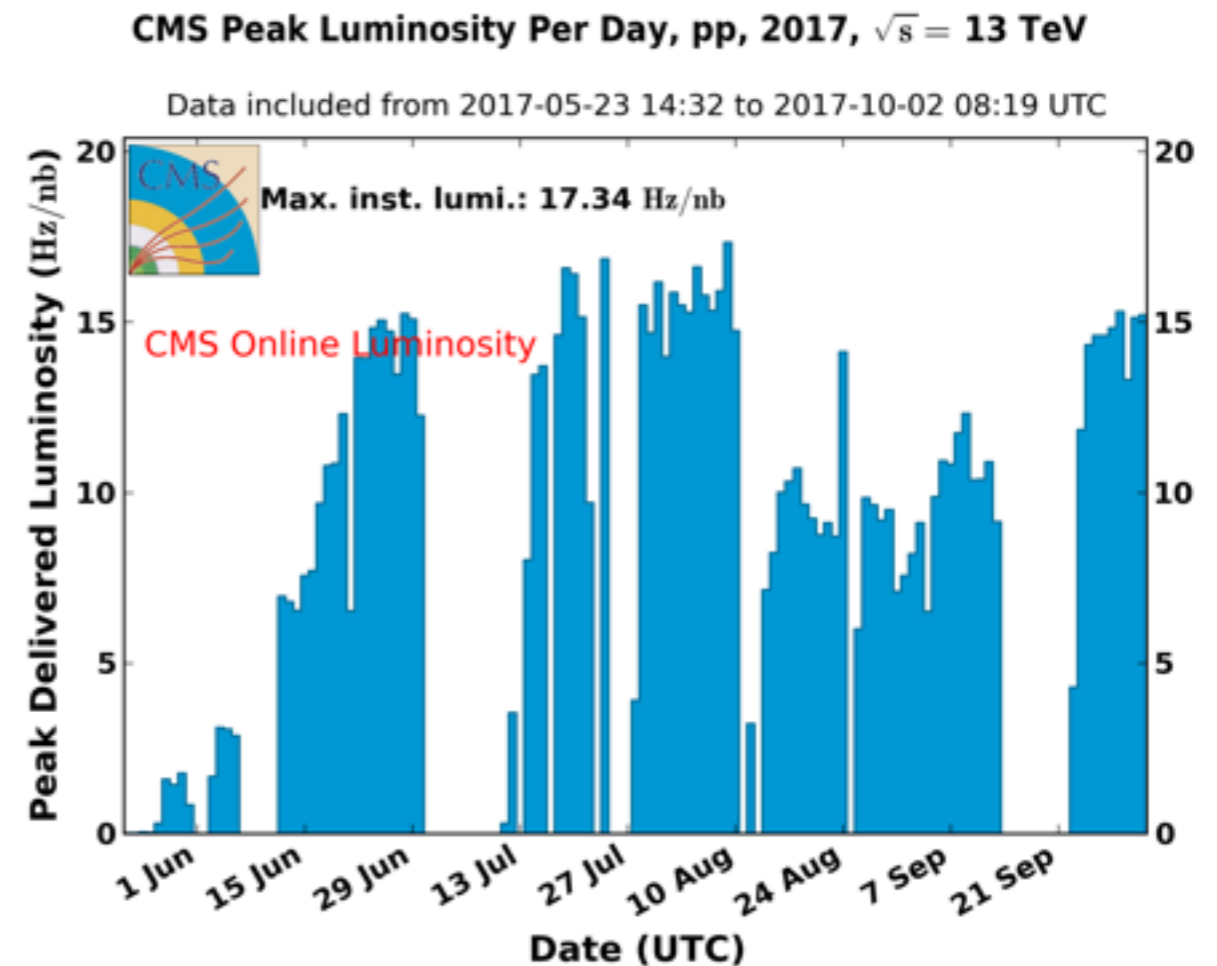
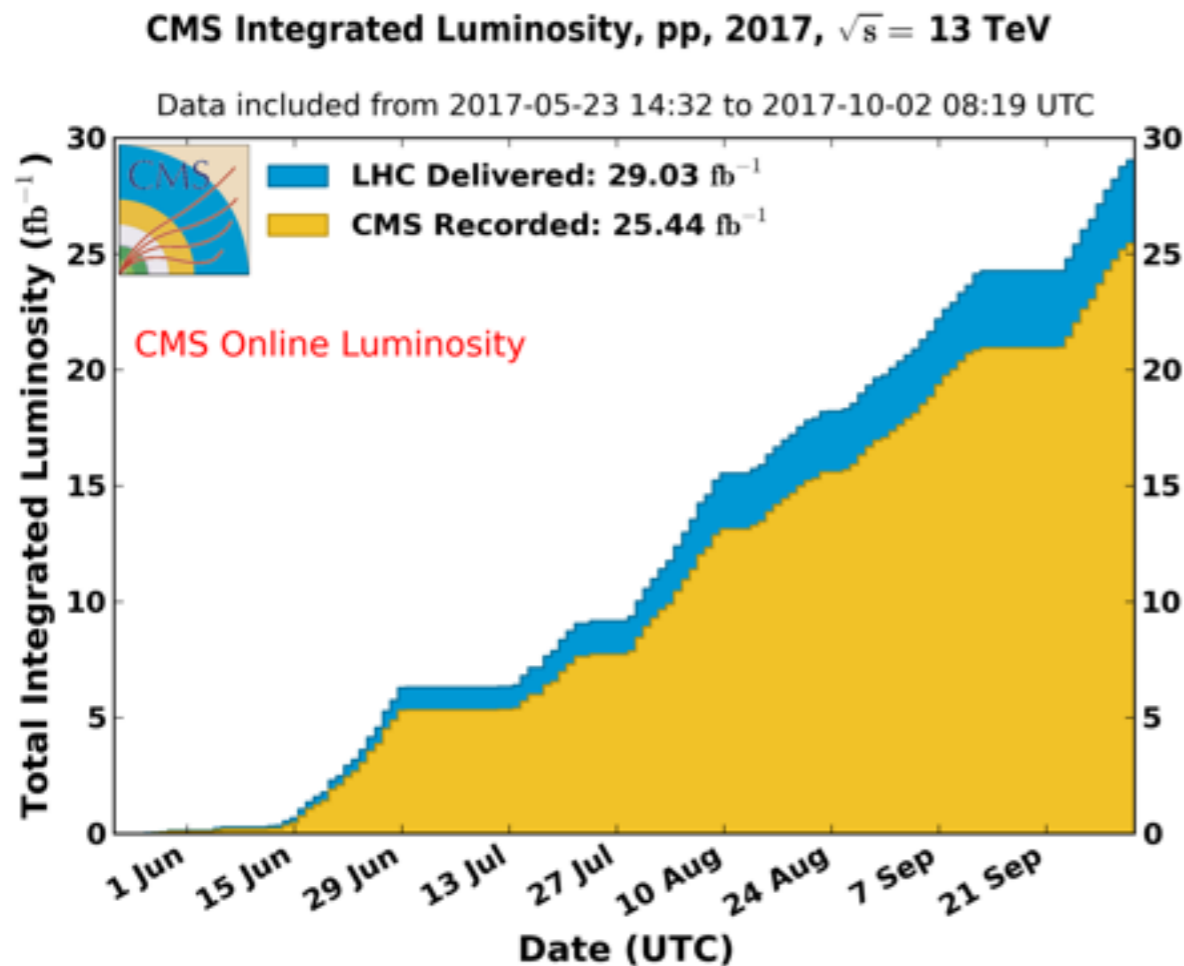


- Technical Stop
- Machine development
- Recommissioning with beam
- Special physics runs
- Xenon ion pilot run
- Scrubbing run

In preparation for Heavy Ion Run in 2018

LHC performance

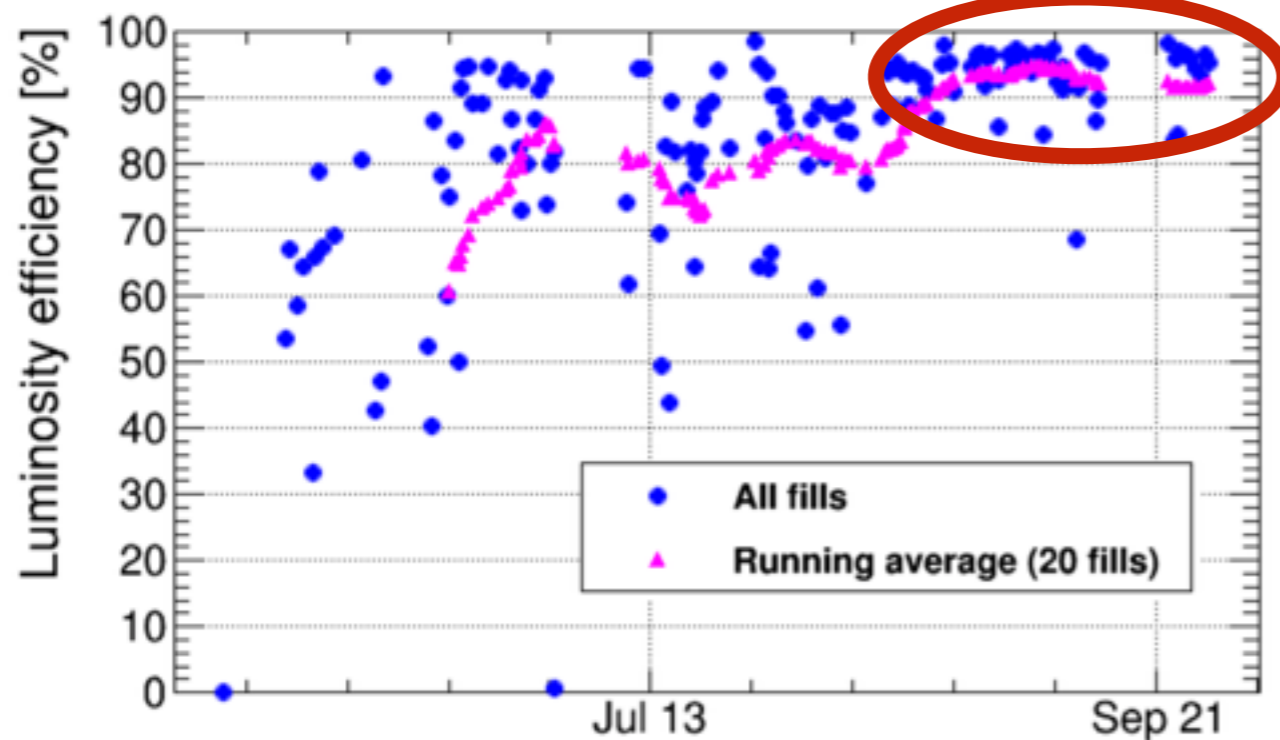
- Expected integrated luminosity in 2017 around 40-45 fb⁻¹
- Still using 8b4n scheme with ~1900 bunches
- Peak pileup up to 58, and might increase further
 - Depends on LHC progress on different beam schemes



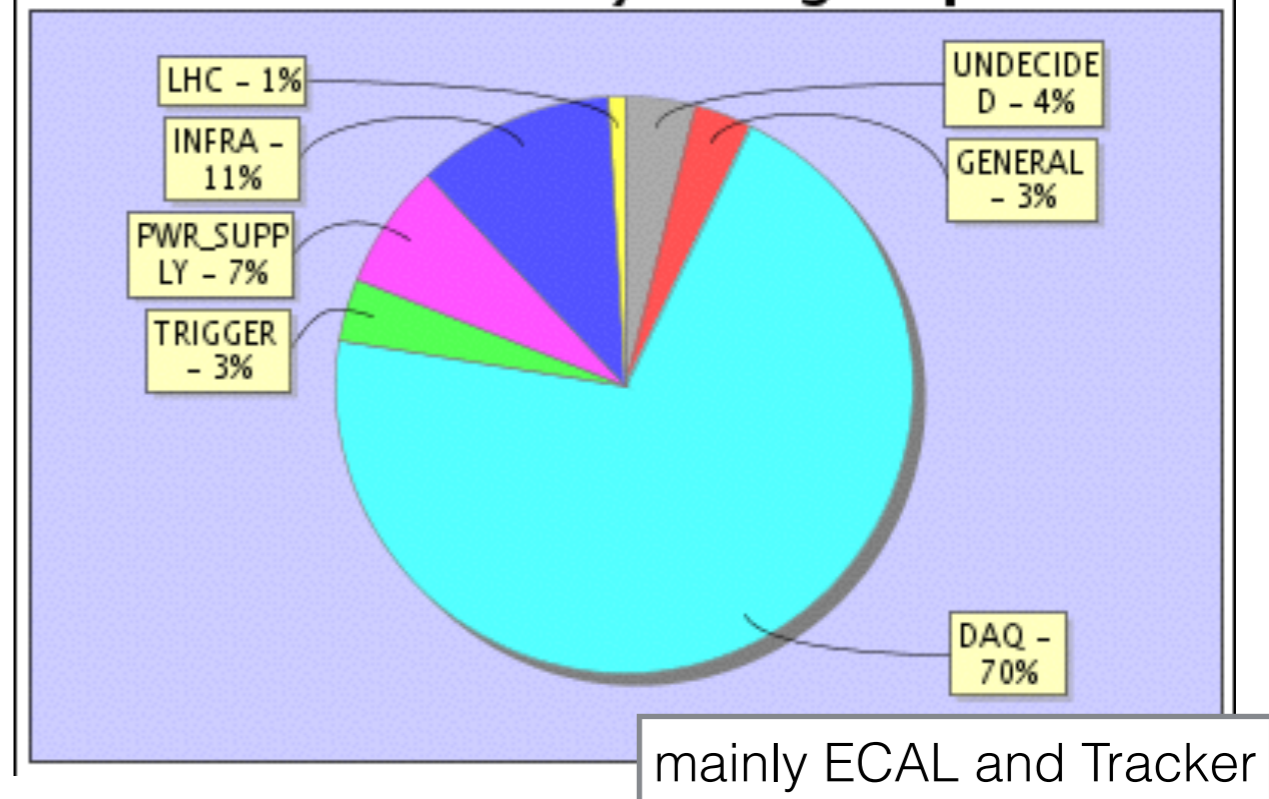
CMS performance

- CMS datataking efficiency improved by implementing extra auto-recovery features, now $\sim 95\%$. Average over full year is 87%.
- Data certified up until the Technical Stop ($\sim 18 \text{ fb}^{-1}$ recorded), certification efficiency at 95%.

2017 CMS Datataking Efficiency per Fill (online) [pp]



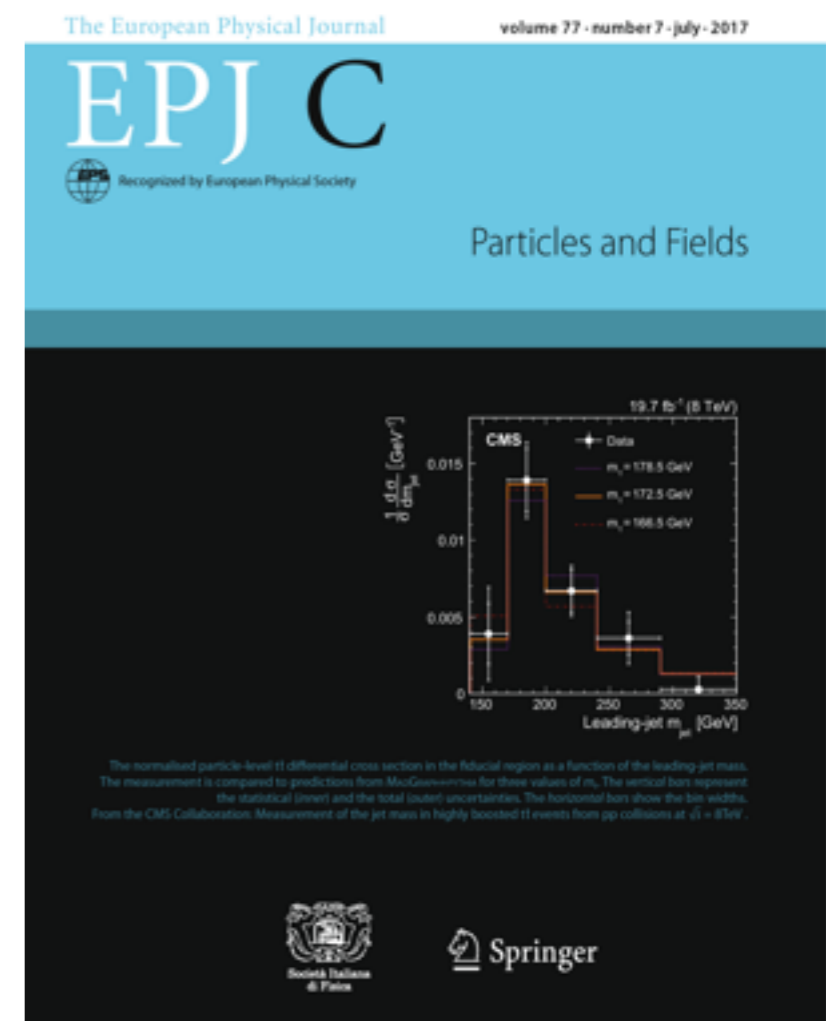
Lumi Lost by cat. groups



Other activities

- Preparations and planning ongoing for Year End Technical Stop (late December through February)
- Detailed plan in progress for work to be done in LS2 (2019), including barrel upgrade of hadronic calorimeter
- Phase2 TDRs for almost all subsystems submitted to LHCC for review
- CMS measurement of differential $t\bar{t}$ cross section and impact on parton distribution functions was featured on cover of EPJC.
(Eur. Phys. J. C (2017) **77** p459)
(DOI: 10.1140/epjc/s10052-017-4984-5)

FNAL



Backup

Fill	Begin Time YYYY.MM.DD HH:MM	Duration HH:MM	PeakInstLumi $\times 10^{30} \text{cm}^{-2} \text{s}^{-1} \text{ pp}$ $\times 10^{24} \text{cm}^{-2} \text{s}^{-1} \text{ Ions}$	DeliveredLumi $\text{pb}^{-1} \text{ pp}$ $\mu\text{b}^{-1} \text{ PbPb}$	RecordedLumi $\text{pb}^{-1} \text{ pp}$ $\mu\text{b}^{-1} \text{ PbPb}$	EffByLumi %
6168	2017.09.05 01:48	04:34	7389	101.3	97.9	96.6
6169	2017.09.05 09:15	06:44	8285	159.6	134.8	84.5
6170	2017.09.05 18:45	04:32	9892	136.2	130.9	96.1
6171	2017.09.06 01:56	08:10	10958	248.6	237.9	95.7
6174	2017.09.06 20:47	12:23	10413	324.2	315.6	97.4
6175	2017.09.07 11:25	11:39	10855	322.4	298.3	92.5
6176	2017.09.08 01:18	02:02	11351	74.5	70.6	94.8
6177	2017.09.08 06:03	12:12	11121	340.9	310.7	91.1
6179	2017.09.08 22:56	00:24	11763	14.8	13.8	93.1
6180	2017.09.09 02:17	00:22	12345	13.8	12.7	92.1
6182	2017.09.09 07:20	09:26	10650	269.6	248.7	92.2
6185	2017.09.10 01:58	02:32	10361	83.3	57.1	68.6
6186	2017.09.10 07:11	11:55	10402	316.0	289.7	91.7
6189	2017.09.11 03:27	13:05	10409	339.0	327.9	96.7
6191	2017.09.12 01:20	12:21	10923	330.3	317.3	96.0
6192	2017.09.12 16:22	03:19	10782	111.0	96.0	86.5
6193	2017.09.12 22:19	05:17	10669	164.2	147.2	89.7
6194	2017.09.13 07:08	06:15	1751	16.3	15.6	95.4

Fill	Begin Time <i>YYYY.MM.DD HH:MM</i>	Duration <i>HH:MM</i>	PeakInstLumi $\times 10^{30} \text{cm}^{-2} \text{s}^{-1} \text{ pp}$ $\times 10^{24} \text{cm}^{-2} \text{s}^{-1} \text{ Ions}$	DeliveredLumi $\text{pb}^{-1} \text{ pp}$ $\mu\text{b}^{-1} \text{ PbPb}$	RecordedLumi $\text{pb}^{-1} \text{ pp}$ $\mu\text{b}^{-1} \text{ PbPb}$	EffByLumi %
6230	2017.09.22 18:02	02:05	7	0.0	0.0	98.3
6236	2017.09.23 12:21	03:27	317	3.5	2.9	83.6
6238	2017.09.23 18:51	05:46	4317	16.0	15.3	95.9
6239	2017.09.24 02:55	05:54	9258	149.6	126.4	84.5
6240	2017.09.24 11:11	12:06	11842	344.8	334.4	97.0
6241	2017.09.25 01:47	12:57	14186	416.5	402.1	96.5
6243	2017.09.25 19:08	12:57	14390	432.5	415.8	96.1
6245	2017.09.26 12:46	12:16	14617	420.6	397.4	94.5
6247	2017.09.27 07:03	07:01	14613	285.3	266.4	93.4
6252	2017.09.27 20:36	12:45	13064	399.2	386.0	96.7
6253	2017.09.28 12:27	13:43	14834	457.1	436.3	95.4
6255	2017.09.29 05:26	17:32	15612	563.5	540.0	95.8
6258	2017.09.30 05:42	13:57	13351	390.3	377.2	96.6
6259	2017.09.30 22:10	15:02	13216	435.8	419.0	96.1
6261	2017.10.01 17:45	03:15	14788	150.7	101.3	67.2
6262	2017.10.01 23:40	03:36	15139	164.1	153.9	93.8
6263	2017.10.02 05:32	02:47	15228	134.0	123.3	92.0
Summary		284:21	15612	8129.5	7620.6	93.7