



ATLAS Trigger Shifter (ACR): General Introduction

ATLAS Shifter Training
27th / 28th January 2015
25th / 26th February 2015
25th / 26th March 2015
29th / 30th April 2015

**Martin zur Nedden,
Humboldt-University of Berlin**



ATLAS Trigger Shifts



- **OTP ID 531452** **ATLAS Trigger Shifter (ACR)**
- **OTP ID 41696** **Trigger Online Expert on Call**
- OTP ID 529786 Bphysics and Muons signature expert on-call
- OTP ID 530496 B-jet, ID and MinBias signature expert on-call
- OTP ID 529785 Egamma and Tau signature expert on-call
- OTP ID 529788 Jets and MET signature expert on-call
- OTP ID 48647 CALO Trigger Reconstruction SW Expert on Call
- OTP ID 46623 **Trigger Offline Monitoring Expert on Call**
- OTP ID 530363 Trigger Offline Monitoring Expert on Call (night)
- OTP ID 46640 Trigger Offline Monitoring Shifter
- OTP ID 47111 Trigger Online Release Coordinator
- OTP ID 530809 Trigger Menu Expert on Call
- **OTP ID 47030** **TRP Support**
- **OTP ID 529169** **Shadow Trigger Shifter in ACR**

Trigger Operation Twiki



ATLAS Trigger Operation

Coordinators: Alexander Oh, Martin zur Nedden (d)

<https://twiki.cern.ch/twiki/bin/view/Atlas/TriggerOperation>

General Information

- [People and Tasks](#)
- [Mailing lists](#)
- Schedule for relevant [Trigger Operation Meeting](#)
- Operations work flow
- Mandate

Operations at Work

- [Trigger White Board](#)
- [Run Coordination Daily Plan](#)
- [Run Coordination calendar](#)
- [Trigger Operations JIRA](#)
- [Debug Stream Description](#)
- [ATLAS Run Query](#)
- Stored Files:
 - [Histogramming-HLT CoCa files](#)
 - [TRP Rate History CoCa files](#)
 - [MDA runs in ATLAS partition](#)
- HLT Commissioning Milestone weeks: [M8](#), [M7](#), [M6](#), [M5](#), [M4](#), [M3](#),
- [Operations To Do List for LS1 / Startup](#)
- [HLT online and algorithm integration](#)
- [Run 2 Preparations / MX weeks](#)
- [HLT specific LS1 activities](#)
- [Simulation at P1 / HLT farm](#)

On Shift in ACR / SCR

- [Trigger Shifter Rules and Duties](#)
- [Shifter Trainings for Run 2](#), please register here!
- Portal for Shift booking, general access point: [OTP access](#)
- [Trigger Crew on Call list](#)
- [Manual for Online Shifter](#),
 - [OTP booking for Online Shifter](#)
- [Manual for Offline Shifter](#),
 - [OTP booking for Offline Shifter](#) (not yet open)

Experts on Call

- [Trigger Experts on Call Procedures and Duties](#)
- [Trigger Expert Training, 05.02.2015](#)
- [Manual for Online Experts](#),
 - [OTP booking Online Trigger Experts](#)
- [Manual for Offline Experts](#),
 - [OTP booking for Offline Trigger Experts](#)
- [Manual for Signature Experts](#)
 - [OTP booking for Bphysics and Muon Trigger Experts](#)
 - [OTP booking for Calo Trigger Experts](#)
 - [OTP booking for bjet, ID and MinBias Trigger Experts](#)
 - [OTP booking for Jet and MET Trigger Experts](#)
 - [OTP booking for egamma and tau Trigger Experts](#)
- [Manual for Menu Experts](#),
 - [OTP booking for Trigger Menu Experts](#)
- [Manual for Online Release Coordinators](#),

Trigger Monitoring and Data Quality

- [Trigger Monitoring Page](#)
- Online tools:
 - **L1-Rates:** [L1 live rates](#)
 - **HLT-Rates:** [offline Trigger Rate Presenter](#)
 - **OHP-Histograms:** [Online OHP Histograms](#)
 - **TDAQ resources:** [ATLAS Dashboard](#)
- [Trigger Rate Presenter \(TRP\)](#), [TRP Training](#)
- [HLT reprocessing Page](#)
- [Trigger at Tier0](#)
- [Data Quality Page](#)
- [Data Quality Defect Data Base](#)
- [Trigger Monitoring Manual](#)

Trigger Monitoring and Data Quality

ATLAS Shifter Pre-requisites



- 24/7 shift, i.e. **7 - 15, 15 - 23, 23 - 7**
 - book your shifts in advance
 - be in time in ACR, read the **Trigger White Board** before your shift:
<https://atlasop.cern.ch/twiki/bin/view/Main/TriggerWhiteBoard>
- presence in the ATLAS Control Room required
 - ensure you have access to ATLAS_ACR
 - do the online safety courses (Level 4A) before
- at least two shadow shifts before the first shift required, preferably more
 - book the *Shadow Trigger Shift in ACR*
 - ensure, that you have seen **all relevant tools and actions** of a shift
- participation at the general ATLAS shifter training required
 - do the training together with Run Control
 - notify Trigger Operation Coordination to be registered in OTP
- make yourself familiar with the following online tools:
 - **TriggerTool, TRP, DQMF, OHP** (lecture today, main tools)
 - ISpyGui, BusyPannel, OH, CTP rates, DCS, DAQ-panel, elog, LogManager, JIRA;

Trigger Shifter Twiki Page



<https://atlasop.cern.ch/twiki/bin/view/Main/TriggerShiftPage>

On Shift	Getting Help	Communication
Start of Shift Shift Duties How To Do Trigger White Board Plan of the Day	Trigger On Call List General On Call List FAQ / Fixes Shift Leader White Board Trigger Shifter Trainings	Elisa (elog) at P1 / outside P1 Today Shift Crew Jira for Trigger Running Schedules
Online Monitoring	Offline Monitoring	Documenatation
DQMF OHP TRP L1 Rates Busy Pannel	han Config MAM Reprocessings Debug Stream Trigger Monitoring Page	Online Expert Manual Offline Expert Manual Offline Shifter Manual Rule Book
Workspace I	Workspace II	Usefull Links
On Workspace I you should have: DAQ Pannel TRP elog / JIRA DCS Spy I gui	On Workspace II you should have: DQMF Trigger Tool Busy Pannel CTP rates OHP	Run Query Trigger Home Page

Relevant Experts / Contacts for you



- **Trigger Operation Coordination**
 - **Alex Oh (16 23 79) / Martin zur Nedden (16 18 75)**
- Trigger Online Expert on Call (16 18 13)
 - **first contact for all questions**
 - discuss all trigger key changes first with the expert on call
- TRP Support (16 18 56)
 - notify if you see any problem with TRP, e.g. unexpected rate fluctuation, unstable rates, mismatch with prediction
 - document the issue always in an email to atlas-trigger-monitoring-software@cern.ch (especially important in the start up phase)
- Trigger Offline Monitoring Expert on Call (16 19 70)
 - all issues with Data Quality (e.g. red flags in DQMF)

Trigger Crew / On Calls



ATLAS Trigger Crew

ATLAS ▾

Phone Lists ▾

Trigger Operation Coordination

Trigger Coordination

☎ 16 2379



Alexander Oh

0h – 24h



Deputy Trigger Coordination

☎ 16 1875



Martin zur Nedden

0h – 24h



Primary On-Call

Online

☎ 16 1813



Pier-Olivier Deviveiros

0h – 24h



Offline

☎ 16 1970



Jiri Masik

0h – 24h



LVL1

☎ 16 0014

Shifts

Online (ACR)

☎ 71342



Sarah Louise Barnes

15h – 23h



Offline (SCR)

☎ 62931

Support

Menu

☎ 16 1884



Catrin Bernius

0h – 24h



P1HLT Release

☎ 16 1913



Brian Petersen

0h – 24h



TRP Support

☎ 16 1856



Ivana Hristova

0h – 24h

LVL1

CTP

☎ 16 0559

L1 CALO

☎ 16 5213



Bruce Barnett

0h – 24h



RPC

☎ 16 1853



Riccardo Vari

0h – 24h



TGC

☎ 16 1905



Toshi Sumida

0h – 24h



Trigger Signatures

Calo

☎ 16 1883



Craig Wiglesworth

0h – 24h



B-jet/ID and MinBias

☎ 16 1976



Stewart Martin-haugh

0h – 24h



Tau and E/Gamma

☎ 16 1995



Denis Oliveira Damazio

0h – 24h



Met and Jets

☎ 16 1808



Ricardo Goncalo

0h – 24h



Bph

Bphys and Muons

☎ 16 1886



Masato Aoki

0h – 24h



<https://atlas-otp.cern.ch/mao/ui/TriggerList.html>

Your Shift Duties (I)



- **observe all trigger and stream rates via TRP, notify unexpected fluctuations**
 - observe the L1 rates, the total HLT output rate and the recording rate
 - ensure the stability of the rates, inform the expert in any case of fluctuations
 - observe the **stream rates**: do the streams have the expected rate? (e.g. **express stream** ~ 10 Hz)
 - do we have events in the **DEBUG stream**? If so, inform expert on call!
 - observe the comparison of the DF rate (TDAQ side) and HLT output: do they agree?
 - observe the HLT subscriptions: ~ 10.000 expected (availability of the farm)
- **observe the rate predictions in TRP**
 - notify the *TRP Support* if discrepancies larger than $\sim 50\%$ appear
- **observe the Trigger DQ via OHP and DQMF, react on red flags in DQMF**
 - notify the *Trigger Offline Monitoring Expert on call* in case a DQ problems (red flags)
- **cross check with RC shifter at each run start the Trigger keys**
 - SMK, PSK, BGK, MCK: are they correct?
 - PSK can be changed during the run, **the SMK can not be changed**
- **provide, if needed new PSKs or BGKs**
 - inform always the *Trigger Online Expert on Call* if you change any of the Trigger keys
 - **never change or create a PSK without discussing with Expert or Operation Coordination**
- **if a new SMK is needed, contact the *Trigger Online Expert on Call***
 - change the SMK only in discussion with the online expert and with *Trigger Operations Coordination*;

L1 Rates



Partition: ATLAS

Trigger Rates

25/3/2015 19:57

☒ Items
 ☒ PITs
 ☒ Enabled

Type	ID	+ -	Name	+ -	PIRate	- +	PS	- +	TBP	- +	TAP	- +	TAV	- +	Enabled	Ratio TBP/TAP
Item	38		L1_2MU4		-		1.0000		10.8017		10.8017		7.3648		True	1
Item	39		L1_2MU6		-		1.0000		1.2275		1.2275		0.4910		True	1
Item	243		L1_ALFA_ANY		-		0.0010		7285.4746		6.8738		5.8918		True	1059.8928
Item	225		L1_BGRP7		-		1.0000		0		0		0		True	0
Item	511		L1_CALREQ2		-		1.0000		0		0		0		True	0
Item	16		L1_EM3_EMPTY		-		1.0000		7.1193		7.1193		5.1553		True	1
Item	0		L1_EM3		-		1.0000		7.1193		7.1193		5.1553		True	1
Item	17		L1_EM7_EMPTY		-		1.0000		0.7365		0.7365		0.7365		True	1
Item	124		L1_J12_EMPTY		-		1.0000		1.2275		1.2275		0.4910		True	1
Item	125		L1_J12_FIRSTEMPTY		-		1.0000		0.4910		0.4910		0.2455		True	1
Item	105		L1_J12		-		1.0000		1.2275		1.2275		0.4910		True	1
Item	131		L1_J30.32ETA49_EMPTY		-		1.0000		0		0		0		True	0
Item	129		L1_J30_EMPTY		-		1.0000		0		0		0		True	0
Item	130		L1_J30_FIRSTEMPTY		-		1.0000		0		0		0		True	0
Item	175		L1_MBTS_2		-		1.0000		0.2455		0.2455		0.2455		True	1
Item	25		L1_MU4_EMPTY		-		1.0000		241.3189		241.3189		185.1012		True	1
Item	19		L1_MU4		-		1.0000		241.3189		241.3189		185.1012		True	1
Item	21		L1_MU10		-		1.0000		11.2926		11.2926		6.3828		True	1
Item	27		L1_MU11_EMPTY		-		1.0000		3.6824		3.6824		1.7184		True	1
Item	22		L1_MU11		-		1.0000		3.6824		3.6824		1.7184		True	1
Item	211		L1_RD0_EMPTY		-		5.96e-8		3.87e+7		1.9639		1.9639		True	1.97e+7
Item	209		L1_RD0_FILLED		-		2.38e-7		3.87e+7		8.8377		7.3648		True	4.38e+6
Item	213		L1_RD1_EMPTY		-		5.96e-8		3.87e+7		1.9639		1.7184		True	1.97e+7
Item	212		L1_RD1_FILLED		-		5.96e-8		3.87e+7		2.9459		2.7004		True	1.32e+7
Item	63		L1_TAU8_EMPTY		-		1.0000		1.9639		1.9639		1.2275		True	1
Item	78		L1_TRT		-		1.0000		8.1012		8.1012		5.8918		True	1
Item	153		L1_XE35		-		1.0000		0		0		0		True	0

Your Shift Duties (II)



- **ensure, that the Trigger White Board is always up to date**
 - correlate with the Trigger On Call expert, ask him/her in any case of questions
 - the white board is the most important source of information also outside from the trigger
- **document all issues in a shift summary in the elog:**
 - document the trigger setup and rates at runstart (i.e. RunNr, L1/HLT/log rate, lumi, SMK, PS and BG keys used)
 - document all changes of trigger Keys
 - document all issues during the shift: e.g. all unexpected rate fluctuations, DQ issues, dead time, ..
 - there is a template for the run summary
 - usually, you make one summary at the end
 - put only additional elogs for important other problems

Key points for the Trigger Shift



- **HAVE FUN!!!**
- Be on time in ACR, take the time to discuss with previous shifter
- Do not be shy to ask questions, also to the “Coordinators”
- Watch the trigger and stream rates and data flow always critical
 - realize and try to understand unexpected differences
 - realize rate fluctuation or unstable rates in TRP
- Keep an eye always on the trigger keys
 - are the trigger keys before each run start OK?
 - cross check with RC shifter and TriggerWhiteBoard
 - change keys only in discussion with the expert on call
- Watch the Data Quality with OHP and DQMF
 - react on read flags from DQMF
- Make useful shift summaries and elogs
 - changes of keys
 - all issues / problems you observe during the shift