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ECAL Shifting Notes

Before an ECAL Shift

There are several things to do before your first DGL/DoC shift. First of all, ensure that you have a way to get to the run meeting at P5. The CERN Carshare service [↗](#) may be of use for this. Note they only provide manual transmission vehicles. The meeting is at 9:30AM Monday-Thursday, and 10:00AM on Friday-Sunday, and takes place in building xxx. Go in the main door and turn right. You need to be at the first meeting to exchange phones. As a DGL, you can get away with connecting to the meetings by EVO [↗](#), but it may be easier to connect with the DoC if you are there in person. You can find the meeting by searching for "CMS Run Meeting." It is password protected, so you should ask the DoC what the latest password is a few days ahead of time.

In addition, the control room at P5 requires EDH access. The first thing to do is complete the safety training [↗](#). To access P5 and the control room, you need basic safety (levels 1 and 2), as well as level 3 and 4C (4C is specific to CMS). Note that it can take some time to go through the safety information and take the tests, so be sure to do this before your first shift.

Once you complete the training, go to EDH [↗](#) and, click the "Access Request" tab. Request access to LHC/LEP P5, then select CMS control room.

You also need a security certificate to get access to the DQM plots. It is recommended that you use Firefox. Follow these instructions for a CERN CA certificate. You can also get a grid certificate here [↗](#) from the DOE. Then follow the procedures listed on the USCMS page [↗](#). For accessing DQM plots, a CERN CA certificate seems to be enough (?).

Subscribe to ECAL e-log [↗](#) by clicking the Config button, and checking off "ECAL," and "Shift Leader," then click save on the top left. The page does not automatically refresh, so it's helpful to get automatic updates when there is an entry.

Helpful Links

Summary of what is going on at P5 can be found here:

<http://cms-project-ecal-p5.web.cern.ch/cms-project-ECAL-P5/> [↗](#)

Most of the links (left side of the page) you need to can be found from here. The first thing to look at is the RFM (DoC used to be called RFM) manual.

One of the main things the DGL is supposed to do is look at the Data Quality Management (DQM) plots, which can be found here [↗](#). At least for Ecal Barrel (EB)/Ecal Endcap (EE), there is also the "Describe" button, which gives you info for each histogram.

Instructions for examining DQM plots

These are some basic instructions given to me by the DoC which describe which plots to look at:

DQM Shifter view:

Workspace Summary & then double-click on EB or EE.... => histogram Set & then also Layouts 00 Shift ES ==> Standard "complete" set

DQM: Workspace EcalBarrel ==> Layouts: 01 ECAL Shift

Normally check all the Folders: 01-09

At least for the 1-D plots, you should find References (Green) - albeit at lower Lumi/Pile-Up...

EcalEndcap ==> Layouts: 01 ECAL Shift

Normally check all the Folders: 01-09

At least for the 1-D plots, you should find References (Green) - albeit at lower Lumi/Pile-Up...

EcalCalibration ==> Layout: EcalCalibration: 3 folders - supposed to be "obvious" - occasional Red bits OK...!

EcalPrershower ==> I think ALL the histograms immediately appear on the "top" Page... - supposed to be "obvious"

There are two main categories of 2D plots: integrity plots and occupancy plots, and these involve different color schemes to see whether things are working correctly, described below:

1. Most things should go RED when they go wrong, Yellow means poor statistics, and White means empty (no events in that bin) - but this MAY be OK, in some circumstances.
2. Some "occupancy" plots are "just" in Blue, so you should look for localised dark (High occupancy) regions, or extensive regions too pale...

Some plots display quantities such as the energy, and these plots may be "temperature" plots where the z axis is color scaled, in which case red doesn't necessarily mean bad, so look at the description carefully.

It's a good idea to "practice" on known good runs. Ask the DoC for a recent good run to look at.

Note that the green reference lines just come from a good previous run.

There are two DQM pages that can help understand the plots. This page is somewhat out of date however. This page has some complementary information.

Pedestal Runs

Every week, when we don't have beam we need to calibrate ECAL with pedestal runs.

Ask shift leader if we can have local control of ECAL.

Run Control Monitoring system

user:***

psswd: ****

check to make sure that there is no one else using ECAL. So go to Running Configurations

go to Configuration Chooser/ LocalReadout/Default/ECAL/CH4 ==>Create

Unlock

Initialize

Take Pedestal_TTCci run

Choose subdetector, so for example EE+ / EE-, so that the DQM job can finish, click apply ==> Configure. Then start.

Next do EB+ pedestal, same set of instructions.

Test Pulse_TTCci

Instructions for examining DQM plots

When finished click destroy

Check ECAL private DQM.

Update ECAL Log. Use WMB to check run numbers.

Tell shift leader we are done and that he can put ECAL back into global.

Abbreviations

There are lots of abbreviations to learn, and CMS has a page with lots of helpful abbreviations and acronyms here. I have listed a few that will be useful for ECAL shifting below.

EB - ECAL barrel

EE - ECAL endcap

ES - ECAL pre-shower

IT - Integrity task, used for examining data quality (example EBIT stands for ECAL barrel integrity task)

OT - Occupancy task used for determining whether there is data in a given channel (example EBOT stands for ECAL barrel occupancy task)

APD - Avalanche photodiodes

PN - Another kind of diode used for looking at LASER calibration signal, more stable than APDs

Rechit - Reconstructed hit

Digi - Digitized raw data

DCC - Data Concentration Card

DCS - Detector Control System

DQM - Data Quality Management

TP - Trigger primitives

ZS - Zero Supression

FED - Front End Driver

CCS - Clock Control System

TCC - Trigger Concentration Card

ttcci (?)

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