Muon Tracker QA Introduction

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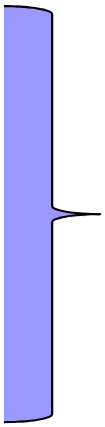
Introduction

- QA (Quality Assurance) – check data quality run by run, make a good run list
- Global QA
  - A general run status report will be provided at the end of run each year, usually by run coordinator.
  - Short time or low statistics runs/fills, Z-Vertex, etc
- Subsystem QA
  - Focus on MuTr QA
- Spin QA
  - Could be covered by Ciperian' s talk on Friday

MuTr QA

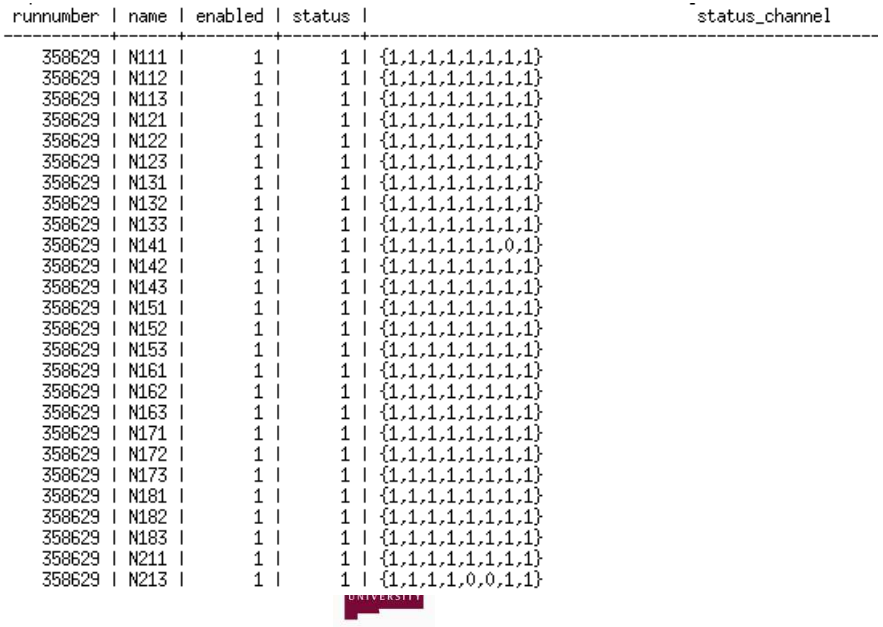
- MuTr QA is usually done by north and south independently.
  - Separate north/south good lists will be generated
- Items to check:
  - HV status
  - Hot/Dead planes – station by station
  - Hot/Dead packets
  - Number of Cluster – station by station
  - Hit per event – station by station



Got from Production QA files

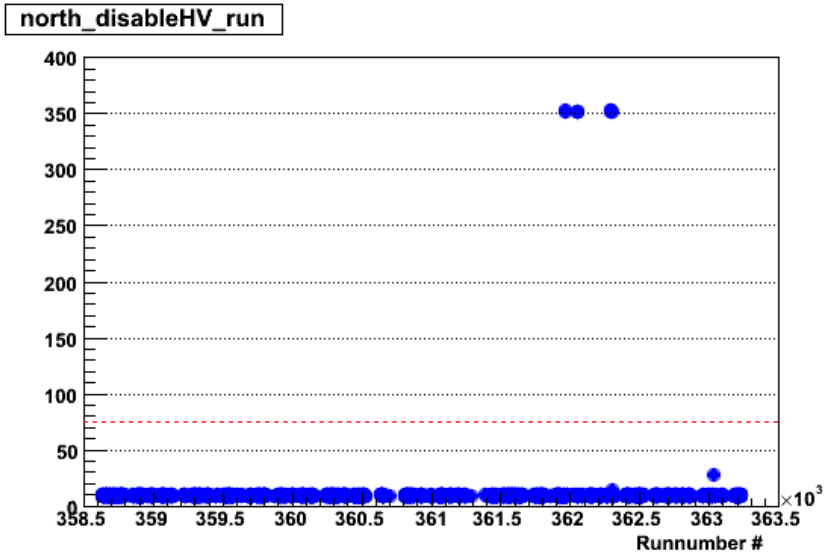
MuTr HV status

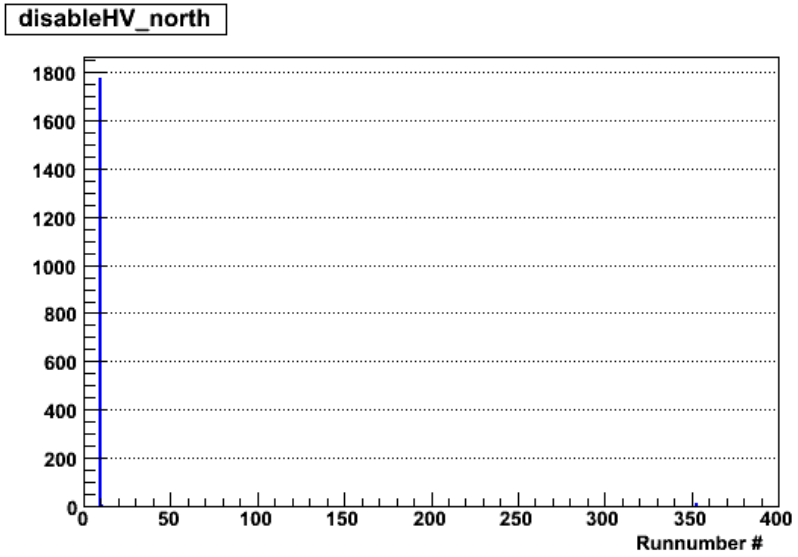
- Follow Hugo's instruction to create HV maps from the online high voltage server http://www.phenix.bnl.gov/WWW/muon/software/mutgeom/html/group__TUT2.html
  - Commit info into database
- Go to database to get the disabled HV channels
  - psql -h phnxdb1.phenix.bnl.gov -U phnxrc -d daq
  - select runnumber, name, enabled, status, status_channel from hvlog_run where runnumber >= 358629 and runnumber<=363228 and (subsystem = 'MutrN' or subsystem = 'MutrS') order by runnumber, name;

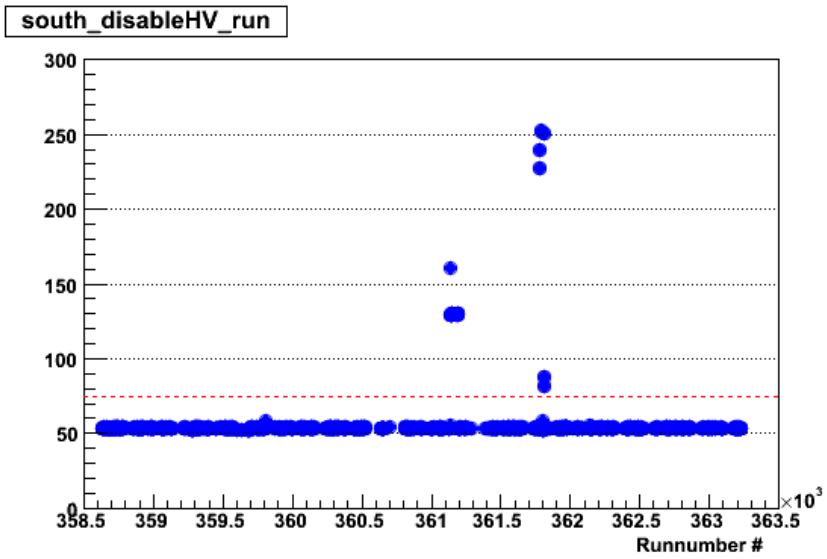


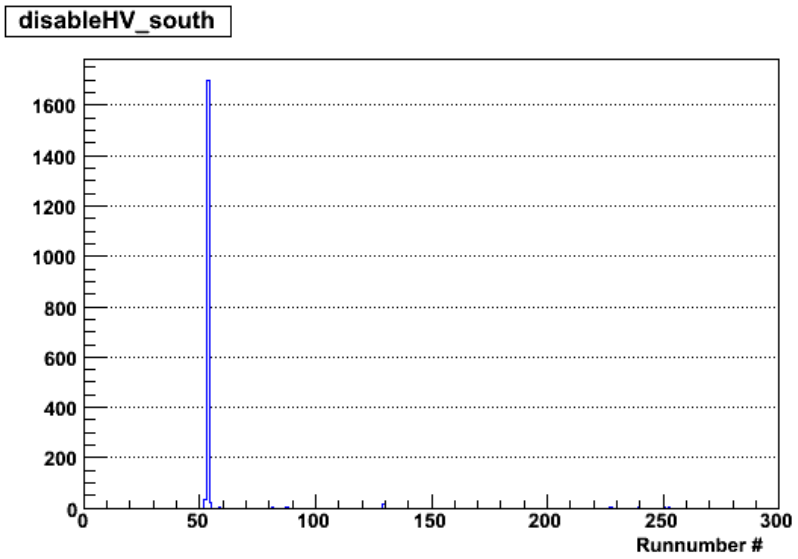
runnumber	name	enabled	status	status_channel
358629	N111	1	1	{1,1,1,1,1,1,1,1}
358629	N112	1	1	{1,1,1,1,1,1,1,1}
358629	N113	1	1	{1,1,1,1,1,1,1,1}
358629	N121	1	1	{1,1,1,1,1,1,1,1}
358629	N122	1	1	{1,1,1,1,1,1,1,1}
358629	N123	1	1	{1,1,1,1,1,1,1,1}
358629	N131	1	1	{1,1,1,1,1,1,1,1}
358629	N132	1	1	{1,1,1,1,1,1,1,1}
358629	N133	1	1	{1,1,1,1,1,1,1,1}
358629	N141	1	1	{1,1,1,1,1,1,0,1}
358629	N142	1	1	{1,1,1,1,1,1,1,1}
358629	N143	1	1	{1,1,1,1,1,1,1,1}
358629	N151	1	1	{1,1,1,1,1,1,1,1}
358629	N152	1	1	{1,1,1,1,1,1,1,1}
358629	N153	1	1	{1,1,1,1,1,1,1,1}
358629	N161	1	1	{1,1,1,1,1,1,1,1}
358629	N162	1	1	{1,1,1,1,1,1,1,1}
358629	N163	1	1	{1,1,1,1,1,1,1,1}
358629	N171	1	1	{1,1,1,1,1,1,1,1}
358629	N172	1	1	{1,1,1,1,1,1,1,1}
358629	N173	1	1	{1,1,1,1,1,1,1,1}
358629	N181	1	1	{1,1,1,1,1,1,1,1}
358629	N182	1	1	{1,1,1,1,1,1,1,1}
358629	N183	1	1	{1,1,1,1,1,1,1,1}
358629	N211	1	1	{1,1,1,1,1,1,1,1}
358629	N213	1	1	{1,1,1,1,0,0,1,1}

Disabled HV example









Find Production QA files

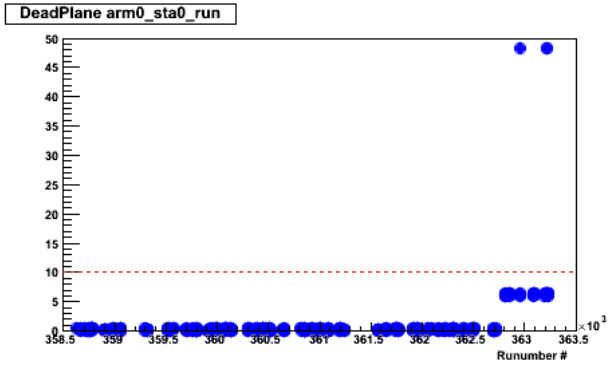
- Ask the person who handle the production to find out the location of those QA files
  - If they were on disk, it is easy.
  - If they were on the tape,

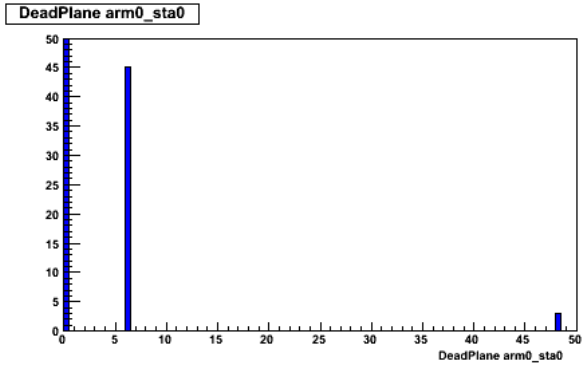
    very painful!!

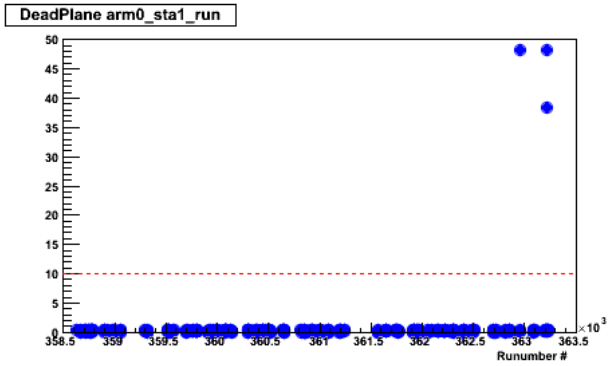
    - Have large enough disk space to keep zip files
    - Use hpss to pull them
    - Have larger disk space to unzip them

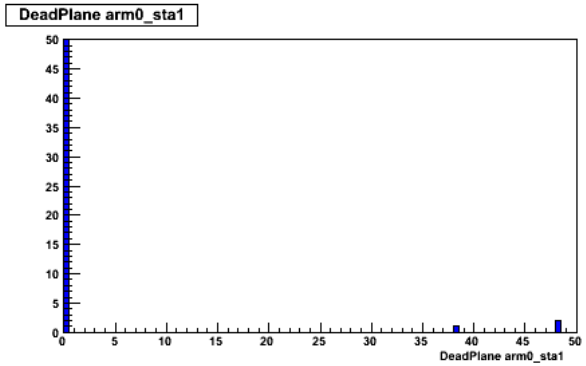
- Steal macros from senior people and run them

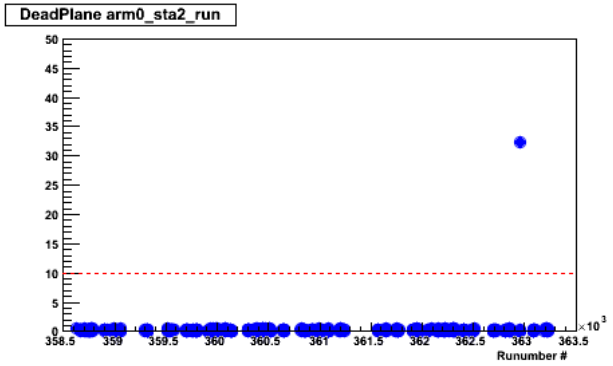
Dead Plane Example

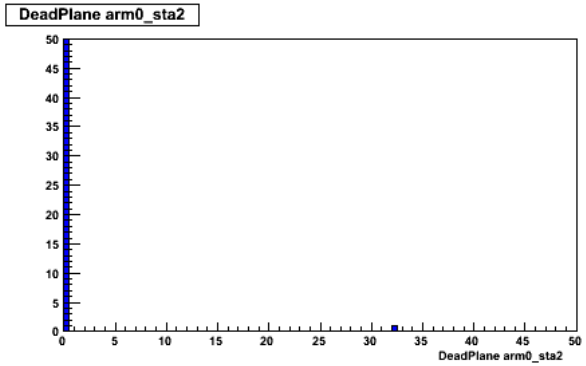




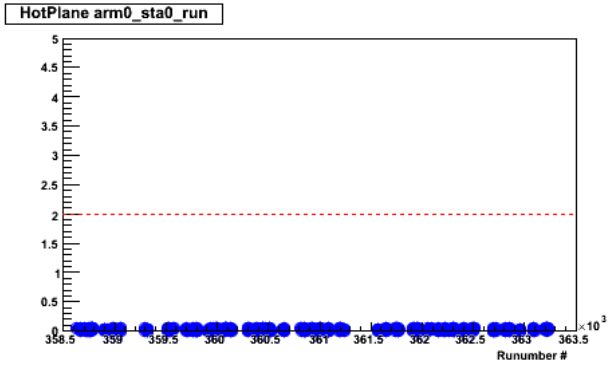


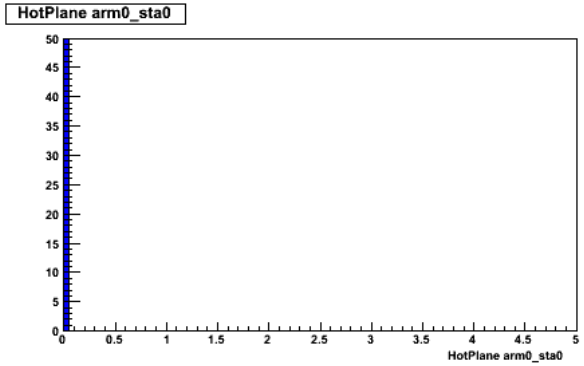


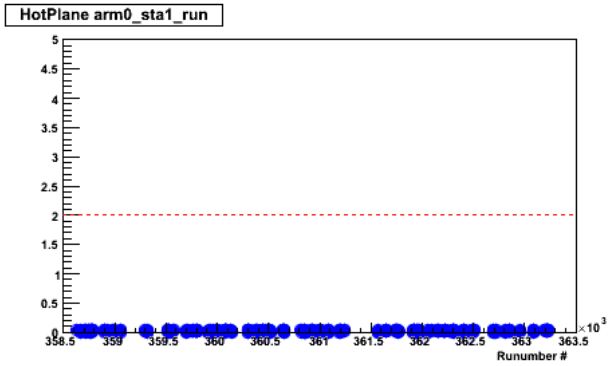


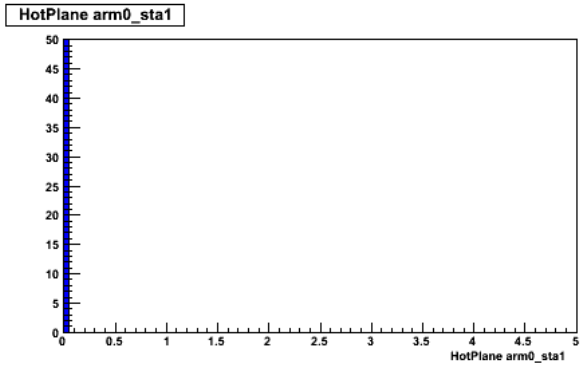


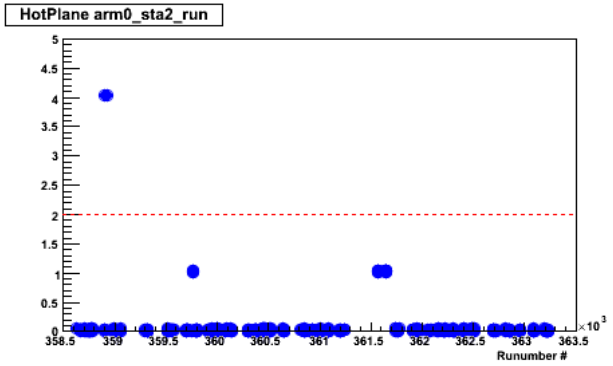
Hot Plane Example

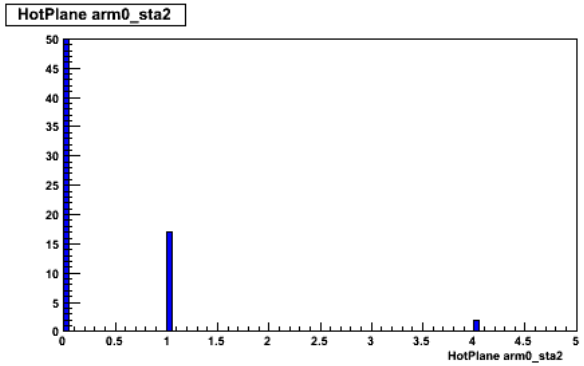




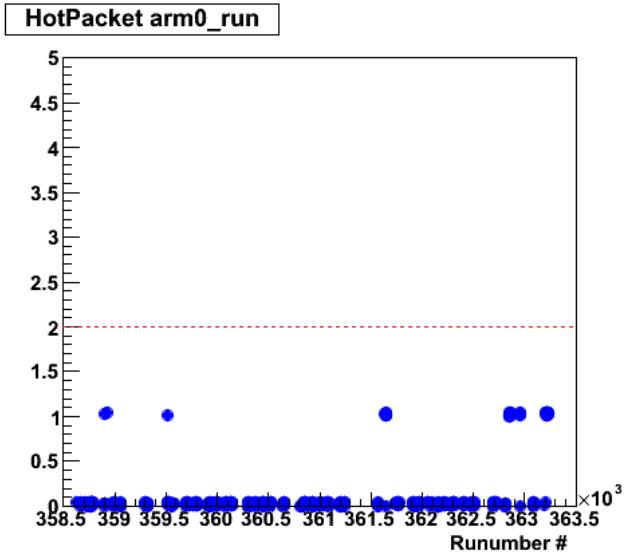


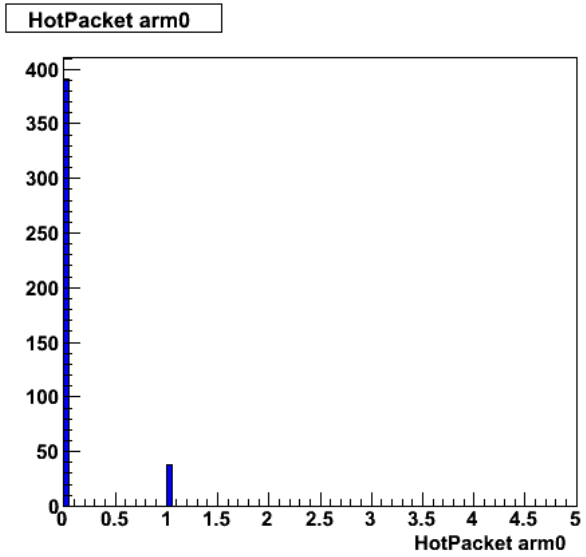


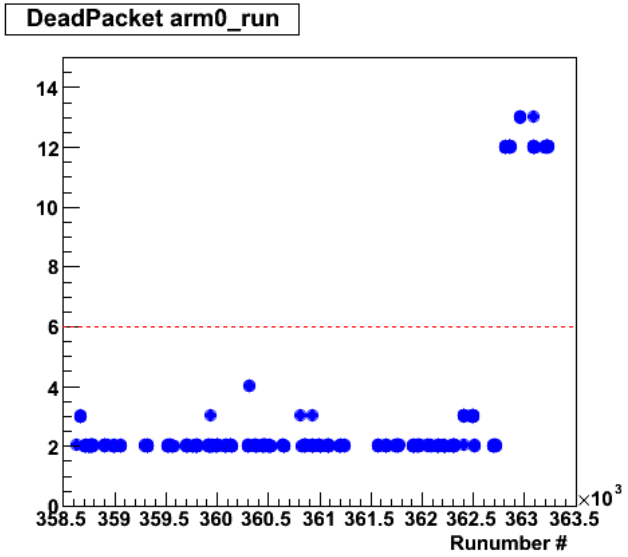


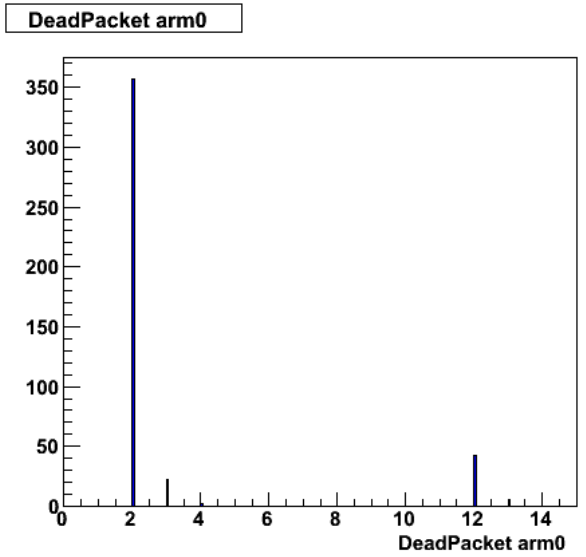


Hot/Dead Packet Example



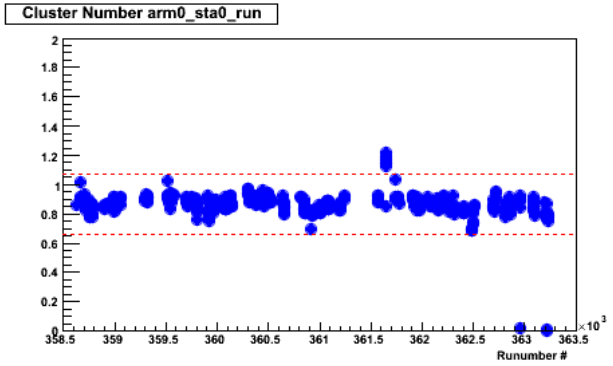


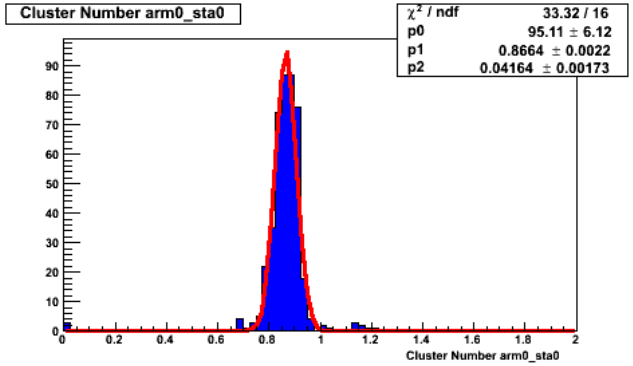




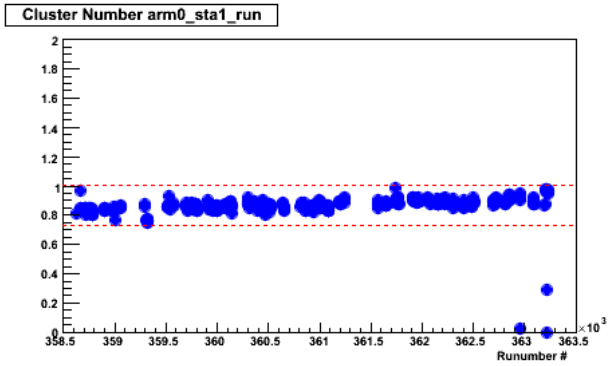
Cluster QA example

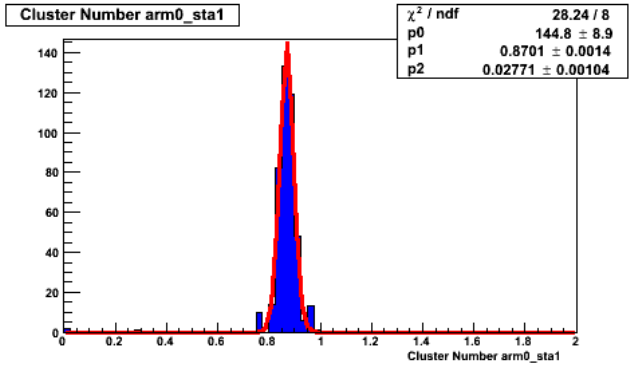
5 σ Cut



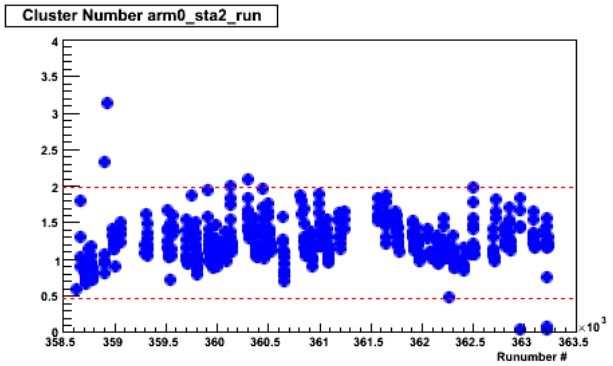


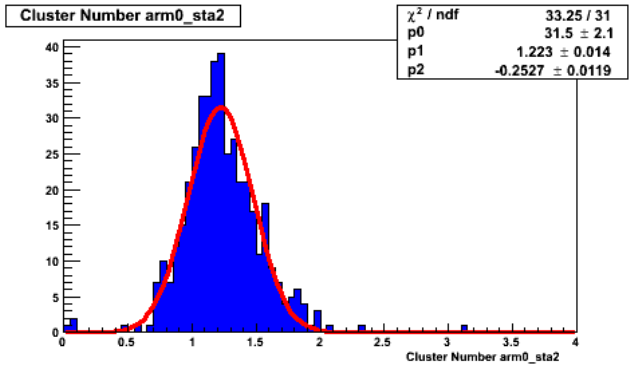
5 σ Cut



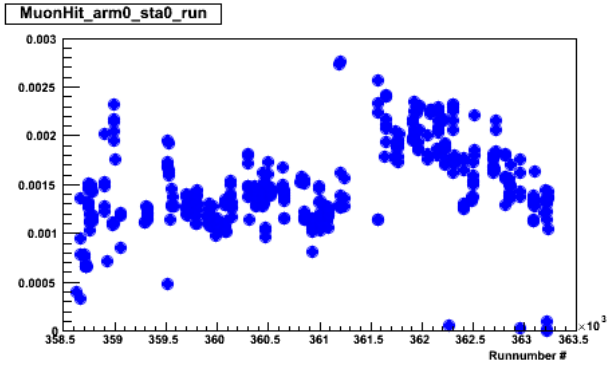


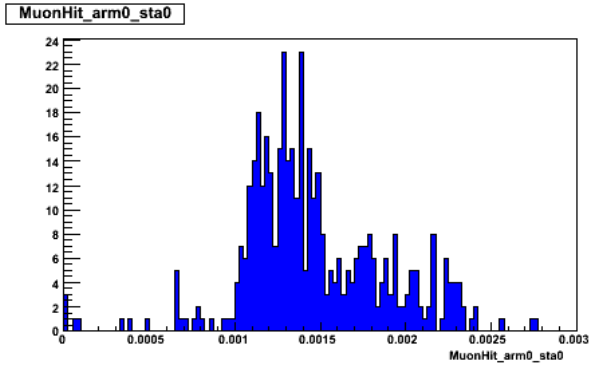
3 σ Cut

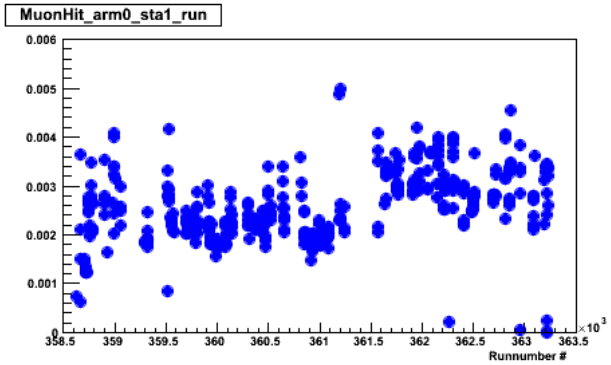


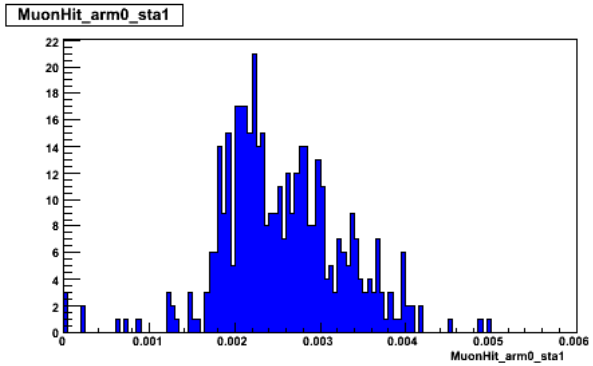


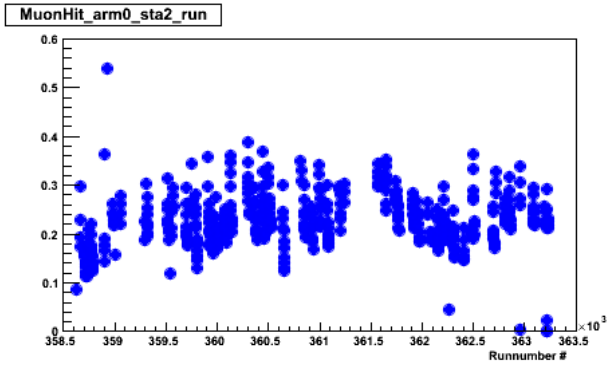
Muon Hit QA example

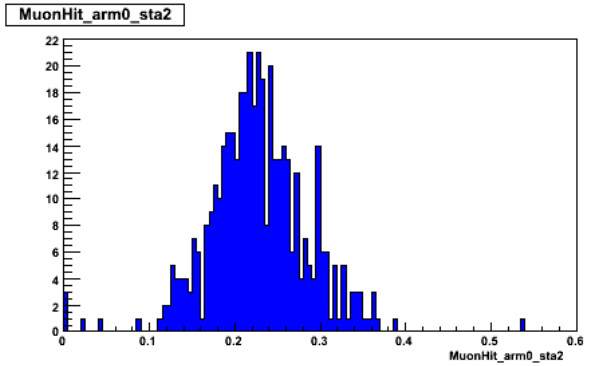




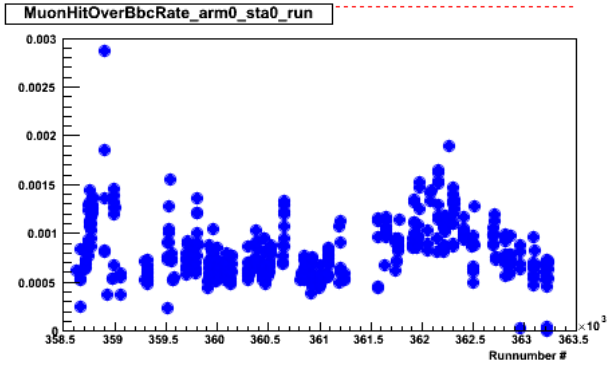


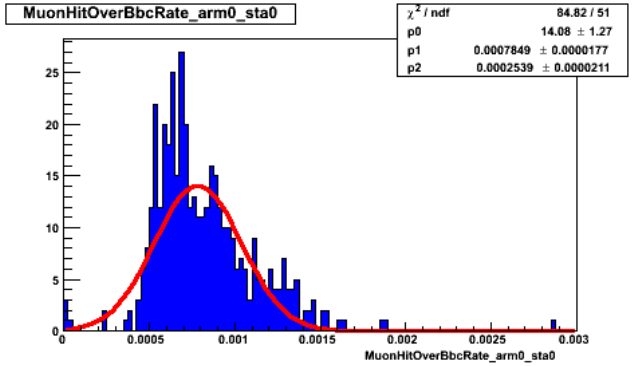


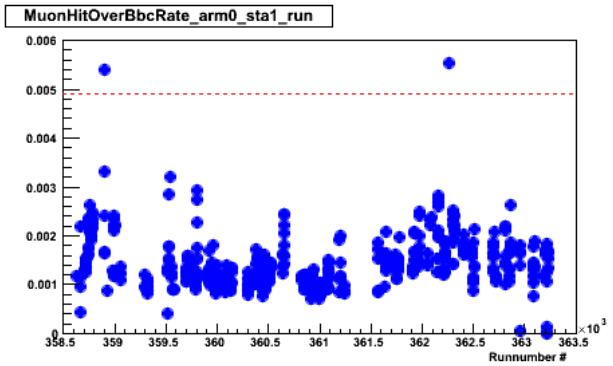


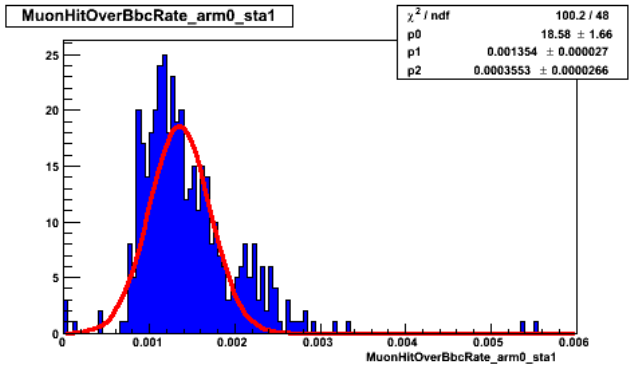


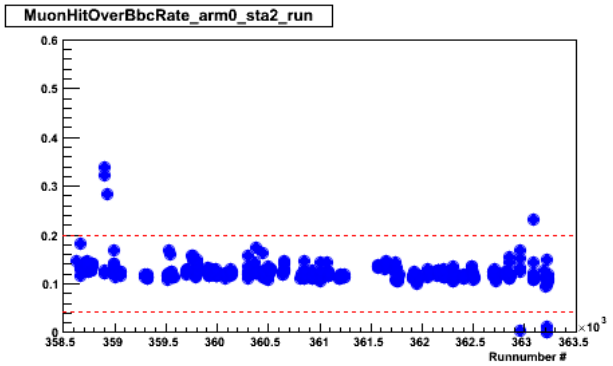
Muon Hit over Bbc example

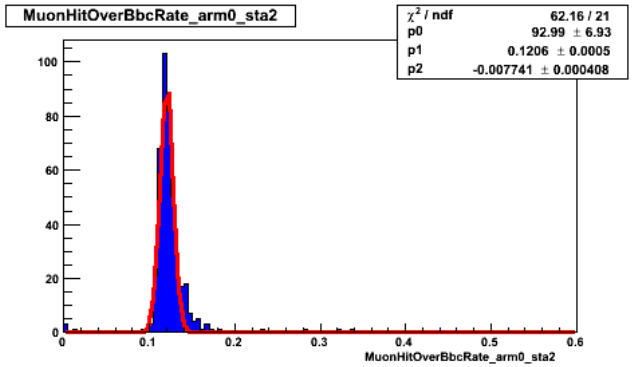












Combine all QAs

- Muon arm consists of Muon Tracker and Muon Identifier.
  - MuID QA is also very important.
- Combine MuTr and MuID QA to get muon arm good run lists.
- Combine with global and Spin QA and other subsystem QA (ie. FVTX) to get final good run lists

Still have questions?!
#1 Suggestion: Read carefully previous QA analysis notes

Ready? To go!