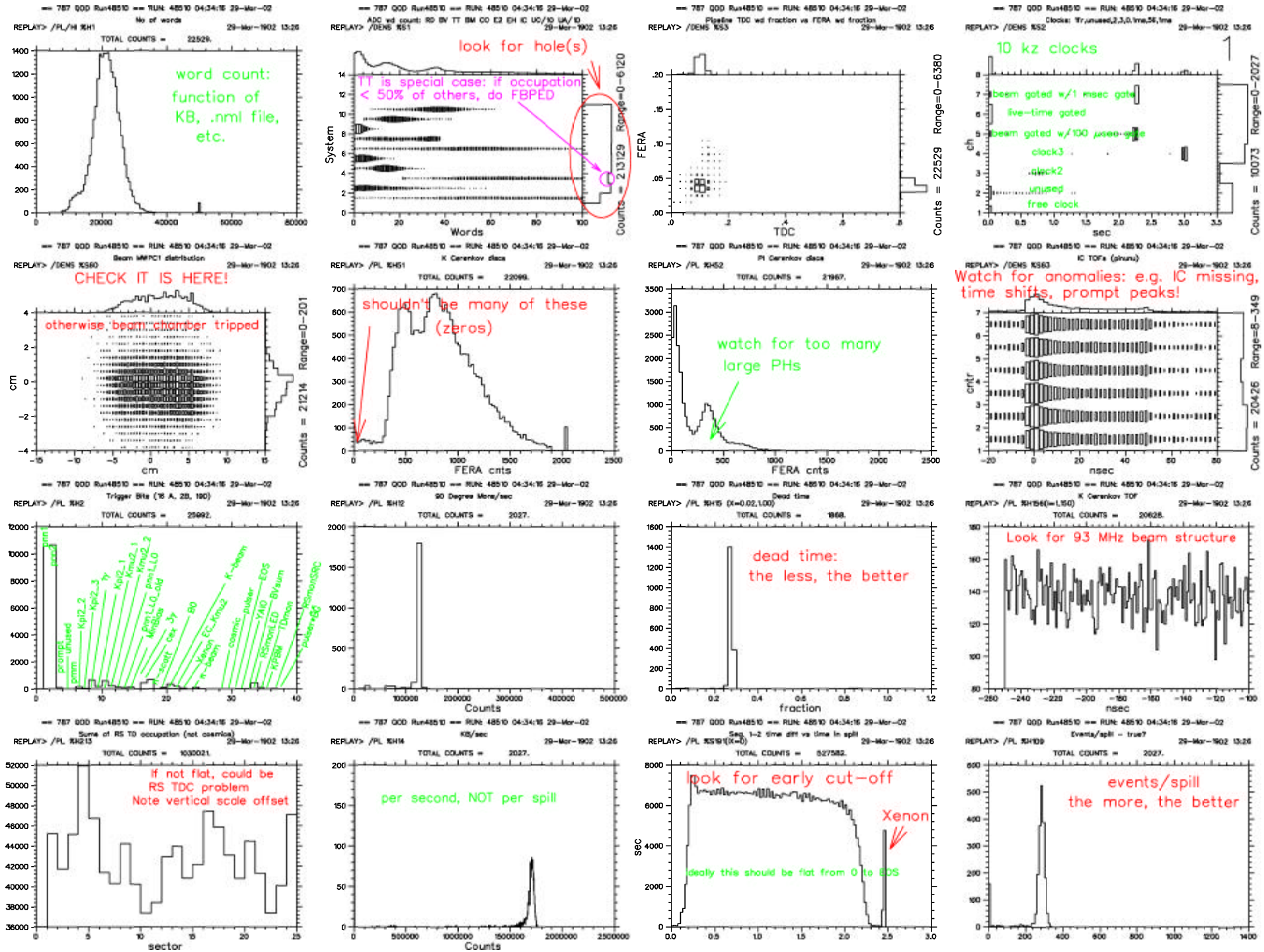
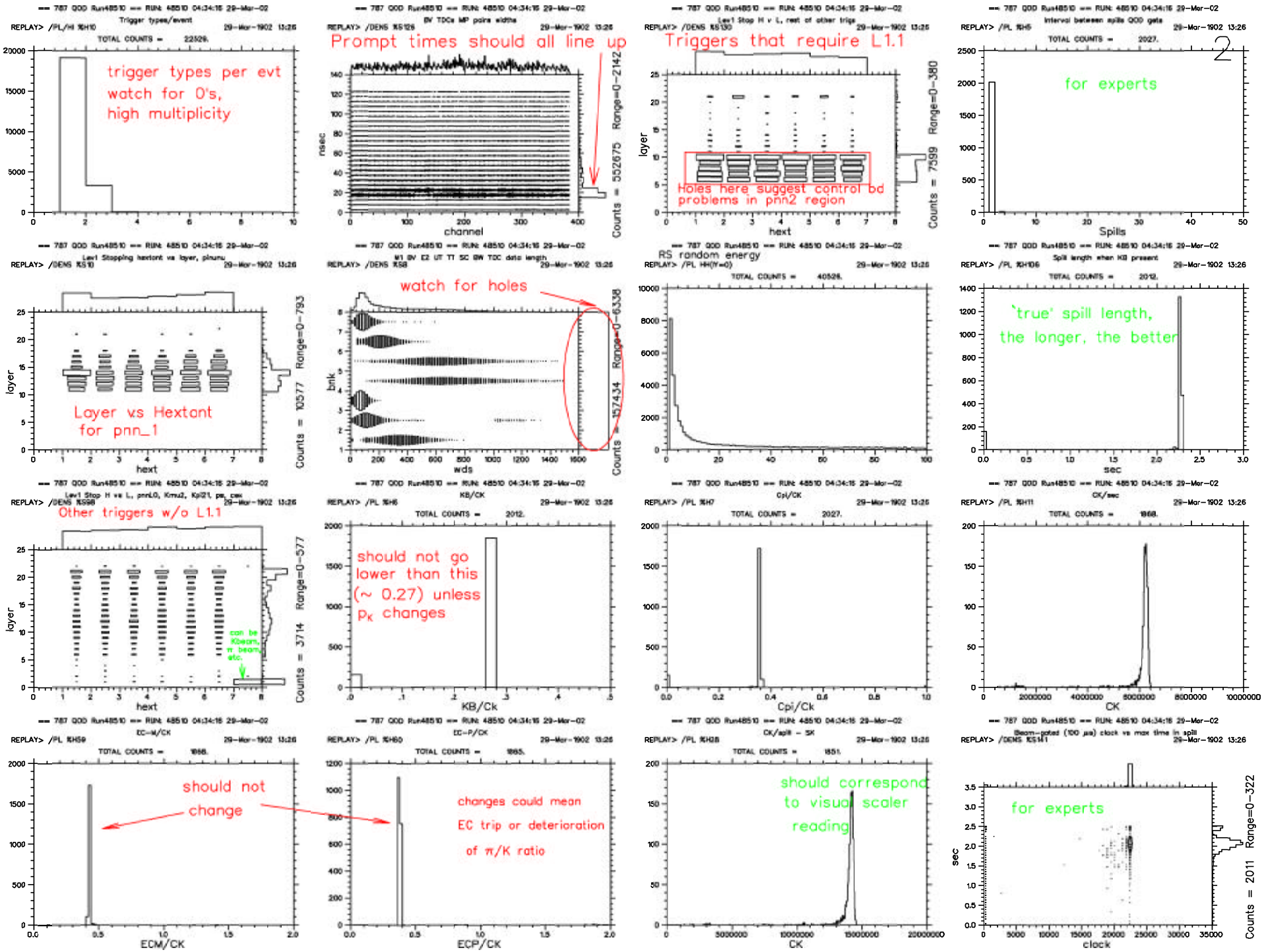
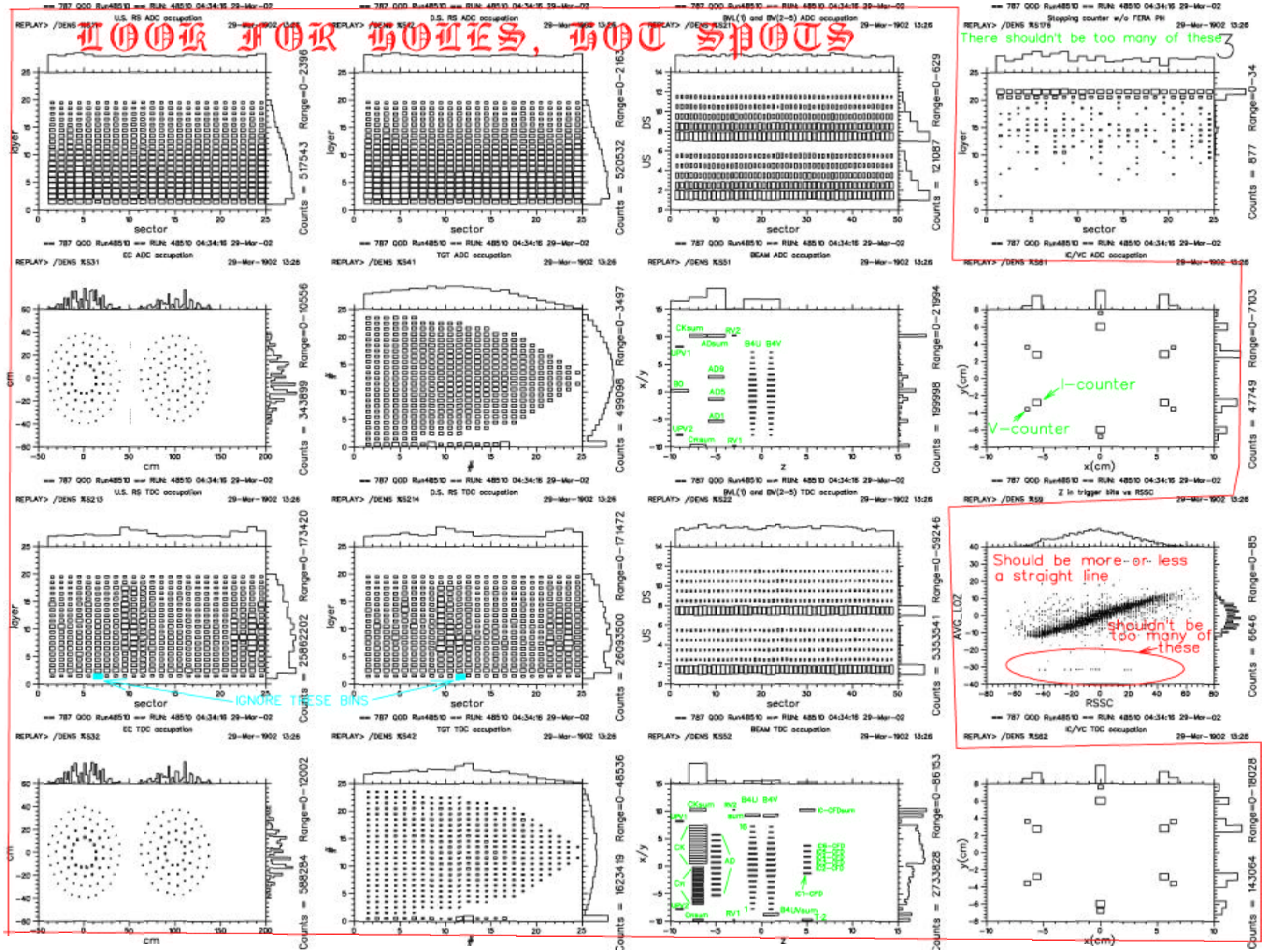
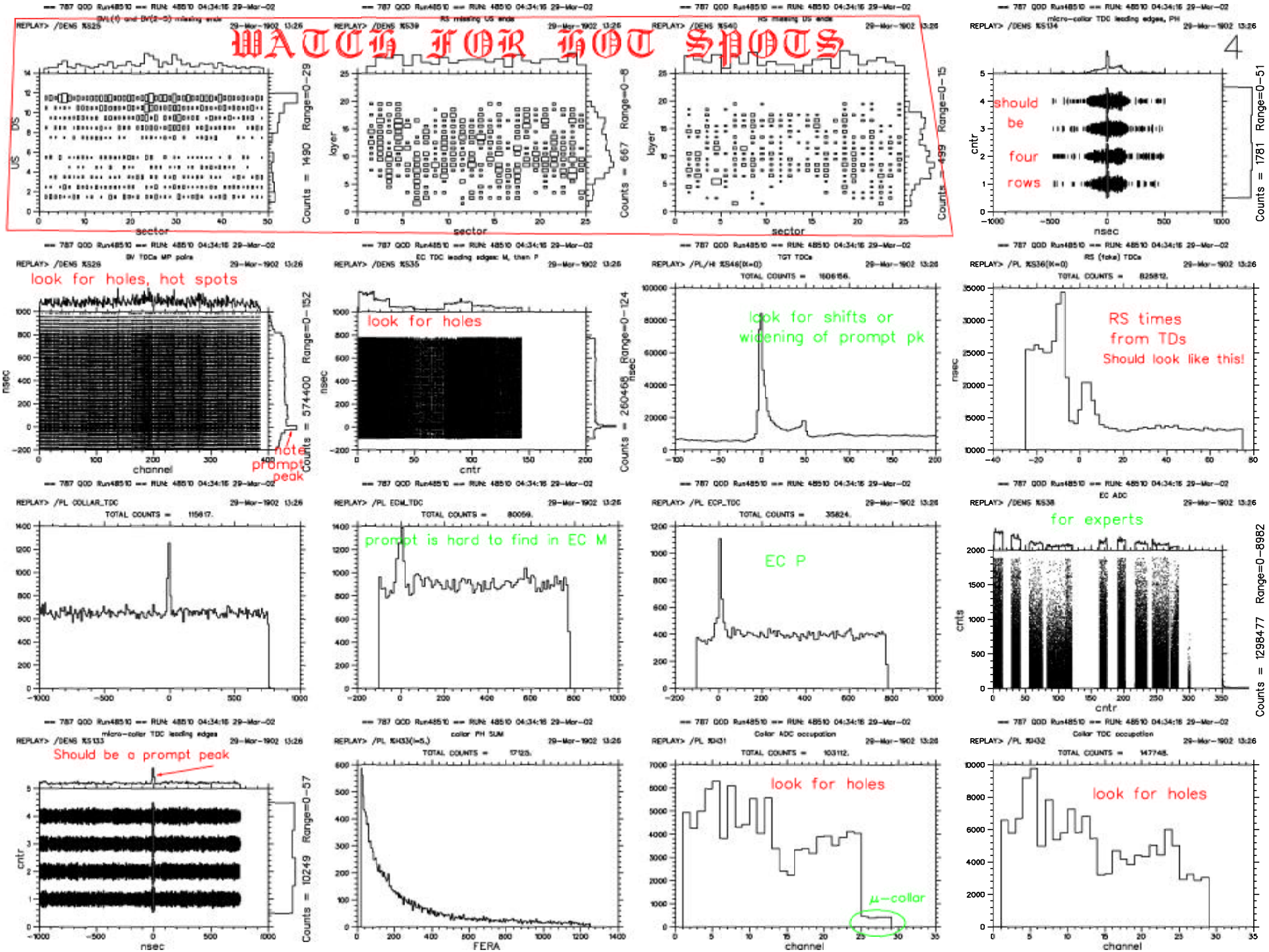

word count:
function of
KB, .nml file,
etc.
look for hole(s)
TT is special case: if occupation
< 50% of others, do FBPED
10 kz clocks
CHECK IT IS HERE!
otherwise beam chamber tripped
shouldn't be many of these
(zeros)
watch for too many
large PHs
Watch for anomalies: e.g. IC missing,
time shifts, prompt peaks!
dead time:
the less, the better
Look for 93 MHz beam structure
if not flat, could be
RS TDC problem
Note vertical scale offset
per second, NOT per spill
look for early cut-off
Xenon
events/spill
the more, the better

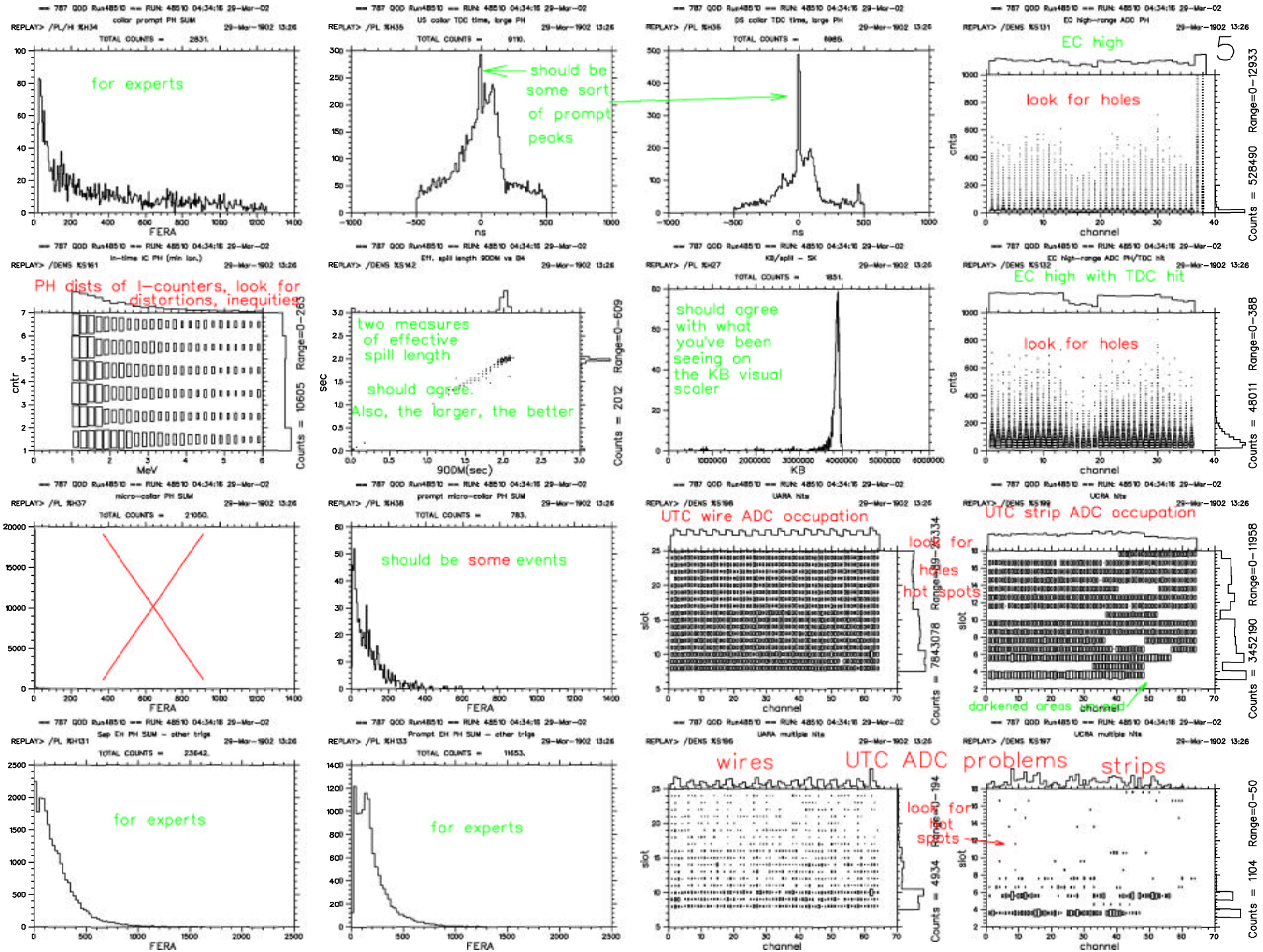

trigger types per evt
watch for 0's,
high multiplicity
Prompt times should all line up
Triggers that require L1.1
Holes here suggest control bd
problems in pnn2 region
for experts
Layer vs Hextant
for pnn_1
watch for holes
RS random energy
'true' spill length,
the longer, the better
Other triggers w/o L1.1
should not go
lower than this
(~ 0.27) unless
p_K changes
should not
change
changes could mean
EC trip or deterioration
of π/K ratio
should correspond
to visual scaler
reading
for experts

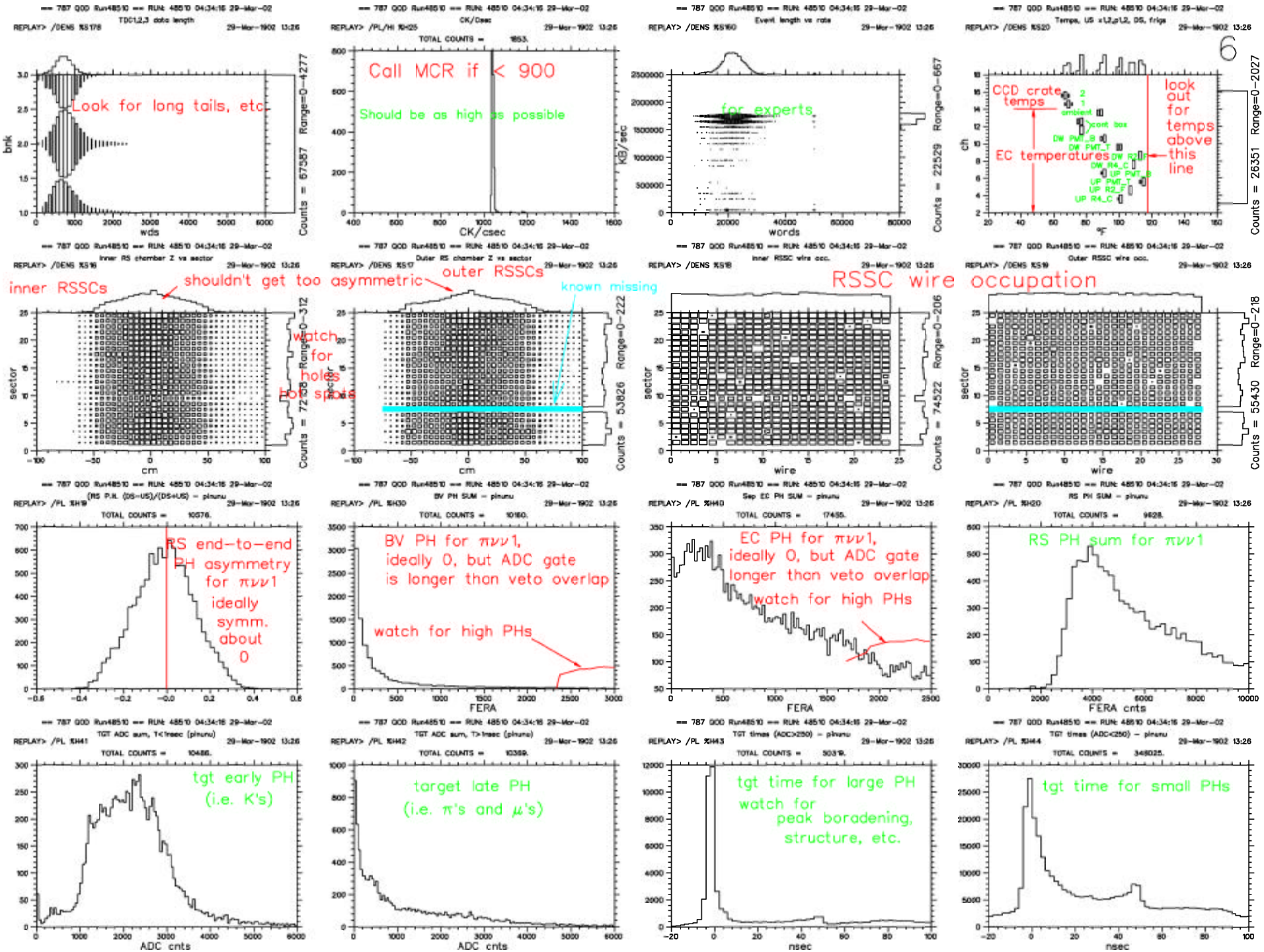
LOOK FOR HOLES, HOT SPOTS

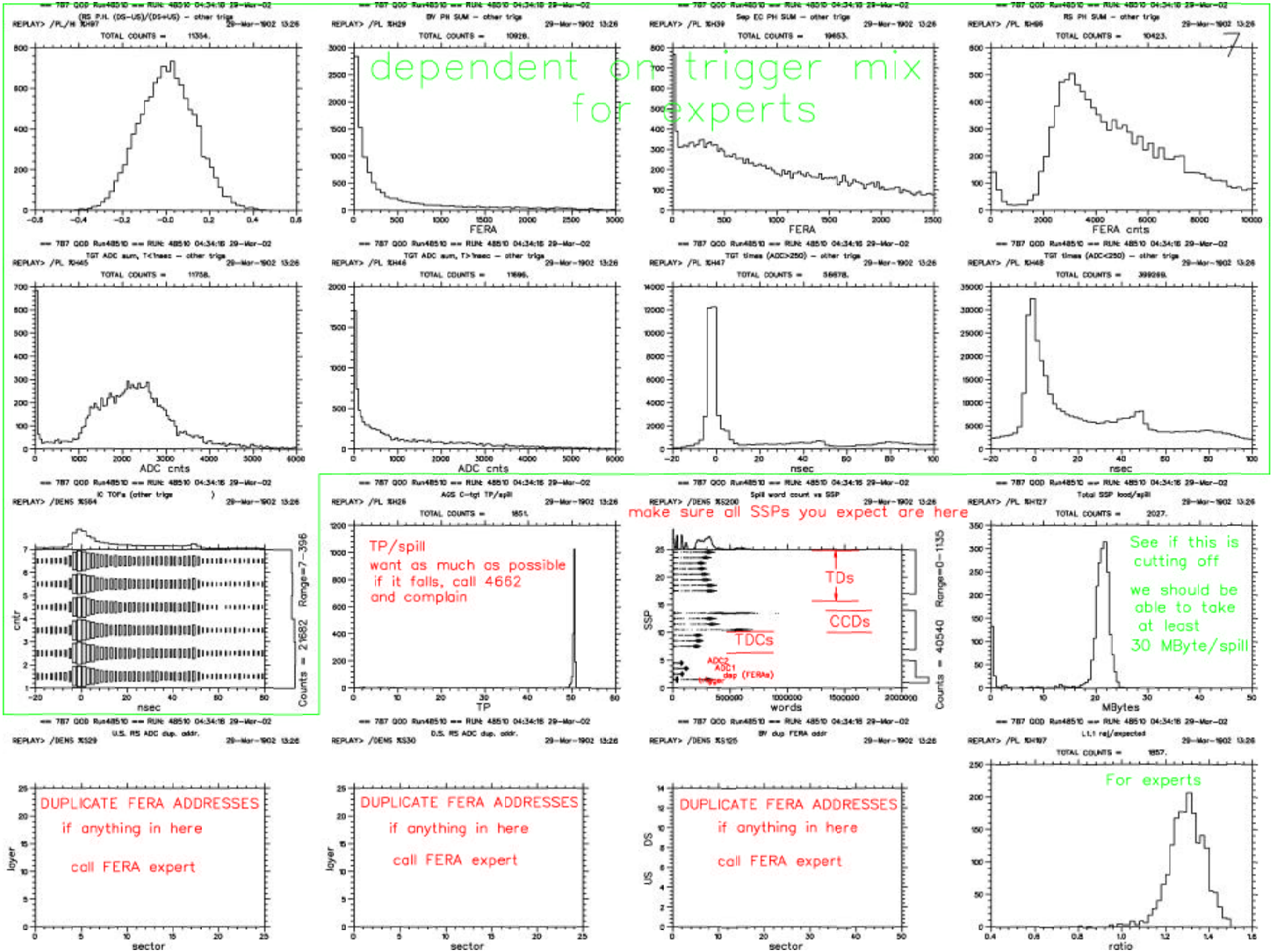


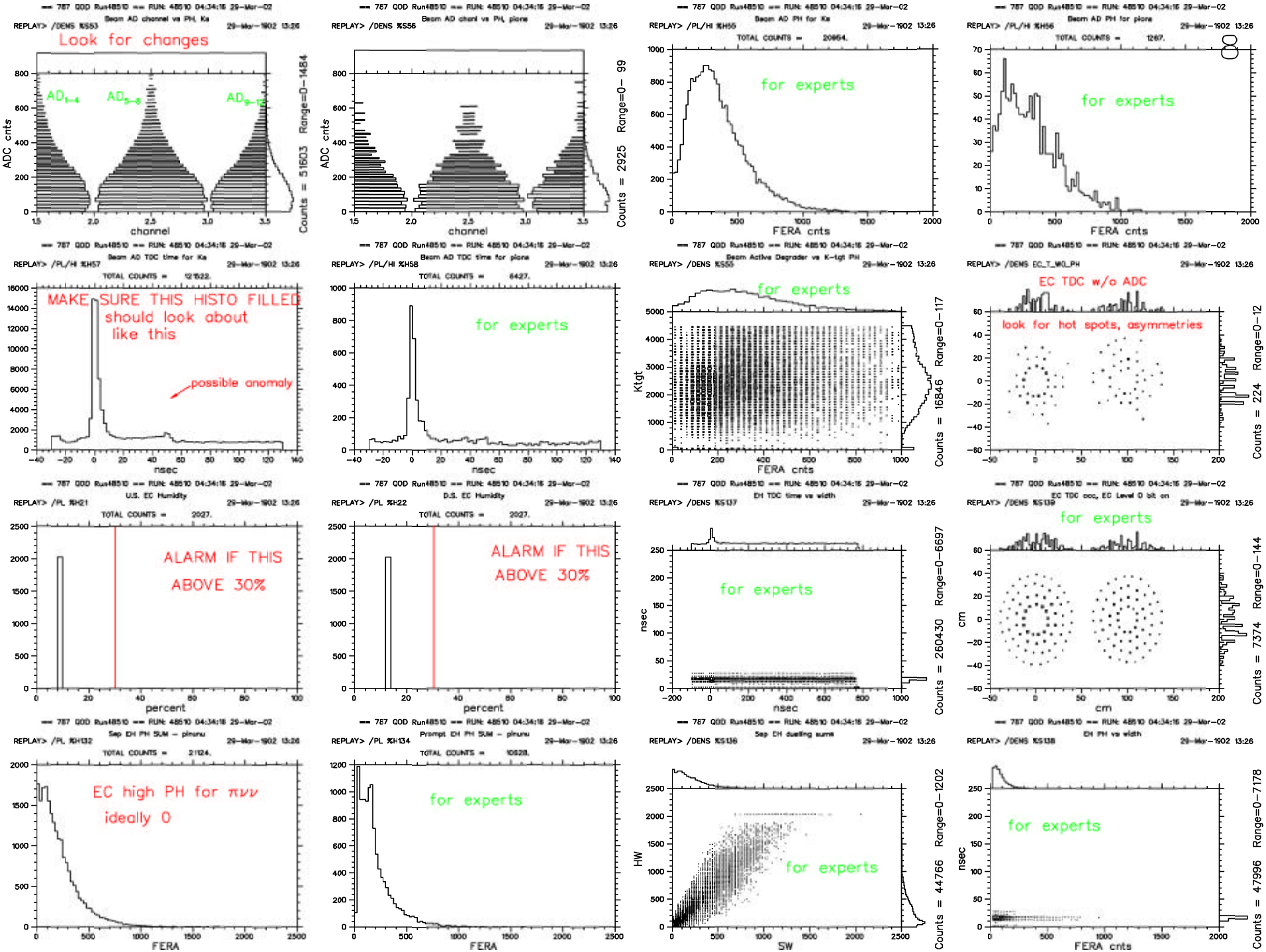
WATCH FOR HOT SPOTS

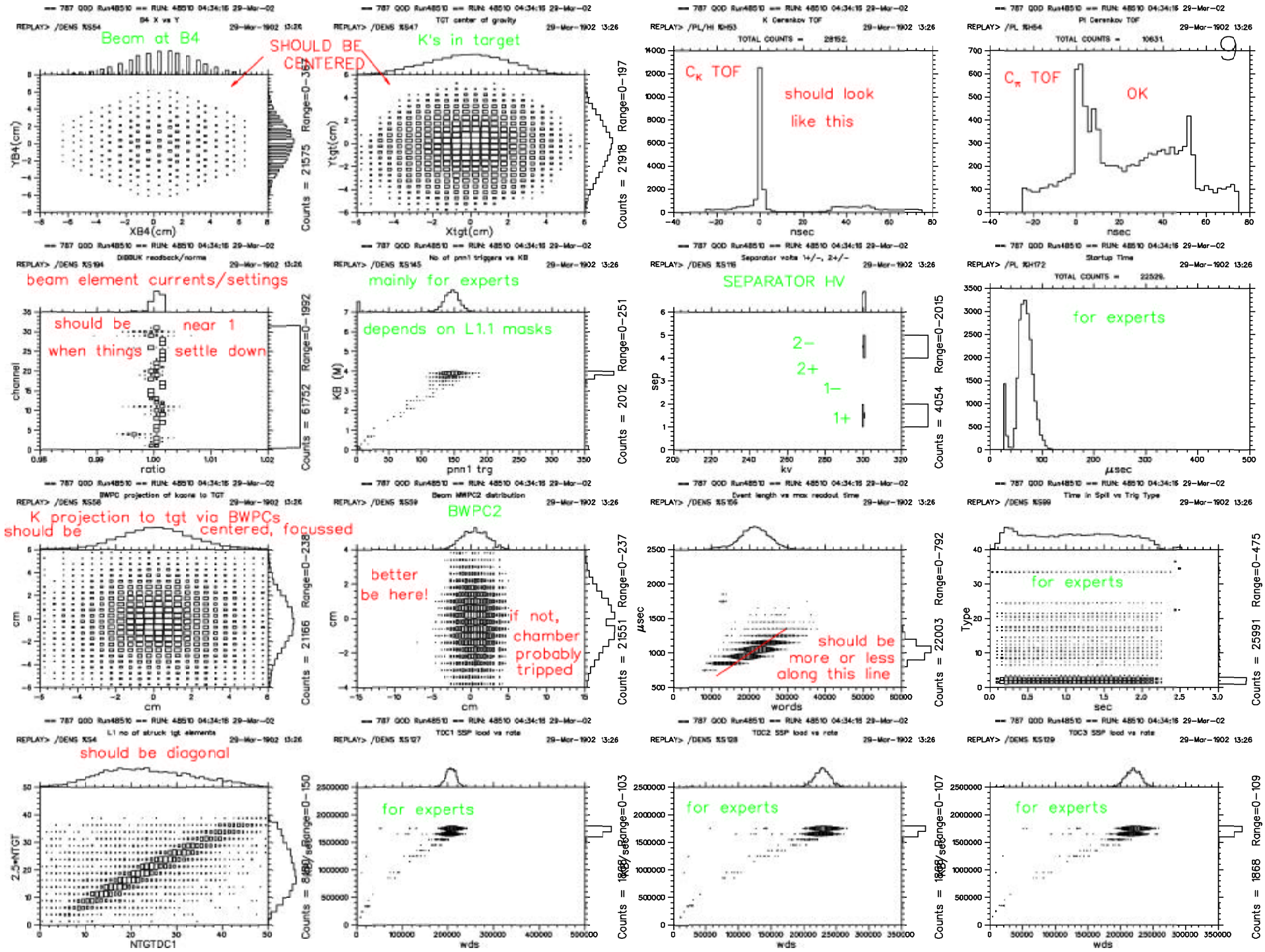


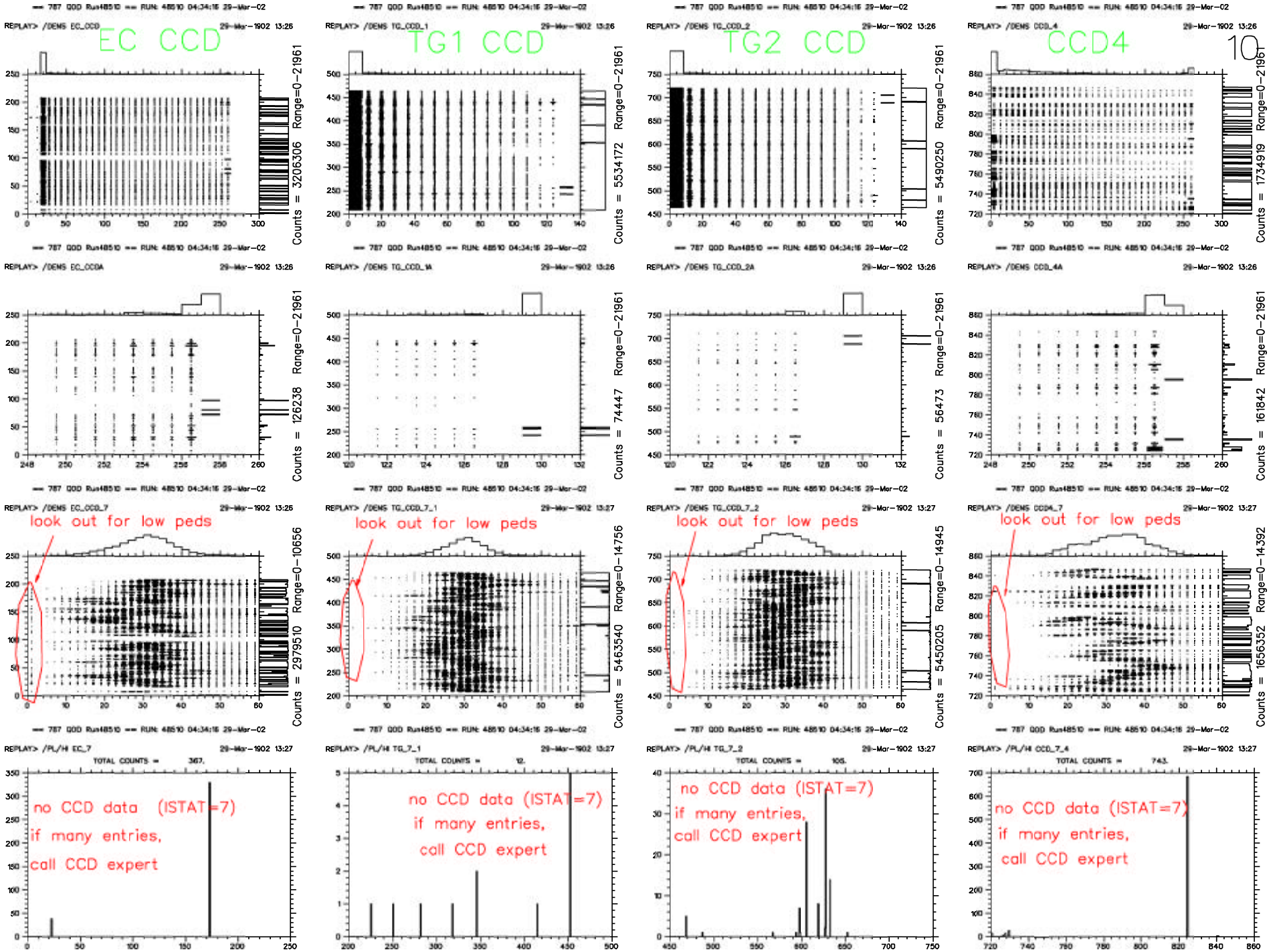

for experts
should be some sort of prompt peaks
EC high
look for holes
PH dists of I-counters, look for distortions, inequities
two measures of effective spill length
should agree.
Also, the larger, the better
should agree with what you've been seeing on the KB visual scaler
EC high with TDC hit
look for holes
should be some events
UTC wire ADC occupation
look for hot spots
UTC strip ADC occupation
darkened areas
for experts
for experts
wires
UTC ADC problems
strips
look for hot spots

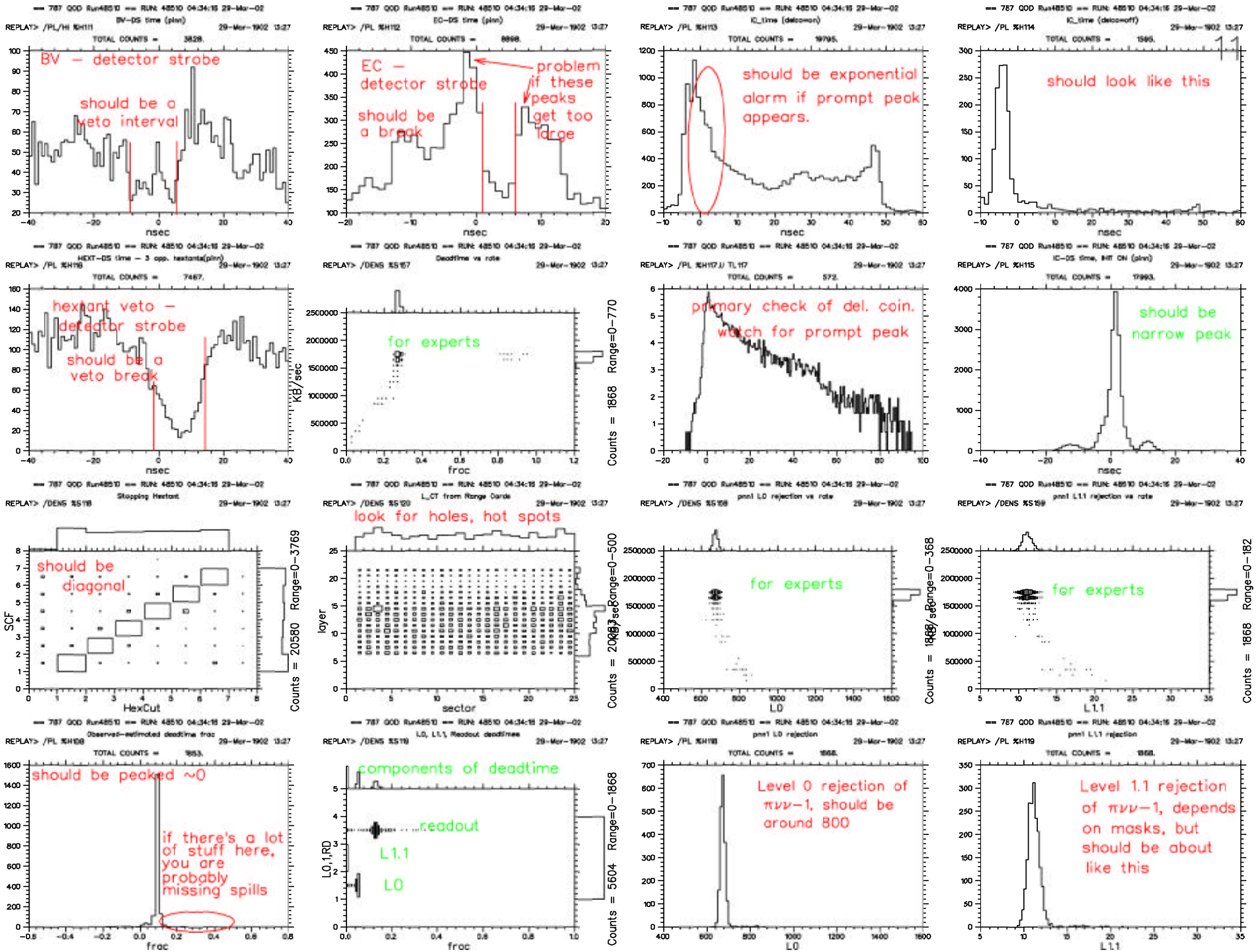

6
Look for long tails, etc
Call MCR if < 900
Should be as high as possible
for experts
CCD crate temps
EC temperatures
look out for temps above this line
inner RSSCs
shouldn't get too asymmetric
outer RSSCs
known missing
watch for holes spots
RSSC wire occupation
RS end-to-end PH asymmetry for πνν1 ideally symm. about 0
BV PH for πνν1, ideally 0, but ADC gate is longer than veto overlap
watch for high PHs
EC PH for πνν1, ideally 0, but ADC gate longer than veto overlap
watch for high PHs
RS PH sum for πνν1
tgt early PH (i.e. K's)
target late PH (i.e. π's and μ's)
tgt time for large PH
watch for peak boradening, structure, etc.
tgt time for small PHs

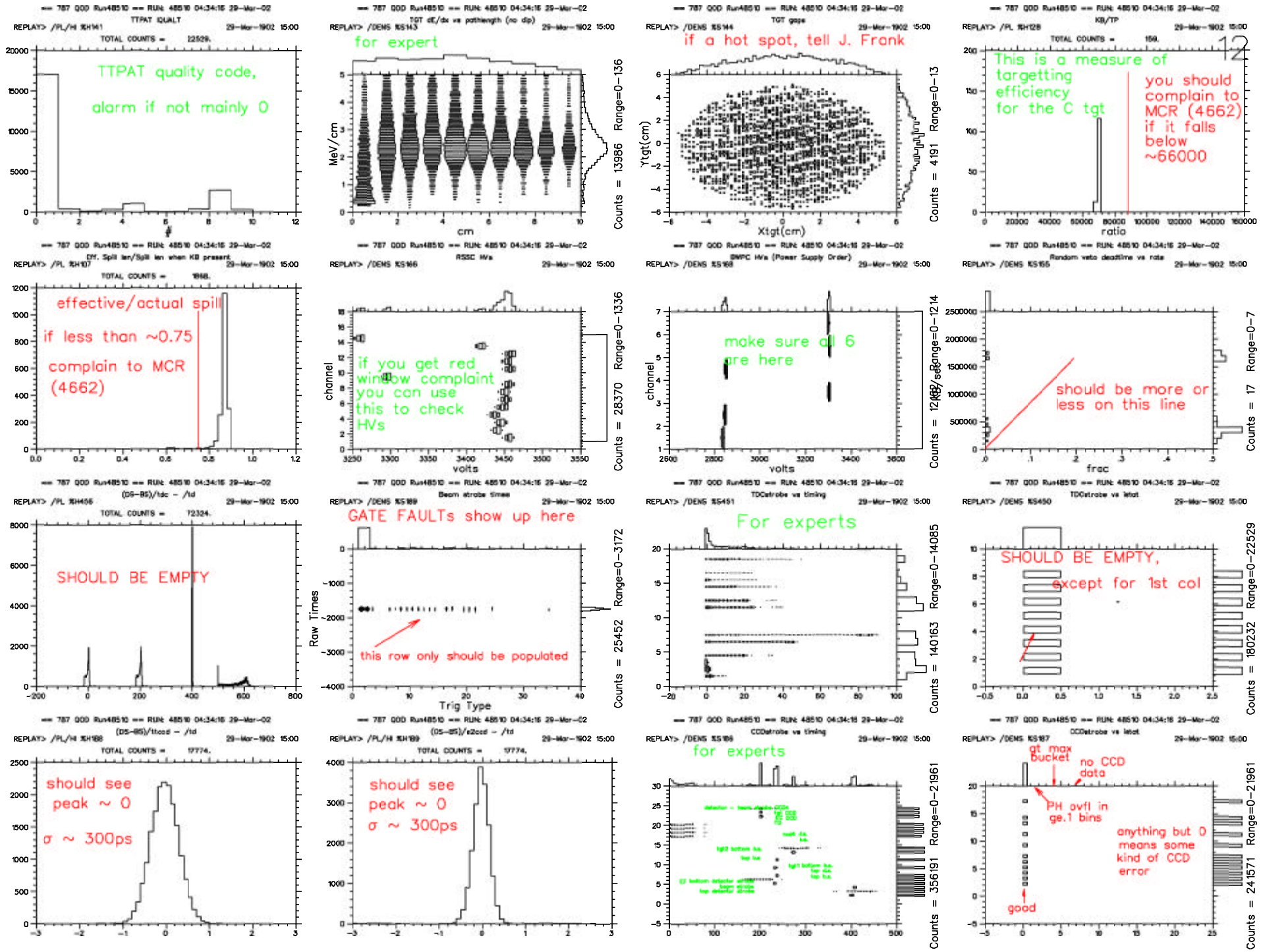

dependent on trigger mix
for experts
make sure all SSPs you expect are here
TP/spill
want as much as possible
if it falls, call 4662
and complain
TDs
CCDs
TDCs
See if this is
cutting off
we should be
able to take
at least
30 MByte/spill
DUPLICATE FERA ADDRESSES
if anything in here
call FERA expert
DUPLICATE FERA ADDRESSES
if anything in here
call FERA expert
DUPLICATE FERA ADDRESSES
if anything in here
call FERA expert
For experts

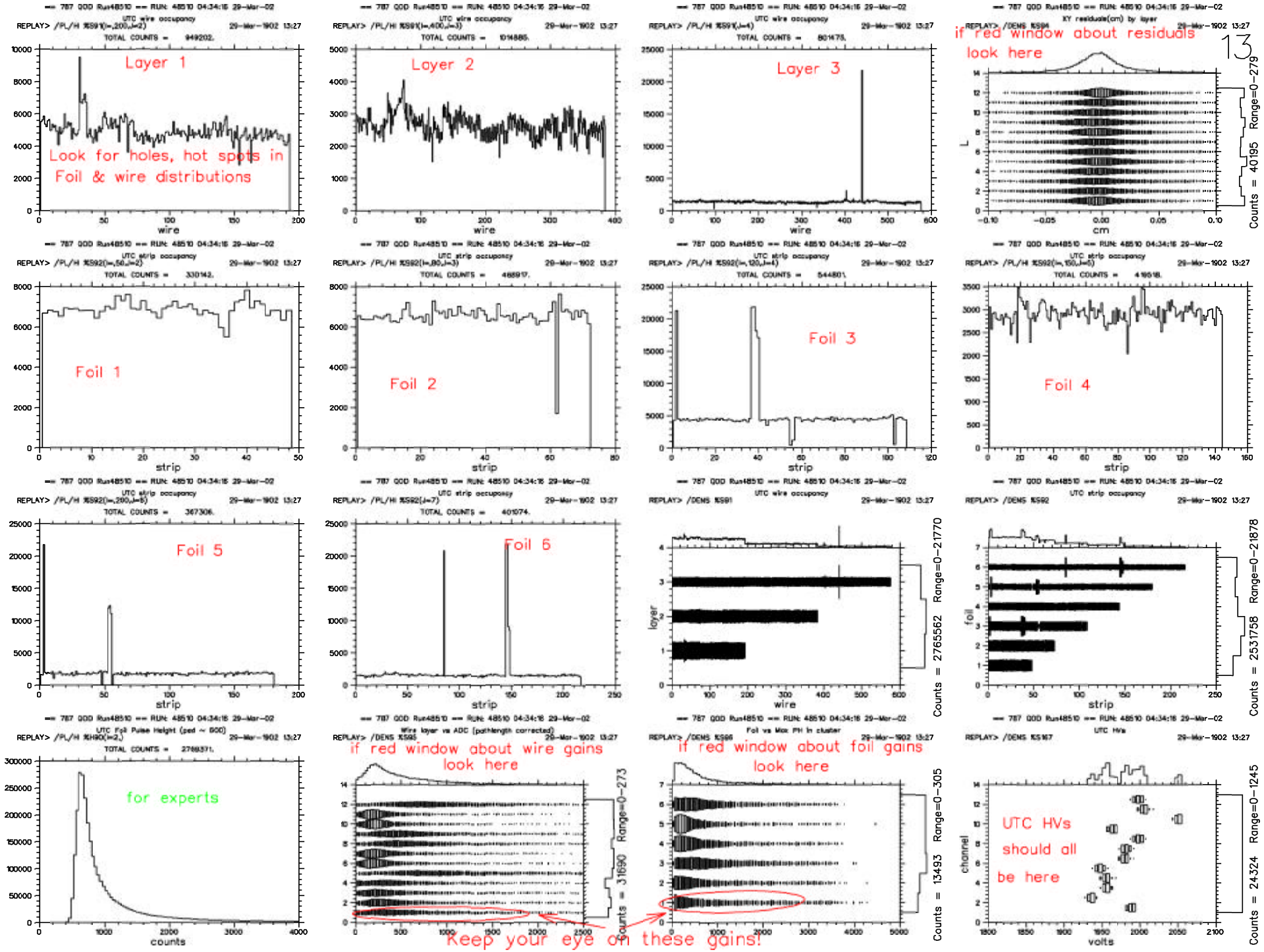

Look for changes
AD1-4
AD5-8
AD9-12
ADC cnts
channel
Counts = 51603 Range=0-1484
Counts = 2925 Range=0- 99
for experts
FERA cnts
MAKE SURE THIS HISTO FILLED
should look about
like this
possible anomaly
nsec
EC TDC w/o ADC
look for hot spots, asymmetries
Counts = 224 Range=0-12
Ktgt
Counts = 16846 Range=0-117
ALARM IF THIS
ABOVE 30%
percent
Counts = 260430 Range=0-6697
Counts = 7374 Range=0-144
cm
EC high PH for πνν
ideally 0
FERA
HW
SW
Counts = 44766 Range=0-1202
Counts = 47996 Range=0-7178

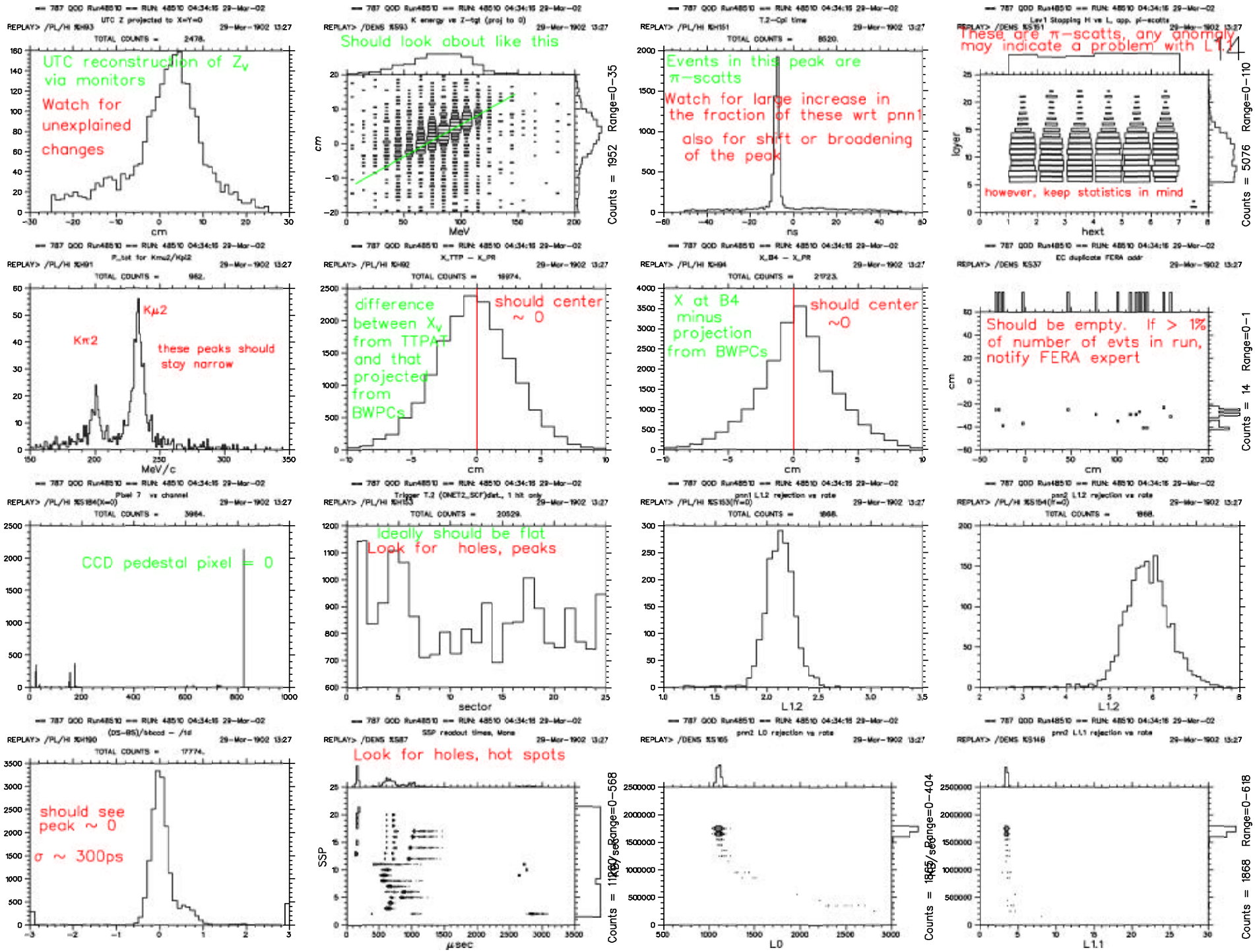

Beam at B4
SHOULD BE CENTERED
K's in target
C_K TOF
should look like this
C_π TOF
OK
beam element currents/settings
should be near 1 when things settle down
mainly for experts
depends on L1.1 masks
SEPARATOR HV
2−
2+
1−
1+
for experts
K projection to tgt via BWPCs
should be centered, focussed
BWPC2
better be here!
if not, chamber probably tripped
should be more or less along this line
for experts
should be diagonal
for experts
for experts
for experts

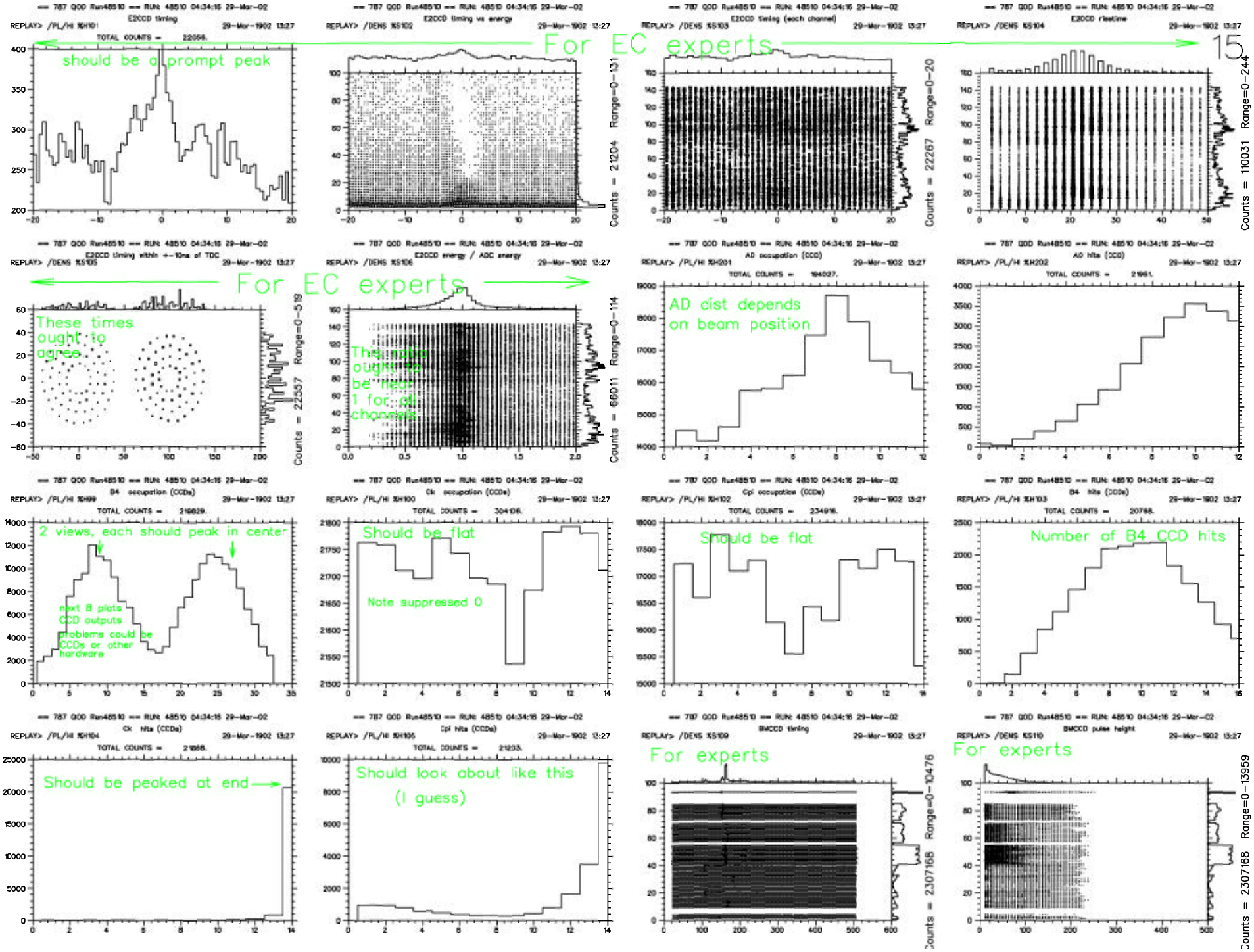

EC CCD
TG1 CCD
TG2 CCD
CCD4
Counts = 3206306 Range=0-21961
Counts = 5534172 Range=0-21961
Counts = 5490250 Range=0-21961
Counts = 1734919 Range=0-21961
Counts = 126238 Range=0-21961
Counts = 74447 Range=0-21961
Counts = 56473 Range=0-21961
Counts = 161842 Range=0-21961
look out for low peds
Counts = 2979510 Range=0-10656
Counts = 5463540 Range=0-14756
Counts = 5450205 Range=0-14945
Counts = 1656352 Range=0-14392
no CCD data (ISTAT=7)
if many entries,
call CCD expert

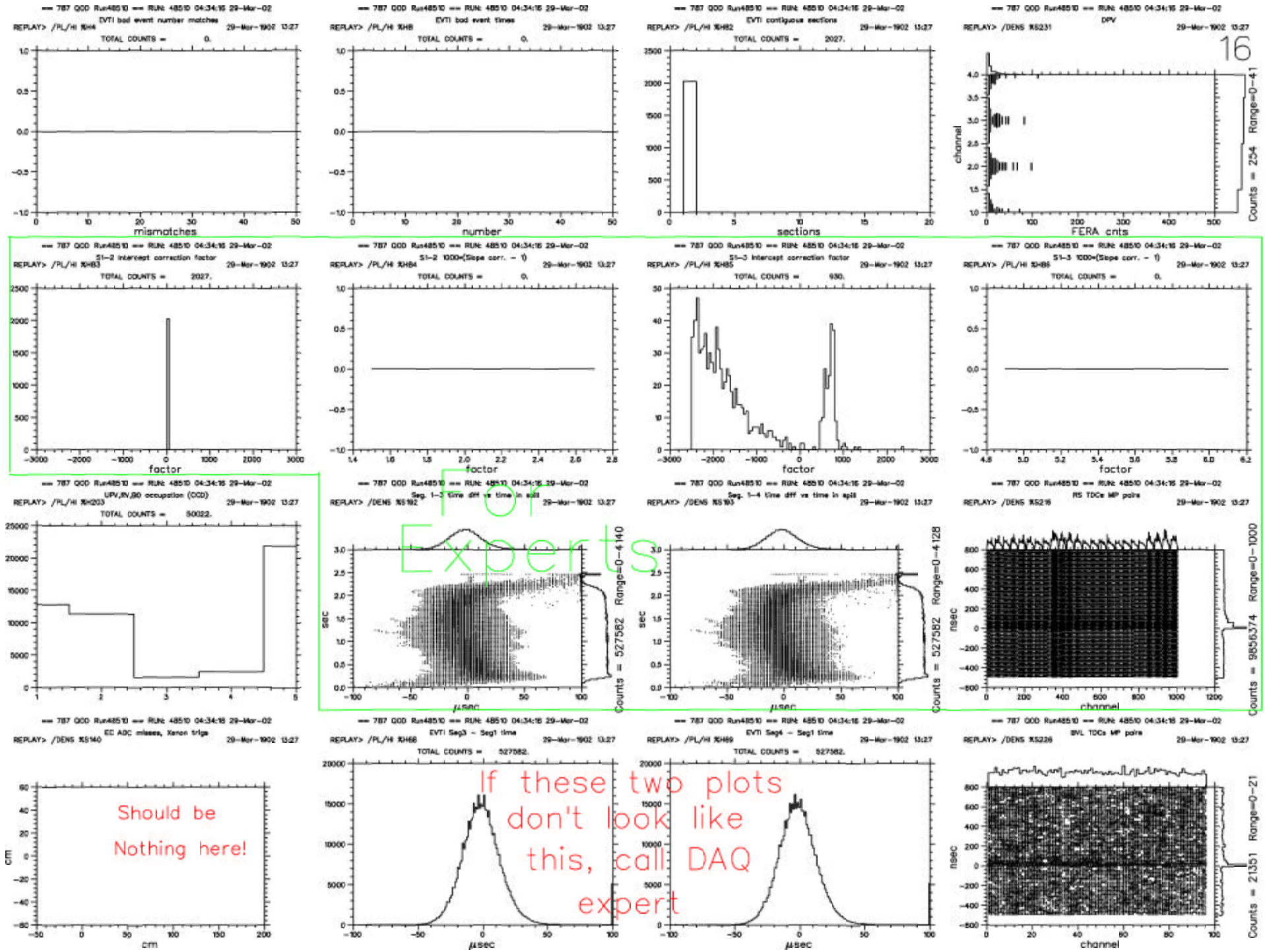

BV – detector strobe
should be a veto interval
EC – detector strobe
should be a break
problem if these peaks get too large
should be exponential
alarm if prompt peak appears.
should look like this
hexant veto – detector strobe
should be a veto break
for experts
primary check of del. coin.
watch for prompt peak
should be narrow peak
should be diagonal
look for holes, hot spots
for experts
for experts
should be peaked ~0
if there's a lot of stuff here, you are probably missing spills
components of deadtime
readout
L1.1
L0
Level 0 rejection of πνν–1, should be around 800
Level 1.1 rejection of πνν–1, depends on masks, but should be about like this

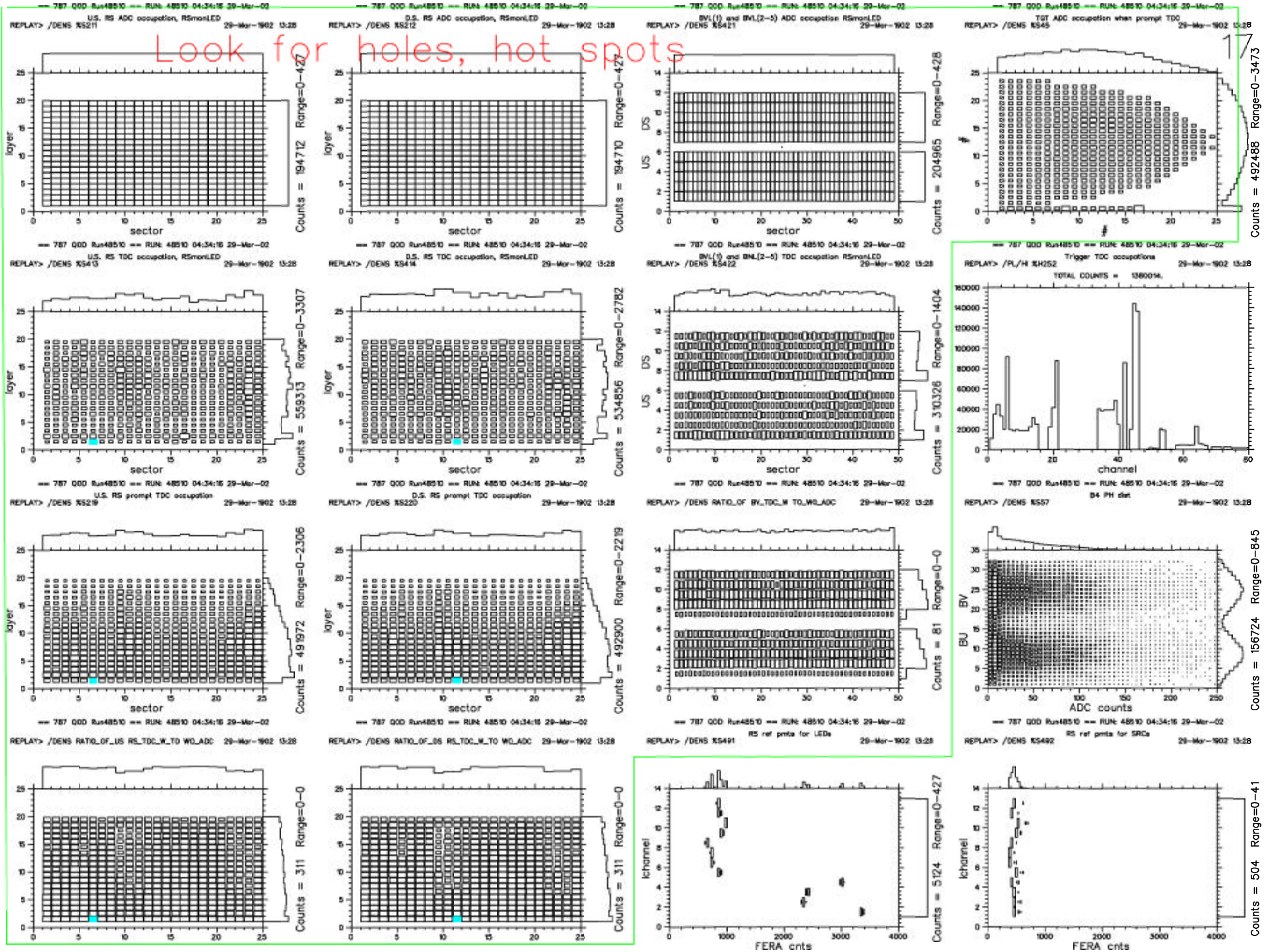

TTPAT quality code,
alarm if not mainly 0
for expert
if a hot spot, tell J. Frank
This is a measure of targetting efficiency for the C tgt
you should complain to MCR (4662) if it falls below ~66000
effective/actual spill
if less than ~0.75
complain to MCR (4662)
if you get red window complaint you can use this to check HVs
make sure all 6 are here
should be more or less on this line
SHOULD BE EMPTY
GATE FAULTs show up here
this row only should be populated
For experts
SHOULD BE EMPTY,
except for 1st col
should see peak ~ 0
σ ~ 300ps
for experts
gt max bucket
no CCD data
PH ovfl in ge.1 bins
anything but 0 means some kind of CCD error
good

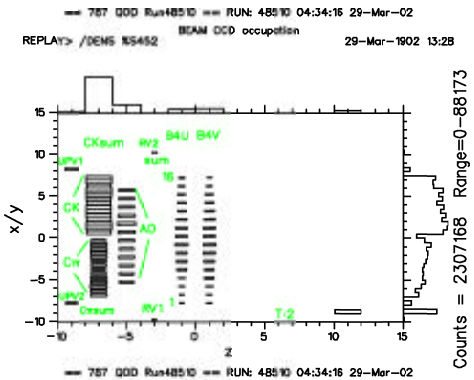

Layer 1
Look for holes, hot spots in
Foil & wire distributions
Layer 2
Layer 3
if red window about residuals
look here
Foil 1
Foil 2
Foil 3
Foil 4
Foil 5
Foil 6
for experts
if red window about wire gains
look here
if red window about foil gains
look here
Keep your eye on these gains!
UTC HVs
should all
be here
Counts = 40195 Range=0-279
Counts = 2765562 Range=0-21770
Counts = 2531758 Range=0-21878
Counts = 31690 Range=0-273
Counts = 13493 Range=0-305
Counts = 24324 Range=0-1245

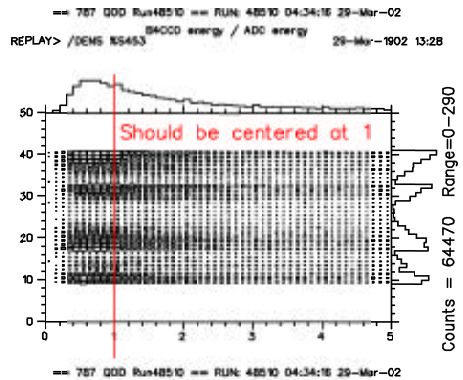

UTC reconstruction of Z_V via monitors
Watch for unexplained changes
Should look about like this
Events in this peak are π−scatts
Watch for large increase in the fraction of these wrt pnn1
also for shift or broadening of the peak
These are π−scatts, any anomaly may indicate a problem with L1.1
however, keep statistics in mind
Kμ2
Kπ2
these peaks should stay narrow
difference between X_V from TTPAT and that projected from BWPCs
should center ~ 0
X at B4 minus projection from BWPCs
should center ~0
Should be empty. If > 1% of number of evts in run, notify FERA expert
CCD pedestal pixel = 0
Ideally should be flat
Look for holes, peaks
should see peak ~ 0
σ ~ 300ps
Look for holes, hot spots

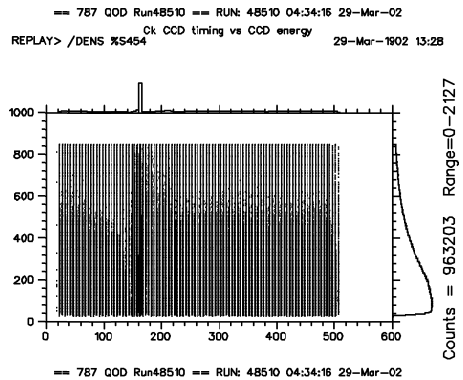

For EC experts
should be a prompt peak
For EC experts
These times ought to agree
AD dist depends on beam position
2 views, each should peak in center
next 8 plots CCD outputs
problems could be CCDs or other hardware
Should be flat
Note suppressed 0
Should be flat
Number of B4 CCD hits
Should be peaked at end
Should look about like this (I guess)
For experts
For experts

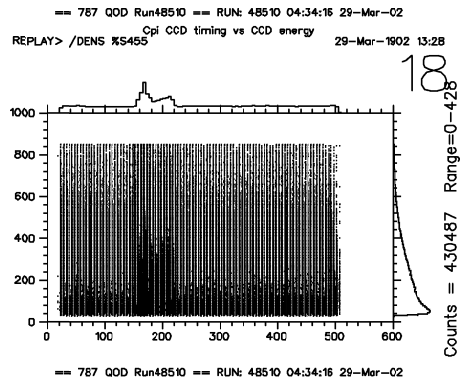

For Experts
Should be Nothing here!
If these two plots don't look like this, call DAQ expert

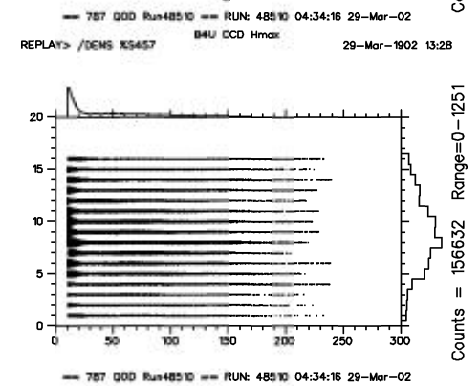

Look for holes, hot spots
17
U.S. RS ADC occupation, RSmonLED
D.S. RS ADC occupation, RSmonLED
BVL(1) and BVL(2-5) ADC occupation RSmonLED
TGT ADC occupation when prompt TDC
U.S. RS TDC occupation, RSmonLED
D.S. RS TDC occupation, RSmonLED
BVL(1) and BVL(2-5) TDC occupation RSmonLED
Trigger TDC occupations
U.S. RS prompt TDC occupation
D.S. RS prompt TDC occupation
RATIO_OF_BV_TDC_W_TO_WO_ADC
B4 PH det
RATIO_OF_US RS_TDC_W_TO WO_ADC
RATIO_OF_DS RS_TDC_W_TO WO_ADC
RS ref pmts for LEDs
RS ref pmts for SRCs
sector
layer
channel
ADC counts
FERA cnts
Counts = 194712 Range=0-427
Counts = 194710 Range=0-427
Counts = 204965 Range=0-428
Counts = 492488 Range=0-3473
Counts = 559313 Range=0-3307
Counts = 534856 Range=0-2782
Counts = 310326 Range=0-1404
Counts = 491972 Range=0-2306
Counts = 492900 Range=0-2219
Counts = 81 Range=0-0
Counts = 156724 Range=0-845
Counts = 311 Range=0-0
Counts = 311 Range=0-0
Counts = 5124 Range=0-427
Counts = 504 Range=0-41

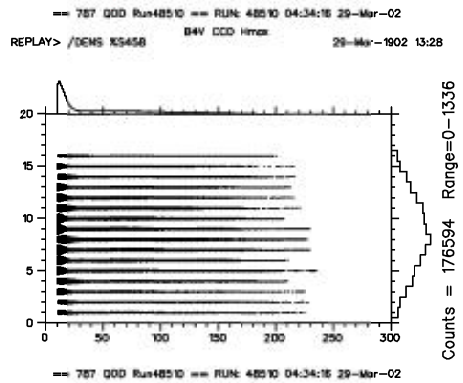

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
BEAM CCD occupation
REPLAY> /DENS %S452
29-Mar-1902 13:28
x/y
z
Counts = 2307168 Range=0-88173

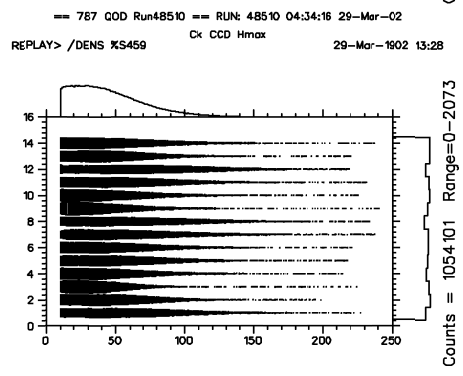

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
B4CCD energy / ADC energy
REPLAY> /DENS %S453
29-Mar-1902 13:28
Should be centered at 1
Counts = 64470 Range=0-290

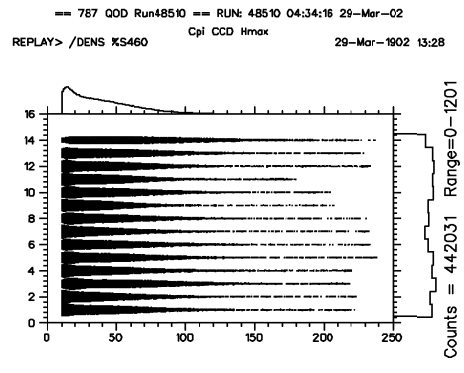

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
Ck CCD timing vs CCD energy
REPLAY> /DENS %S454
29-Mar-1902 13:28
Counts = 963203 Range=0-2127

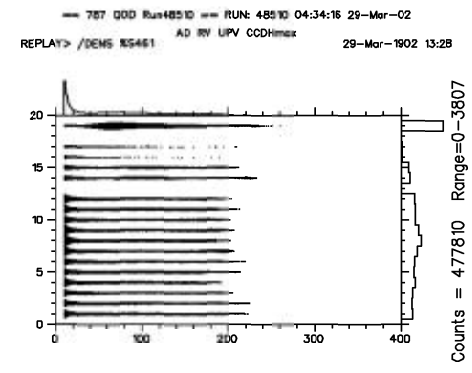

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
Cpi CCD timing vs CCD energy
REPLAY> /DENS %S455
29-Mar-1902 13:28
Counts = 430487 Range=0-428

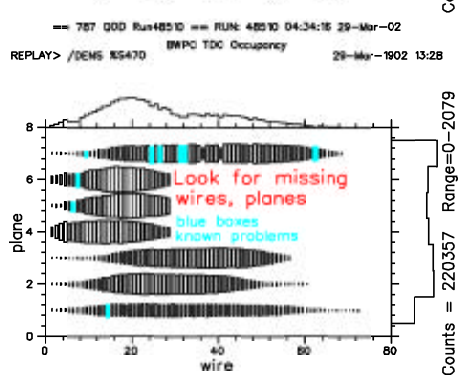

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
B4U CCD Hmax
REPLAY> /DENS %S457
29-Mar-1902 13:28
Counts = 156632 Range=0-1251


== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
B4V CCD Hmax
REPLAY> /DENS %S458
29-Mar-1902 13:28
Counts = 176594 Range=0-1336

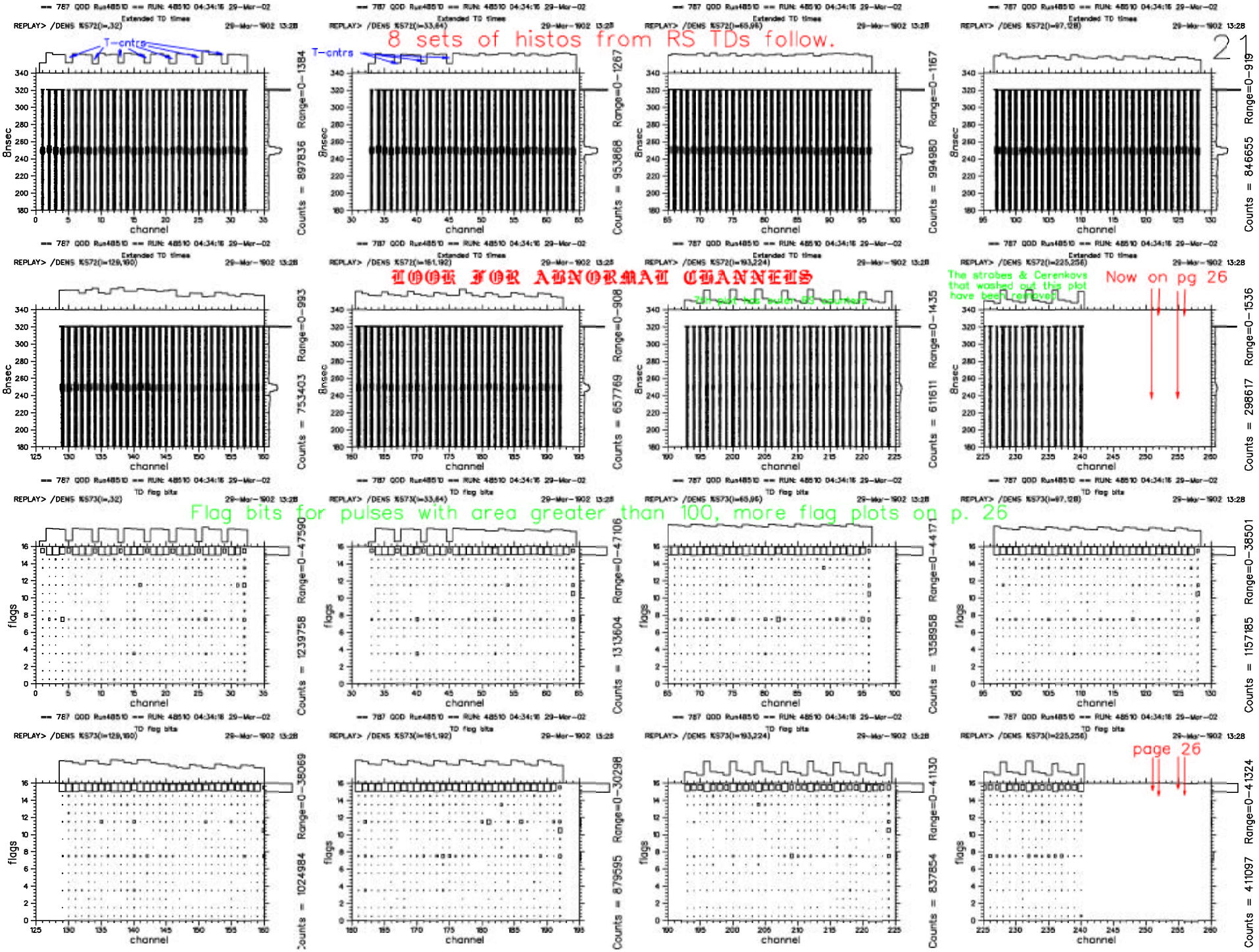

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
Ck CCD Hmax
REPLAY> /DENS %S459
29-Mar-1902 13:28
Counts = 1054101 Range=0-2073

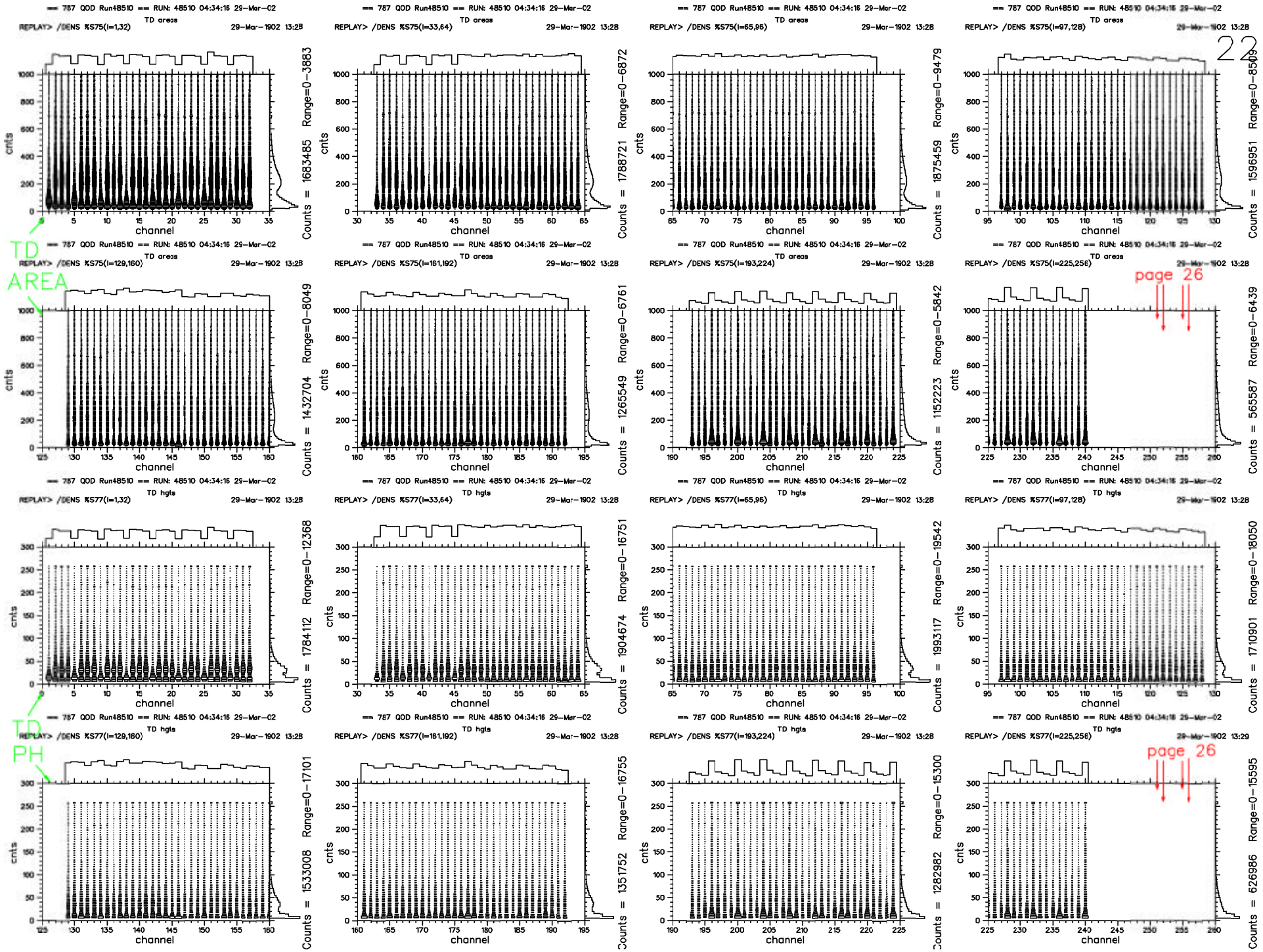

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
Cpi CCD Hmax
REPLAY> /DENS %S460
29-Mar-1902 13:28
Counts = 442031 Range=0-1201

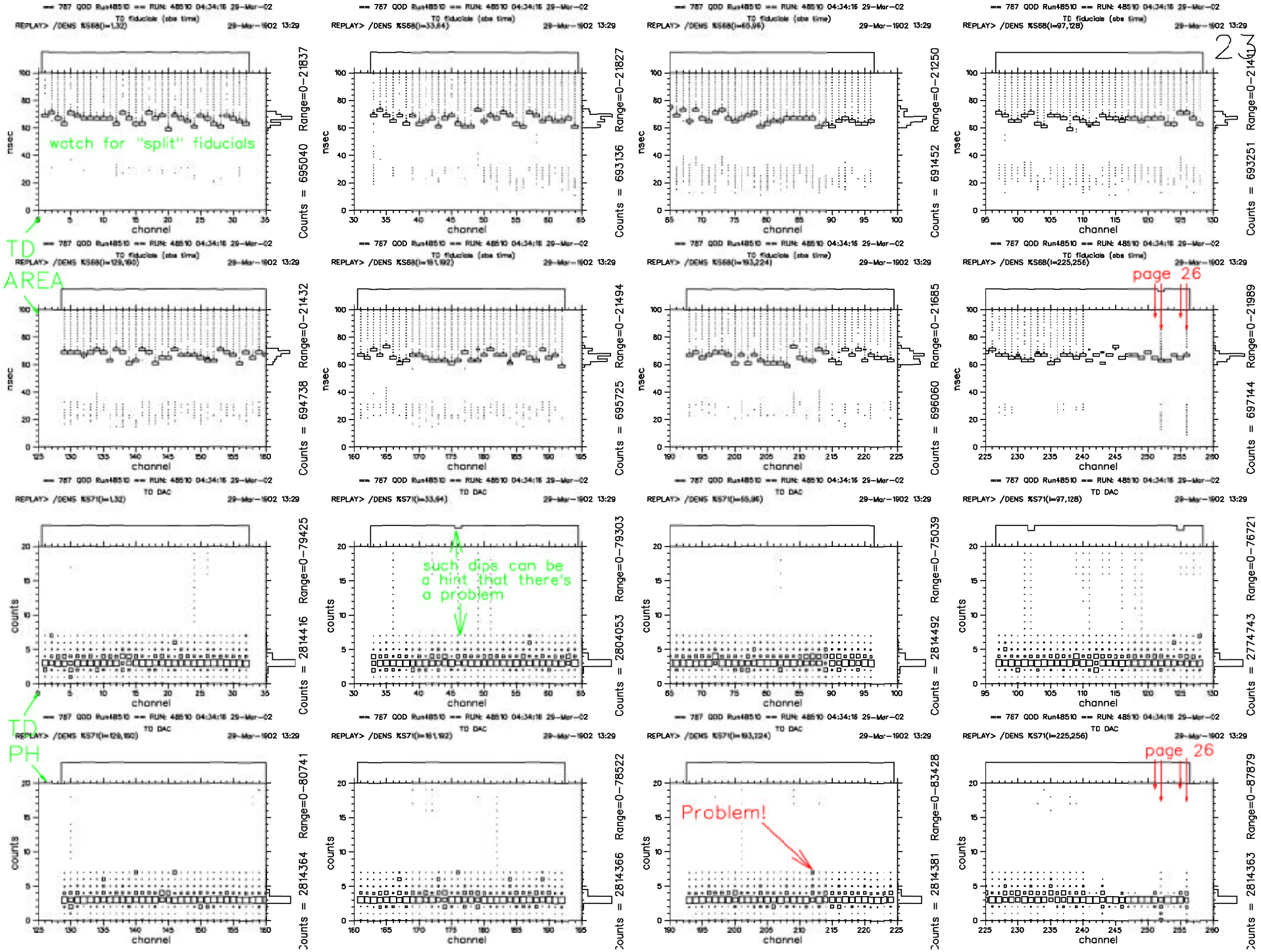

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
AD IRV UPV CCDHmax
REPLAY> /DENS %S461
29-Mar-1902 13:28
Counts = 477810 Range=0-3807

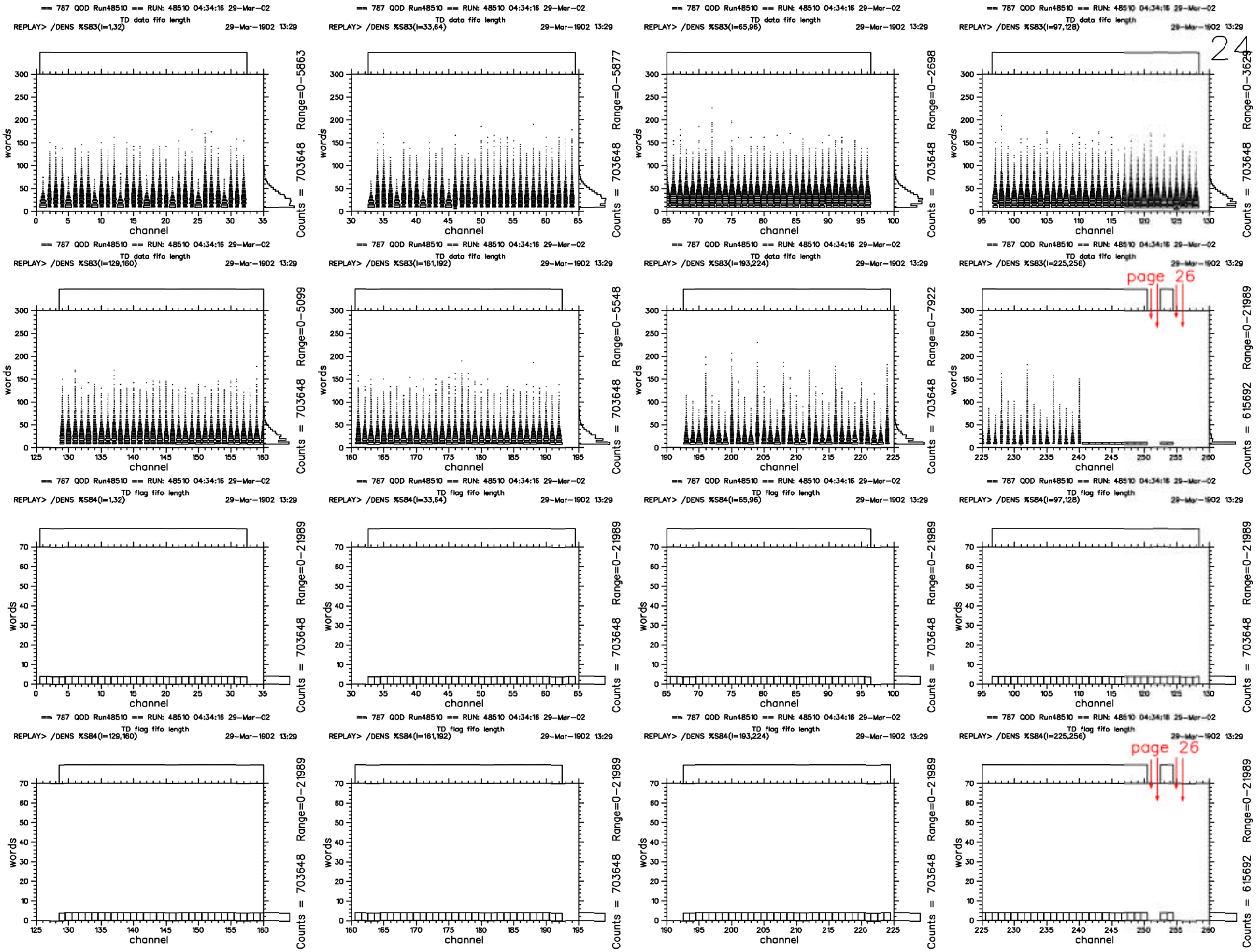

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
BWPC TDC Occupancy
REPLAY> /DENS %S470
29-Mar-1902 13:28
Look for missing wires, planes
blue boxes known problems
plane
wire
Counts = 220357 Range=0-2079

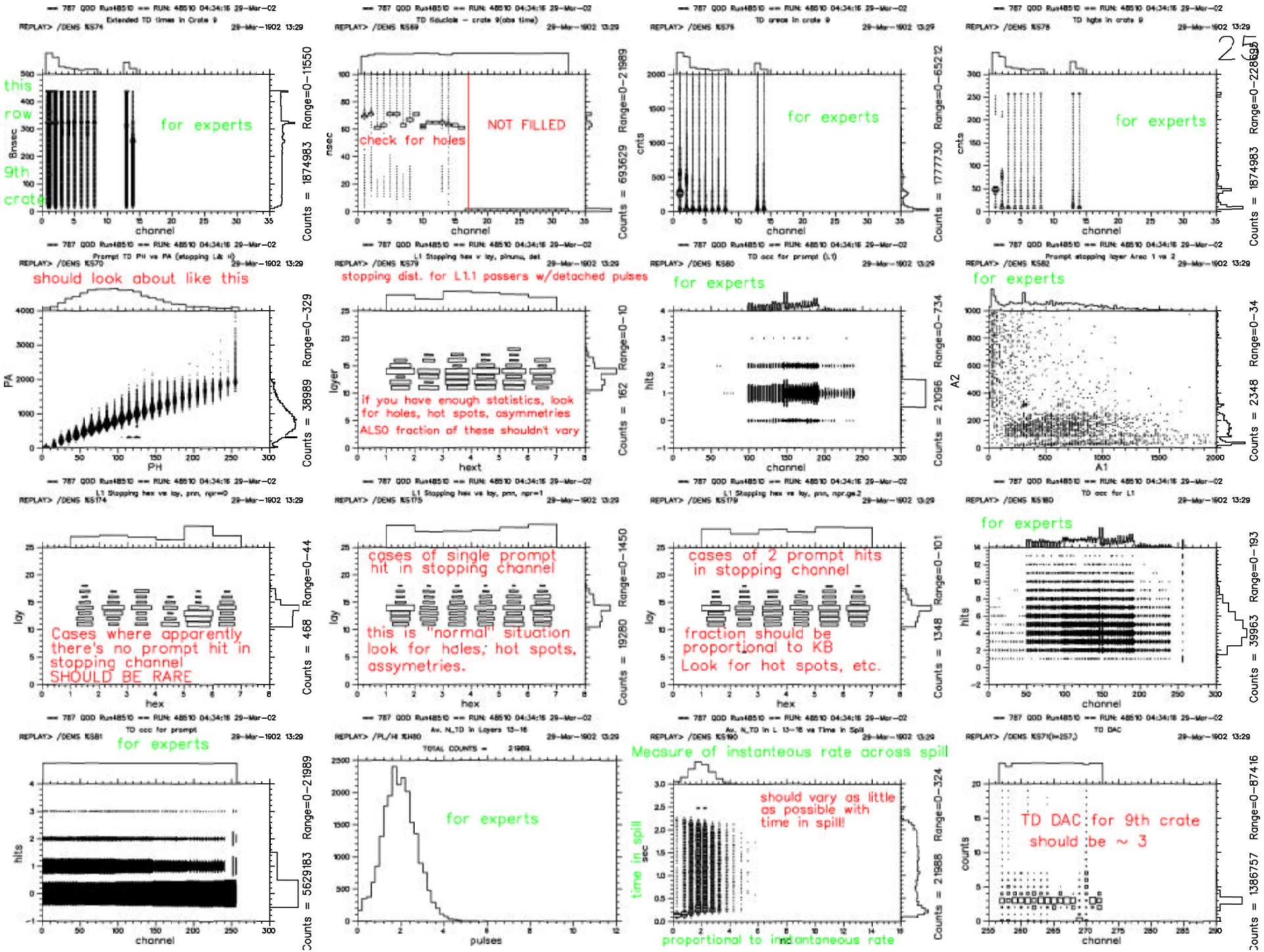
8 sets of histos from RS TDs follow.

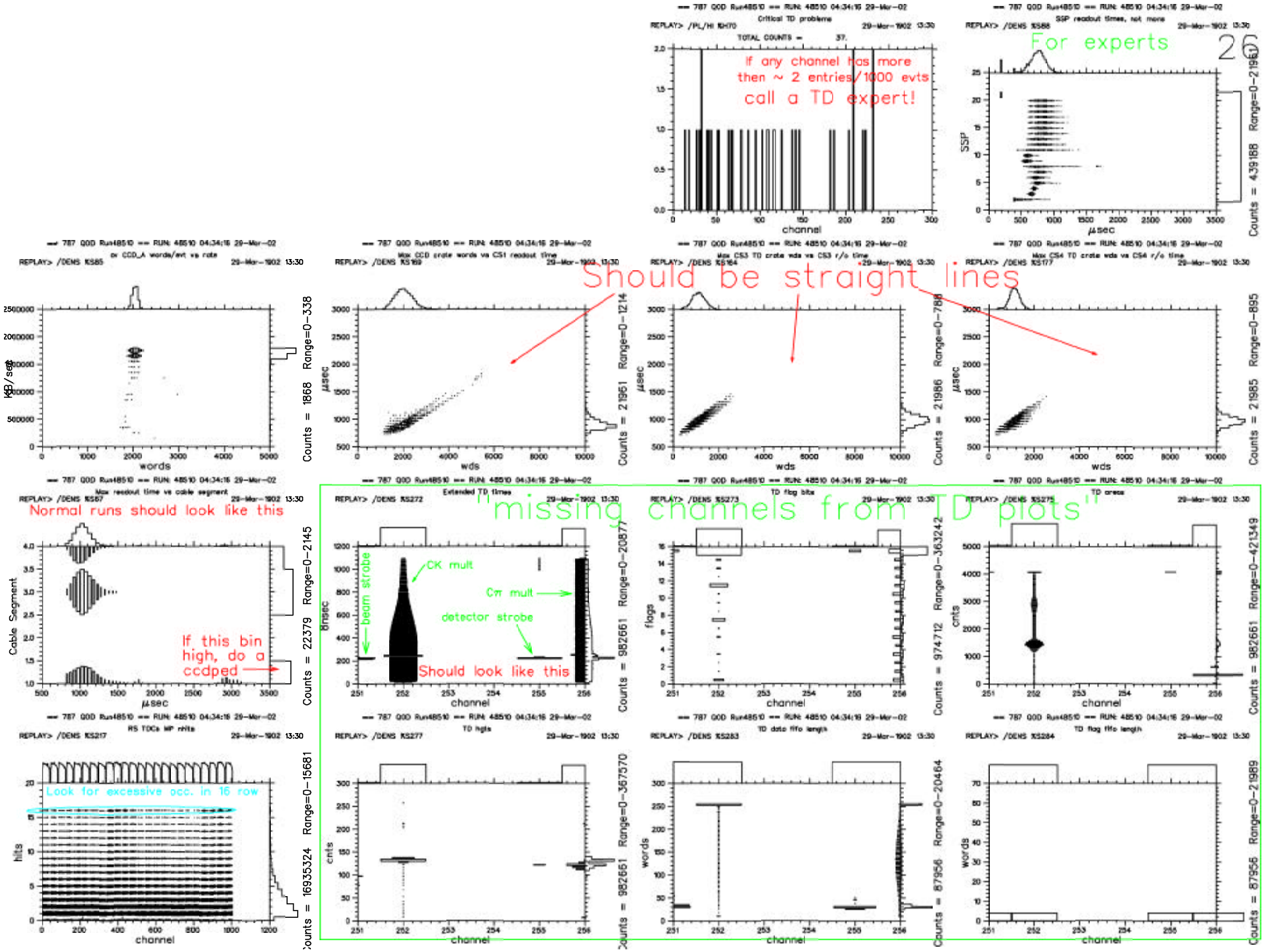


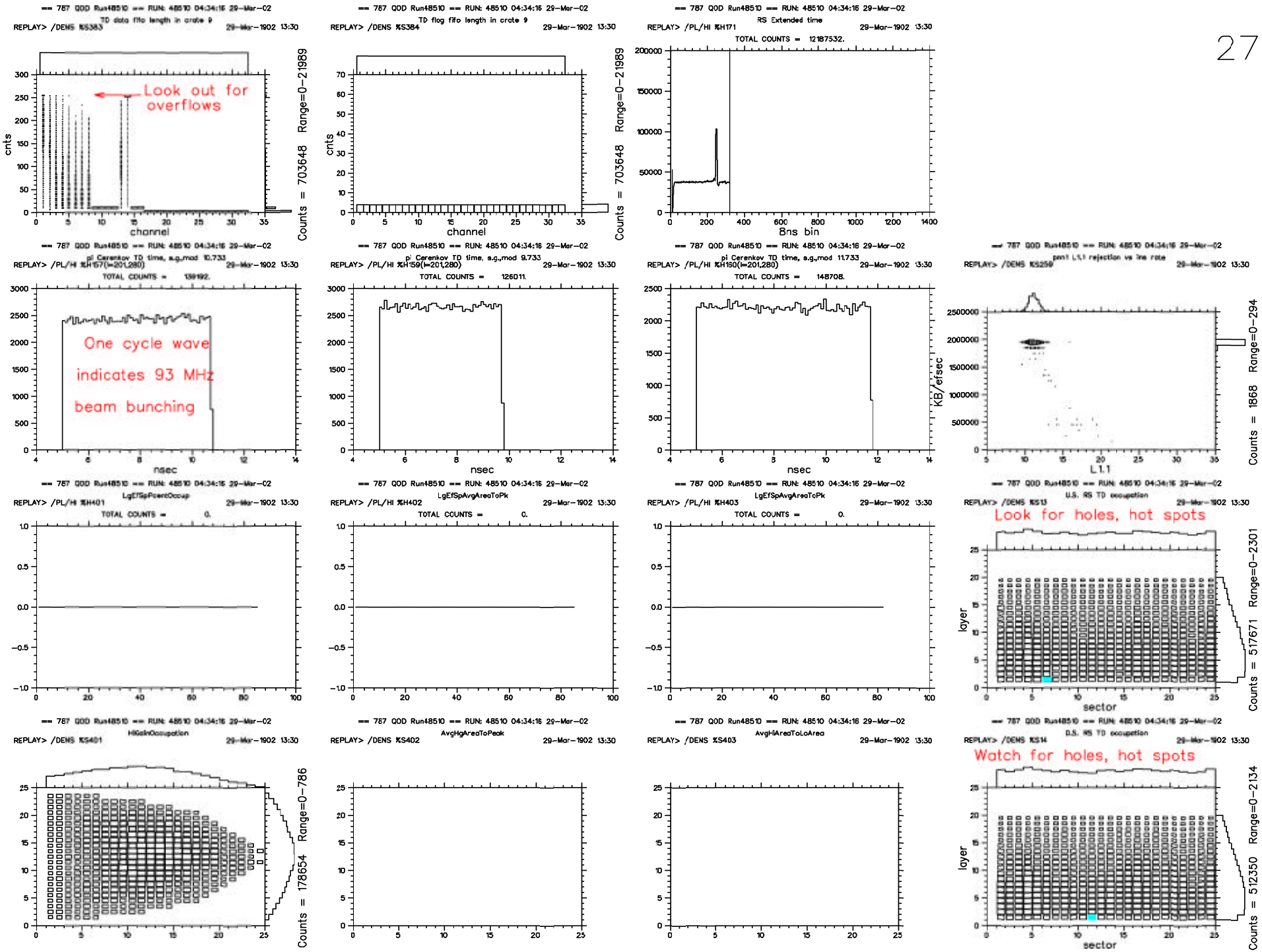

== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
TD areas
REPLAY> /DENS %S75(l=1,32)
29-Mar-1902 13:28
Counts = 1683485 Range=0-3883
REPLAY> /DENS %S75(l=33,64)
Counts = 1788721 Range=0-6872
REPLAY> /DENS %S75(l=65,96)
Counts = 1875459 Range=0-9479
REPLAY> /DENS %S75(l=97,128)
Counts = 1596951 Range=0-8509
REPLAY> /DENS %S75(l=129,160)
Counts = 1432704 Range=0-8049
REPLAY> /DENS %S75(l=161,192)
Counts = 1265549 Range=0-6761
REPLAY> /DENS %S75(l=193,224)
Counts = 1152223 Range=0-5842
REPLAY> /DENS %S75(l=225,256)
Counts = 565587 Range=0-6439
TD hgts
REPLAY> /DENS %S77(l=1,32)
Counts = 1784112 Range=0-12368
REPLAY> /DENS %S77(l=33,64)
Counts = 1904674 Range=0-16751
REPLAY> /DENS %S77(l=65,96)
Counts = 1993117 Range=0-19542
REPLAY> /DENS %S77(l=97,128)
Counts = 1710901 Range=0-18050
REPLAY> /DENS %S77(l=129,160)
Counts = 1533008 Range=0-17101
REPLAY> /DENS %S77(l=161,192)
Counts = 1351752 Range=0-16755
REPLAY> /DENS %S77(l=193,224)
Counts = 1282982 Range=0-15300
REPLAY> /DENS %S77(l=225,256)
Counts = 626986 Range=0-15595
cnts
channel
TD
AREA
TD
PH
page 26
page 26


watch for "split" fiducials
TD
AREA
page 26
such dips can be a hint that there's a problem
TD
PH
Problem!
page 26
TD fiducials (abs time)
TD DAC
channel
nsec
counts
Counts = 695040 Range=0-21837
Counts = 693136 Range=0-21827
Counts = 691452 Range=0-21250
Counts = 693251 Range=0-21411
Counts = 694738 Range=0-21432
Counts = 695725 Range=0-21494
Counts = 696060 Range=0-21685
Counts = 697144 Range=0-21989
Counts = 2814416 Range=0-79425
Counts = 2804053 Range=0-79303
Counts = 2814492 Range=0-75039
Counts = 2774743 Range=0-76721
Counts = 2814364 Range=0-80741
Counts = 2814366 Range=0-78522
Counts = 2814381 Range=0-83428
Counts = 2814363 Range=0-87879


== 787 QOD Run48510 == RUN: 48510 04:34:16 29-Mar-02
TD data fifo length
REPLAY> /DENS %S83(I=1,32)
REPLAY> /DENS %S83(I=33,64)
REPLAY> /DENS %S83(I=65,96)
REPLAY> /DENS %S83(I=97,128)
REPLAY> /DENS %S83(I=129,160)
REPLAY> /DENS %S83(I=161,192)
REPLAY> /DENS %S83(I=193,224)
REPLAY> /DENS %S83(I=225,256)
29-Mar-1902 13:29
words
channel
Counts = 703648 Range=0-5863
Counts = 703648 Range=0-5877
Counts = 703648 Range=0-2698
Counts = 703648 Range=0-3629
Counts = 703648 Range=0-5099
Counts = 703648 Range=0-5548
Counts = 703648 Range=0-7922
Counts = 615692 Range=0-21989
page 26
TD flag fifo length
REPLAY> /DENS %S84(I=1,32)
REPLAY> /DENS %S84(I=33,64)
REPLAY> /DENS %S84(I=65,96)
REPLAY> /DENS %S84(I=97,128)
REPLAY> /DENS %S84(I=129,160)
REPLAY> /DENS %S84(I=161,192)
REPLAY> /DENS %S84(I=193,224)
REPLAY> /DENS %S84(I=225,256)
Counts = 703648 Range=0-21989
Counts = 615692 Range=0-21989


this row 9th crate
for experts
Counts = 1874983 Range=0-11550
check for holes
NOT FILLED
Counts = 693629 Range=0-21989
for experts
Counts = 1777730 Range=0-65212
for experts
Counts = 1874983 Range=0-228695
should look about like this
Counts = 38989 Range=0-329
stopping dist. for L1.1 passers w/detached pulses
if you have enough statistics, look for holes, hot spots, asymmetries
ALSO fraction of these shouldn't vary
Counts = 162 Range=0-10
for experts
Counts = 21096 Range=0-734
for experts
Counts = 2348 Range=0-34
Cases where apparently there's no prompt hit in stopping channel
SHOULD BE RARE
Counts = 468 Range=0-44
cases of single prompt hit in stopping channel
this is "normal" situation look for holes, hot spots, assymetries.
Counts = 19280 Range=0-1450
cases of 2 prompt hits in stopping channel
fraction should be proportional to KB
Look for hot spots, etc.
Counts = 1348 Range=0-101
for experts
Counts = 39963 Range=0-193
for experts
Counts = 5629183 Range=0-21989
for experts
Measure of instanteous rate across spill
should vary as little as possible with time in spill!
proportional to instantaneous rate
Counts = 21988 Range=0-324
TD DAC for 9th crate should be ~ 3
Counts = 1386757 Range=0-87416


For experts
26
If any channel has more then ~ 2 entries/1000 evts call a TD expert!
Should be straight lines
"missing channels from TD plots"
Normal runs should look like this
If this bin high, do a ccdped
CK mult
Cπ mult
beam strobe
detector strobe
Should look like this
Look for excessive occ. in 16 row


Look out for overflows
One cycle wave indicates 93 MHz beam bunching
Look for holes, hot spots
Watch for holes, hot spots
channel
cnts
Counts = 703648 Range=0-21989
8ns bin
nsec
KB/efsec
L1.1
Counts = 1868 Range=0-294
sector
layer
Counts = 517671 Range=0-2301
Counts = 178654 Range=0-786
Counts = 512350 Range=0-2134