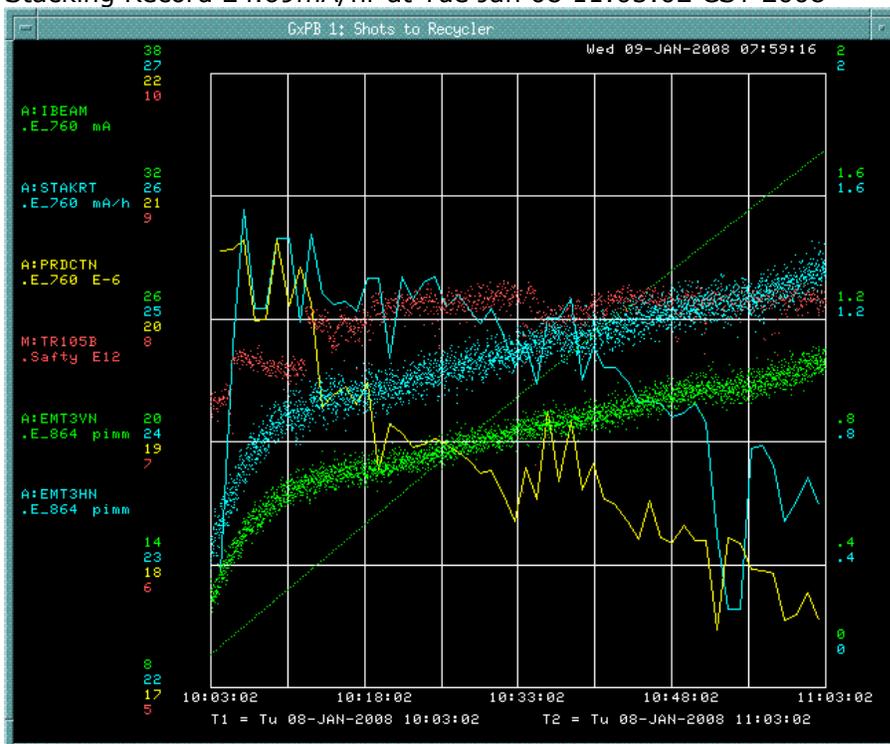


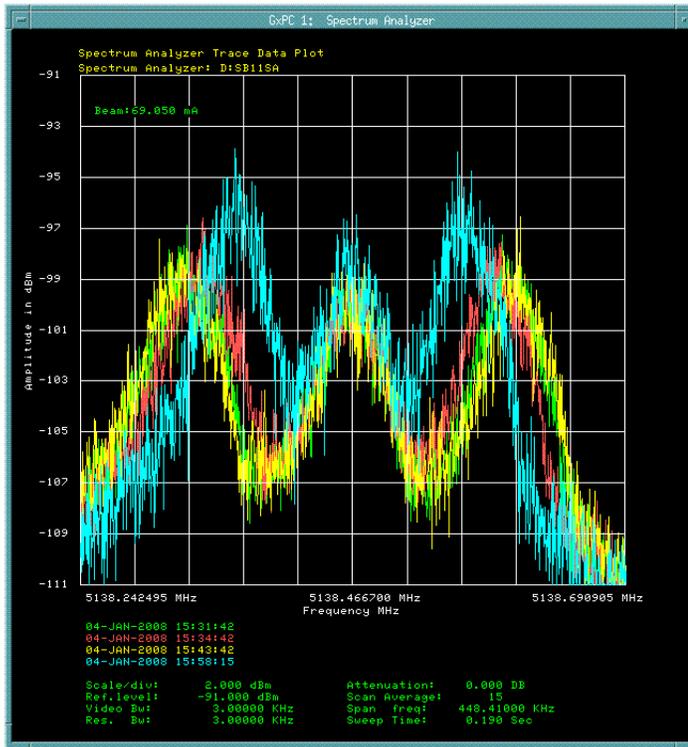
- Had 14 hours with beam above  $8e12$  on target.
- Then stacked up to 200mA, so didn't get a chance again.
- Beam on target was down after this.

Stacking Record 24.69mA/hr at Tue Jan 08 11:03:02 CST 2008

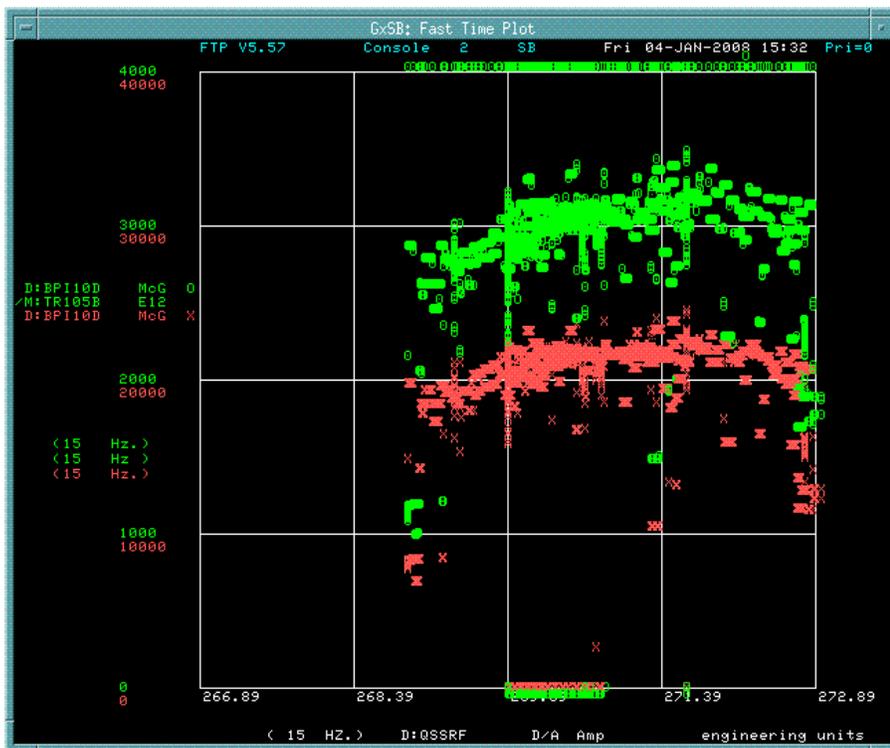


- Debuncher Tunes

- Vertical:



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Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=-93&button=yes>>

- The starting point is the center of the plot. The "default" tunes are near the edge on the left.
- BPI10D increases when we move the other direction? This is a mystery.

```

PA P60 POWER SUPPLY PARAM
P60 New Deb Tune Mults      SET  D/A  A/D  Con-U  *PTools*
<FTP>+ *SR+ X-R/D  X=TIME  Y=D:PHERR6, D:PHERR2, M:TR105B, D:BPI10D
COMMAND ... Eng=U  I= 0  I=-2  /-2  / 0  / 0
<34>+ On+ 15_Hz  F= 100  F= 2  / 2  / 10  / 50000
acc10 acc30 acc50 DEB10 deb30 deb50 protn inj dtoa ext bostr

! Horizontal (+0.71 A on D:QSSRF => +0.010)

MULT :2
-D:QSSRF * 35311QSS 300A 269.89242 271.30236 271.34063 Amp *
-D:QDRF * -.05242D 300A 243.63928 244.65024 244.60313 Amp *

! Vertical (+0.25 A on D:QSSRF => +0.010)

MULT :2
-D:QSSRF * 125985SS 300A 269.89242 271.30236 271.34063 Amp *
-D:QDRF * 0.061205D 300A 243.63928 244.65024 244.60313 Amp *

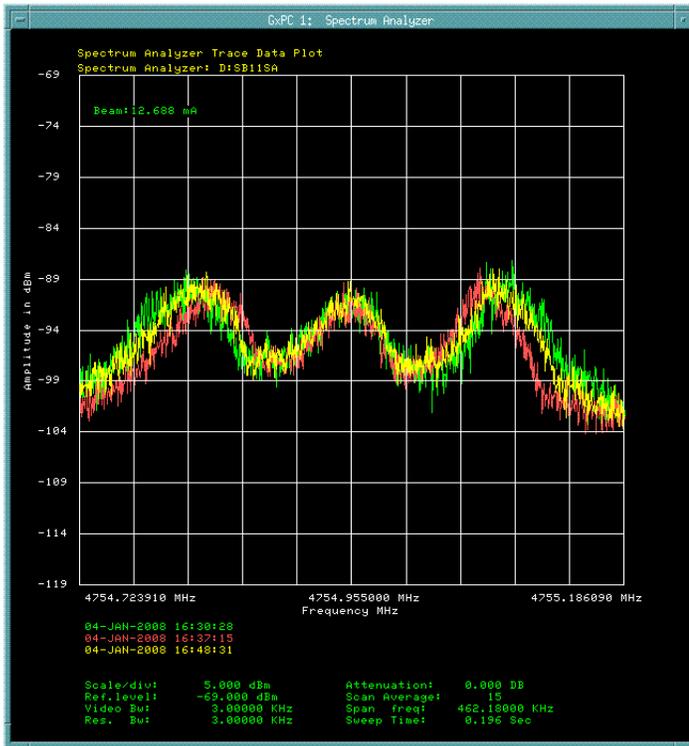
! NOTE: These tune mults were constructed and
! tested on 1/21/2006 . -- SJW

-D:SA11T Trigger fo 1.039999 1.299999 1.299999 secs ...

Z:PRDIMP PBARS PER P @ TOR109 18.55 E-6
D:IC728N D:IC728/M:TR105B .004 E-03

```

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- Horizontal



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Pasted from <<http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pbar08&action=view&page=-96&button=yes>>

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PA P60 POWER SUPPLY PARAM
P60 New Deb Tune Mults      SET  D/A  A/D  Con-U  *PTools*
-<FTP>+ *SA+ X-A/D X=TIME  Y=D:PHERR5, D:PHERR2, M:TR105B, D:BP110D
COMMAND ... Eng-U I= 0      I=-2    -2      0      0
-<34>+ One+ 15_Hz F= 100    F= 2    2      10     50000
acc10 acc30 acc50 DEB10 deb30 deb50 protn inj  dtoa  ext  bostr

! Horizontal (+0.71 A on D:QSSRF => +0.010)
MULT :2
-D:QSSRF *+.85311QSS 300A 271.30236 272.12634 272.16562 Amp *
-D:QDRF *+-.05242D 300A 244.55024 244.42664 244.49062 Amp *

! Vertical (+0.25 A on D:QSSRF => +0.010)
MULT :2
-D:QSSRF *+.125996SS 300A 271.30236 272.12634 272.16562 Amp *
-D:QDRF *+.081205D 300A 244.55024 244.42664 244.49062 Amp *

! NOTE: These tune mults were constructed and
! tested on 1/21/2006 . -- SJW

-D:SH11T Trigger fo 1.039999 1.299999 1.299999 secs ...

Z:PRDTHP PBARS PER P @ TOR109 1E+38 E-6
D:IC728N D:IC728/M:TR105B .004 E-03
  
```

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So the tune values are as follows:

$$v_x = 0.781$$

$$v_y = 0.839$$

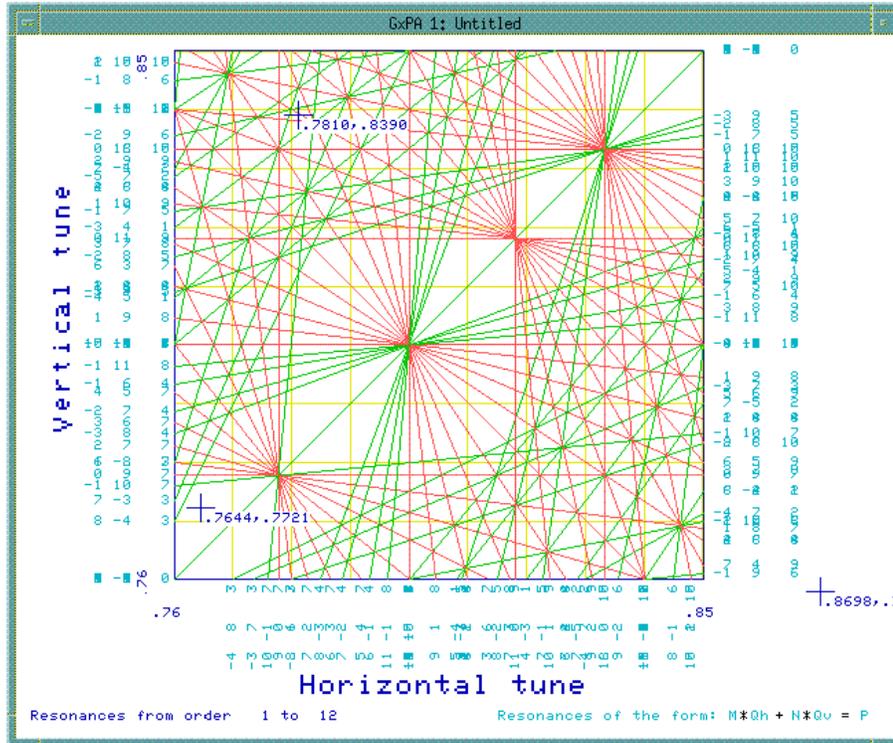
Compare this to the old advertised default tunes of:

$$v_x = 0.764$$

$$v_y = 0.772$$

At the new values we have 12-13% more circulating beam in the Debuncher, but do

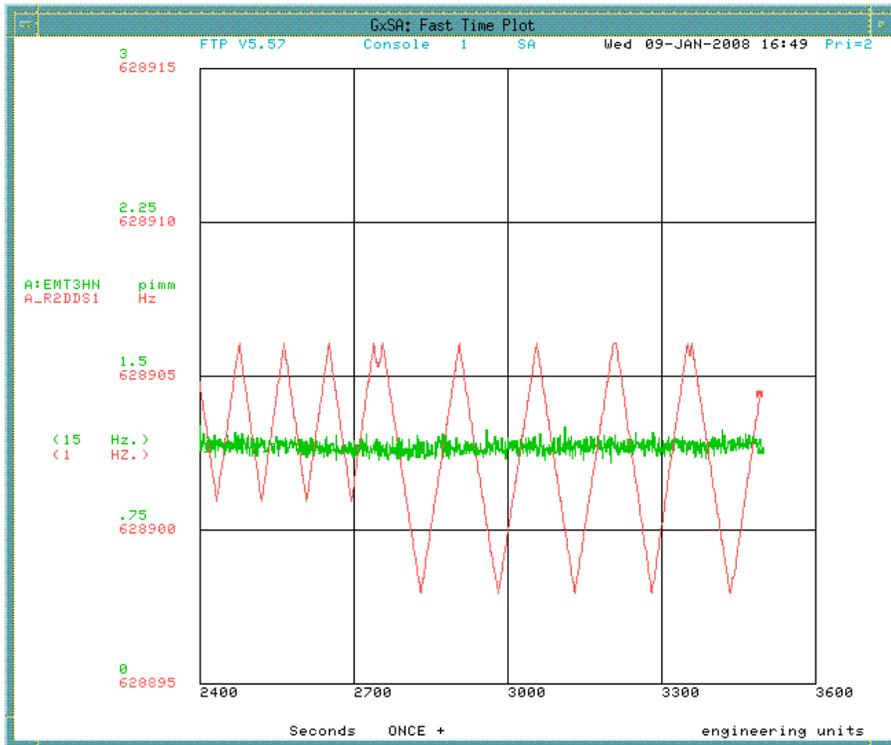
not stack better.



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- Cooling impacted
  - When tunes away from 3/4, cooling doesn't work as well.
  - There is an orbit change, that could be used to correct the orbit.
  - Intensity on first half turn (INJFLX)...does the injected beam get bigger? The 3rd and 5th turns. When move the tunes up and down, stay flat.
  - Ralph suggests that we could open notch filters on band 3 and 4, and increase gain 3dB. A test that we could do for an hour. Those are the bands that are effected most by the tunes being in a different.
  - It was discussed moving BPI10D timer earlier to during adiabatic debunching.
- Would like to retreat after taking some measurements.
- Now ramp ARF2 stabilizing RF back and forth with large stacks.

○



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There is yet another sequencer aggregate to run called the 'Acc K-Train Ion Flusher'. It is located in the mode 5 PBAR STUDIES sequencer for now and **should always be run when the core is > 100mA. Operators should still monitor and adjust the core tunes, turn off the stacktail monitor, turn off the core 4-8 momentum system, and manually maintain 10-12 watts on the core 2-4 momentum for stacks over 100mA.** As we gain some experience with this sequencer, it will likely become part of another aggregate or part of a program like P34, so stay tuned.

What does this thing do? Jim Morgan has a trick he uses when the core is big and the emittance's go unstable - he 'pops' the RF stabilizing frequency back and forth a few times through the core to displace ions. When the instabilities happened again this morning, we quickly wrote an ACL script to ramp A:R2DDS1 back and forth slowly through the core in 0.1 Hz steps between 628898 Hz and 628906 Hz. This was very successful in stabilizing the core, so a more robust version of the script was written and is in ACC\_ION\_FLUSHER.ACL.

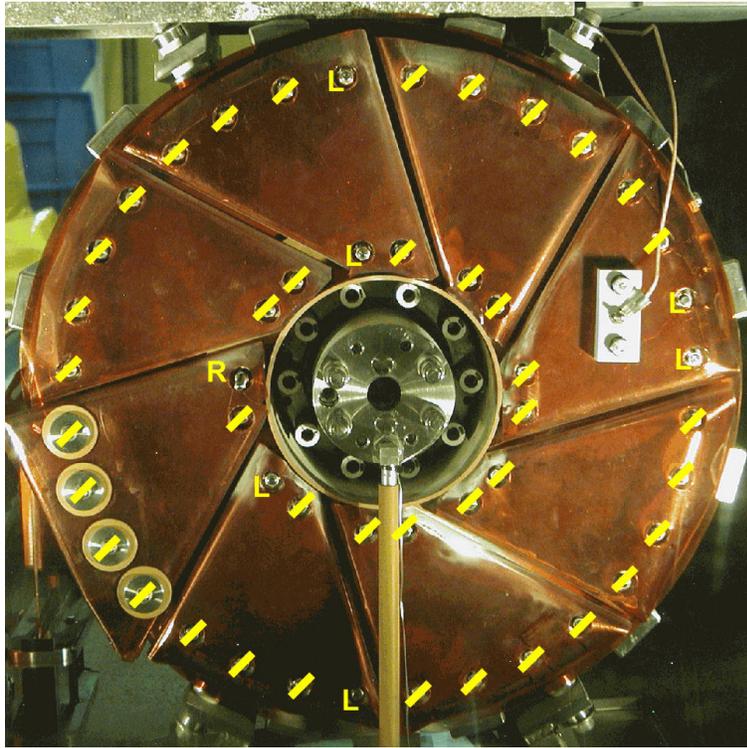
It is believed that with very large cores (and therefore large frequency widths), the stabilizing RF does not cover enough frequency space to clear all the ions that accumulate. The logic is by ramping A:R2DDS1 back and forth over a selected frequency range, we can more effectively clear ions. At least that's our story and we're sticking with it. The frequency ramping also squares the core somewhat and that may also be helping.

The script is controlled by the parameters A:FSHUFR (FluSHer Upper FR limit), A:FSHLFR (FluSHer Lower FR limit), and A:FSHSTP (FluSHer frequency STep) and are located on P38 MISC <15>. The script has error checking to make sure illegal values are not entered, like A:FSHUFR < A:FSHLFR and negative frequency steps. If one of the parameters is set out of range, a default setting for the parameters will be set by the script. Changes to these parameters only take effect when the aggregate is started and at the top or bottom of the frequency ramp. You can change the parameters on the fly whenever you like, but the change will not take effect until the current ramp changes direction or the aggregate is restarted.

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- Lens 10mm-2 repair: <http://www-bd.fnal.gov/cgi-mach/machlog.pl?nb=pts&action=view&page=292&load=>



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Here is a mark up of the DS side showing results of torque check. "L" indicates tie-rod nuts which turned before reaching 110 in-lbs. "R" indicates the tie-rod which was removed and replaced. "/" indicates tie-rod nuts which were found at desired torque spec. All of the torlon insulated nuts were backed during tightening and all could be tightened probably due to creep in the torlon insulators. Note that there is no electrical connection behind torlon insulated tie-rods.

- MI want to use 11 batch slip stacking as the operational mode. Will likely have less beam on target for a bit.
- Keith showed a plot with the number of Antiprotons per year produced by us and CERN.