

RHIC Retreat Closeout Session
March 28, 2002

Retreat Summary

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Outline

A few **critical issues**

(emerged in all sessions, consensus formed at the Retreat)

Input from **visitors** (CERN, FNAL, DESY)

The **Retreat itself** (concept, implementation, feedback, improvements...)

Retreat 2002: “**Deliverables**”

Acknowledgements



Issues – 1 Flattop

- # Optics understanding/control: **dispersion, coupling, chromaticity**
- # **Library of flattop configurations** (β^* and experiment configurations):
 - real-time driven **ramps**
 - **experimental magnets** under MCR control
 - **lifetime**: working point + corrections
(global, local, linear+nonlinear)

Issues – 2 Weekly scheduling

From experiments, machine, MCR, visitors,.....:
move from daily to true **weekly scheduling**

- # Plan **production time, machine development, beam experiments, accesses,...**
- # Realistic estimates on requested times, avoiding inefficient rescheduling, etc.
- # Limit burden on **MCR** personnel



Issues – 3 Polarization in AGS

- # **Polarization >50%** to insure a worthwhile pp run (2003 and/or 2004)
- # **AGS dedicated polarization studies** prior and/or in parallel to RHIC Run 2003 set-up time (2-3 weeks)

Development plan:

- # **Westinghouse** → **Siemens** (factor 2 ramp rate)
- # fix the **J10 bump** power supply jitter problem
- # set **$Q_x - Q_y > 0.2$** to minimize the impact of the coupling spin resonance
- # install a **CNI polarimeter** in the AGS (improve the polarization tuning)
- # Octupoles to compensate **nonlinear resonances** and to minimize beam loss
- # upgrade the **AGS RF dipole** control system to improve its reliability and capability of switching between different PPM users

Good for **diagnostics, tune feedback**

Proposal to **tune the machine up with PLL** from the start. That requires:

- # PLL system **reliable** and **operable from MCR**
- # **Chromaticity** and **coupling** information available
- # System **commissioning time**: ~ 2 days

System understanding through **modeling** and **data analysis**

Collaboration with CERN SL-BI

Machine Availability Definitions

DESY-HERA :

time for luminosity production
scheduled hours - (MD + studies)

Visitors
P.Ingrassia

CERN – LEP :

physics hours
scheduled hours

(LEP I stores >> LEP II stores)

CERN – LEP II:

physics hours + fill time
scheduled hours

FNAL:

physics hours + shot setup + studies
scheduled hours

RHIC:

(newly defined)

physics hours + studies + MD
scheduled hours - setup



The CERN perspective (H.Schmickler)

LEP scheduling/coordination/development

- # Clear (strict) definition of **run objectives**
- # 4 experiments with **same** insertion and goals
- # LEP **Physics Coordinator** (1 year) + **Machine Coordinator** (1 week)
- # **2 scheduling meetings** (Monday and Friday)
- # **Machine Development** handled by a formal Committee

Remark to instrumentation

- # **Emittance** measurement → potential use of wire scanners
- # Need of **transverse feedback** at RHIC not clear...damping time?
- # Collaboration with CERN on **PLL development** (goal of a new hardware implementation by 2004)

The FNAL perspective (M. Syphers)

Impact of RHIC on future hadron colliders (LHC,..VLHC?)

Notes on operations:

- # **Availability/reliability** comes with years of operation
- # **Scheduling/meetings**: know what to expect at every meeting, look at meeting logical and chronological placement in the week
- # **Set-up time** at FNAL Run 1: 2-3 h now, Run II: ~30min
- # From AP point of view: RHIC great for **beam studies** (beam-beam, e-cloud, IBS, etc.) – Potential for **inter-lab collaboration**
- # Acquire better **communication skills** for operations (will come with time)



The DESY perspective (B. Holzer)

- # **Collimators** (HERA never runs without)
- # **Reference Magnets**: backbone of HERA operations (**ramp control** via Bdot measurement in the reference magnets, control of **chromaticity from persistent currents** from 240 units to ~ 2 units, compensation of **snapback**)
- # **Knobs**: tune, energy, Q' , orbit bumps and correctors, lumi scans....
- # **Meetings**: 1 meeting/week of **accelerators physicists**, 1 meeting/week for **scheduling** (HERA and experiment coordinators ~ 12 people), and **shift change** meetings at shift end of ~ 15 minutes
- # **Luminosity tuning**: control to $1/10 \sigma$ is required, active tuning, golden orbits not enough



Retreat 2002 - Format

2002 was the **3rd RHIC Retreat**.

A different format was tried this year:

- # **Outside location**
- # **No parallel sessions**
- # Sessions organized around **issues, not systems**
- # **Short talks + discussion**
- # **Written Output**

Format similar to the **Chamonix Workshops** (LEP and then LHC Retreat) organized by CERN for 12 years and the **DESY Retreats**.



Retreat 2002 – evaluation, feedback

(From participants, visitors, + my opinion)

Outside location

Lots of interaction, discussion GOOD

Limits number of participants GOOD/BAD (rotation, if yearly event)

Cost bad (in within budget, similar to CERN)

No parallel session

GOOD (mixing)

Session organized around issues

GOOD (more lively)

Short talks + discussion

GOOD, but need **more discussion time**

Written Output

GOOD, **presentations on the WEB**
short proceedings, summary

REMARK: more people from **operation!**

Worth making it a yearly event



Retreat “deliverables”

- # All presentations are already on the **Retreat WEB site**
<http://www.c-ad.bnl.gov/RHIC/retreat2002/>

(collecting presentations ahead of time worked very well !)

- # **Short Proceedings**: slides + summary text for all talks
(Riken model)

- # **Written Retreat Summary**

executive summary + summary of sessions

documentation of yearly operations, developemnt

input to decision making for next year run

DEADLINE: April 15, 2002



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