

Scheduling Physicist Journal

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1 Tue 5 Sept 06

At the Time Meeting it was decided that the start of RHIC cool-down will be delayed until 1 November 2006. Further delays may be necessary depending on the funding situation. These will be announced one month prior to the scheduled start date.

2 Wed 6 Sept 06

1. Booster Radiation Safety Check-Off list completed by 4:00 pm.
2. Proton beam (from Tandem) injected into Booster but survives for only one or two turns.

3 Thur 7 Sept 06

1. After much searching by Paul Sampson and Greg Marr, Greg finds that the beam does not spiral because the Booster injection dipoles are in the wrong polarity. This was due to particle species “protons” being specified in the Superman application rather than “Tandem protons”.
2. Acceleration of Tandem protons to 2 GeV kinetic energy in Booster was then established.
3. Thursday afternoon, Kip Gardner worked on setting up a fault study for the EBIS-Booster penetration. He was unable to produce the

desired fault condition with beam being lost at the QHC2 quadrupole in Booster.

4 Fri 8 Sept 06

1. Setup for the EBIS-Booster penetration fault study resumed in the morning.
2. Leif Ahrens found that polarity of the B6 dump bump in Booster is opposite what it was thought to be. Greg Marr was then able to make local losses at the dump and the C3 inflector. It was not possible to make a local loss at quadrupole QHC2.
3. The fault study was carried out and finished by 1:30 PM. No radiation (above background) was detected at the opening of the penetration pipe in the Linac building.
4. Tandem switched from protons to chlorine ions (Cl^{14+}) which were injected into Booster and accelerated to kinetic energies of 650 and 1000 MeV per nucleon. The chlorine ions were extracted and transported down the R line to the NSRL target room.
5. Adam Rusek did Bragg curve measurements.

5 Mon 11 Sept 06

Start of NSRL run. Some problems getting started: RQ3 power supply failure; iris scanner, stepper motor control, network camera, and data acquisition system problems. Chlorine ions with kinetic energies of 650 and 1000 MeV (per nucleon) were delivered to the NSRL target room.

6 Tue 12 Sept 06

NSRL ran with chlorine ions and then with protons.

7 Wed 13 Sept 06

1. NSRL continued running with 1 GeV protons.

2. In the morning, vacuum group (Steve Gill) noticed that the pressure at D6 in Booster was rising. Upon completion of beam use for the day, vacuum personnel entered the ring and found a leak on the D6 ion pump header; this was sprayed with sealant which stopped the leak. Pressure at D6 returned to normal values.
3. Pilat and Sampson held a well-attended and productive meeting on maintenance policy.

8 Thur 14 Sept 06

NSRL continued running with 1 GeV protons.

9 Fri 15 Sept 06

1. Although originally scheduled to run with 2.5 GeV protons, NSRL decided to continue running with 1 GeV protons.
2. Upon completion of NSRL running for the day, 2.5 GeV proton beam was set up for next Friday. 200 and 500 MeV proton beams were developed for NSRL (to be used next Wednesday).

10 Mon 18 Sept 06

1. 1 GeV protons delivered to NSRL.
2. Upon completion of NSRL running for the day, mode switching between protons and iron was setup. This effort was hampered by problems with the mode switching program. John Morris was consulted and fixed the problems.
3. As of today the Run 7 ion options are:
 - a) d-Au followed by Au-Au
 - b) p-p followed by Au-Au
 - c) Au-Au only

A decision (as to which option) is expected Wed 20 Sept.

4. PHENIX could use either d-Au or p-p to commission their Hadron Blind Detector (HBD), but for physics reasons they would like some p-p running time this year. The best case scenario for them would be p-p followed by Au-Au.
5. STAR prefers Au-Au followed by d-Au so that they can commission their Forward Meson Spectrometer (FMS) with Au before running with d-Au.
6. RHIC prefers Au-Au before p-p so that rewiring of the sextupole families can be completed before running with p-p. This allows for correction of second order chromaticity which is expected to reduce tune spread by 0.005 (according to Thomas Roser). This is supposed to help increase p-p luminosity by reducing beam-beam effect.

11 Tue 19 Sept 06

NSRL ran with mode switching between protons at 1 GeV kinetic energy and iron ions at 1 GeV (kinetic energy) per nucleon.

Here are John Morris' remarks regarding the mode switching problems encountered Monday night:

“The root cause turned out to be a problem within the mode switching sequences—not in the tape software. It’s a problem that can come up in other mode switching sequences so I’ll describe it here.”

“The Save State step in a mode switching sequence saves device state information in its partner sequence. So the Iron-Hydrogen sequence, for example, saves Iron state information into the Hydrogen-Iron sequence. A full path of the partner sequence has to be specified in the Save State step. The paths of sequences changed with tape reorganization this summer so all Mode Switching sequences need to be updated to reflect the new paths.”

“For example, the Iron-Hydrogen.tape sequence had to be updated as follows:

Change:

/operations/app-store/TAPE/sequences/mode-switch/Hydrogen-Iron/Hydrogen-Iron.llt

To:

/operations/app-store/tape/NSRL/ModeSwitch/Hydrogen-Iron.tape.”

“I’ll follow up with Ted and folks from operations to see that other mode switch sequences get updated as needed.”

12 Wed 20 Sept 06

1. There was a meeting with Peter Bond today but there is still no decision about Run 7 ions.
2. NSRL continued running with mode switching between protons at 1 GeV kinetic energy and iron ions at 1 GeV (kinetic energy) per nucleon. In the afternoon, the archive for 500 MeV protons was restored and protons were transported to the NSRL target room. Keith Zeno worked to improve the intensity but the SEB spill had large spikes which prohibited accurate dosimetry. 600 MeV protons were also transported to the target room but the spill quality was still poor. At 8:30 pm the Biologists decided to quit for the night. Adam Rusek requested that Kevin Brown be consulted in the morning.

13 Thur 21 Sept 06

1. Kevin Brown worked on the SEB spill today. There were actually two problems: 1) There was a slope on the tune function which caused beam to be extracted after the beam cut-off had been issued by the dosimetry system. 2) The spill had large spikes which prohibited accurate dosimetry.
2. Kevin also setup up spills with 20 Hz and 60 Hz (I believe) structure for Betsy Sutherland.
3. Fast Extracted Beam (FEB) was also setup for NSRL.
4. Due to insufficient setup time and TTB beamstop reachback problems, NSRL running did not conclude until 1:00 am Friday morning. In the future we need to have a list of all the setups required for NSRL each day.
5. Solar Particle Simulator development ran from 1:00 am to 4:00 am Friday morning. Setups for 200 and 500 MeV protons were developed and archived. The setup for 2.5 GeV protons was loaded and tuned for the start of NSRL in the morning.

14 Fri 22 Sept 06

1. In the morning, 2.5 GeV protons were delivered to NSRL.
2. In the afternoon, 200 and 500 MeV protons were delivered followed by another round of 2.5 GeV protons.
3. At 21:47 NSRL finished for the day. The 1 GeV proton setup was then restored and a mode switch to 1 GeV iron was performed.

15 Mon 25 Sept 06

1. We met with Peter Bond at 1:30 pm. Still no decision about ions for Run 7, but he is leaning toward d-Au followed by Au-Au.
2. 1 GeV iron beam ready for NSRL by 7:25 am; NSRL running by 9:00 am.
3. Between NSRL users, 300 and 600 MeV iron beams were set up for tomorrow.
4. At 19:00 NSRL finished running for the night. The 1 GeV iron setup was documented before switching to 300 MeV setup for tomorrow.

16 Tue 26 Sept 06

1. Start of RHIC cool down has now moved to 1 Dec (as per Derek Lowenstein).
2. We had another meeting with Peter Bond after the Time Meeting. No definite decision yet, but current proposal is for Au-Au followed by p-p.
3. 300 MeV iron transported to NSRL target room by 7:30 am.
4. Switched to 1 GeV iron and then to 600 MeV iron.
5. At 14:35 NSRL finished running for the day; 600 MeV setup documented.
6. Adam Rusek worked on development of "thin" beams of iron at 600 MeV.

7. Setup for 1 GeV iron loaded for tomorrow morning.

17 Wed 27 Sept 06

NSRL ran with 1 GeV iron, but running was hampered by problems with the dipole correctors in Booster.

18 Thur 28 Sept 06

Problems with Booster dipole correctors fixed. NSRL ran with 1 GeV iron without interruption; they were finished for the day by 1 pm. Kevin Brown worked on extraction efficiency and Lee Hammons did studies with the Booster-NSRL extraction bumps. Setup for 600 MeV iron was loaded before shutting down for the night.

19 Fri 29 Sept 06

1. Peter Bond announced his decision that Run 7 will begin with Au-Au. Depending on budget and experimental results we may run in a second mode after Au-Au. This would be p-p unless a case can be made for running with d-Au. Simply continuing to run with Au-Au is also a possibility.
2. NSRL ran on schedule with 600 and 1000 MeV iron. Adam Rusek did beam development work and Kevin Brown did tune measurements in Booster.

20 Mon 2 Oct 06

NSRL ran with 1 GeV iron beam and M. Sivertz did machine development work.

21 Tue 3 Oct 06

1. NSRL ran with 1 GeV iron beam and Adam Rusek did dosimetry development work with 1 GeV and 600 MeV iron beam.
2. Vacuum group noticed that the pressure at the E5 ion gauge in Booster seems to go up by two orders of magnitude when beam is on during the day and then goes back to normal at night (and over the weekends) when beam is off. HP made an entry into Booster at the conclusion of today's beam activities to measure residual radiation levels at E4, E5, E6, and E7. The measured levels at the upstream ends of E5 and E7 were 4 and 12 mr per hour respectively; the levels at the downstream ends were 2 mr per hour.

22 Wed 4 Oct 06

NSRL ran with 1 GeV iron and M. Sivertz did dosimetry development work.

23 Thur 5 Oct 06

NSRL ran with 1 GeV iron for only 1 hour and 45 minutes before being held off by TTB vacuum valve closure at the TTB beamstops. Tandem personnel found that the beamstop actuator bellows failed allowing the beamstop section to come up to air. The bellows were replaced followed by re-assembly, testing and re-certification of the beamstops. This was completed by 5 pm. By 7:30 pm the pressure was low enough to open the vacuum valves on either side of the beamstop. A broken wire on the signal cable for beamstop No. 2 was then found and fixed. Beam was finally restored in Booster and the R line by 9:50 pm. The exposures originally scheduled for the afternoon were re-scheduled for tomorrow morning.

24 Fri 6 Oct 06

NSRL ran with iron beam at 1 GeV and 600 MeV per nucleon. Near the end of the day a problem with archives of the NSRL Iris Logger was discovered.

25 Mon 9 Oct 06

1. It was found that disabling the Windows firewall restored the NSRL Iris Scan log communications.
2. Vacuum valve in R line closed due to ion gauge being off. Controller for the gauge was replaced. Valve then opened and iron beam (at 1 GeV per nucleon) was transported to the NSRL target room.
3. NSRL did radiobiology experiments (with 1 GeV iron) and Nick Kling did Solar Particle Simulator development work.

26 Tue 10 Oct 06

NSRL did radiobiology experiments with iron at 1 GeV per nucleon. Development work on the Solar Particle Simulator continued. A study cycle for operator training was set up on Booster user 4.

27 Wed 11 Oct 06

NSRL did radiobiology experiments with iron at 1 GeV per nucleon. Development work on the Solar Particle Simulator continued.

28 Thur 12 Oct 06

NSRL did radiobiology experiments with iron at 1 GeV per nucleon. This was followed by machine development work with iron at 600 MeV per nucleon.

29 Fri 13 Oct 06

NSRL did radiobiology experiments with iron at 600 and 1000 MeV per nucleon. Shortly after completion of NSRL experiments for the day, the Booster main magnet power supply tripped off on a D6 quadrupole overtemp fault. This required entry into the ring to backflush the magnet. The backflushing was completed by 4:00 pm and beam was restored to the

R line by 5:15 pm. The Booster main magnet was then run for 2 hours to verify that the overtemp problem had been fixed.

30 Mon 16 Oct 06

NSRL did radiobiology experiments with iron at 600 and 1000 MeV per nucleon. In the morning the A3 RF station tripped off and could not be brought back on. The B3 cavity voltage was raised to compensate for this, and this allowed the radiobiology experiments to continue running. There were also problems with remote control of quadrupole Q3 in the R line which held off NSRL running for about an hour. Upon completion of the experiments for the day, the A3 RF station was repaired.

31 Tue 17 Oct 06

NSRL did radiobiology experiments with iron at 600 and 1000 MeV per nucleon. Upon completion of experiments for the day, the RQ3 power supply was repaired. Study cycles for Glenn, Harvey and Ahrens were set up by Zeno. Glenn did vertical dispersion measurements; Harvey and Ahrens did frequency, radius and field measurements.

32 Wed 18 Oct 06

NSRL did radiobiology experiments with iron at 600 and 1000 MeV per nucleon. Upon completion of experiments for the day, Sivertz and Rusek did beam development work for NSRL. Then Gardner and Savatteri did testing of a Booster magnetic cycle for Au³¹⁺ ions.

33 Thur 19 Oct 06

NSRL did radiobiology experiments with iron at 600 and 1000 MeV per nucleon. Upon completion of experiments for the day, some Solar Particle Simulator work was done by Kling. At 5:00 pm beam was handed over to Tandem to switch to delivery of silicon. By 6:40 pm silicon was accelerated in Booster to 1000 MeV per nucleon. Extraction and transport to NSRL target room were then setup and documented for tomorrow morning.

34 Fri 20 Oct 06

NSRL did radiobiology experiments with silicon at 1000 MeV per nucleon. Solar Particle Simulator studies were then done, followed by frequency, field and radius measurements. End-of-run shutdown activities commenced at 3:00 pm.

35 Thur 8 Feb 07

The first shipment of liquid helium for the start of RHIC cool-down arrived today. As per Dewey Lederle, the 4K wave in blue will start Tuesday 13 February. The second liquid helium delivery is expected on Thursday 15 February.

36 Fri 9 Feb 07

Chuck Carlson reports that Au³¹⁺ beam has been transported to the TTB beamstop. The measured beam current is 70 microamps. The Booster radiation safety check-off list has been completed. We will set up Booster injection on Monday 12 February. The MCR will not be staffed over the weekend.

37 Mon 12 Feb 07

Injection of Au³¹⁺ beam into Booster was held off by a number of problems during the day, but was finally achieved by 8:00 pm. The current transformer at the end of the TTB indicated some 2.94×10^9 ions per pulse. Beam was partially accelerated by 9:00 pm. The available gap voltage was not sufficient for acceleration to top energy. This will be investigated tomorrow.

38 Tue 13 Feb 07

Acceleration of Au³¹⁺ to full energy was achieved by raising the gap volts and lowering dB/dt during the Booster magnetic cycle. The intensity at top energy was some 1.36×10^9 ions per cycle.

39 Wed 14 Feb 07

Beam was setup on 4 Booster cycles per supercycle. AGS Radiation Safety Check-Off list completed. Booster extraction and AGS injection established.

40 Thur 15 Feb 07

RF personnel are setting up for acceleration in AGS. BTA stripping foil studies underway.

The second shipment of liquid helium arrived today, one day ahead of schedule. As blue ring cool down is going very well, Wolfram Fischer requests that we try to inject gold beam into blue ring on Sunday 18 February. We will meet tomorrow afternoon to plan setup activities for the coming weekend.

The new foils in BTA look very good. Initial analysis indicates that they perform as predicted by Peter Thieberger's calculations. The best performer appears to be Foil 7 (the aluminum and carbon "sandwich"). It gives the largest fraction of Au^{77+} ions and the energy spread of the ions is a factor of 4 smaller than that of ions emerging from the standard carbon foils (numbers 4 and 5) we have been using for years. The energy loss is also smaller by a factor of 1.3/2. The present plan is to set up with Foil 7.

Setup today was hampered by two power dips (one in the morning and one the evening) due to windy and icy conditions.

The RF group worked in the evening on acceleration in AGS; they suspect a problem with feedback circuitry which will require a ring access Friday morning.

41 Fri 16 Feb 07

An AGS ring entry was made and the problem with the RF feedback circuitry was fixed. Acceleration of 12 bunches to top energy in AGS was achieved late in the evening.

With the expectation that the blue ring cool-down will be completed tomorrow (Saturday 17 February) several days ahead of schedule, and with the goal of providing as many weeks of Physics running as possible, we met

in the afternoon and decided on a significantly more aggressive Run-7 startup schedule. The milestones are given on the Scheduling Physicist Web Page. The hope is to put beam in blue on Sunday and have high-intensity collisions by Monday 12 March.

42 Sat 17 Feb 07

In the morning Leif Ahrens and Nick Tsoupas were in to setup AGS extraction, but by 10:00 it was realized that BTA MW006 (the first beam profile monitor in the BTA line) was stuck in a partially inserted position and partially blocking the beam. This required a Booster access to fix. With considerable effort, Steve Jao and Dan Lehn were able to retract the harp; they left it locked in that position as they could not get it to move in and out freely. LOTO did not get removed from Booster until 18:30.

By 21:30 Kevin Smith and Tom Hayes had set up extraction timing so that one of 12 bunches could be extracted. Nick Tsoupas arrived shortly after to setup extraction and transport to the W dump.

By 23:00 Dewey Lederle had announced that the Blue ring is cold and stable (at operating temperature) with all temperature alarms cleared and all recoler levels at their setpoints.

43 Sun 18 Feb 07

By 01:00 or so, Nick Tsoupas had beam transported down the ATR line to the W dump.

During the day and evening Don Bruno and George Ganetis worked on RHIC power supply setup. MCR Operations and Todd Satogata worked on ATR transport and timing in the ATR BPMs. RHIC Radiation Safety Checkoff List completed by 17:00. Problems securing RHIC for beam required the assistance of Access Controls personnel. RHIC power supplies were ramped to injection at 22:30. AGS to RHIC synchro not set up; this will be addressed tomorrow. A quench link interlock in blue occurred at 23:55.

44 Mon 19 Feb 07

During the wee hours RHIC Security System problems persisted; Greg Marr and MCR personnel worked on ATR transport.

RHIC Security System problems resolved by 8:00.

Don Bruno worked on RHIC power supplies until 19:00.

RF personnel worked on setup of AGS to RHIC synchro. Setup completed at 20:30.

Beam was transported to the end of the X arc and setup for injection into blue commenced.

45 Tue 20 Feb 07

In the wee hours beam was injected into blue and survived for one turn; circulating beam was established shortly after noon.

RHIC ring opened from 13:00 to 19:00 for Cryogenics and Power Supply work. During this time the RF group worked on the AGS bunch merge. By 22:30 RHIC was secured for beam and setup for blue injection commenced.

46 Wed 21 Feb 07

In the wee hours circulating beam was re-established in blue. Significant discrepancy between measured and predicted tunes was found. The main dipole current was found to be 5A higher than that of Run-4. Later in the morning the reason for the discrepancy was found to be a mistake in the transfer function for the main dipoles, and by 12:30 it was decided that capture work (which had already started) should not proceed any further until RHIC was brought to the correct injection field. RHIC was then opened for access into the experimental areas. An access into AGS was also required for repairs to AGS RF station DE. By 15:45 beam was back in AGS and the RF group continued with their work on the bunch merge. Later in the evening Kevin Smith and Tom Hayes reported that a first-pass version of the merge from 24 to 4 bunches was operational.

47 Thur 22 Feb 07

During the wee hours circulating beam was re-established in blue with the correct magnetic field. Beam was also transported down the Y arc in preparation for injection into yellow early next week. In the morning the RF group completed work on capture in blue. At noon RHIC was opened for experiment, cryogenics, and power supply personnel. An access into AGS was also required to service RF station DE. Following the access, work continued on the AGS bunch merge and Keith Zeno setup the gamma-transition jump. RHIC sweeps were completed by 7 pm; RHIC secured for beam by 7:20 pm. Circulating beam in blue re-established by 9:30 pm. Blue ring instrumentation setup was completed overnight.

Overnight several things were accomplished in RHIC:

1. Vertical Chromaticity problem fixed.
2. Tunes set according to RHIC configuration.
3. Horizontal and vertical closed orbits globally corrected.
4. Tunes decoupled.
5. RhicInjection Auto Setup made operational.
6. 56-bunch and 110-bunch fills achieved.
7. Broadband tune meter (BBQ) and Beam Transfer Function (BTF) work.

48 Fri 23 Feb 07

During the day and early evening (from 9 am until 8 pm) RHIC was opened for experiment, cryogenics, and power supply personnel. Work on the AGS bunch merge continued.

49 Sat 24 Feb 07

During the wee hours work in blue focussed on setting up the BBQ system, testing sextupoles and gamma quads, and decoupling the machine.

Cryogenics reported that some blue ring temperatures increased slightly above their alarm limits overnight due to a possible obstruction in a heat exchanger. The obstruction is thought to be due to frozen contamination or a mechanical blockage. Additional refrigeration equipment was pressed into service to help bring the temperatures down. At 8 am RHIC was opened for access by experiments, cryogenics, and power supply personnel.

Later in the morning Cryogenics personnel began warming up the heat exchanger in an attempt to remove possible contamination. Cooling of yellow ceased.

Kevin Smith worked on setting up multi-bunch extraction from AGS; he and Keith Zeno also worked on setting up AGS user 2.

Late in the afternoon cryogenics personnel reported that warming up the heat exchanger did not clear the obstruction.

50 Sun 25 Feb 07

In the wee hours MCR operators did emittance and dispersion measurements in the ATR line. The F6 septum magnet tripped a number of times. Cryogenics personnel still were not able to clear the obstruction in the heat exchanger and said that blue probably would not be at operating temperature before Wednesday 28 February.

During the day Kevin Brown did emittance studies in the AGS. Controls personnel were in to diagnose the problems with the F6 Septum magnet. (It appears to be a timing problem.) RF cavity conditioning work was done in RHIC. STAR and PHENIX were placed on Experimenter Access.

Late in the evening cryogenics personnel reported that they removed some nitrogen contamination from the heat exchanger, but the blockage remains. There is no estimate for when the problem will be resolved.

51 Mon 26 Feb 07

From Phil Pile and Joe Tuozzolo:

During the past weekend the RHIC refrigeration system developed a high pressure drop through one of the heat exchangers (HX 20) on the return (low pressure) side. This raised temperatures in the blue ring to the point where the superconducting magnets can not operate. This may have been

caused by contamination from the last liquid helium delivery for yellow operations or some other obstruction. Prior to the delivery the refrigerator was running strong maintaining blue operations while cooling yellow. Attempts to resolve this situation by warming HX 20 to drive out nitrogen contamination were not successful. We must now warm up the entire cryogenic refrigeration plant to room temperature to drive out possible water contamination. The RHIC magnets will be maintained at liquid nitrogen temperature. The current estimate is 10-11 days from now until the blue ring is once again ready for beam and 3-4 more days until the yellow ring is ready for beam. This then amounts to about a 2 week slip in the RHIC schedule.

52 Tue 27 Feb 07

In the morning the Booster ring was accessed to repair beam profile monitor MW006 in the BTA line. The repair was successful.

The Booster extraction dipole cross-talk problem was resolved.

Due to problems with the Booster main magnet (it was receiving remote OFF commands) and with BTA dipole DH5 (the power supply DCCT was not working) beam was not restored to Booster and AGS until late in the evening. For unknown reasons the F6 septum magnet setpoint had to be changed and the BTA line retuned in order to restore nominal beam intensity in AGS.

From Dewey Lederle:

A second warm up of the affected heat exchanger to nitrogen temperature failed to free up the obstruction leading us to believe that the cause is very likely water contamination which may have come from removing residual helium gas from a liquid helium truck. Refrigerator turbines have been shutdown. Flow paths through the refrigerator have been redirected to flow through the purifier and thermax heater to warm up the refrigerator to ambient and remove contamination. We will be closely monitoring the outlet of the affected heat exchanger for evidence of water as it warms. The warm-up, purification/regeneration process should take about 4 days. During this process we will conduct a flow test through the heat exchanger. If the preliminary flow test looks good, we will start the refrigerator cooldown which should take two days. When the refrigerator is at operating temperature, we can confirm that the obstruction has been

cleared and start recooling the blue ring. We hope to have blue ready for beam 10 to 11 days from now. Both rings are drifting at 40K. Helium inventory from the rings has been stored in our liquid helium dewars and gas storage tanks. If the rings drift to 80K, they will be maintained at that temperature by the 80K cooler. After the refrigerator clean-up process has been completed we should still have enough helium inventory on hand to cool all of the blue ring and most of the yellow ring. The final liquid helium delivery has been rescheduled for next week.

53 Wed 28 Feb 07

In the morning Greg Marr found the source of the problems in BTA late last night: The F4 extraction dipole was pulsing with the wrong amplitude.

Work with beam in Booster and AGS was done throughout the day and evening.

From Dewey Lederle:

The refrigerator warm up will be complete at approximately 19:00. We are still flowing warm gas through the heat exchanger and still see the high pressure drop. The pressure drop tracks with flow rate and is confirmed with multiple instruments. When warm up is complete we will shutdown the compressors and apply LOTO in preparation for cutting and removing the heat exchanger inlet elbow. Work permits have been issued.

Technicians and a welder are standing by to cut, remove, inspect, reweld as soon as LOTO is applied. The elbow should be out by 20:00.

We have already drilled a 1/2 inch hole into the elbow and about a cup of oil was drained out. This was unexpected and is a concern, but inconclusive. The cold turbines will be removed and inspected tomorrow because they are a possible source of the oil - there is no indication that they lost oil and they were performing well with no issues. The boroscope image was inconclusive.

We also have a bypass scheme developed that will tie the cold train outlet back to the next heat exchanger in line bypassing the affected heat exchanger. The material has been ordered and will be delivered tomorrow morning. Cutting will commence early tomorrow morning for the bypass if no hard evidence of a blockage is found on the heat exchanger or it is found to be damaged. More info to follow tomorrow.

From Joe Tuozzolo:

Roberto and Dewey are out helping with LOTO.

The refrigerator warm up was completed and the heat exchanger inlet elbow was removed. The same turbine oil that was found earlier was found to be dripping down from the upstream face of the heat exchanger. About a pint of oil has been recovered in total. No other oil was found on the surfaces of the upstream piping other than what dripped back into the elbow by gravity. This is consistent with the warm oil being injected from the bearings on the cold turbines becoming highly viscous in the 9K cold flow and then sticking to the first obstruction in their path - the upstream face of HX20 - about 2 seconds later. The passages in the heat exchanger are approximately 6mm x 8mm and oil could be seen filling the passage on a handful of them. The elbow and heat exchanger has been wiped down and the elbow is being welded back tonight to minimize air contamination.

We had a couple of trips of the cold expanders during start-up but nothing that was considered off normal. The turbine bearings are designed with labyrinths and a seal gas system to prevent oil loss. Unfortunately, these 27 year old turbines may have had this abnormal oil issue that the 27 year old horizontal heat exchangers built for 2.5X ISABELLE load have been handling for the last 8 years. (We will check them for oil next summer).

Therefore, the work will start 6 am tomorrow on the parallel bypass around HX20 to the downstream (old) heat exchanger. The LOTO for this work will be completed tonight, the green sheets have been written and approved, stress calculations for the bypass have been completed, and the piping tees and elbows will be delivered tomorrow. Still hope to have the refrigerator sealed up and ready for pump and purge by the weekend. We should know by Late Tuesday or Wednesday whether the bypass is effective and then have blue coolers filled on or about March 12.

54 Thur 1 Mar 07

Work with beam in Booster and AGS was done throughout the day and evening.

From Joe Tuozzolo:

Either the oil was a one time unusual event which we will be careful to monitor or the old heat exchanger has been handling this problem. They were not specifically designed to deal with oil; but, they are different. A lot of effort is made to keep oil out of the heat exchangers because it

reduces their conduction efficiency.

Both turbines will be out today for inspection. That job started yesterday when the oil was first found.

Those turbines are old technologies. The person who designed them and was the specialist on them from rotoflow died two years ago – no one took his place. Rotoflow basically provides parts based on their old drawings and specifications.

Replacing the cold end turbines with gas bearing turbines is another 1.5M AIP.

From Dewey Lederle:

The refrigerator work is well underway. The elbow upstream of HX20 has been re-installed and those welds have been inspected and approved. The parts for the parallel bypass line were received and the lines have been cut. Welding of the helium process piping of the bypass will commence shortly and will be completed tonight. As soon as process pipe welding is complete, LOTO will be removed, the system will be pumped out and backfilled with clean helium, and we will start the scrub using one first stage compressor and one second stage compressor in order to use the full capacity of the purifier. The new welds remain under very low pressure during the scrub. Tomorrow, the scrub flow path will be modified to build up some back pressure on the bypass so that leak checking can be performed. When the leak check is complete, we will start welding the vacuum jackets for the bypass.

E. Lessard put together a walking review by a sub-group of the Laboratory Pressure and Cryogenic Safety committee which has reviewed all of the work that is being done. A documentation package with stress calculations, system modifications, and inspection sheets will be completed tomorrow.

We are still on schedule.

55 Fri 2 Mar 07

Tandem MP7 is open for repair of foil oscillator and installation of new terminal foils.

Maintenance schedule for today:

0600: Vacuum and HP enter AGS ring on controlled Access to begin C15 polarimeter work.

CAS will supply gate watch, MCR operator will release gate.

After C15 survey HP surveys C20 and the end of BTA (DH5).

0640: Instrumentation enters AGS for polarimeter work.

0730: G. Mahler begins C15 target installation.

0830: Access Booster to investigate current transformer problem. HP accompanies to survey C1-E6.

0900: Instrumentation, power supply personnel to enter AtR (area to be determined) HP to escort, MCR to perform Gate watch.

0930: AGS ring locked, remove LOTO from I10 and E20 snakes for Power supply testing.

1000: LINAC personnel to enter TTB crossover, HP to escort.

1100: Remove LOTO from Booster, restore to operational state.

1400: Re-apply LOTO to the snakes, access AGS for polarimeter work. Sweep AGS ring if necessary.

1500: Remove LOTO from AGS, restore AGS to operational state.

1700: Accelerators to standby.

Gold beam will be restored to Booster and AGS tomorrow (Saturday) morning. (This beam will come from Tandem MP6 which is being used to service outside users until Saturday morning.)

From Joe Tuozzolo:

The He process piping was sealed up last night. Al Farland came in last night and inspected all of the welds. The welds were leak checked this morning. The system was pumped and purged. The first step in cleaning air out of the refrigerator. Dewey established a scrub of the system at 4:00 am this morning.

All of the cold turbines (5A, 6A, 5B, 6B) were pulled and inspected. Oil was found upstream and downstream of the turbines. It was cleaned up. There was no indication that the turbine seals caused this problem. Considering some of locations and some of the "war stories" from the early days of RHIC start-up some of the oil could be historical.

The stress calculation documentation and ECN were completed and will be submitted later this morning. The bypass has a stress safety factor of $> 6:1$ at the burst disk pressure.

From Derek Lowenstein:

RHIC Refrigerator Status

The cryogenic refrigerator was warmed up during the week to investigate the pressure drop across the heat exchanger (HX20) that was preventing operations. After removing a section of piping upstream of HX20 significant oil contamination was found. This is a very unusual situation for a cryogenic system. To provide a larger flow path, a parallel bypass line has been installed to direct flow from the expander turbines into a larger heat exchanger that is better able to deal with this should it reoccur. This summer shutdown the affected piping and heat exchangers will be cleaned and the oil contamination source will be addressed.

At this time the helium process lines in the refrigerator have been re-established. The refrigerator gas is being "scrubbed" through a liquid nitrogen purifier to remove air that was introduced during the inspection and bypass installation. Also insulating vacuum will have to be re-established. The refrigerator may be ready for cool-down by Sunday or Monday. There are still some hurdles to be jumped but the blue ring should be cold with re-coolers filled on or before March 12. The blue ring fill should go faster than normal since we will be drawing helium from our cold liquid storage area. The yellow ring will take longer because we will have to reliquify helium from the warm storage tanks. The schedule will be updated on Monday.

From Dewey Lederle:

Welding of the vacuum jackets for the new bypass line is complete, and we have begun pumping down cold box 6 and this new vacuum jacketed line. As soon as vacuum is established, a leak check of the vacuum space will be performed while we pressurize the system. Scrubbing continues. The system is very clean.

After the leak check is complete, we will start warm turbines. I will send an update then.

From Keith Zeno:

Summary of how things are going from my perspective with set up.

<http://www.cadops.bnl.gov/elog/graphics/rhic-au-2007/>

Thu-Mar-1-2007-175925-13300.gif is a gpm table that shows a high intensity cycle.

The Booster has accelerated, at best, up to about 10×10^9 ions to extraction energy, over 4 cycles. With Au+32, the highest intensity achieved was about 12×10^9 . There is no difference I can see so far

between the way Au+32 and Au+31 look in the Booster. Tandem intensities have also been comparable so far.

The Booster main magnet function was modified at points in the cycle after the peak dB/dt was reached. Specifically, the dB/dt was lowered for the remainder of the cycle. This was done because of losses that were occurring after the 'early acceleration' part of the cycle, and the RF voltage could not be raised further. This lower dB/dt removed these losses, and I do not believe the change has had an adverse effect on the Booster's performance, as there are no significant losses after peak dB/dt is reached this run, and there have not been in past runs. That is, the critical part of the magnet cycle is up to the point of peak dB/dt , and this part has not been changed. A similar thing was done with the magnet cycle during the Cu run.

One side effect of this change in the magnet cycle, were problems that developed with the hall probe reading which lead to F6 tripping off. I think this problem is understood now and is probably fixed.

The transfer efficiency looks somewhat better than in previous runs. Perhaps this is due to the new foil being used in BtA as preliminary measurements indicate that the amount of beam in the 77 charge state is about 3 to 4% more than in previous runs. The beam also looks smaller and requires less gap volts to match on the injection porch. These last two things tend to make it easier to achieve good transfer of the 77 charge state. With 3.5 to 4×10^9 in AGS after the last transfer the transfer efficiency is about 60 to 65%, which may be as much as 5% greater than the best achieved in previous years.

At intensities below about 35×10^8 on the injection porch, little loss occurs during the merge and during acceleration. As the intensity is raised above this level, a loss gets progressively larger during the time of the merge. As the intensity is raised coming out of the Booster, the efficiency between B late and AGS cbm (after the last transfer) slowly degrades. At the highest intensities reached so far, the transfer efficiency drops from the initial 60 to 65% or so to 55% or so, resulting in about 55×10^8 after the last transfer for 100×10^8 late in Booster. More significantly, the loss around the merge, without any further tuning, becomes quite large preventing more than about 40×10^8 to accelerate. Aside from orbit and tune adjustments, adjustment of sextupole and octupole (the old ones) stopband correctors raise this to about 48×10^8 (the highest intensity in the last Au run was around 60×10^8). I have not looked how the merge setup effects these

losses, and if this can be improved. For example, by not raising the gap volts after the merge more than they have to be raised. So, this seems a bit of a bottleneck, but it hasn't been looked at much.

With the merge set up it is more critical that the pulses from Tandem be even. There are two kinds of unevenness that seem to occur. The first kind is where there are pulses within the four that are much less than the other (50% or less), but seem to occur more or less randomly. The other type has a pattern, for example, where the first pulse is the highest, and the last the lowest, supercycle after supercycle. I made a couple of gpms to monitor this behavior, both located in Booster/Comfort Displays, a table (AuScalersTable) and a strip chart (AuEfficiencies). They both show the sigma of the variation over the 4 cycles divided by the average pulse intensity, in percent (amongst other things). The table also shows the individual cycle input intensities. It seems that Tandem, when asked can reduce this sigma to around 5 to 10% even at high intensities, but it tends to drift. I have not seen them do anything yet about the missing or low pulses, though I imagine things will be different with MP6 anyway. See <http://www.cadops.bnl.gov/elog/graphics/rhic-au-2007/Thu-Mar-1-2007-210215-23228.gif> for example.

As far as other sources of instability, the Booster/AGS Synchro seems quite stable. Booster RF cavities sometimes drop out leading to missing booster cycles, and Booster capture tends to drift, on the order of hours to a day. BTA needs its usual adjustments, and TTB is rather stable.

56 Sat 3 Mar 07

Gold beam restored to Booster and AGS. (This beam is coming from Tandem MP6; MP7 is open for repair of the foil oscillator and installation of new foils.) Tune meter, IPM, and Orbit Response Matrix work was done with beam in AGS.

Four RF cavities in Sector 4 of the Blue ring were found to be up to air. The leak was found to be in the tuner on one of the cavities. The tuner was removed and a flange was placed over the opening in the cavity. Repairs will commence on Monday.

From Dewey Lederle:

Warm turbines are running. Refrigerator cooldown has begun. No issues to report at this time.

57 Sun 4 Mar 07

Beam was off until early afternoon due to a faulty breaker for Booster Main Magnet PS station 1AB. A line crew came in and changed the breaker and beam was back in Booster and AGS by midafternoon. BTA dispersion measurements were done and AGS orbit response matrix, tunemeter, and IPM work was done.

58 Mon 5 Mar 07

Work continued with Gold beam in Booster, AGS, and ATR.

A fault study was done with protons in the LTB line. (The study setup and results are recorded in the NSRL 2007 elog.)

59 Tue 6 Mar 07

Keith Zeno worked on Gold setup in Booster and AGS.

Greg marr finished setting up multi-bunch extraction out of AGS.

Nick Tsoupas did work with the ATR flags.

Kevin Brown did work with a “bare” AGS.

Kevin Smith did bunch merge work in the AGS.

Brain Brisco and Anatoli Zelenski successfully transported polarized beam to the 200 MeV polarimeter and tested it.

From Dewey Lederle:

The blue ring cooldown is halfway complete. The equivalent of about 10000 gallons of liquid helium inventory is now in the blue ring with about 10000 gallons to go. The speed of the cold wave varies depending on whether we are using liquid helium, or warm helium gas. The blue ring should be at operating temperature Thursday, and we will have no more liquid helium inventory at that time. We will proceed with the yellow cold wave using only warm helium gas. Another liquid helium truck is due to arrive Friday. We are continuing to push a 45K wave through the yellow ring. The upper 90K temperature spikes that we saw earlier have now flattened out. Yellow temperatures as indicated on our instruments vary between 52K and 85K.

60 Wed 7 Mar 07

The NSRL Radiation Safety Check-Off list was completed.

PPM with carbon and gold was set up in Tandem and Booster. Carbon was extracted from Booster and transported partway down the R-line.

BLIP began isotope production.

From Dewey Lederle:

The blue ring cooldown is proceeding well. Five sectors are very close to operating temperatures with re cooler levels being maintained at their setpoints. The cold wave is entering sector 4/5. This last sector should take the rest of today, then the magnets may have to soak for 12 or more hours before all the temperature alarms clear. The blue ring should be ready tomorrow morning.

61 Thur 8 Mar 07

Blue ring declared cold early this morning.

Silicon and gold PPM was set up, but silicon was not extracted from Booster.

Work with gold beam in Booster and AGS continued during the day.

The two IPMs in yellow were found to be shorted in the afternoon. They were removed, repaired and put back in place by late evening.

From Dewey Lederle:

The blue ring cooldown is complete. All temperature alarms are clear and all re cooler levels are being maintained at their setpoints. We have started the yellow cold wave. I will send an update later on yellow.

From Dewey Lederle:

The yellow ring cooldown is going faster than expected. Two sectors are at operating temperature. The next two sectors should be there tomorrow. The final two sectors will take a little longer because they are starting from 80k rather than 50K. A liquid helium truck is on schedule to be delivered tomorrow morning. We expect the yellow ring to be ready Sunday morning.

From Angelika Drees:

An issue with the yellow IPM in RHIC came up late this afternoon. Both devices are found shorted and need to be repaired. Unfortunately this involves braking the vacuum. After re-installation of the devices baking and pumping takes about 3 days before we could reopen the valves and allow low intensity beam to circulate in yellow. Since we don't really expect yellow earlier than in 3 days we decided to take the "hit" now rather than later and allow instrumentation and vacuum to go in. Work is being prepared as we speak (they are already in, IR2 was still in restricted access). There are two options:

i) after the IPMs are pulled and inspected it turns out the repair can be done in-situ, this could take a few hours ii) after IPMs are pulled out it turns out that they cannot be repaired right away, we'll close yellow with blank pipes and get out of the tunnel, this should be done by 8 pm but would likely require another access into IR2 tomorrow.

In parallel to this the RHIC blue magnets are brought up to full current. Ramping should be finished by 8 pm (as indicated earlier). Experimental IRs are still open and will be swept once we get closer to 8 pm. All other RHIC areas are swept. We still plan on working with blue beam for the remainder of the night through Friday and Saturday until Sunday morning.

(I used the term "sector" sloppily in my earlier mail. I should have used sextant instead. 3 yellow sextants are cold and there are 3 more to go.)

From Angelika Drees:

The IPMs have been taken out and were repaired in the tunnel (thanks, Tom and Dan). Luckily spare parts were in hand. Tom, Dan and Roger are putting them back in as we speak and vacuum will begin pumping the section over night (thanks Mike M. and crew). Tomorrow (Friday) morning baking will begin. Unfortunately that requires a full day access into IR2. After the first 8-12 hours that can be left alone for a couple of days until we stop and another access day is required. This 2nd access will happen together with PS check-out on Monday. Until then the valves around this section have to remain closed.

All other RHIC areas have been swept and several hysteresis ramps were done successfully. We expect to see beam in RHIC 'soon' (well, I hope before midnight).

62 Fri 9 Mar 07

In the early morning hours circulating beam was established in blue.

During the day vacuum and instrumentation personnel worked on the yellow IPMs in sector 2.

A second fault study was done in the LTB line. (The study setup and results are recorded in the NSRL 2007 elog.)

Carbon and gold PPM was set up with carbon transported to the NSRL target room in preparation for the start of the NSRL run on Monday 12 March.

By early evening RHIC sector 2 was swept. There were quench link interlocks into the late evening.

From Angelika Drees:

A (telephone) bridge is setup for the daily meetings. The weekend number is x-2261 (please see the Run7 site for other days). Just a reminder: tomorrow's meeting is at 8:30. The first person to call should answer "yes" when prompted by the automatic bridge setup.

The yellow IPM are repaired/improved and back in the beampipe since last night. The yellow 4K wave is progressing. I didn't get a detailed cryo update yet but I will pass it on to you as soon as I hear more. The Run7 site and the Plan of the Day (which is pretty much the same as yesterday minus what we got done) are updated. Please have a look.

Vacuum work in Sector 2 should be done for today by 6pm. STAR should be done by 5pm, PHENIX by 5:30. I hope this will allow us to start with the evening shift by 7pm (PS work is about to be done for today, hysteresis is in progress). We intend to run with beam until Sunday morning, 8 am. Both, vacuum and PS will need access then and the ring will be open for 8-12 hours. Accesses during the day tomorrow, Saturday, will be on an as-needed basis for the PS crew and the vacuum group. We will resume working with beam on Sunday, 8 pm (pending PS work) and work with beam until 8 am on Monday. The ring will be open during daytime on Monday. The plan for Tuesday depends on PS progress.

63 Sat 10 Mar 07

Machine development progressed throughout much of the overnight shift, but early efforts at establishing beam in RHIC were hampered by several quench link interlocks that appeared to be tied to faulty hardware and a problematic power supply. In addition, an access into the RHIC ring was required to reset the bakeout equipment for the yellow IPM. The bakeout tripped due to a faulty gauge.

Following the completion of the IPM bakeout repair, beam operations proceeded in the blue ring, including tuning of the ATR line and decoupling work in RHIC. Near the end of the shift, a ramp to full energy was attempted. Beam survived only briefly at the beginning of the ramp.

Blue Ring setup continued for most of the day shift, yielding several successful ramps to 100 GeV with low intensity beam. BLIP ran for 11.91 hours.

In the early evening yellow was declared cold.

From Dewey Lederle:

The yellow ring cold wave has pushed through. Yellow sextant 4/5 has coolers that are still filling and temperature alarms that haven't cleared yet. We are still on schedule to have yellow ready tomorrow morning, if not sooner. The blue ring remains stable at operating temperature. There are no issues with the refrigerator at this time (11:43 am).

Both blue and yellow rings are stable at operating temperature. There are no issues with the refrigerator at this time (7:30 pm).

64 Sun 11 Mar 07

Work on RHIC beam development continued throughout the overnight shift without interruption. The early portion of this shift included work on tune feedback, while the remainder of the shift was devoted to ramp development and measurement of chromaticity.

During the day RHIC was open for Yellow vacuum (IPMs in sector 2) and PS work.

Beam development activities (beam-based alignment and tune feedback development) in blue resumed in the evening and continued into the night and early (Monday) morning. There were two beam-induced quenches

overnight.

65 Mon 12 Mar 07

Early in the morning carbon beam was set up for the start of the NSRL run. NSRL took carbon beam all day.

During the day RHIC was opened for vacuum, instrumentation, power supply, and experimental personnel.

Greg Marr did BTA foil studies.

By early evening blue and yellow power supplies were ramping to top field.

IPM bake-out and vacuum work was completed late in the evening and the rings were ready for beam by midnight.

66 Tue 13 Mar 07

In the wee hours circulating beam was established in yellow. Blue ramp development work was also done.

During the morning and afternoon hours machine setup in RHIC was delayed by RHIC power supply failures.

During the afternoon and evening RF capture was set up in yellow.

Instrumentation personnel set up the WCM, BPMs, Artus, and Dampers for the yellow ring.

NSRL took carbon beam all day.

67 Wed 14 Mar 07

In the wee and early morning hours sextupole polarity check data were taken in both blue and yellow, the yellow BBQ was setup, ramp development work was done, and the tunes and chromaticities were optimized at store. The orbits were checked at store and were found to have rms deviations under 0.5 mm.

Machine setup in RHIC continued during the day, interrupted by a lead flow interlock in sector two that was initiated by a communications glitch, and an access to repair a broken thermostat in an iceball heater.

Beam was back in blue around 1pm. The blue IPM channels were calibrated and the Blue IR bump application was checked. The signs of skew quad currents were verified. The sextupole polarity measurement data were processed; no wrong polarity was found.

Machine Setup in RHIC continued into the late afternoon and evening. Work was done on blue and yellow bunch injection timing, Yellow RF Loop closure, RHIC ring-to-ring synchro, and ramp development in both rings.

NSRL took carbon beam all day.

68 Thur 15 Mar 07

Ramp development took place in the wee and early morning hours. During this time the ramp efficiency was approximately 88%; beam on yellow ramps did not make it to flattop.

Durnig the day RHIC Setup continued, interrupted by a PHENIX flammable gas alarm and leak check. Todd did his beam based alignment measurements. After resolution of the gas leak one ramp was done with open loops. Some of the yellow beam survived and the yellow tunes and blue chromaticity were adjusted.

NSRL biology ran with carbon at 300 MeV per nucleon. Tandem then switched to silicon and Nick Kling and Keith Zeno worked on silicon setup in Booster for tomorrow.

During the evening the following was done (as per Joanne Beebe-Wang):

At Injection:

1. BBQ tuning (Pete, adp, Grag) with and without magnet loop (Al M.);
2. Decoupling phase measurement and phase tuning in both blue and yellow (Yun, Al);
3. Finished yellow sextuple polarity check (Yun);

On Ramp:

1. Blue ramp with tune feedback, decoupling feedback and flight recorder on;

2. Tested RampTuner and flight Recorder in Blue (Al);
3. Ready to try the playback on the next ramp (Al M.).
4. Ready to try BBQ tune feedback and coupling feedback in yellow (PC, Al M).

69 Fri 16 Mar 07

In the wee and early morning hours, a blue ramp with 95% efficiency was achieved (using ramp replay). A yellow ramp with 55% efficiency was also achieved (with tune feedback).

During the day, the STAR and PHENIX experimental magnets were unlocked and ramped to full current. Several successful ramps with the Ramp Replay option were executed, and the ramp from yesterday was run through the feed-forward process.

During the day (as per Angelika Drees):

Star and Phenix magnets were turned on this morning. (Thanks to some STAR problems with clixons and passwords it required an access and took over 2 hours in the end!) Injection was retuned. We addressed the following problems during the day:

Yellow radial shifts during the ramp. (Tom found a “bad” locking amplifier for ring2ring synchro.)

Yellow rampTuner was fixed.

The last 2 TF ramps in yellow were used for partial feedforward. We tried one ramp that likely had not enough intensity for the radial loop to work and failed. At the end of the shift we did another ramp using RePlay in Blue and chromaticity measurements in yellow with the Star and Phenix magnets ON. Both beams made it to flattop. Blue degraded from 95 to 77% and yellow improved from 50 to 70%. Yellow vertical orbit at store was corrected using Best Corrector from 3.5 mm to about 1 mm.

Dispersion data at store were taken and look reasonably good in both rings. Radial aperture in blue was greater than ± 2 mm and ± 1.3 mm in yellow.

NSRL Biology ran with silicon at 300, 600, and 850 MeV per nucleon.

During the evening (as per Mei Bai):

At the beginning of the shift, we did a feedforward ramp in blue. Even though the transmission efficiency was similar to the ramp with replay, the tunes were not flat at all. Since the blue transmission efficiency was above 80%, we demonstrated that we can ramp 23 bunches with $0.9e9$ ions per bunch. We didn't stay in this mode because we had to use wiggles in both ring to correct the Yellow chrom. For Yellow, after some confusion about the chromaticity ramp measurements, we finally made improvements with the transmission efficiency around transition.

70 Sat 17 Mar

During the wee hours (as per Yun Luo):

The goal of this shift was to find a “golden yellow ramp” to replay; the blue ramp was always replayed from the ramp fill 8278.

- 1) In the first try, we couldn't pass t200 with tune feedback.
- 2) Then, we measured the yellow chromaticities and made a lot of chromaticity changes before and after yellow transition.
- 3) After that, we had several ramps with tune feedback on. We couldn't reach the store, even had huge beam loss at the transition in two or three ramps.
- 4) In the last ramp in this shift, with tune feedback off, the yellow reached the store with 84.7% efficiency. The yellow Artus was on for this ramp.
- 5) For the current yellow ramp, before t140, the tune and skewQ settings were fed forward from one yellow ramp with tune feedback on. After t140, the tunes and skewQ settings are same as Mei's.
- 6) In the last ramp the replay from the blue “golden ramp” was strange. We saw the vertical tune too close to 0.2 before transition.

During the day (as per Vadim):

Main work on this shift was done on the orbit correction on the ramp for both rings. SVD method was used in the ramp stones where the orbit rms exceeded 1mm. Nikolay's calculation for tune shifts during the orbit correction was checked for the store correction and gave reasonable agreement with observed tune shifts. Ramp transmission efficiency in both rings were above 90% with ARTUS off. IR separation bumps have been reinstalled in all stones, including the store. Last half of the shift was affected by STAR magnet trips. Later on in the shift (when Al came to

help) the first successful ramp with Yellow tune feedback was accomplished (8302).

As per Lee Hammons:

RHIC setup progressed throughout much of the shift, focusing on orbit correction along with tune and chromaticity adjustment as well as tune feedback for the yellow ring. However, setup was hampered by a several trips of the STAR experimental magnet. On at least one occasion, fuses for the supplies also had to be replaced. After conferring with D. Phillips, CAS identified a faulty 24 V power supply for the STAR magnet PLC. As of the end of the shift, CAS is replacing the supply.

During the evening (as per Waldo):

Ramps were made with wiggles to measure chromaticity up the ramp; however, the data were not all that good. We got replaying working in yellow, and replayed ramps in blue. Al improved yellow transmission through transition by adjusting the coupling to remove the glitches in the skew quad settings at gamma3.

At the end of the shift, there seems to be a problem with the BBQ signals: somewhere in the system, things locked up. Travis says that the buttons got turned off last night.

Steve T. has fixed the bug in the RhicChromaticity program which prevented display of the dispersion.

STAR's magnets tripped several times during the day. CAS replaced a power supply for the STAR magnet interlock. Afterward the STAR magnets stayed on through the end of the shift.

71 Sun 18 Mar 07

During the wee hours (as per Todd Satogata):

This shift started with FEC problems in the feedback system. Al diagnosed these issues as an async cache corruption. One ramp, 8309, was performed with replay in blue, tune feedback in yellow, giving efficiencies of (84.0/54.8)% in blue/yellow rings. The yellow coupling loop opened and spoiled this ramp, but Pete got good high-loop-gain low-kicker-power data and believes that this is a new BBQ diagnostic. BBA data was taken at injection while Al diagnosed the coupling loop problems. Ramp 8310 tried replay in both rings, giving (95.6/55.8)% transmission. This store ended

when the beam apparently went unstable when Al accidentally turned on the tune feedback system. We have modified the tape sequence to prevent this in the future. The yellow BPMs were timed in at injection during an RF outage in the AGS. A final ramp, 8311, achieved (82.3/89.5)% transmission with Replay in Blue and feedback in yellow. At the end of the shift we are diagnosing possible sources of lower transmission.

As per Travis Shrey:

Ramp development with tune feedback and replay was the focus of the efforts. Downtime was due to time spent having to rewrite the ado code for the tune feedback system and a failure of the AGS RF cooling system. As of the end of the shift pump room personnel are in to repair the RF cooling system.

During the day (as per Lee Hammons):

Machine setup in RHIC was hampered by several interruptions in RHIC including a gas detector problem in the PHENIX IR as well as a problem with the yellow abort kicker. The gas detector problem required an access into the IR. CAS reported that no gas was found during the investigation, and C. Pearson supervised the recalibration of the detector heads in the IR. J. Mi was called in for the yellow abort kicker problem, and, as of the end of the shift, he is investigating the problem.

The shift began with a problem tower level transmitter for the AGS RF cooling system. Water group personnel were able to resolve this problem, and beam operations. Beam operations in the Booster and AGS were also briefly hampered by a beamstop reachback problem in TTB causing the 26DH2 magnet to trip to off. The power supply required a reset.

As per Joanne Beebe-Wang:

During this shift, the beam was available only for 3.5 hours. (repairing the pump room cooling problem till 10 am; PHENIX low-level gas investigation started 1:30 pm, now the beam is about to be back).

There were three ramps during the beam time:

- (1) Ramp with blue tune feed back and yellow playback. Blue ramp efficiency: 97.4%, Yellow ramp efficiency: 79.9% (with Artus and IPM on). Non-artus yellow bunches had about 91% transmission;
- (2) Ramp with reply in both rings. Done orbit corrections around yellow transition and measured yellow chrom. on the ramp;
- (3) Ramp with reply in both rings. Orbit correction again and chrom.

correction. Lost the yellow beam at the transition due to the large horizontal orbit excursion around transition;

(4) Orbit excursion correction around transition in yellow with Bend trim based on Vadim's suggestion, ready for the next ramp.

During the evening (as per Travis Shrey):

RHIC machine setup ran for 5.5 hours this shift. Work focussed on ramp development in yellow. Tandem is out of conditioned foils; when a foil change is required it will take approximately 20 minutes. U2 is currently functional on Table E with the tune quads and chrom sextupoles zeroed. The RHIC landau cavities were set up and turned on this morning. Zeno reports that the Booster skew quad and H & V chrom sextupole signals are not working through the mux. Snow and ice removal is also required at the 930A transformer yard and the loading dock for 929. The site supervisor has been notified. BLIP ran all shift.

As per Christoph Montag:

Had a couple of ramps during this shift. Blue looks very good, but couldn't find the right handle to improve Yellow, which still loses about 20 percent at transition. Had to revert Yellow to ramp 8311 towards the end of the shift to eliminate changes made based on faulty BPM readings. Ramped 37 bunches in Blue; this seemed to cause our familiar instability after transition, though octupoles are on and chromaticity is far from zero. Cogged this with 6 bunches in Yellow, and removed separation bumps. No ZDC rates though, so we put the bumps back in and returned to ramp development.

72 Mon 19 Mar 07

During the wee hours (as per Jorg Kewisch):

We have achieved transmission with 36 x 36 bunches with efficiencies of 94.8% (in yellow) and 97% (in blue). We reverted to ramp 8300, used the sextupole settings of ramp 8325, did an orbit correction up the ramp and adjusted the qgt-quadrupoles in yellow to minimize the tune jump.

During the day (as per Mei Bai):

This shift only had beam until a little after lunch time. We inherited a store from previous shift and fixed the yellow lifetime by some tune/chrom changes. RF then started storage cavity setup. The store was terminated

by permit pull when they tried to rebucket. A 6x6 bunch was ramped to the store although yellow was lost short after it reached top due to some unknown instability. Nikolay, Steve and Yun managed to get chromaticity data for offline model with blue beam only. They killed the beam also at the end of their data taking. Sweep in 10a was blown off at the same time blue beam was lost and we are still in the state waiting for beam to come back. Both STAR and PHENIX got the access.

During the evening (as per S.Y. Zhang):

- 1) RF rebucketing is done, but needs fine tuning tomorrow.
- 2) We had a 37 x 37 ramp with injected bunch intensity of $1e9$. Todd did DX BPM timing and tuned for collisions. Both STAR and PHENIX ZDC coincident rates are 2.6 kHz.
- 3) Keith had AGS CBM intensity greater than $5.8e9$. We tried another 37 x 37 ramp with injected bunch intensity of $1.2e9$. Coherence and possible lack of separation bump caused large beam loss at the end of the injection.

As per Lee Hammons:

Beam operations proceeded during this shift and collisions in RHIC were achieved. Operations were hampered by access control problems that arose during the previous shift and required that the 10 o'clock sector be reswept. In addition, AGS substation 2F was taken offline due to the discovery of an electrical hazard that required remediation. This required that the AGS RF system be turned off as a protective measure. Taking the substation offline also caused several power supplies in the U-line to trip, and both CAS and D. Bruno assisted in restoring the power supplies to operation. Following restoration of beam to RHIC, setup of rebucketing proceeded, followed by coggng and steering beam into collisions at full energy.

73 Tue 20 Mar 07

During the wee hours (as per Vadim):

- 1) Yellow radius excursion at the transition was reduced as well as orbit rms in that region.
- 2) Separation bumps were restored in Yellow on second part of the ramp.
- 3) One magnet real quench happened, though no beam losses seems to precede the beam abort.

4) At the store chromaticity adjustment was done using BTF.

During the day (as per Nick Kling):

Machine setup in RHIC ran with a 6x6 bunch store for the first 2.5 hours of the shift. Setup efforts were thwarted for the remaining 4.5 hours of the shift by what has turned out to be a problem with the Yellow injection kicker. It is not yet known exactly what the problem is with the kicker and the investigations are ongoing. NSRL ran with silicon for Biology and Physics for 4 hours. The program was interrupted for a total for 40 minutes due to degraded machine performance which required dedicated tuning time. Blip ran for all 7 hours of the shift.

During the evening (as per Jenn Niedziela):

RHIC setup was delayed this shift by a mechanical failure of the RHIC yellow injection kicker. NSRL ran silicon beam from MP6 for 4.5 hours. As of the end of the shift, gold beam is being provided by Tandem from MP6, and MP7 is in conditioning mode. Behind the yellow injection kicker repair, work on blue rebucketing, swapping of amplitude and phase modulators in the Blue ring, and Blue orbit response matrix work was done. BLIP ran for eight hours, impacted slightly by the start of setup for NSRL proton running.

As per Yun Luo:

- 1) The beam and yellow transmission efficiencies were verified with 6 bunch ramps. The yellow beam was back around 10pm.
- 2) RF people did blue rebucketing fine tuning in the beginning of this shift.
- 3) Yun, Jen and pc measured Blue chromaticities at store. The 8 sextupole family correction was tested. It gave much smaller second order chroms than that from 2 family correction scheme.
- 4) Todd and Jen took some ORM data with blue beam at store. They suffered bad beam lifetime during this process.
- 5) Nikolay was checking linear and nonlinear chrom calculation model since we found the chrom differences from the setting and from the measurements didn't agree.
- 6) Angelika is currently using the 37 x 6 bunches at store for collimation and gap cleaning.

74 Wed 21 Mar 07

During the wee hours (as per Joanne Beebe-Wang):

- 1) Inherited a 37 x 6 store at the beginning of the shift. Finished collimators set up and gap cleaning test (kad).
- 2) Injection tuning and ramping with 37 x 37 bunches (0.5e-9/bunch). The ramp was with replay in Blue and no replay in Yellow; Artus and IPM on in both rings. Blue ramp efficiency: 94.6%, Yellow ramp efficiency: 95.2%. Seeing collisions by 2:30am.
- 3) Did collimation, gap cleaning and steering for PHENIX and STAR. Moved Blue tunes a bit to improve lifetime. We handed the colliding beams to PHENIX and STAR by 3am.
- 4) Steering and DX BPM timing in IR2. Got the beam in collision in BRAHMS by 4am (TJS).
- 5) The same store continues.

During the day (as per Nick Kling):

The RHIC experimenters utilized a 37x37 bunch store for experimenter setup during the first three hours of the shift. The next three hours of the shift was used for further setup of collimation and rebucketing in RHIC. For the final hour, setup was off while a smoke alarm in the STAR detector was being addressed. The NSRL physics program utilized 1GeV proton beam from the LINAC for the final hour of the shift. The remainder of the shift was spent setting up the proton beam and addressing a problem with the LTB QH5 power supply tripping on over-temperature faults. Pump room personnel will repair this problem after the NSRL run wraps up for the day. BLIP ran for 4.79 hours. The BLIP program was interrupted by the HEBT area access for the LTB QH5 investigation.

As per Angelika Drees:

This shift took over an overnight store for exp. with 37x37. At the end of that store we looked at/debugged collimation system and rebucketed yellow (unfortunately w/o instrumentation). After that we filled 6x6 (w/o landay cavities and shifted yellow transition by 0.2 s). We lost it at store due to chromaticity measurements in both rings. A (false) fire alarm in STAR killed most of the afternoon. At the end of the shift we ramped another 6x6 fill. Yun is working on chromaticity measurements and Mike is in stdb for rebucketing. We found the problem with the collimator

equipment and are in the process of fixing it. That has to be completed before I can try to setup collimators again.

During the afternoon and evening (as per Jen Niedziela):

RHIC setup ran this shift, impacted by an AGS access to repair a broken air hose to a box valve, and failure of a network switch. NSRL ran biology with protons from the LINAC for 5 hours, impacted by intensity, and a module six pulsing trip. BLIP ran for 9 hours. Delivery of gold was switched from MP6 back to MP7.

75 Thur 22 Mar 07

During the wee hours (as per Brian van Kuik):

Machine Setup ran at the beginning of the shift. A 6x6 bunch ramp was done to test chromaticity changes up the ramp. Afterwards a 37x37 bunch ramp was put up for Experimenter Setup which ran for the remaining 6.7 hours of this shift. BLIP ran for 7.8 hours.

During the day (as per Nick Kling):

RHIC experimenter setup ran for three hours of the shift utilizing a 37x37 bunch fill from the previous shift. Following this machine setup progressed for the next 5 hours and 45 minutes with only minor interruptions. Setup was halted for the final three hours of the shift due to a failure of the b4-q89 power supply in RHIC. The failed supply has since been repaired and Machine setup should resume soon after the start of the next shift. NSRL Biology ran with protons from LINAC for 4 hours. 600MeV Protons for tomorrow were set up following a long break for LTB QH5 magnet acid flushing. Blip ran for 8.48 hours. The program was interrupted by the repairs to the LTB QH5 magnet.

76 Fri 23 Mar 07

During the wee hours (as per Jen Niedziela):

Experimenter setup in RHIC was hobbled this shift by a timing change in the RHIC blue ring which shifted the PHENIX vertex by 8 ns; STAR was still able to take data. As of the end of the shift, the issue has been remedied, and we are ramping a new store for experimenter setup.

During the day (as per Nick Kling):

As of 8 am PHENIX reports that their vertex is still off by 1 ns. This is an improvement but the problem is not completely fixed. We will collimate the beams and use this store for experimenter setup. The Rf group will require additional time to investigate this issue at a future time.

RHIC ran for experimenter setup for 2 hours and machine setup for 7 hours of this shift. Operations were held up for 2 hours due to a failure of power supply b12-q89. NSRL physics ran with 250 MeV protons from LINAC for 8 hours and 15 minutes. After a slow startup there were no interruptions in the program. As of the end of the shift NSRL has been set up for 1 GeV protons for Monday's Biology user. BLIP ran for 11.36 hours.

During the evening (as per Todd Satogata):

The shift started with quench recovery and RF setup, checking rebucketing and cavity phasing with a 6-bunch ramp (8374) of 99% efficiency in blue and 88% efficiency in yellow. Another 6-bunch ramp confirmed good rebucketing, but with high beam decay after rebucketing. This store was dumped immediately for new PLC code to make storage cavities immune to vacuum pressure rise at transition. A QLI occurred when magnets started ramping down. A 48-bunch ramp (8376) worked for RF storage cavity testing, but had only 51% blue transmission, with most losses before transition. Rebucketing was still good. Rates were very low, and STAR had rates consistent with no collisions. Another 48-bunch ramp (8377) had large yellow losses before transition and tripped BLMs near the end of the ramp, as well as produced 90% blam alarms. A 6-bunch ramp (8378) at the end of the shift had 52% yellow transmission, and large losses before transition. Best corrector orbit correction was performed in yellow; blue beam decay after rebucketing was very low, but yellow was very high (> 100%).

Late Friday early Saturday (as per Brian van Kuik):

Experimenter Setup ran for 2.7 hours with 7.7 hours of Machine Setup. The Machine Setup time was spent on ramp development and preparing ramps for Experimenter Setup. The remainder of the time was spent in downtime; recovering from two blue ring quench link interlocks and a 90% BLAM alarm. BLIP ran all shift.

77 Sat 24 Mar 07

During the wee hours BBQ was found to be blowing up the beam.

As per Pete Cameron:

Regarding earlier comments of BBQ blowing up the beam during ramping—BBQ was left with kickers OFF yesterday evening. The BTF app restores BBQ kickers to the state they were in before the BTF was taken, so running it would not have resulted in kickers being on during ramping. Someone turned BBQ on using one of Jen's tape scripts, and did not turn it back off? Jen and I discussed how to deal with this potential problem late on Thursday night, don't think we came to any resolution. For now if someone turns on BBQ they have to remember to turn it off when they're done with it. I am also very surprised that it could cause the beam loss seen during ramping, unless the kicker strengths requested in the tape scripts were modified. We have been running BBQ for weeks now on ramps without this sort of problem.

During the day (as per Jim Jamilkowski):

The RHIC store from the previous shift continued for an additional 3.13 hours, after which work progressed on tuning the Yellow ramp and store configuration after rebucketing. On two occasions, emergency access was required in response to smoke alarms in the RHIC tunnel at 1005. The second trip was traced to the smoke detector above the RHIC storage RF cavities. While replacing the detector, it was noted that debris had accumulated inside its head. Power supply b12-q89 caused a Blue QLI after a DC overcurrent trip. After Brian Karpin adjusted the trip threshold, the supply successfully traversed a hysteresis ramp. RHIC injection is about to resume as of the end of the shift.

Accesses were granted for STAR and PHENIX today. However, the planned access for the Monopole experiment did not occur due to lack of advanced warning to arrange the required tasks.

Re-bucketing work (as per Mike Brennan):

If we have another test ramp it would be helpful to perform rebucketing but the storage cavities NOT enabled. It will blow up the bunches because the acceleration cavities will do their gymnastic but the storage cavities will not capture the shortened bunch. The purpose is to find the best timing for when the storage cavities should be switched on, ie: when the bunches get to their shortest length. If this is to be done please contact

John Butler to find out the correct way to make sure the storage cavities do not come on but the acceleration cavities do exactly their same gymnastic. For good rebucketing we need bunch lengths less and 6 ns (5 would be nice). Good injection matching is important. I've seen bunches as low a 8 ns at injection. And prompt rebucketing is also important. The bunch grows significantly between the end of the ramp and rebucketing.

Angelika Drees just before midnight:

I think we're almost there. If rebucketing works and auto-cogging does too and Mei got good lifetime—we should be able to deliver collisions with storage cavities on. Did Mike get his data?

78 Sun 25 Mar 07

Late Saturday and early Friday morning (as per Brian van Kuik):

RHIC had problems all shift. The majority of the downtime was with the b12-q89 power supply failing at flattop. D. Bruno, J. Wilke, and CAS have been working on it most of the night. The power supply has been replaced twice this shift with CAS swapping out the supply first and then Don and Jeff replacing it a second time. There was 5.2 hours of Machine Setup. As of the end of shift, Don and Jeff are working to replace the b12-q89 power supply. BLIP ran all shift.

During the day (as per Nick Kling):

Replacement of the b12-q89 power supply in RHIC continues from the previous shift. D. Bruno and J. Wilke are replacing the the bi-polar power supply previously used for this element with a uni-polar supply capable of higher operating currents. Tandem is using this time to condition foils. BLIP is running.

D. Bruno reports that it will likely be a 1-2 hours more more to install the b12-q89 supply followed by some additional time setting up the new supply. In light of this we have contacted V. Dzhodzhadze to begin getting ready for the requested access for the Monopole experiment. Vasily is contacting D. Phillips for assistance.

09:15 C. Bloxon and L. Arnold are coming in to set up the dewar for the monopole experiment.

10:00 C. Bloxon and L. Arnold have arrived.

10:20 The IR2 access is underway.

The experiments have been notified of the availability of RHIC accesses. STAR has taken us up on the offer and are going in. PHENIX did not wish to enter the IR at this time.

During the day (as per Nick Kling):

The first seven hours of the shift were spent finalizing the replacement of the b12-q89 power supply. The regular bipolar supply used for the q89 supplies was replaced with a unipolar supply capable of operating at higher currents. This repair was prolonged a stuck switch on the Blue Main Quad flattop supply breaker. Once the repairs were finalized we were able to successfully perform 6x6 and 37x37 bunch ramps for machine setup activities. The above mentioned 37x37 bunch fill was lost due to a loss monitor interlock in the Yellow ring. This beam abort caused a quench link interlock that has just been recovered from as of shifts end. BLIP ran for 10.96 hours of the 11 hour shift.

During the evening (as per Brian van Kuik):

RHIC ran in Experimenter Setup for 3.25 hours this shift with 1.83 hours of Machine Setup to prepare beam for stores. A false Fire Alarm at 4z1 was the only source of downtime. The store that was in RHIC was dumped just before the alarm. BLIP ran all shift.

79 Mon 26 Mar 07

During the wee hours (as per Jen Niedziela):

Experimenter setup in RHIC ran for 6.3 hours this shift, in spite of periodic beam decay spikes in both rings. BLIP ran all shift.

During the day (as per Jim Jamilkowski):

The store from the previous shift continued for 3.0 hours, and was followed by vacuum scrubbing efforts in Blue and Yellow with high intensity beam. During a subsequent RHIC Ring access, the problem smoke detector in 4 o'clock was replaced with a photo-detector, J. Butler and D. Goldberg cycled the QEI power for cavity X4, and PHENIX and STAR made Ring entries. As of the end of the shift, a 4z1 sweep is underway while the STAR access continues. NSRL ran physics experiments for 3.9 hours using 1 GeV protons. BLIP ran for 6.88 hours.

During the evening (as per Nick Kling):

Physics was declared for the first time this run at 21:00 and ran for the final two hours of the shift. Behind this physics store the AGS ring is being accessed in order to repair the A10 upstream vacuum valve box. NSRL ran 1GeV protons for the first 3 hours of the shift. Blip ran for all 9 hours of the shift without interruption.

80 Tue 27 Mar 07

During the wee hours (as per Jen Niedziela):

RHIC physics with 51 and 56 bunch ramps ran for 6.5 hours this shift. The first store ended after a slight extension due to a trip of the Booster Main Magnet Power Supply, and the second continues in the machine as of the store end. BLIP ran all shift.

During the day (as per Jim Jamilkowski):

Physics continued from the previous shift for 3.57 hours, followed by 3.35 hours of development for RHIC collimator settings adjustments and BBLR testing. NSRL radiobiology experiments ran for 3.85 hours using 250 MeV proton beam. BLIP ran for 6.37 hours. M. Bannon reports that the water flow interlock on the AGS I10 snake magnet has been jumpered out. The power supply is now ready for operations.

During the evening (as per Nick Kling):

Physics in RHIC ran for 4 hours on one 56x56 bunch store. Attempts to get to physics were delayed by A/C problems in building 1000P that prevented the turning on of the X and Y arc power supplies. Shortly after dumping this physics store, there arose a problem with the access controls system in the YZ1 zone. As of the end of the shift technicians are in route to repair this problem. NSRL biology used proton beam from LINAC for the first 1.5 hours of the shift. After Biology runs were complete, NSRL setup ran for most of the remainder of the shift. BLIP ran throughout the shift without interruptions.

81 Wed 28 Mar 07

During the wee hours (as per Jen Niedziela):

RHIC physics ran for 2.85 hours this shift, interrupted by an hour wait for a BLAM alarm clearance, problem with RHIC orbit correction, and a

PASS system failure in ATR. As of the end of the shift, the physics store continues, and scheduled maintenance activities have begun. CA LOTO has been applied to the AGS, and Booster RA LOTO is being applied.

BLIP ran for 6.93 hours, down due to a pulsing trip in mod 5, that ultimately required the LINAC personnel to come in and affect a repair.

During the day (as per Jim Jamilkowski):

Physics continued for 0.5 hours, after which scheduled maintenance ran for the rest of the shift.

During the evening (as per Nick Kling):

Efforts are still underway to return to physics running in RHIC. There is what seems to be either an Rf or optics problem that is preventing what causing poor beam injection into RHIC and rapid de-bunching of the what beam does manage to get into the machine. The injectors appear to be back to their nominal running conditions. Blip ran for 8.7 hours of the shift.

As per Todd Satogata:

The shift started with maintenance recovery. Beam returned to RHIC at 19:50. AGS extraction issues were resolved by gjm with combinations of G10/H10 tuning bi9-tq4 had a setpoint, but the reference and current were zero. This was eventually traced to the voltage reference card, and we ramped to zero, replaced this card, and performed a hysteresis ramp. Recovery was slightly hampered because the local/remote switch on the card was mislabeled. There were apparent RHIC cogging issues, as we could only inject into bucket 1. This was apparently resolved by the RF group in 1004, though no clear root cause was found. Strong yellow debunching at injection was cured with chromaticity adjustments, after RF was checked for noise and proper phasing. The yellow vertical injection damper was reversed by Rob, after cables were switched on one of its input BPMs during the maintenance day. While preparing for a 6-bunch test ramp, a QLI occurred driven by b12-q89. Recovery from this QLI extended well into the next shift.

82 Thur 29 Mar 07

During the wee hours (as per Jen Niedziela):

Machine setup in RHIC ran for 2 hours this shift after maintenance day

activity, interrupted by replacement of the b12-q89 power supply, and two quench link interlocks. BLIP ran for 7.89 hours, interrupted intermittently by a high temperature indication.

As per Todd Satogata:

The shift started with recovery from a b12-q89 failure. We recovered from this at 04:10, only to suffer another QLI from the blue mains at the start of a hysteresis ramp. We encountered a ground current warning in the yellow main dipoles when performing quench recovery. Carl Schultheiss found nothing wrong, and we recovered again. After a brief ATR PASS trip, we performed a 6-bunch ramp (8414) with good transmission, clogged manually, zeroed the autocogging lock-in amps, and checked beam decay rates. We forgot to rebucket before dumping for a physics store. Another ramp followed (8415) with 61x61 bunches. This ramp rebucketed well, and beam decay was excellent after best corrector orbit correction at flattop. There was a hit to yellow beam intensity during gap cleaner turn-on (06:57 entry). Rates were optimized to 12 kHz, and physics ran for approximately 55 seconds before another blue QLI, apparently driven by b12-q89 again. At end of shift we are ramping down for recovery

During the day (as per Jim Jamilkowski):

A physics store ran for one minute this morning before the b12-q89 power supply tripped. After the supply was swapped out once, a six bunch ramp was successful using the new ramp Au72 (modified beta star at IR12). This store also ended prematurely when b12-q89 had a circuit breaker trip. Another Dynapower unipolar supply was then installed, which exhibited the same trip behavior. As of the end of the shift, G. Heppner, F. Orsatti, M. De La Vergne, W. Louie, and C. Schultheiss are attempting to ascertain the cause of the breaker trips. NSRL radiobiology experiments ran for 6.45 hours using 500 MeV proton beam, after which 1 GeV proton extraction was configured. BLIP ran for 11.18 hours.

L. Hoff and T. D'ottavio have implemented a fix for a Quench Recovery bug that was causing the Reset Aux Circuits steps to fail in the TAPE sequence, though they have not had a chance to test it. If the standard version of the sequence fails, an alternate version of the sequence has also been created.

The iris scan logs for PHENIX and STAR stopped displaying current activity this afternoon during the access. This should be investigated during the day tomorrow.

During the evening and overnight hours (as per Nick Kling):

RHIC physics ran for the final 1.3 hours of the shift on one less than optimal store. This lone physics store was crippled by massive debunching in both rings shortly after rebucketing. The return to physics was delayed by ongoing repair work to the b12-q89 power supply and then further by noise in the YA1 Rf cavity that caused several hours of frustration in setting up injection and store in the Yellow ring. Blip ran for 12 hours.

G. Heppner reports that the latest test of b12-q89 failed after 25 minutes. They suspect there could be a thermal problem with the breaker for this supply. While they are looking into the ratings for this breaker they are trying out another spare supply.

It appears the problems with B12-q89 were caused by insufficient cooling of the power supply. With additional fans cooling the supply they were able to keep the supply on a current for 50 minutes without any issues. The power supply group is unlocking the main power supplies and we will attempt to restore the quench links.

As per Don Bruno:

22:15 Update on b12-q89-ps problem. Wing, Carl, Gregg, Mitch and Fred have been working on the problem with the circuit breaker tripping on the unipolar b12-q89. They have found that this spare unipolar supply gets much hotter than the originals we ordered. Because they get so hotter this causes the circuit breaker to trip. They have added fans to the p.s. to keep the air moving and that has reduced the circuit breaker temperature.

It seems like the manufacturer of these unipolar supplies may have changed the air flow in the spare units causing them to get hotter. We do have one unipolar ps spare from the original order however. We believe this ps was built with the proper air flow.

Our plan is to let the unipolar b12-q89 p.s in the rack run through the night with the fans. Tomorrow morning we will test the unipolar spare we have, which is the same as the unipolar supplies in the service building. We will also make sure we have a bipolar 300A unit tested and ready. Once we have these 2 units ready we can discuss if we should re-install a unipoar unit which we feel is built with the proper air flow or a bipolar unit that is has been repaired and tested. These probably won't be ready until sometime in the afternoon because of the thermal testing we want to do on them.

We will also monitor the temperature of the circuit breaker on the ps in the

rack and see how hot it is getting. The new running current is -264amps instead of -295amps so this will help reduce the heat on the circuit breaker.

These guys did a really nice job figuring out why the circuit breaker was tripping. I really appreciate it. Gregg is in the process of trying to bring up the links and then he will hand it over to mcr so they can do a hysteresis ramp.

83 Fri 30 Mar 07

During the day (as per Jim Jamilkowski):

The physics store from the previous shift continued for another 2.92 hours, and was aborted by beam losses caused by a trip of trim quad power supply bi1-tq6. The power supply had its current regulator card replaced and ultimately was itself replaced. A second and third store was used for development, including re-phasing of the RHIC storage RF cavities. The third store was aborted due to a breaker trip of bi12-q89, which now has a portable A/C unit cooling it continuously. In the midst of a subsequent RHIC access, a power dip brought down various systems around the complex. As of the end of the shift, beam has been injected into RHIC and efforts are concentrated on restoring the STAR magnet power supplies to operation. NSRL radiobiology and physics experiments ran for 9.03 hours using 1 GeV proton beam. BLIP ran all shift.

A new version of the Quench Recovery TAPE sequence was tested successfully today by T. D'ottavio and J. Morris.

During the evening and overnight hours (as per Jen Niedziela):

Physics ran for 1.68 hours in RHIC this shift, after work to restore the STAR power supplies after a power dip earlier today, a lead flow interlock, and work to troubleshoot multiple quench link interlocks in the blue ring. As of the end of the shift, a physics store is in the machine.

NSRL ran 1 GeV protons, and 250 MeV protons for 4 hours of biology this shift. As of the end of the shift, the 1 GeV proton settings are being returned for documentation. BLIP ran all shift, interrupted only briefly by 3 trips of the mod 4 pulser.

84 Sat 31 Mar 07

During the day (as per Brian van Kuik):

Physics ran in RHIC for 9.7 hours between two stores this shift. There were 1.8 hours of Machine Setup to refill RHIC and 0.2 hours of Experimenter Setup to allow Star access into their IR at the end of the first store.

BLIP ran all shift.

During the evening and overnight (as per Jen Niedziela):

Physics in RHIC ran for 6 hours this shift between 3 stores, with downtime due to two instances of lead flow interlocks requiring access to the RHIC ring, and diagnostic work on the blue main dipole ramping circuits. BLIP ran for 10.68 hours, interrupted by a low resistivity indication in the cooling system for the LINAC that tripped off most of the pulsers.

19:00 RHIC physics running. A 68x68 bunch store continues in the machine from the last shift. BLIP is running. The active supercycle is A, with the 4 second rep rate. Mike Brennan is in 1004 waiting for the store end so that he may test the stochastic cooling system.

19:10 Physics off. Beam is aborted when a loss monitor interlocks after several power supplies go off on lead flow interlocks. Cryo personnel need to access the ring to adjust a valve. Preparing for the access.

22:18 Quench link interlock in the blue ring. The signature of the quench is similar to that observed on quench link interlocks of the previous days, where the blue main dipole oscillates before the quench event.

85 Sun 1 Apr 07

During the day (as per Brian van Kuik):

Physics ran in RHIC for 5.75 hours this shift between two stores with 4.37 hours of Machine Setup. The first two attempts to put up a store this shift failed. The first one was lost when greater than 50 percent of the beam debunched shortly after rebucketing. The second ramp attempt failed near the beginning of the ramp when the Blue Ring quench link interlocked due to the main dipole power supply. As of the end of shift, Physics continues to run. BLIP ran all shift. Tandem has been working this shift to set up Iron for NSRL.

During the evening (as per Travis Shrey):

Physics ran for 3.7 hours this shift in two stores. The first was dumped by MCR after a normal lifetime, the second continues in the machine. BLIP ran all shift. Note to Operations: AGS RF station KL has a significantly different function than the rest of the stations in the AGS ring. Do not load the same RF function to all the stations.

86 Mon 2 Apr 07

During the early morning (as per Nick Kling):

RHIC ran physics for 3 hours and 50 minutes over two stores. A quench link interlock while ramping delayed the program for two hours while we waited for cryo recover. 1 GeV Iron beam was set up in the Booster and transported down the NSRL line. Blip ran for all seven hours of the shift.

During the day (as per Brian van Kuik):

Physics ran for 5.6 hours this shift with 1.4 hours of Machine Setup. NSRL ran for 1.6 hours this shift with 2 hours of Machine Setup. NSRL was turned off around 1200 to switch the Injectors to Gold running. BLIP ran all shift.

During the evening (as per Jim Jamilkowski):

Between two stores, RHIC physics ran for 4.4 hours. The second store was delayed by a blown fuse on the charging supply for Tandem MP7. NSRL physics and radiobiology experiments ran for 5.92 hours using 1 GeV Fe beam. BLIP ran all shift.

Note to Operations: - The GPM AllExpBkgdFy07.mon has been updated so that the PHENIX signals have the collision component subtracted out. Optimal PHENIX rates are 0 Hz, but up to 10 kHz is acceptable.

87 Tue 3 Apr 07

During the early morning hours (as per Nick Kling):

Physics ran for the first 2 hours and 16 minutes of the shift. This lone successful store was interrupted by a loss monitor interlock caused by a Blue corrector supply ramping to an incorrect value because of a corrupted wfg. Two subsequent ramp attempts were thwarted soon after rebucketing by a lurch in the voltage of the Yellow storage cavity YS2 which caused an

almost total debunching of the Yellow ring. As expected the disposal of this unbunched beam from the Yellow ring caused two beam induced quench link interlocks. To compound matters more, the Blue ring suffered quench link interlocks on both of the hysteresis ramps that followed the Yellow beam induced quench link interlocks. As of the shift's end C. Schultheiss is investigating the Blue ring QLI's on hysteresis ramps and J. Butler is in to look into why YS2 has been malfunctioning. NSRL ran Biology for the first 2 hours of the shift. BLIP ran throughout the shift without interruptions.

During the day (as per Lee Hammons):

Work continued throughout the entire shift to correct problems in both the blue RHIC main magnet system as well as the RHIC yellow RF system to resolve issues that contributed to repeated instances of beam loss and quench link interlocks in the previous shifts. C. Schultheiss and F. Orsatti swapped voltage and subharmonic isolator boards for the power supplies in 1004B for yellow and blue rings in an attempt to address the problem of repeated blue QLIs. However, these efforts were unsuccessful, and, as of the end of the shift, Carl and power supply personnel are work to check, clean, and reseal all connections in for the blue main dipoles. He has projected that the work will require 3-4 hours.

In addition, RHIC RF problems appear to be tied to a 120 Hz ripple in the line power to the cavities. T. Nehring has been contacted to assist in the diagnosis, and, as of the end of the shift, RF personnel are working to diagnose the problem. They have provided no estimate.

During the RHIC diagnosis, 1 GeV iron beam was delivered to NSRL to allow A. Rusek to make physics measurements. This effort was hampered by several trips of the Booster main magnet power supply. R. Bonati was called to assist, and, after reloading Booster main magnet functions, he indicates that the main magnet stations appear to be stable, and he should be paged should the main magnet trip again.

During the evening (as per Jim Jamilkowski):

RHIC remained off almost the entire shift for b-dmain troubleshooting and a temporary fix for the Yellow storage RF noise problem. As of the end of the shift, we are preparing to inject into RHIC. K. L. Zeno set up a Booster injection and acceleration of polarized proton beam on user 4. NSRL ran for 3.97 hours using 1 GeV Fe beam. BLIP ran all shift.

88 Wed 4 Apr 07

During the early morning hours (as per Nick Kling):

RHIC Physics ran for only 1.5 hours on one less than optimal store. In total there were three physics ramp attempts on this shift. All three attempts suffered considerable Yellow losses at transition but did survive to flattop. The first store attempt was dumped manually because the events that control the Rf storage cavity dampers were not properly configured and re-bucketing could not take place. The second attempt survived at store for almost 2 hours before a corrector power supply in Yellow tripped due to what we believe was a corrupted wfg. This trip caused a loss monitor interlock and a beam induced quench link interlock of the Yellow ring. The final store attempt was taken down by a RHIC chipmunk interlock after heavy Blue losses were encountered during collimation. APEX progressed without major interruptions for the final two hours of the shift. Blip ran for all 8 hours of the shift.

During the day (as per Lee Hammons):

Accelerator physics experiments proceeded throughout a portion of the shift but were severely hampered by assorted power supply problems resulting in several quench link interlocks originating at both the 2 o'clock and the 12 o'clock sectors in RHIC. The first of these QLIs came from the 2 o'clock sector. After diagnosis, recovery was attempted but was also hampered by another QLI from the 12 o'clock sector. This, in turn was followed by a third quench link interlock from the same sector during recovery. G. Heppner assisted in the effort to restore operations, and he reported finding loose connections that were repaired. Both a hysteresis ramp and a normal ramp without beam followed recovery in order to provide power supply performance data to C. Schultheiss for analysis. In the meantime, beam experiments at injection proceeded.

After his analysis, C. Schultheiss indicated that diagnostic instrumentation that had been installed yesterday was a likely contributor to poor ramp performance in RHIC, and magnets were ramped down to zero in order to allow this instrumentation to be removed. A hysteresis ramp followed, but also resulted in a quench originating in bo2-q89. As of the end of the shift, D. Bruno is replacing this power supply.

We also encountered a difficulty with the AGS IPM that appears to be correlated to pressure spikes in the E-superperiod in the AGS. S. Jao reports that a vacuum pump had tripped, and the pump was restored.

However, the IPM has been left off.

In addition, some setup work was completed for polarized proton running in the AGS. LOTO was removed for the E17 quad, and P. Rosas completed some testing this morning. This work will continue tomorrow.

During the evening (as per Jim Jamilkowski):

APEX ran for 1.08 hours after which C. Schultheiss and F. Orsatti completed reverting the isolation amplifier cards for the Main Dipole power supplies to their original configuration. Subsequent ramps suggest that this change has cleared a beam loss problem at transition in Yellow. The remainder of the shift was spent in tuning the ramp and store conditions in preparation for physics. R. Michnoff is currently being consulted regarding problems with the Blue injection dampers that have recently appeared. NSRL remained off all shift for RHIC setup, and BLIP ran for 9.0 hours.

The incorrect RHIC RF damper control event settings that caused one ramp to fail last night were traced to a bug in pet. Sending archived settings from the buffer would result in corrupted values being loaded to the damper event list. A new version of pet has been released today to correct the problem.

89 Thur 5 Apr 07

During the early morning hours (as per Nick Kling):

Physics ran for just over 5 hours over the course of two RHIC stores. There were slight delays injecting and dumping the first store due to a problem with the Controls Name Server. The second fill attempt was delayed for 20 minutes due to a degradation of the injectors that Operations is still investigating as of shifts end. After many hours of waiting for RHIC, NSRL Biology was able to complete the scheduled experiments behind the first physics store with only minor interruptions. Blip ran through out the shift and was interrupted briefly by two trips of LINAC mod 4.

During the day (as per Lee Hammons):

RHIC physics continued for 10 hours during this shift over two stores. The first store of the shift was extended to allow completion of the PASS software implementation and validation that was required to begin NSRL exclusive operation. This implementation and validation were completed successfully, and as of the end of the shift NSRL is running in the exclusive

mode. At the end of the store, A. Drees adjusted the collimators and G. Marr rearranged the end of the Up sequence to provide for best corrector correction, auto-lisa steering, collimation, and then gap cleaning.

A second store was successfully begun at midday and continues as of the end of the shift. During this store, the AGS IPM problems from the previous shifts were addressed and the IPM has been restored to operation. In addition, J. Butler restored the X3 cavity to operation. Finally, J. Niedziela has successfully tested mode switching sequences.

BLIP ran for 11.82 hours during the period.

During the evening and overnight hours (as per Jim Jamilkowski):

RHIC physics ran for 10.12 hours between two stores. NSRL radiobiology (600 MeV) and physics (1 GeV) ran for a total of 6.65 hours. BLIP ran for 11.7 hours.

The Yellow left stochastic cooling pickup does not indicate that it is at home when it is fully retracted.

Each time the TTB beamstops were closed tonight as part of the NSRL Target Room access procedure in exclusive mode, a reachback would occur to 26DH2. The Access Controls Group should be contacted to burnish the necessary relay contacts behind a RHIC store on Friday morning so that the beamstops can be used for accesses on Friday night.

A failsafe interlock occurred for chipmunk NM216 (Thompson Rd at Y line) on Thursday evening, after which W. Lamar came in to swap it out. Since then, another failsafe interlock has occurred.

90 Fri 6 Apr 07

During the day (as per Lee Hammons): Physics in RHIC ran for 9.53 hours this shift. Attempts to set up the AGS for user 4 were called off when the extent of the RF cavity conditioning was realized. NSRL ran 1 GeV and 600 MeV iron for 1.62 hours. BLIP ran all shift.

During the evening and overnight hours (as per Nick Kling):

RHIC physics ran for 7.62 hours over two physics stores. Behind these stores there were three separate chipmunk failures, all occurring on ATR berms. As of the end of the shift there is a 93x93 bunch fill at store. This store will not likely last the full 6 hours as the YA1 cavity tripped during re-bucketing and caused substantial losses in the Yellow ring. This cavity

had also tripped on the previous store but with less drastic consequences. Rf personnel are currently on route to diagnose why this cavity is not functioning properly. NSRL ran Biology with 600MeV Iron for 3 hours. Blip ran all 12 hours of the shift.

Note to Operations: There is a false Stby-Fault indication for yo12-th16. This supply is on and working properly contrary to what the pet page and alarm display indicate. This problem will be addressed on the next maintenance day.

91 Sat 7 Apr 07

During the day (as per Jen Niedziela):

RHIC physics ran for 8 hours between 2 stores today. The first store was terminated early due to heavy losses on ramp up that were attributed to the trip of a yellow acceleration cavity. The start of the second was delayed by Tandem tuning and ran for the nominal 6 hours. As of the end of the shift, setup for an access is underway in the AGS to backflush a magnet in BTA. BLIP ran all shift.

During the evening and overnight hours (as per Nick Kling):

A lone 93x93 bunch store provided seven hours of physics time for the experiments during this shift. The store was prolonged for one hour while we awaited the arrival of J. Butler to diagnose yet another trip of the Yellow accelerating Rf station YA1. During the ensuing investigation J. Butler discovered that a failed circuit breaker inside the Rf area of IR4 was likely the cause the trip of the station trip. Currently the Site supervisor is attempting to contact an electrician to replace this breaker. The first three hours of the shift were spent investigating load fault interlocks on the BTA QH10 power supply. It was determined that there is a problem in the cabling somewhere between the magnet and the power supply for this element. Further investigation and repair of this fault will take place during the next maintenance period. In the meantime the load fault interlock on this supply has been bypassed. This means the supply has no over-temperature and low water flow protection. In the hopes of limiting the risk of damaging the magnet due to a water flow problem the DC over-current interlock for this supply has been lowered to 190 Amps down from the 700 Amps the supply is capable of providing. BLIP ran for all 12 hours of the shift.

92 Sun 8 Apr 07

During the day (as per Jen Niedziela):

RHIC was in failure this shift due to ongoing problems with a circuit breaker in sector 4z1 that required multiple electricians and attention from the RF group, complicated by an inability to locate a proper replacement breaker. Alternative solutions including retuning the cavities were attempted; ultimately the breaker was replaced with a spare that had a higher than necessary amperage rating. The electrician who did the second replacement noted that there was evidence of the circuit breakers overheating, and there are notable discolorations on the buss bar. Additionally, the electrician noted that access to the storage facility in building 452 was limited. As of the end of the shift, the breaker has been replaced, and an attempt to ramp has been made. The ramp ended with a radiation monitor interlock that appears to have been caused by poor orbit in the yellow ring. BLIP ran for 9 hours this shift. Smooth running was interrupted by a trip of mod 5, which required attention from LINAC personnel.

Notes to Operations:

YS2 is off until the maintenance day. YS1 may trip on the down ramp, but it can be restored remotely.

AGS RF station C has a heat lamp fault, and should be fixed behind a store during the day next week; other cavities have been adjusted to compensate.

The PASS iris scan logger program is not working.

During the evening (as per Nick Kling):

Physics ran for the final 32 minutes of this shift. The majority of the shift was spent replacing a corrector power supply in the yellow RHIC ring.

This repair effort was prolonged by a blown fuse in the disconnect panel that powers this supply. Blip ran for all 6 hours.

93 Mon 9 Apr 07

During the early morning hours (as per Jim Jamilkowski):

RHIC physics ran for 5.62 hours in a single store. Efforts are currently concentrated on diagnosing continuing problems with the QEI for RHIC RF station YA1.

The Vacuum Group should be contacted during the daytime to reset the vacuum coprocessor at 1004B.

WFG modules cfe-9a-ps2 and cfe-7c-ps1 have required multiple resets between them during a store tonight. The dmm3458 Manager is causing a no heartbeat alarm on ADT, though there is no link in StartUp to perform diagnostics for the server application.

There is a communications problem with bo7-tv9 that is causing frame error and PSI Primary Link error alarms.

During the day (as per Travis Shrey):

Machine development ran for 3.5 hours after the RF access for YA1 was finished. Feedback ramps in blue and yellow were performed; by the end of the shift both rings are ramping in Replay mode. BLIP ran all shift.

During the afternoon and evening (as per Lee Hammons):

Machine development continued throughout much of the shift, and efforts at establishing a physics store were hampered first by a problem with the mechanical linkage for the YARC90 contactor in ATR and, later, by problems with Replay for the yellow ring. The yellow ring problems appear to have resulted in repeated beam aborts due to beam loss monitor interlocks near the end of the ramp in RHIC. As of the end of the shift, we have switched off replay in the yellow ring and are ramping 93 bunches to full energy for the next physics store.

The difficulties in RHIC ramps also delayed the start of the NSRL program, and NSRL ran for 1.57 hours during the shift with 1 GeV iron beam.

BLIP ran for 9 hours during the shift.

94 Tue 10 Apr 07

During the early morning (as per Jim Jamilkowski):

A RHIC store has been running for 4.82 hours. NSRL radiobiology experiments using 1 GeV Fe beam ran for 5.67 hours. BLIP ran all shift.

TTB reachbacks continue to be a problem when attempting to use the beamstops as the critical device for NSRL Target Room accesses.

Two ramp attempts failed when beam losses at b6-lm3.1 pulled the permit at the end of the ramp when Blue tune feedback replay switches to the

store stepstone settings. It was noticed that the jump in the b-qmain current at this event is 0.4 A larger than it was last night (since the Blue tune feedback file was updated during development), and was thus causing a tune shift and associated beam losses. In order to clear the problem, the ramp was reverted to 8491, the Blue tune feedback replay file was reloaded to 1174226848, and the here2last command was skipped in the Disengage Tune Feedback sequence (in order to manually delay the here2last command until after rebucketing instead of triggering just after flattop). The here2last command should ultimately be enabled in the Up sequence at a point which has not yet been determined.

During the day (as per Travis Shrey):

Physics ran for 5 hours over two stores this shift. The first store from early this morning was extended until after the RHIC morning meeting. The second physics store followed immediately and is scheduled to be dumped at 1400. A short machine development period will follow. BLIP ran all shift. NSRL completed their run at 0840 this morning.

During the afternoon and evening (as per Lee Hammons):

Machine development ran throughout the early portion of the shift, focused on correcting errors in application of replay files to both the blue and yellow rings simultaneously. A six-bunch ramp followed this development activity and was completed successfully, however, an attempt at resuming physics running with 93 bunches resulted in loss monitor interlocks, BLAM 90% threshold alarms, and a quench of the blue ring due to losses near the end of the ramp. The issue appears to be that the application of the replay settings alters the optics of the machine and induces losses. For this reason, it was ultimately decided to revert to a successful ramp from earlier in the day.

However, a subsequent attempt at restoring physics running was severely hampered by a problem with the vacuum contactor for YA1. J. Butler was called in to assist with the repair and replacement of the contactor. Because the contactor forms a component of the PASS system, the PASS behavior of the cavity was also verified once the contactor was replaced.

During the repair of the YA1 cavity, we also encountered problems with AGS RF stations due to our attempts at switching tables in preparation for polarized proton setup. Stations DE and JK tripped during the process, and JK could not be revived. After repairs to the RHIC RF were completed, John Butler also assisted with reviving station DE. Station JK remains off, and will have to be repaired during the maintenance period,

however, John also suggests that the RF functions may have the wrong harmonic loaded down to the cavities.

As of the end of the shift, APEX is running, although the program was delayed by the failures of the RF cavities.

BLIP ran for 8.64 hours during the shift.

95 Wed 11 Apr 07

During the early morning (as per Jim Jamilkowski):

Accelerator physics experiments ran for 6.42 hours, with only an interruption for a beam induced magnet quench. The RHIC tunnel opened for maintenance ahead of schedule when the APEX store was aborted due to the BBLR pulling the permit link.

During the morning and early afternoon (as per Travis Shrey):

Scheduled maintenance ran all day. As of the end of the shift the booster has been turned back over to Operations and setup for iron is underway for NSRL beam work.

During the evening (as per Lee Hammons):

Maintenance continued throughout much of the shift. RHIC operations were restored near the end of the shift, but were significantly delayed by problems with a vacuum contactor in the substation that supplies power to the X- and Y-arcs as well as difficulties with the access control system. Several aborted attempts at sweeping were required and the help of access controls personnel in order to correct problems in the security system. Efforts at securing the ring were also hampered by a false indication of the MCR PanelView display.

As of the end of the shift, we have completed a six-bunch test ramp to full energy. PHENIX, however, reports that their ZDC is malfunctioning, and they are working with system experts to fix the problem.

BLIP ran for 8.40 hours during the shift.

Maintenance summary (as per Paul Sampson):

Maintenance Ran from 0600 to 1815hrs today. All approved work was completed on schedule and the injectors were ready to inject beam into RHIC by 1800hrs. At that time, all areas if RHIC were swept and secured except for PHENIX and STAR. Unfortunately, emergent jobs arouse that

delayed RHIC turn on. A problem with a 13.8kV contactor for the X arc power supply transformer was discovered in the afternoon, and postponed extraction to RHIC until later in the evening. As a result, experimenters were permitted to extent their accesses. Beam was available in Tandem by 1100hrs and both Gold and Iron beam was re-established in the booster By 1430hrs. At that time, NSRL took the beam for development work. LINAC and BLIP were operational by 1400hrs. Bunches of greater than $1.2e9$ gold ions late were accelerating in the AGS by 1800hrs and were extracted to the W dump by 1815. At 1830hrs there was a mode switch to allow NSRL to continue running until the arc substation work was completed. NSRL resumed running at 1830hrs while Operations awaited the completion of the sub-yard repair. Of the 108 Jobs scheduled, 7 were rescheduled, 3 were cancelled and 4 remain in remain In Process. 94 were completed. Finally at 2114, The arcs were ready and preparation for injection into RHIC was being made. A complete view of the Maintenance Jobs can be viewed at Results. Further delays were the result of issues with the STAR and 2Z2 sweeps.

96 Thur 12 Apr 07

During the early morning hours as per (Jim Jamilkowski):

One RHIC physics store has been running for 5.25 hours after PHENIX experimenters implemented a fix for missing ZDC scaler information. Collisions have been set up at IR10 for the LARP luminosity detector. NSRL radiobiology experiments using 1 GeV Fe beam ran for 0.98 hours. BLIP ran all shift.

The vacuum coprocessor in the A Trailer is in need of a reset.

There is a false alarm on ADT indicating that one of the Yellow stochastic cooling pickups or kickers is not at the home position.

RHIC storage RF stations YS2 and BS2 experienced voltage fluctuations during tonight's store that had an adverse impact on the bunched beam.

The Booster D6 septum tripped on two separate occasions tonight after the end of NSRL activities and remains off as of the end of the shift.

Power Supply personnel should investigate these temperature interlocks during the daytime.

During the day (as per Travis Shrey):

Physics ran for 2.5 hours this shift in a single store began overnight. A five hour machine development ran through the afternoon. As of the end of the shift MCR is preparing for another physics fill. PHENIX ZDC signals were restored today. BLIP ran all shift. D Bruno has turned over the AGS cold snake power supplies to Operations for use. MCR has enabled the Cold Snake Quench permit input in the AGS permit link. Don will leave the trim 2 power supply on overnight with a zero setpoint.

During the evening and overnight hours (as per Lee Hammons):

Efforts at establishing physics for RHIC in this shift were thwarted by problems with the RHIC RF system as well as the cooling system for the AGS RF power amplifier stations. The RHIC RF system malfunctioned at the beginning of the shift causing blue beam to become completely debunched and ultimately resulting in a quench at full energy, requiring downtime to wait for temperatures to stabilize and for BLAM threshold alarms to clear. A subsequent test ramp was also compromised due to continued RF setup problems.

Ultimately, a successful test ramp in RHIC was achieved, however, as a physics run was being prepared, a power failure to the pump motors for the AGS RF cooling system prevented injection into RHIC. Water group personnel were called in who traced the problem to a loss of power to the pumps and associated equipment. Both an electrician and, later, a member of the line crew were then called in to assist in repair of the power distribution problem. As of the end of the shift, this effort continues.

NSRL biology ran for 4.37 hours during the shift largely uninterrupted. Titanium was successfully setup and archived.

BLIP ran for 12 hours during the shift.

97 Fri 13 Apr 07

During the day (as per Travis Shrey):

Physics ran for 1.45 hours over two stores this shift. The first 111x111 bunch store was aborted by the permit for the Stochastic cooling system. The permit was enabled during the maintenance day and left that way; involved personnel are still investigating how it happened. The second 111x111 store continues in the machine as of the end of the shift. NSRL ran for 1 hour behind the stores and continues to run. Polarized proton setup ran for 3.5 hours. BLIP ran for 12 hours. B Olsen released new

versions of ATRMagMan and BLAM. The fallback versions are available if problems are encountered. CAS has been tracking down an intermittent pump room alarm for 949.6 - 'RF Mezzanine - AC Problem'. They instruct us to disregard it. S Jao reports that the AGS vertical IPM leak is not functional and will require attention during the next maintenance day. The horizontal unit is available. The NameServer on acnsun60 was rebooted this shift.

During the evening and overnight hours (as per Jim Jamilkowski):

Physics has been off since the beginning of the shift. LLRF problems that caused debunching in Yellow during the store from the previous shift and at the beginning of the following store eventually resulted in two magnet quenches. During recovery from the second QLI, several ATR power supplies at 1000P tripped. A linecrew came in and replaced broken shear pins for the switch actuator on the center phase for the X arc power supply and reset a tripped 480V breaker. As of the end of the shift, CAS is attempting to bring on the affected power supplies. NSRL ran for 2.17 hours using 1 GeV Ti beam after which 1 GeV Fe was restored. BLIP ran all shift.

The cause of Yellow debunching at store or when the Rings are put into linked hold was not determined during troubleshooting tonight. During this work, the Yellow LLRF controls were cycled. When RHIC operations resume, a 6x6 bunch ramp test should be performed. If unsuccessful, K. Smith should be contacted to investigate.

RHIC RTDL WFG's K0 and K1 on cfe-4b-ps3 are showing RTDL parity errors that cannot be cleared.

The Booster D6 septum began tripping tonight after Booster setup of 1 GeV Fe was completed. M. Bannon is coming in to clear the problem.

98 Sat 14 Apr 07

During the day (as per Nick Kling):

RHIC physics ran for 6.5 hours on one 111x111 bunch store. The first 2.75 hours of the shift were spent recovering from various power supply and electrical power feed problems associated with the X-arc90 power supply. After these issues were resolved, we were able to successfully ramp a 6x6 test ramp and the above mentioned 111x111 bunch physics ramp. Behind this store NSRL Biology completed their days run with 1GeV Iron beam in

just under three hours. The NSRL Biology run was followed by about two hours of tuning for higher Iron intensities that resulted in only modest gains if any. Also tucked away behind this physics store were 5.66 hours of polarized proton development in the AGS. While these efforts ran relatively smooth and without any major roadblocks, written accounts of the days work indicate that there was only modest progress on this front as well. BLIP ran through out the shift.

During the evening and overnight hours (as per Jim Jamilkowski):

Physics ran for 6.75 hours between two stores. The second store was delayed by an incorrect accounting of the Blue beam dump from the first store by the Loss Analysis server. ORM measurements were taken at top energy in the AGS using pp beam behind the RHIC stores. BLIP ran all shift.

99 Sun 15 Apr 07

During the day (as per Nick Kling):

RHIC physics ran for 8.77 hours over two 111x111 bunch physics stores. There was an extended delay between stores due to an ongoing problem with the PostMortem server that causes BLAM to not receive credit for properly dumped beam. Polarized proton development progressed behind stores for the majority of the shift. This program was held off for just under one hour due to a failure of the LINAC bending magnet 1 power supply. BLIP ran for 10.12 hours with the only downtime due to the above mentioned LINAC power supply failure.

During the evening (as per Jim Jamilkowski):

Physics ran for 6.82 hours between two stores. AGS pp development work, including ORM measurements, continued behind the RHIC stores.

The Blue Landau cavity trips during each attempted ramp, but is restored remotely each time.

The air compressor used to cool the STAR silicon strip detector has leaked at least a half gallon of oil onto the floor of the Power Supply Room in the process of failing. This significant portion of their detector will remain off until Plant Engineering personnel can effect a repair tomorrow. PE techs have already started to clean up the spill.

100 Mon 16 Apr 07

During the early morning (as per Lee Hammons):

RHIC physics ran for 1.81 hours during this shift. A power dip occurred during this shift affecting all accelerator systems. Much of the shift was devoted to trying to recover from the power dip. As of the end of the shift, gold beam is running in the Booster at somewhat reduced efficiency. Work continues to recover the AGS RF system, the DH2-3 power supply in BTA, many of the ATR power supplies, and the RHIC blue ring. In addition, DH1 in the BTA is running in local. This should be addressed when an opportunity presents itself.

BLIP ran for 2.87 hours during this shift.

During the day (as per Brian van Kuik):

Most of the shift was spent recovering from power dips that occurred early this morning. By the end of shift, a store put up for Physics.

NSRL ran Science 0.5 hours this shift.

BLIP ran for 6.8 hours shift.

During the evening (as per Travis Shrey):

Physics ran for 8.4 hours in RHIC over two fills. The first began on the previous shift and was dumped after a nominal 6 hour life. The second continues in the machine. NSRL ran biology with iron beam for 5 hours. PP setup ran for 6.75 hours. BLIP ran for 8.7 hours. The F3 kicker fine delay is once again in a bad state and cannot be changed. During a mode switch to gold this necessitated a large change in the A5 fine delay to get all six bunches from the Booster into the AGS. Investigation by both controls and power supply personnel for the "Transmission T/O" alarms for the d3 and d6 booster septa points to a controls hardware problem. This should be investigated during the day.

101 Tue 17 Apr 07

During the early morning (as per Lee Hammons):

RHIC physics ran for 5.75 hours over two stores during this shift. We encounter a delay in establishing the second store due to losses in the AGS. These losses turned out to be tied to sextupoles that were off. No alarm was generated for this condition.

K. Zeno also set up proton beam for NSRL on table H so that gold beam for RHIC and proton beam for NSRL are on the same table.

BLIP ran for 7.93 hours during the shift.

During the day (as per Brian van Kuik):

Physics ran for 3.42 hours this shift from a store that started on the previous shift. The remainder of the shift was spent in Machine Development to work on backgrounds at store. As of the end of shift, Machine Development continues to run.

NSRL setup work ran for 3.75 hours with proton beam from Linac. NSRL ran biology for the last 3.2 hours of this shift.

BLIP ran all shift.

Notes: J. Butler repaired the 5W amplifier for the X3 RF Storage Cavity.

During the afternoon and evening (as per Travis Shrey):

Physics ran for hours over two stores. The first began as the machine development fill for collimators and was turned into a physics store. The second continues in the machine. The G09 and H11 C bumps trip when in U4 mode. To prevent them from pulsing the start and stop triggers are turned off. To restore them from a trip the triggers must be turned on and the AMMPS must be single cycled. They have been running this way since PP setup began, so they are not being asked to do anything new. NSRL ran biology for 1 hour. BLIP ran for 8.9 hours. Zeno spent many hours setting up a PP and NSRL proton supercycle with different Linac users for each (for independent intensity adjustments). The final setup is on table E and requires a different BMMPS function. See the NSRL elog for details.

102 Wed 18 Apr 07

During the early morning hours (as per Lee Hammons):

Physics ran for 2.33 hours over two stores. APEX began near the end of the shift and ran for two hours. A vernier scan in PHENIX was completed at the end of the first store of the shift, and AGS ORM studies using polarized proton beam progressed throughout the shift in the AGS.

BLIP ran for 7.89 hours.

During the day (as per Brian van Kuik):

Accelerator Physics Experiments ran all shift.

NSRL ran for 4.5 hours this shift.

BLIP ran for 6.2 hours. As of the end of shift, B. Briscoe is investigating why BLIP tripped off.

During the afternoon and evening (as per Travis Shrey):

APEX ran for 2.9 hours this shift. An attempt at a Physics store followed immediately but was dumped by a QLI at transition in blue. The next store was plagued by fec problems at flattop, but was eventually declared to be a physics store once backgrounds got below the limits. An AGS entry followed to check the health of the polarimeter. At the end of the access both STAR and PHENIX called MCR and stated that the store had not been useful to them because of backgrounds. The store was dumped, but a QLI in blue resulted when the yellow beam was aborted and the loss monitors pulled the permit link. As of the end of the shift MCR is preparing for another fill. NSRL ran machine development for 3.6 hours. BLIP ran for 8.8 hours.

103 Thur 19 Apr 07

During the early morning (as per Lee Hammons):

RHIC physics ran for 3.61 hours over two stores. The first store of the shift was abbreviated by consensus of the experiments due to low rates. Efforts at establishing a second store were hampered by heavy losses in both rings that resulted first in the abandonment of a store attempt and a second attempt that was aborted due to beam loss monitor interlocks and a BLAM 90% threshold alarm that required waiting for the alarm to clear. Finally, a new store was established that runs as of the end of the shift.

In addition to the RHIC store, AGS ORM work proceeded during this shift.

BLIP ran for 8 hours.

During the day (as per Brian van Kuik):

Physics ran for 4.8 hours this shift with 4.2 hours of Machine Development.

BLIP ran all shift.

NSRL was in 3.6 hours of Machine Setup for Iron beam.

Notes: RF Group rephased all the RF Cavities and tweaked the Fine Cog knob for RHIC. C. Watts and A. Pham report that the 1012A UPS are

working, but a communication failure is generating an alarm on the ADT. A. Pham will monitor the UPS overnight and will address the problem during the day tomorrow.

During the evening and overnight hours (as per Travis Shrey):

Physics ran for 10.5 of the last 12 hours over 3 stores. Each store lived out a nominal 5 hour lifetime. NSRL ran physics and biology using 600 MeV and 1 GeV iron for 4.3 hours. BLIP ran all shift.

104 Fri 20 Apr 07

During the day (as per Brian van Kuik):

Physics ran for 8.6 hours this shift with 3 hours of Machine Setup. The bit of downtime was caused by a fault network switch that needed to be reset.

NSRL ran for 5.25 hours this shift under RHIC stores for Physics.

Polarized proton beam was used in AGS during RHIC Physics stores.

BLIP ran for 10 hours this shift. There were 2 hours of Machine Setup for BLIP.

Notes: J. Addressi requests that if the KDHF3 kicker fine delay malfunction appears on AGS ADT for current PPM user, have CAS reset the DE535 delay unit via the front panel on/off switch located in bldg 914 F3 center rack. The delay unit will be replaced next week during maintenance day.

During the evening and overnight hours (as per Lee Hammons):

RHIC ran for 8.95 hours during this shift over two stores. The end of the first store was prolonged slightly to understand and correct problems with the mode-switching sequence between polarized proton operation and gold running. An error was discovered in the sequence that was eventually corrected. The second store of the shift was also delayed due to apparent injection kicker problems in RHIC that caused the yellow bunch intensity to fluctuate over multiple AGS cycles. In addition, a quench link interlock in the blue ring along with a Tandem spark contributed to further delays. Eventually these difficulties were resolved and a second physics store was established that is running as of the end of the shift.

H. Huang worked on polarized proton development for 3.87 hours during the shift.

BLIP ran for 12 hours.

105 Sat 21 Apr 07

During the day (as per Jim Jamilkowski):

Between three stores, RHIC physics ran for 6.78 hours: the store from the previous shift ended as scheduled, the second was aborted due to a PASS Peer 11 division B gate wiring fault that required W. Lamar to come in and make a gate strike adjustment, and the third continues in the machine as of the end of the shift. AGS pp development ran for 7.58 hours behind the RHIC stores. BLIP ran all shift.

The RHIC PASS iris log PC rebooted multiple times and then froze during attempts to use it for an access today.

During the evening and overnight hours (as per Lee Hammons):

RHIC physics ran for 3.55 hours over two stores during the shift. Efforts at establishing a second store in RHIC were hampered by beam loss and BLAM threshold alarms likely caused by a problematic ramp reversion. A reversion to another, more recent ramp resolved the beam loss problems and allowed a second store to be established.

However, the second store of the shift was aborted prematurely due to a trip of the b12-q89 power supply, likely caused by a voltage ripple in the supply. D. Bruno was consulted, and he advised that the power supply be replaced. CAS was dispatched to effect the repair.

In addition, for a brief period, chipmunk 216 repeatedly tripped on a failsafe interlock indication and was reset each time, also delaying the establishment of a second store. Furthermore, cfe-12a-ps3 required a reset on several occasions throughout the shift.

BLIP ran for 12 hours.

Polarized protons setup ran for 1.93 hours during the shift.

106 Sun 22 Apr 07

During the day as per (Jim Jamilkowski):

RHIC physics ran for 8.77 hours between two stores. Significant beam debunching has been observed at each rebucketing this weekend, though it is not clear what additional steps can be taken to clear the problem after speaking with M. Blaskiewicz. AGS pp development work ran for 7.58 hours behind the RHIC stores. BLIP ran all shift.

Chipmunk NM216 (Thompson Rd at Y line) has tripped three times with a failsafe interlock. NM084/85 caused a beamstop interlock five times today without beam present in the U line. Both problems routinely occur each morning, likely the result of thermal variations.

Intermittent alarms were received during stores today indicating that the Yellow Abort Kicker voltage was too low. However, no problems were encountered when dumping the store on our one attempt this shift.

The vacuum coprocessor in 1008B is in need of a reset.

A null bpmModeM indication for bo6-bh4 could not be cleared after multiple resets of cfe-7w-bpm1 and a reset of its IFE module.

During the evening (as per Lee Hammons):

RHIC physics ran for 2.87 hours during this shift. Beam operations were delayed by a blue quench that occurred due to voltage oscillations in the blue mains, causing DX heaters to fire in 8 o'clock and an attendant rise in temperature. Stabilization of the temperature and return to nominal levels was required before recovery could proceed.

BLIP ran for 6 hours during the shift.

Polarized proton setup ran for 3.03 hours.

107 Mon 23 Apr 07

During the early morning hours (as per Travis Shrey):

Physics ran for 5.3 hours over two stores; the first began earlier in the evening and was dumped after 5 hours. The second store continues in the machine. PP setup ran for 1.25 hours. BLIP ran all shift.

During the day (as per Jen Niedziela):

RHIC physics ran for 5 hours between two stores today. The first ran out a normal lifetime, but was aborted by a beam loss monitor interlock caused by a fault in a wfg module in one of the triplet octupoles. The second continues in the machine at the end of the shift.

NSRL ran 1 GeV protons from LINAC and 1 GeV iron ions for 4.67 hours, with little difficulty. Polarized proton setup ran for 1.75 hours, and BLIP ran all shift.

Notes:

There is an error string that appears on the ADT for the e19/f1 quad that can be ignored until the snakes are operational. CAS observed that the light bulb indicating that there are no security faults on the eight degree bend is burnt out.

During the evening (as per Brian van Kuik):

Physics ran for 2.7 hours this shift with 2.9 hours of Machine Setup. The remainder of the time was spent in failures. A problem with a bad flow controller for sleeve 4 at the Blue 6 o'clock Valve box cause a Blue quench link interlock (QLI) and ended the first store put up this shift. After recovering from the Blue QLI, Y-line power supply YTV10 failed. CAS replaced the power supply after consulting with D. Bruno. A second store was put up once the Y-line power supply was replaced. As of the end of shift, Physics continues to run.

NSRL ran 1 GeV Iron for 4 hours this shift.

BLIP ran all shift.

Polarized Protons ran under the RHIC stores concurrent with NSRL running.

108 Tue 24 Apr 07

During the early morning hours (as per Travis Shrey):

Physics ran for 5 hours in a single store that was loaded up by the last crew. A failure of network switch 11b-108 required a ring entry to replace. Upon reaching injection a series of problems with the injectors and RHIC injected beam performance ensued. The injector efficiency problems suddenly resolved themselves; the RHIC injection issues were traced to a doubling of the AGS bunch length with the C17 gamma quad off. As of the end of the shift a new store has been established. PP setup ran for 1.5 hours this shift. BLIP ran all shift.

During the day (as per Jen Niedziela):

Physics in RHIC ran for 2.08 hours this shift. The first store was put up at the end of the previous shift, and had lost a significant portion of the yellow beam at transition, but was retained because of scheduled ramp development activity. The second store was put up at the very end of this shift, and will be declared as physics shortly.

Ramp development in RHIC for RF purposes was held off by a lead flow

interlock, quench link interlock, and a two beam loss monitor interlocks. One successful ramp was completed with limited debunching at rebucketing, but was lost shortly after arriving at flattop by to beam loss monitor interlock induced by the lead flow trips.

BLIP ran for 6.75 hours, and was off for a target change and a cooler trip.

Notes to Operations:

The RHIC Landau cavities should remain off until further notice. The PrepBeforeFill.tape sequence has been modified to reflect this change. The bias voltage power supply for the AGS IPM has changed. The on/off control works, but the readback will not work until after the maintenance. The change improves the performance of the IPM. It was observed this shift that the TAPE application ran extremely slowly on acnmcr6p, and this was possibly correlated with increased “soft irq” reporting. Don Bruno has turned on the warm dipole in sector ten, and it should remain on for the rest of the run.

During the evening (as per Brian van Kuik):

Physics ran for 5.5 hours this shift from a store that started on the previous shift. After the store, Accelerator Physics Experiments (APEX) began an ran for 2.2 hours this shift. There was a bit of downtime to recover from a Blue quench link interlock (QLI) that happened during the first ramp of APEX. C. Schulthies was consulted due to oscillations in the Blue main dipole ramping power supply at the time just before the Blue QLI. He recommends recovering and try ramping again. C. Schulthies will come in if this happens again, otherwise this will be addressed during Maintenance tomorrow.

BLIP ran all shift.

Polarized Protons were used in the AGS for 5 hours.

109 Wed 25 Apr 07

During the early morning hours (as per Travis Shrey):

APEX ran without interruption this shift. There were two radiation monitor interlocks in the U line PASS system this shift that turned off the critical devices without showing any individual chipmunk trips. The critical devices were restored without resetting the PASS system. BLIP ran all shift. The booster vertical tune supply went to the off state (no faults)

several times this shift and was brought on remotely by MCR each time.

During the day as per (Jen Niedziela):

Scheduled maintenance ran for 6 hours this shift after one hour of APEX studies. BLIP ran for 2.43 hours.

Note to Operations: A. Zheng reported that the fine delay for the A5 kicker should never be set to zero.

During the afternoon and evening (as per Brian van Kuik):

Scheduled Maintenance ran for 5 hours this shift. There were 1.9 hours of downtime for two failures. The first was to adjust a flow valve for the W-line, Warc20, WD4 magnet. The second failure was to troubleshoot problems with the yi2-qgt and bo2-qgt power supplies. There were two lemo connectors found disconnected from the cfe-3a-ps1 to yi2-qgt and bo2-qgt power supplies. As of the end of shift a 6x6 bunch ramp was successfully ramp and RHIC is being prepared for a Physics store.

NSRL ran for 3.8 hours this shift.

BLIP ran all shift.

Also from Don Bruno:

These Gamma-T's were not jumping. I saw that the capacitors were not charging up so the Gamma-T's would not jump. The High Voltage signal to charge up the capacitors comes from 3a-ps1. I spoke to Al because he was having problems with this FEC today and he was doing troubleshooting with the controls group on it. Al suggested that the 2 High Voltage signal cables may have been left off the card in 3a-ps1. I sent CAS down to look at the signals and Al was right. The 2 high voltage signal cables were left off the card in 3a-ps1. CAS re-connected them and the capacitors charge up now.

Summary of maintenance (as per Paul Sampson):

Maintenance went well today and there were only a few surprises. A complication that arose during a job by Access Controls delayed NSRL running for 1.5 hours. Of the 129 Jobs approved for this maintenance period, 92 were completed, 5 were canceled 20 were rescheduled and 12 remain in process. Several Jobs in the AGS proved to be faster than expected (E15 IPM and C20 Polarimeter) while some at RHIC took somewhat longer (controls hardware, BPM survey and AC installation). BLIP was on by 1330, Booster by 1430, NSRL by 1500 and AGS by 1740. Beam was transported to the W dump was on by 1815, injected into RHIC

at 1850 and ramped to full energy by 1920.

110 Thur 26 Apr 07

During the early morning hours (as per Travis Shrey):

Physics ran for 5 hours this shift in a single store. The two following ramps were lost at flattop by trips of NMO312; the first as STAR/BRAHMS autosteering was occurring, the next as the blue collimators were inserting to their store settings. A third was lost before reaching flattop. Ultimately it was found that the blue beam emittance was much larger in the ramps this morning. MCR reverted the ramp settings back to the successful ramp at the beginning of the shift. As of the end of the shift another store is being prepared. BLIP ran all shift. PP setup ran for 4 hours.

During the day (as per Jen Niedizela):

Physics ran for 1.87 hours in a single store, and the rest of the shift was devoted to machine development and machine restoration. As of the end of the shift, another store is on its way to flattop. BLIP ran all shift.

G. Marr released a new version of the Rhic Beam Ions script. It can be started from the command line: `/usr/controls/scripts/RHICions.py`.

There has been a method of automatic orbit correction implemented in the Up sequence. The step will execute the orbit correction, and then activate the correction if it is successful.

cfe-12a-ps3 had to be reset several times this shift to clear problems with wfgs.

The start charges for the AGS A5 injection kickers have been turned off on users 2 and 3.

During the evening and overnight hours (as per Brian van Kuik):

Physics ran for 7.5 hours this shift between two stores. The first store started on the previous shift and was aborted normal at 0030 hrs to put up a new store. A second store was soon running for Physics, but ended prematurely due to a Yellow quench link intoerlock (QLI) at 0347 hrs. D. Bruno was consulted and yi11-qd2-ps was found to have a bad Control Card and Digital Isolation Card. After they were replaced, Yellow quench recovery was attempted, but failed after trying a few times. D. Bruno was again consulted and discovered that the 2b-qd2 quench protection assembly (QPA) had a bad fan and possible bad DC Card. He has called

in T. Nolan to replace the QPA fan and W. Louie to check the ADC card for the 2b-qd2 QPA. As of the end of shift, T. Nolan is in replacing the QPA fan and we are waiting for W. Louie to come in. NSRL ran for 3.9 hours this shift. They were delayed an 1 hr for Tandem to change Iron foils. BLIP ran all shift.

Notes:

Contacted P. Rosas this evening in regards to a Hold Tag on the A19-qd power supply. He notes that the power supply will not be ready until tomorrow. Also no one communicated with him that the power supplies were needed this evening.

cfe-12a-ps3 tripped off several times this shift with suspended task errors. It was able to be reset long enough to ramp RHIC.

1 GeV Protons were extracted from Booster to NSRL's 302 SWIC in preparation for the Morning's NSRL Experiments.

111 Fri 27 Apr 07

During the day (as per Jen Niedziela):

RHIC was in failure for most of this shift. Starting out with a QPA replacement, the shift was beset with several QLIs caused by problems with the 2a quench detector, wfg problems, and power supply trips. The need to reset cfe-4a-rtdl due to unpingable status further complicated matters by requiring the quench link to be dropped on purpose, as well necessitating the reset of all quench detection front ends. NSRL ran for 5.52 hours after some delay in getting started due to faulty Booster orbit controls.

Notes to Operations:

The reset light on the internal gate 9GI1 is burnt out. Further, during a sweep of section 10z1 it is noted that water is dripping down one of the cryo penetration tunnels.

The cold and warm snake power supplies were worked on this shift, and as of the end of the shift, all were functioning with no issues.

The permit for the cold snake beam loss monitor was tested successfully this shift.

During the evening and overnight hours (as per Travis Shrey):

Physics ran for 6.5 hours this shift over two stores. The first was

established after restoration of the RHIC low level RF system in yellow and was dumped after a normal lifetime. The second continues in the machine. BLIP ran all shift. PP setup ran for 3.5 hours. Booster orbit control archive loading appears to fail. The program complains that the E1 corrector is out of range and stops the load process. Attempts to set up U3 in the AGS with the cold snakes were unsuccessful. The solenoid suffers a QLI as soon as it is ramped out of park. AgsSnakeCorrect was used in two attempts and the pet page controls were used on the third following the cold snake setup instructions.

112 Sat 28 Apr 07

During the day (as per Jim Jamilkowski):

The RHIC store from the previous shift continued for 2.63 hours, but was aborted due to regulation problems on the y-qmain power supply that caused a Yellow QLI. The following ramp attempt failed when the Yellow beam debunched at flattop due to a problem closing the RF loops, which then resulted in a Yellow magnet quench. K. S. Smith, M. Harvey, F. Severino, and T. Hayes came in to diagnose and apply a temporary fix to the low level RF DSP code. Final programming adjustments have not been tested yet however, since a vacuum interlock in the Y arc is preventing further injection. P. O'Grady is currently in to clear a discrepancy in the vacuum valve versus PLC indication that requires a tunnel access. AGS pp development ran for 3.05 hours behind the morning's store. BLIP ran all shift.

During the evening and overnight hours (as per Travis Shrey):

Physics ran for hours this shift over three stores. The first was brought down by oscillations on the yellow main quad. The second was an unexplained beam-induced quench in the yellow ring. The third continues in the machine. The Raritan switch at MCR6 is not working and needs to be replaced. The chipmunk in IR10 used in previous runs to monitor radiation levels on the PHOBOS silicon started alarming during routine operation this weekend. If the monitor is no longer needed in the tunnel it should either be removed or its alarming capability silenced.

113 Sun 29 Apr 07

During the day (as per Jen Niedziela):

Physics ran for 8.45 hours between 3 stores today. The first store ran out its normal lifetime, the second was aborted early due to a trip of the yellow abort kicker, and the third continues in the machine as of the shift. Beam decay rates are high in both rings, and this should be investigated at the end of the store, preferably before refilling. PP setup ran for 5.7 hours, and work to set up the cold snake has begun as of the end of the shift. BLIP ran like a champ all shift.

During the week, the source of intermittent alarms for the Booster high field correctors should be isolated if possible. The intermittent nature of the alarm has the effect of masking real problems with the supplies. Further, we were able to turn on the Booster Vertical trim quad with the Booster MMPS pulsing, and updated instructions about whether the BMMPS should be off before restoring this supply are in order.

Notes to Operations:

A step to ensure that the AGS sextupoles are ON after the polarized protons to gold mode switch has been added to the tape sequence.

The step to perform automatic orbit corrections is consistently failing, and has been skipped in the Up sequence.

During the evening (as per Travis Shrey):

Physics ran for 4.6 hours over 2 stores. The first began in the afternoon and was dumped after 5 hours. The second continues in the machine. PP setup ran for 30 minutes. The commissioning version of RHIC InjectionTuning has been used throughout the weekend with noticeable improvements over the regular StartUp version and should continue to be used.

114 Mon 30 Apr 07

During the early morning (as per Brian van Kuik):

Physics ran for 5.6 hours this shift between two stores. The first store started on the previous shift and dumped naturally. The second store was up up after 1.1 hours of Machine Setup and 0.25 hours of downtime. A beam abort while trying to put up the second store was the source of the

downtime for RHIC. As of the end of shift, Physics continues to run.

Polarized Proton work in AGS ran for 2 hours this shift.

BLIP ran all shift

Notes:

Chipmunk NMO-216 tripped to failsafe, a 'HW Reset' and a 'Rad Reset' from the PASS touch panel at MCR2, the chipmunk NMO-216 failsafe fault cleared. cfe-7a-ps1 was reset this shift

During the day (as per Nick Kling):

RHIC ran physics for 5.13 hours over two 111x111 and one 6x6 bunch stores. Behind the 6x6 bunch store an access was made into the AGS to investigate a water leak in the AGS RFMG cooling system. No leak was discovered in the AGS ring. NSRL Biology ran with 1GeV iron ions for 2.7 hours. Polarized proton setup ran for the final hour of the shift. Blip ran for 6.98 hours. Note to Operations: Contact J. Funaro after hours for problems with the e19 warm snake compensation quad.

During the afternoon and evening (as per Jen Niedziela):

Physics in RHIC ran for 8.17 hours this shift in two stores. The first ran out its normal life, and the second continues in the machine at the end of the shift. Polarized proton setup ran for 5 hours, and was held up by mispulsing of mod 7 that required a breaker reset. NSRL ran 1 GeV iron for 3.6 hours, and BLIP ran all shift.

Notes to Operations:

D. Bruno has left updated instructions in the MCR about turning on the AGS cold snake and associated supplies. The instructions will be on the web soon.

The AGS cold snake setup is proceeding on user 3, while user 4 is being maintained as the cold snake off machine.

The uf4 flag is still left in after ATR automated emittance measurements - the problem is understood but not fixed, and requires release of a new fpmDisplay program. S. Tepikian is addressing the issue.

115 Tue 1 May 07

During the early morning hours (as per Brain van Kuik):

Physics ran for 5.55 hours this shift with 2.22 hours of Machine Setup. There were two stores this shift the first of which started on the previous shift, which was dumped naturally. A second store was put up and again it was natural dumped towards the end of this shift. There was a third attempt to put up a Physics store, but a chipmunk in RHIC cause the RHIC beamstops to close. As of the end of shift, RHIC is being ramped back to Injection.

BLIP ran all shift. 600 MeV Iron was setup for NSRL Experimenters later today.

During the day (as per Nick Kling):

RHIC physics ran for 2.38 hours on one store. A problem with yellow injection kicker timing delayed operations for the first hour and was the likely cause of the less than optimal yellow beam intensities over the three stores prior. This lone store of the shift was abbreviated to permit scheduled beam development activities. BLIP Ran for 4.88. The program was shut down for just over 2 hours for studies in the LEBT area.

During the evening (as per Jen Niedziela):

RHIC physics ran for 6.65 hours between two stores, and machine development ran for 1.43 hours. The first store was put in at the end of the machine development period, and ran out a five hour lifetime. The second continues in the machine as of the end of the shift.

NSRL ran biology for 3.25 hours with 600 MeV iron, and BLIP ran all shift. Polarized proton development ran for 4.6 hours, but was cut short by severe weather that necessitated shutdown of the pulsed power equipment.

Notes to Operations:

The Booster D1 injection bump is not following its function. This should be looked at during the day.

116 Wed 2 May 07

During the early morning hours (as per Brian van Kuik):

Physics ran 4.5 hours this shift with 1.5 hours of downtime. The downtime was for problems with Booster Dwell Field fluctuations. This downtime cause APEX to be delayed and shifted 1.5 hours.

NSRL ran for 1.33 hours this shift with 600 MeV Iron.

BLIP ran all shift.

During the day (as per Nick Kling):

APEX ran relatively smooth for the entire shift. The studies were adversely impacted by an Operator induced quench link interlock and by cooling problems in the YD10 magnet in the Y-arc. BLIP ran throughout the shift.

During the afternoon and evening (as per Jen Niedziela):

RHIC physics ran for 4.45 hours in a single store that went up after work performed on the yd10 magnet. APEX ran for 50 minutes; studies were prematurely terminated by a QLI in the blue ring due to a fault on a gas cooled lead at 2 o'clock that was due to a communication interruption.

NSRL ran biology for 45 minutes with 1 GeV iron. Because of the small number and brief nature of the accesses planned, NSRL exclusive mode was used to expedite their run. Polarized proton setup ran for 4 hours, and BLIP ran all shift.

Notes to Operations:

The AgsSnakeCorrect program has been tested and is fully operational. The snake and associated supplies will still need to be turned on with the scripts in Wing Louie's home directory, as listed in the program instructions.

K. Zeno reports that Booster injection bump D1 is still not functioning nominally. Please see pictures in this Booster-AGS elog entry.

K. Zeno has also set up a Booster Early RF turn off which turns off the RF on the polarized proton user only.

117 Thur 3 May 07

During the early morning hours (as per Brian van Kuik):

Physics ran for 3.9 hours this shift with 2.3 hours of Machine Setup. There was 1.8 hours of downtime due to debunched beam at store aborting during the collimation step in the Tape Up sequence. K. Smith and P. Harvey investigate the debunching of RHIC beam at store, but were unable to find any causes for the debunched beam. K. Smith advised MCR to do a 6 bunch ramp to check the RHIC RF for any potential problems, none were found. Afterwards a Physics store was successfully put up and

continues to run as of the end of shift.

BLIP ran most of the shift with two interruptions. Both interruptions were caused by the Linac Mod 5 Pulsing tripping off and needing its Plate Circuit reset.

During the day (as per Nick Kling):

RHIC ran for Physics for 4.17 hours over 2 stores with 4.23 hours of machine development time between these stores. The last 1.5 hours of scheduled development were lost due to a bad relay in the anode supply for the AGS L10 cavity. As of the end of the shift Iron beam is available for NSRL but not yet being used as the experimenters are still setting up for their run.

Polarized proton setup ran for the final 45 minutes of the shift. BLIP ran for 11.85 hours.

During the overnight hours (as per Jen Niedziela):

RHIC physics ran for 10.3 hours between 3 stores. The first was put up by the previous crew, and ran out a normal life. The second was put up immediately, and ran out a five hour life as well. The third store went up after an attempt failed on a loss monitor permit interlock, and continues in the machine as of the end of the shift.

NSRL ran for 3 hours, and is in preparations to start again as of the end of the shift. BLIP ran all shift, and polarized proton setup ran for 7 hours.

Notes to Operations:

The Booster F3 kicker fine delay module is in malfunction. This should be reset before the weekend.

Roger Lee has released two new managers, one for the F3/A5 and G10 kickers, and one for the RHIC Button BPM.

The sequence that turns on the Green Synchro in the Up sequence has been changed to prevent the green synchro reference from being turned on for users 3 and 4.

118 Fri 4 May 07

During the day (as per Nick Kling):

RHIC Physics ran for 6.7 hours over three physics stores. The first 3.5 hours of physics were from a store inherited from the previous crew. This

store was followed by a failed ramp attempt that was thwarted by the all too familiar accumulated loss monitor permit interlock during the "beta squeeze" portion of the ramp. Following this, a more meager store was put up and provided just over an hour of usable data before its life was cut short by vacuum induced losses which were the result of a trip of the star magnets. On the ensuing ramp attempt another all too familiar foe, catastrophic debunching at rebucketing, reared its ugly head. This led to beam induced quenches of both rings and a lengthy recovery by cryo. To help prevent future recurrences of this rebucketing problem, the Rf group has implemented a new rebucketing setup scheme in which the storage cavities are brought up in a more staggered fashion. For now this is the new standard operating mode, but it is too early to tell if this will permanently fix the problem. As of the end of the shift there is a 103x103 bunch store in the machine that was put up using this new setup. The number of bunches per fill has been stepped back with the hopes that the machine will be able to tolerate higher bunch intensities than are capable in the 111 bunch pattern. NSRL ran 1 GeV Iron beam for Physics for 6.62 hours. The Booster and AGS were utilized for polarized proton development for a total of 5 hours. BLIP ran for all 12 hours of the shift. During the overnight hours (as per Brian van Kuik):

Physics ran for 9.5 hours this shift between three stores with 2 hours of Machine Setup. There was a half hour of downtime to gap clean yellow beam after more than 50 percent of the yellow beam debunched during rebucketing.

NSRL ran for 4.4 hours this shift using 1 GeV Iron.

BLIP ran for the majority of shift. There was a small amount of downtime for the Linac Mod 4 tank quad 4-17 to have its malfunction card replaced.

119 Sat 5 May 07

During the day (as per Travis Shrey):

Physics ran for 7 hours this shift over 2 stores. The first was inherited from the previous shift and dumped after its 5 hour lifetime. A second 5 hour store followed immediately. The next ramp was aborted by a loss monitor permit pull and followed by a ramp that suffered 30% debunching in yellow at rebucketing. It took quite a while to clean out the debunched beam before eventually ramping down. The ramp that followed appeared

to have BS3's damper come out up the ramp; MCR dumped the beam before rebucketing to avoid debunching. As of the end of the shift K Smith is in and troubleshooting the RF system. PP setup ran for 3 hours. BLIP ran all shift.

During the evening and overnight hours (as per Brian van Kuik):

Physics ran for 9.4 hours this shift with 1.5 hours of Machine Setup. The beginning of shift was used for the RF Group to diagnose problems with debunching beam during rebucketing. There was not any conclusive problems found and a 103x103 bunch ramp was successfully put up for first of two Physics stores this shift. As of the end of shift, Physics continues to run.

BLIP ran all shift.

B. Briscoe came in to repair Linac Mod 7 and Mod 8. For Mod 7 he replaced a 15 Amp line fuse and a 8618 tube. Linac Mod 8 had its Screen Power supply reset. Afterwards K. Brown used polarized proton beam in the AGS until the end of the first Physics store this shift.

120 Sun 6 May 07

During the day (as per Travis Shrey):

Physics ran in RHIC for 7.3 hours this shift over two stores. The first lived out its normal lifetime. The second was aborted by a loss monitor pull. The ramp that followed was pulled by loss monitors shortly after transition. As of the end of the shift another store has been declared for physics. BLIP ran for 10.6 hours. PP setup ran for 5.2 hours. J Funaro needs to be called in to look at the e19-f1 quad power supply; when it comes up it runs at full current all the time instead of following the function.

During the evening (as per Brian van Kuik):

Physics ran for 3.9 hours this shift between two stores. The first store was aborted early due to a possible Yellow Abort Kicker pre-fire. After Cryo recoverd a second store was put up for Physics. As of the end of shift, Physics continues to run.

BLIP ran all shift.

S. Tepikian used polarized protons for 3.25 hours this shift.

121 Mon 7 May 07

During the early morning hours (as per Jen Niedziela):

RHIC physics ran for 3.93 hours between 2 stores this shift. The first store ran out a 5 hour life, and the second was put up after much wrangling with tandem intensity, and continues in the machine as of the end of the shift. BLIP ran for 7 hours, and polarized proton setup in the AGS ran for 1 hour.

During the day (as per Jim Jamilkowski):

Physics ran for 5.58 hours between two stores, both of which ended in Blue QLI's. The first was probably caused by a Blue Abort Kicker prefire, which prompted a round of conditioning of the both Abort Kicker power supplies. The second QLI is currently under investigation. AGS pp development ran for 2.55 hours. BLIP ran for 6.95 hours.

H. Huang reports that a maximum polarization of 66% has been measured in the AGS recently during pp development.

During the afternoon and evening (as per Nick Kling):

RHIC physics ran for 2.73 hours on two physics stores. The first store was lost due to a cryo lead flow interlock in sector 7. The second store remains in the machine as of shifts end. Preceding these physics stores were two hours of machine development and 1.15 hours of time recovering from quench link interlocks from the previous shift. NSRL ran 1 GeV iron ions for Biology for 2.2 hours. Polarized proton development in the AGS ran for 4.75 hours. BLIP ran for 8.20 hours. The program was off for 0.8 hours to due a LEPT cryo problem.

122 Tue 8 May 07

During the early morning hours (as per Jen Niedziela):

Physics in RHIC ran for 5.92 hours between 3 stores. The first was aborted by a quench link interlock stemming from a voltage excursion on one of the blue insertion supplies. The second store ran out a normal five hour lifetime. The third store was ramped at the very end of the shift, and will be declared for physics shortly. BLIP ran all shift, and polarized proton setup ran for 3.3 hours.

During the day (as per Jim Jamilkowski):

RHIC physics ran for 5.22 hours through one store. Before RHIC could be filled again, the BMMPS tripped on a D1 magnet temperature interlock. A Booster access is currently underway to clear the problem. NSRL radiobiology ran for 2.98 hours. AGS pp development ran for 1.45 hours after a problems related to CST.914-DN.VME were resolved. BLIP ran all shift.

J. M. Brennan and M. Blaskiewicz lowered the RHIC RF voltage from 300kV to 200kV at five seconds before transition during the ramp with the intention of reducing the longitudinal emittance of the beam.

During the afternoon and evening (as per Nick Kling):

The first 2.5 hours of the shift were spent recovering from the Booster D1 magnet water flow problems. Following this there was a 2.5 hour physics store that was ended early due to APEX. APEX ran for the remainder of the shift and was delayed somewhat by a BLAM 90% hourly loss alarm and by problems with the TTB section 11 DH2 power supply.

NSRL ran 1 GeV Iron for Biology for 2.08 hours. Polarized Proton development ran concurrently with NSRL Biology but got only minimal useful beam time. This is because NSRL needed to run in "exclusive" beam stop access mode to facilitate them finishing before the start of the APEX session.

BLIP ran for all 9 hours of the shift.

Note to Operations: The nominal RHIC physics store length has been shortened to 4.5 hours.

123 Wed 9 May 07

During the early morning hours (as per Jen Niedziela):

APEX studies ran all shift, interrupted by a series of QLI's stemming from problems with a corrupted ramp file, reversion of DSP code in the LLRF from an earlier study, rebooting a front end in 1004A, and a reboot of cfe-4b-evt. BLIP ran for 7.22 hours, turning off with the LINAC turn off for maintenance day activity.

During the day (as per Jim Jamilkowski):

APEX came to a conclusion after 0.8 hours, after which the remainder of the complex entered a scheduled maintenance period. As of the end of the shift, accelerating Au beam has been restored in the Booster.

Note to Operations:

The RHIC ramp has been reverted to 8720. A ramp activate will be needed before operations resume.

During the afternoon and evening (as per Nick Kling):

Scheduled maintenance progressed for the first 4 hours of the shift. The remainder of the shift was spent recovering from the problems that have arisen since this maintenance period officially ended. There were several hours of downtime due to problems with RHIC power supplies as well as the high and low level RHIC Rf systems. As of the end of the shift, repairs to all three of these systems are still underway. The Booster and AGS are back up to their pre-maintenance efficiencies after 5 hours of continuous tuning by K. Zeno. Polarized proton development is running while the ongoing problems with RHIC are being addressed. BLIP ran throughout the shift.

Maintenance summary (as per Paul Sampson):

Maintenance went well today, all work was completed on time and RHIC was ready for beam at 1730. There were some unexpected complications resulting from the power outages at 1004B and 1004C substations. Of the 86 Jobs 73 were completed, 6 remain in process 5 were rescheduled and 2 were canceled.

124 Thur 10 May 07

During the early morning hours (as per Jen Niedziela):

Machine setup in RHIC after the maintenance day ran for a quarter of an hour, including successful ramp up of a six bunch ramp. Further setup and physics running conditions were thwarted by a false ODH alarm in sector 1z1, a false fire alarm at PHENIX, destruction of a disconnect switch in building 914, work on the the blue main dipole, and replacement of a power supply in yellow. As of the end of the shift, work to repair the breaker panel in building 914 is being planned, and Collider-Electrical personnel are in to address problems with a house keeping supply. BLIP ran for 7.78 hours, interrupted by several trips of the Mod 2 pulser.

During the day (as per Jim Jamilkowski):

RHIC remained off all shift due to power distribution problems at building 914, several RHIC power supply problems, a b-dmain oscillation induced

QLI, and a BTA vacuum problem. As of the end of the shift, T. Hayes is in to clear a Booster to AGS synchro problem that was likely caused by the power outage.

After replacing disconnect switch 914-1A-5-3 today, it was found that the upstream switch (914-1A-Main) had thermal damage on the center phase. Electricians have successfully set up an alternate switch upstairs in 914, and all power has been restored to the building.

Note to Operations: Though the vacuum leak has been successfully sprayed at BTA MW060, the multiwire has been locked out for the remainder of the run.

During the evening and overnight hours (as per Nick Kling):

After a two day hiatus physics in RHIC returned and ran for 4.6 hours. The first half of the shift was spent shaking off the lingering effects of the events of these past two days. The problems with Booster to AGS synchro halted beam operation for the first two hours of the shift and lingered for the next 3.5 hours before finally being restored to proper working order. There were multiple trips of the Yellow abort kicker, which are still unexplained, and a Yellow quench link interlock that may, or may not have been caused by the Yellow abort kicker. After waiting patiently for many hours NSRL Biology completed their Thursday's run in one 3 hour block behind the lone quality physics store of the shift. Polarized proton development did not run during this shift. BLIP ran throughout the shift without interruption.

125 Fri 11 May 07

During the day (as per Jim Jamilkowski):

RHIC physics ran for 3.02 hours in one store amid lead flow controller problems, Blue quench protection switch UPS problems, a disconnect switch problem at the L18A house, and failed attempts to turn on the PHENIX chillers. As of the end of the shift, the Power Supply Group is replacing the bad UPS at building 1010A. NSRL radiobiology experiments ran for 4.0 hours. AGS pp development ran for 1.6 hours. BLIP ran for 10.84 hours.

Notes to Operations:

The Access Controls Group should be contacted if there is at least 30

minutes of downtime on a weekday. The ODH sensor that was replaced in sector 1 will need a second calibration.

M. Harvey has lengthened the fine cogging timeout in order to avoid future events of slight mis-cogging.

A. Drees has issued special gap cleaning instructions. See today's Shift Plan in the RHIC elog for details.

During the evening and overnight hours (as per Jen Niedziela):

Physics in RHIC ran for almost an entire hour in a single store that was aborted by a quench link interlock. This QLI resulted from problems with the quench protection switches in 1010, which were on going after repairs done at the beginning of the shift. Further beam activity in RHIC was held up by a water leak in the Booster which required water systems personnel to come in, and failure of the AGS polarimeter controls, which left the polarimeter target in the AGS, preventing the beam from accelerating. Both of these failures ultimately required accesses to repair. Several hysteresis ramps were performed in the intervening time.

BLIP ran for 12 hours, and polarized proton setup ran for 4.45 hours.

Notes to Operations:

The low-resistivity alarm for the 911 multipole room has been disconnected by the system specialist, and will be reconnected on Monday.

126 Sat 12 May 07

During the day (as per Brian van Kuik):

Physics ran for 4.77 hours this shift from a single store. At the beginning of shift, a Controlled Access into the AGS ring was under way to unstick the AGS C15 polarimeter. Afterwards a shift in the BtA DH4 power supply held up restoring beam to AGS. At the end of the store this shift, the Blue ring quench link interlock. The Blue ring was recovered and a hysteresis ramp was done without any further incident. As of the end of shift, another 103x103 bunch fill is ramping to flattop for another physics store.

BLIP ran for most of the shift. There was a couple minutes of downtime due to the Linac Mod 2 pulsing tripping off. CAS reset the Screen power supply which had tripped on a screen voltage fault.

During the evening and overnight hours (as per Jen Niedziela):

Physics in RHIC ran for 4.7 hours in two stores this shift. The first store was aborted by a problem with the blue quench protection switches, and the second ran for 4.5 hours. After the second store, work by Collider-Electrical personnel began to isolate the cause of the recent problems with the quench protection switches. The Booster Main Magnet power supply tripped twice, and as of the end of the shift, experts are being contacted to investigate further.

BLIP ran for 11.5 hours, with downtime due to drifting of the node buncher.

Notes to Operations:

The AgsSnakeCorrect application does not ramp up the cold snake properly, stopping at 2A on the solenoid power supply.

The pressure reading on the ion gauge at Booster A8 is creeping up. There were several times during the night that the gauge alarmed that the pressure was high, and it is occasionally spiking to $5e-08$ torr.

127 Sun 13 May 07

During the day (as per Brian van Kuik):

Physics ran for 5 hours this shift with 3.5 hours of Machine Setup. The first store was put up around 1100hrs after G. Danowski replaced a optical card for the Booster 1D power supply and P. Harvey fixed the auto-cogging for RHIC. After the store, Star Experimenters made an access into their IR to replace a control board for their Inner Anode TPC. As of the end of shift, a second store was put up and continues to run.

BLIP ran most of the shift. CAS adjusted the buncher 1 null pot twice this shift.

D. Bruno reports:

“Summary of sector 9 blue 6000A quench switch work:

1. We examined the high voltage relay. We added an insulator between the mounting screw and one of the coild terminals.
2. We checked the connections on TB2 and they all looked good.
3. We removed the old butt splice for the E-STOP and put a new one on but teh old one looked good.
4. We did find a loose wire on a resistor but we don't think that could

have caused the switch to drop out.

5. While checking for loose wires on the PLC terminal blocks we did find that one of the terminal blocks popped out because it was not snapped in all the way. This could have caused the switch to drop out. I have to take a look a closer look at the schematic to see what these wires do.

6. We turned the swicth on in local and did a wiggle test on the plc wires.

7. We conencted a scope to the QLin and QLout of both switches so if the problem returns we can verify which switch is tripping the link or if an input is causing the link to come down. If the blue link comes down and the problem is not the 6000A quench switch CAS will need to go out and re-arm the scope AFTER the blue link has been re-covered. I will leave them instructions for this. If the blue link comes down and the 6000A quenech switch did cause the link to come down then call Don Bruno so I can look at the scope traces. You can also call Wing Louie if you cannot get me.”

During the evening (as per Jen Niedizela):

RHIC physics ran for 4.6 hours in a single store this shift. The store, established by the previous crew, ran out a normal lifetime. The yellow ring QLI'ed on the next ramp up, and CAS swapped out a regulator card for the supply. A hysteresis ramp is in process as of the end of the shift.

BLIP ran for 6 hours. Polarized protons ran for 4 hours.

128 Mon 14 May 07

During the early morning hours (as per Nick Kling):

RHIC physics ran for 5.5 hours over one 103x103 bunch store. During this store a problem arose with the 5 volt power supply for cfe-7b-ps2. As of the end of the shift CAS is replacing this failed 5V supply. BLIP ran for all 7 hours of the shift.

During the day (as per Lee Hammons):

Physics ran for 0.85 hours near the end of the shift in RHIC. The shift began with the completion of a repair of the 7b-ps2 FEC, and the replacement of a fan for the 8b-scraper FEC. Following the replacement, an attempt at a physics store was interrupted by a quench link interlock caused by a fault power supply for yi3-qd2. After the power supply was replaced, a RHIC physics store was successfully established.

NSRL ran biology for 1.27 hours. BLIP ran for 5.86 hours.

During the afternoon and evening (as per Jim Jamilkowski):

RHIC physics ran for 4.05 hours between two stores. The store from the previous shift was taken down by beam losses that pulled the permit and were accompanied by a mistimed Yellow abort that caused a magnet quench. The subsequent store attempt was unsuccessful due to a Blue abort kicker prefire. The following store continues as of the end of the shift. NSRL radiobiology experiments ran for 2.5 hours. AGS pp development ran for 1.8 hours. An access to investigate AGS CNI polarimeter encoder problems was cut short after the store in RHIC was lost. BLIP ran all shift.

BPM's yi10-bh7, bo11-bv21, and yi10-bh11 are causing null mode alarms. This should be investigated during the daytime.

129 Tue 15 May 07

During the early morning hours (as per Nick Kling):

RHIC Physics ran for 6.93 hours over two 103x103 bunch stores. After dumping the store inherited from the previous crew, there were two more ramp attempts on this shift. The first ramp made it to store successfully but suffered heavy losses at transition and produced collision rates 50% less than recent efforts. This store was promptly dumped and new ramp with approximately 3% less beam per ring was attempted. With these slightly reduced intensities the transition losses were nominal and collision rates were on par with recent expectations. This store remains in the machine as of shifts end. Polarized proton development in the AGS ran for the first 1.66 hours of the shift. BLIP ran uninterrupted for 8 hours.

During the day (as per Lee Hammons):

RHIC physics ran for 5.02 hours in RHIC. A fire alarm, caused by smoke in a microwave oven occurred at building 1005S during the morning.

NSRL ran for 1.12 hours. BLIP ran for 7 hours.

During the afternoon and evening (as per Jim Jamilkowski):

RHIC physics ran for 2.18 hours in one store. The first store attempt was disrupted by problems with storage RF station X2 that resulted in Blue and Yellow magnet quenches. The following store was aborted by a Yellow abort kicker discharge on what appears to have been a spurious trigger. J.

Mi and L. Ahrens have disconnected one of the redundant trigger modules for the Yellow abort system as part of troubleshooting. As of the end of the shift, CAS is working on power supply yo4-qb6. NSRL ran for a total of 4.32 hours at both 600 MeV and 1 GeV. AGS pp development ran for 4 hours. BLIP ran for 8.82 hours.

Notes to Operations:

Yellow Stochastic Cooling is now started and stopped by Operations using TAPE sequences under RHIC/Systems/RF/Stochastic-Cooling. A copy of the manual instructions is available in the MCR. The on sequence should be run after steering is completed, and the off sequence can be run either just before or after the store is dumped.

Separation bumps have been added at IP's 2 and 10.

130 Wed 16 May 07

During the early morning hours (as per Nick Kling):

RHIC physics ran for 1.9 hours on one store that was cut short to facilitate the start of beam studies. The start of this lone store was delayed for the first 3.25 hours of the shift by a failure of a firing board in the yo4-qb6 power supply and by a trip of a circuit breaker in the 1000p sub-yard. Following this store APEX ran without interruptions for the final 2 hours of the shift. Polarized proton development ran for the first 1.75 hours of the shift. BLIP ran for all 8 hours of the shift.

During the day (as per Lee Hammons):

APEX ran throughout the entire shift. However, beam operations in RHIC were interrupted by a problem with the regulation for the 11DH1 magnet power supply in the TTB line. After replacing the regulator card, beam operations were restored and APEX continued. Beam operations were also interrupted by a number of blue abort kicker trips. The cause of these trips is unclear, but may have been caused by multiple cogging resets as well as problems with recharging the voltage modules after the trips of these modules were reset. L. Ahrens, J. Mi, and Y. Tan continue to monitor the kickers. In addition, the cause of spurious triggers for the abort system continues to be investigated.

During the evening (as per Jim Jamilkowski):

APEX ended prematurely after 0.5 hours due to a trip of yi7-tq6. After

completing a repair, RHIC physics ran for 5.88 hours between two stores. AGS pp development ran for two hours. BLIP ran for 8.96 hours. The PHENIX chillers were started today. Experimenters are working to restore their detectors to operation.

Notes to Operations:

An AGS Ring access for C15 polarimeter work is planned tomorrow morning after 0800 behind a store. Please have CAS apply Controlled Access LOTO, and then notify A. Curcio, G. Mahler, and H. Huang when the entry is ready to begin.

Zeno has optimized Booster Au injection for a Tandem pulse width of 900 microseconds.

The RHIC stochastic cooling TAPE sequences have been incorporated in the Up and Down sequences.

131 Thur 17 May 07

During the early morning hours (as per Nick Kling):

RHIC physics ran for 7.13 over two stores. BLIP ran for all 8 hours of the shift.

During the day (as per Lee Hammons):

RHIC physics opened the shift and ran for 1.92 hours. Beam operations in RHIC were then halted due to a yellow ground fault indication. After an investigation including hi-potting of the yellow ring and high-current ramping, the cause of the ground fault indication was not found and no further indication of the fault was observed. During this period, access into the AGS to repair the polarimeter also progressed. Some progress was made in repairing the device, however, the polarimeter is still not working properly.

In addition, STAR, PHENIX, and the Monopole experimenters were granted access to their IRs to complete maintenance items. Also, repair to a BPM module was completed in the 2 o'clock sector.

Beam operations were further delayed by a loose connection on the main buss for the STAR magnet power supplies, requiring an access into the IR to repair. As of the end of the shift, we prepare for the next store in RHIC.

NSRL ran 1.28 hours. BLIP ran for 11.89 hours.

During the evening and overnight hours (as per Jim Jamilkowski):

RHIC physics ran for 9.82 hours between two stores. Investigations are currently underway into possible power problems affecting the Booster and AGS security systems. AGS pp development ran for 5.3 hours. BLIP ran all shift.

The processes of starting and stopping Yellow stochastic cooling both were interrupted once this shift. F. Severino and M. Brennan believe that this was caused by problems with the software manager, which will be investigated during the daytime.

Multiple cfe-1c-bpm1 resets have failed to clear several related BPM alarms.

132 Fri 18 May 07

During the day (as per Lee Hammons):

RHIC physics ran for 4.65 hours during this shift. The shift began with a problem with the access control system for the Booster. A blown fuse was replaced in the Booster security system, however, all of the Booster gates lost their reset indication and a sweep was required. The sweep was hampered by problems resetting the Booster labyrinth gate B. After receiving assistance from ACS personnel, the gate was finally reset and Booster beam operations were restored.

Following the problems with the Booster, a problem with current regulation for y12-q7-ps developed, and D. Bruno replaced the regulator card. Following this repair, a store was established in RHIC. NSRL and polarized protons both ran for 3.33 hours. BLIP ran for 12 hours.

Notes:

D. Bruno and G. Heppner indicate that after a blue or yellow quench link interlock, the yellow and blue main power supply quench ground currents (QGND) must be checked. Don has left instructions on how to check these currents in MCR. This check must be completed due to the recent yellow quad buss short to ground. This must be done before quench recovery is attempted.

C. Gardner indicates that upon completion of NSRL running with iron, Tandem personnel will tune up MP6 with gold and transport this beam to the end of the MP6 by-pass line. Then, shortly after a good store has been

put up in RHIC, Tandem will transport gold beam (from MP6) to the end of the TTB line. When they are satisfied with the tune of the line, they will turn the beam over to MCR for injection and acceleration in Booster and AGS. When MCR is satisfied that the MP6 gold beam is satisfactory for filling RHIC, Tandem personnel may proceed with their scheduled plans to open MP7 for installation of new stripping foils.

During the evening and overnight hours (as per Nick Kling):

Rhic ran for 9.42 hours over two 103x103 bunch physics stores. To start the shift there was one failed ramp attempt in which heavy losses late in the ramp caused a Blue ring quench link interlock. While the first of the two stores was in the machine Tandem switched over to Gold from MP6. The second store was put up using this MP6 provided Gold beam. Once this store was up Tandem personnel began the opening of MP7 for foil replacement. NSRL ran for 0.70 hours during the downtime caused by the QLI in the beginning of the shift. Polarized proton development ran for 3 hours. BLIP ran for 11.58 hours, with 0.42 hours of downtime due to a blown fuse on a HEBT quad.

133 Sat 19 May 07

During the day (as per Jen Niedziela):

Physics in RHIC ran for almost 10 hours between 3 stores this shift. The first store was a remnant of the previous shift, and was dumped after a normal five hour lifetime. The second was put up immediately, and ran a normal lifetime. The third was put up shortly thereafter, and continues in the machine as of the end of the shift.

BLIP ran for 10.8 hours, off due to a trip of Mod5. Polarized proton development ran for 7.5 hours.

Notes to Operations:

A new set of TAPE sequences has been written to switch between Gold and PP running in the injectors that does not invoke Tandem in the changes.

Supercycle table C was changed this shift to facilitate Tandem foil conditioning.

During the evening and overnight hours (as per Nick Kling):

RHIC ran for 10.25 hours over three physics stores. The shift began midway through a 103x103 bunch store that was inherited from the

previous crew. After a slight delay due to degraded performance at all levels of the injectors a 111x111 bunch fill with slightly reduced intensities was brought to store. This store was cut short after 3.5 hours by a Blue abort kicker pre-fire. Following a lengthy recovery from the carnage caused by this all too familiar event, another 111x111 bunch fill with more robust beam intensities was ramped to store and remains in the machine as of shifts end. Polarized proton development ran for 5 hours of the shift. After the development ended for the night, 1.3 hours were spent attempting to restore the polarized proton and NSRL proton setup in the Booster with no notable success. BLIP ran for all 13 hours of the shift.

134 Sun 20 May 07

During the day (as per Jen Niedziela):

Physics in RHIC ran for 6 hours between 3 stores this shift. The first ended close to the beginning of the shift at the end of a normal life span, the second went up immediately and was dumped after five hours. Following the store, an access was made into the STAR IR to repair water flow to a detector. The ramp attempt after the access was thwarted by a blue abort kicker prefire which caused a significant quench event, which may have caused radiation upset to the 11b quench detector. As of the end of the shift, a newly hatched physics store is in progress.

BLIP ran for 11.95 hours, and polarized protons ran for 6.5 hours.

During the evening (as per Nick Kling):

RHIC Physics ran for 4.75 hours over one physics store. As of the end of the shift a new store attempt is ramping to flattop. Polarized proton development in the AGS ran for 4 hours. BLIP Ran for all 5 hours of the shift.

135 Mon 21 May 07

During the early morning hours (as per Jim Jamilkowski):

RHIC physics ran for 6.28 hours between two stores. As of the end of the shift, we are attempting to set up Booster proton injection for NSRL.

BLIP ran for 6.7 hours.

The “preparing to dump” message is not visible to other users of BERT

when it is issued by PHENIX. However, the PHENIX “ready for dump” message does get broadcast properly. This should be investigated during the daytime.

During the day (as per Travis Shrey):

Physics ran for 1.8 hours during the store inherited from the previous shift. A trip of a blue sextupole caused an abort of the beam by the loss monitors. PHENIX changed the polarity of the central magnet inner power supply and a machine development period followed to adjust the ramp to the new polarity. MCR set up protons for NSRL on the RHIC gold supercycle. Work on the AGS PP/NSRL proton cycle was cut short by the RHIC abort, but as of the end of the shift there is a fast beam inhibit on the NSRL beam request. BLIP ran all shift.

During the evening (as per Lee Hammons):

RHIC physics ran for 7.78 hours during this shift. Polarized protons ran in AGS for 4.98 hours. N. Kling completed setup of NSRL proton beam in preparation for tomorrow. BLIP ran for for 9 hours.

Notes:

M. Harvey has indicated that because the stochastic cooler sequence in the Up sequence is not working properly (the sequence aborts with an error when executed in the Up sequence), this step should be run from another TAPE application from the RHIC/System/RF/StochasticCooling/StartYellowSC.tape branch. The rest of the Up sequence can be resumed while the stochastic cooler sequence is running. The problem will be addressed tomorrow.

K. Zeno indicates that he has tuned the machine to use H-minus foil 6 for gold with polarized proton operation.

None of the supercycle tables appears to have an LU5, thus preventing a measurement at the LINAC polarimeter. This should be addressed tomorrow.

136 Tue 22 May 07

During the early morning hours (as per Jim Jamilkowski):

RHIC physics ran for 1.3 hours, primarily with the store from the previous shift. Both the initial and subsequent stores were aborted due to Blue abort kicker power supply trips. While waiting for assistance to arrive on

the abort kicker, a fuse blew for the access controls panel at building 914. After resweeping the Booster and removing LOTO, the Booster extraction bump power supplies discharge triggers were not occurring. As of the end of the shift, K. Hartmann is in to troubleshoot the problem. BLIP ran for the entire shift.

During the day (as per Travis Shrey):

Physics ran for 2.5 hours this shift in a single store that continues in the machine. NSRL ran for 5.2 hours using 250 MeV, 500 MeV and 1 GeV protons. PP setup ran for 50 minutes. BLIP ran all shift. MCR added 30 seconds to the end of the TAPE NSRL entry sequence at the request of A Rusek to allow rare20 to settle more before delivering beam.

During the afternoon and evening (as per Lee Hammons):

RHIC physics ran for 1.83 hours during this shift during a single store that began the shift. Attempts at establishing a second store were impeded by a quench link interlock in the yellow ring due to a faulty power supply yi7-tq6. After the power supply was replaced, it was decided to start APEX early to best use the available time.

Polarized protons ran for 4.11 hours in AGS. K. Zeno has left instructions in the Booster-to-AGS-PP elog on running beam to HEBT. These instructions also appear in this log. Table C should be used with DH1 off in order to run beam to the HEBT polarimeter.

NSRL ran for 6.61 hours during the shift at both 250 MeV and 1 GeV energies. BLIP ran for 9 hours. APEX ran for 3.32 hours.

137 Wed 23 May 07

During the early morning hours (as per Jim Jamilkowski):

APEX continued for 4.22 hours, amid QLI's that were caused by a bad ramp file, a Yellow MMPS trip, and two gas cooled lead trips that consistently occur when ramping with the IBS ramp file. Quench recovery was prolonged by three false QPA fan faults that needed to be bypassed by CAS. As of the end of the shift, preparations for the maintenance work are underway. BLIP ran all shift.

During the day (as per Travis Shrey):

Experimental access and repairs ran all shift. NSRL ran for 5.7 hours using 1 GeV, 500 GeV and 250 GeV protons. BLIP ran all shift. When

running Polarized Protons to the AGS and no NSRL the supercycle should be set to table C with DH1 pulsing. When running gold to the AGS and no NSRL DH1 should be turned off.

During the afternoon and evening (as per Lee Hammons):

Maintenance activities were concluded in the beginning of the shift. Several six-bunch test ramps in RHIC followed to configure the RHIC for running with polarity changes in both the STAR and PHENIX experimental magnets. A store followed this activity, and RHIC ran physics for 4.78 hours. In addition, the monopole experiment at IR2 was placed in collision during the physics run.

High backgrounds were encountered at STAR during the physics store prohibiting the experiment from collecting data for part of the run. These high backgrounds are likely the result of the polarity change in the experiment, and attempts at collimation were unsuccessful in reducing the background to acceptable levels. Eventually STAR was able to take data during the physics run.

NSRL ran physics for 2.67 hours throughout the beginning of the shift with 250 MeV protons. The R-line has been configured tomorrow's biology run.

Polarized protons ran in the AGS for 2.87 hours. BLIP ran for 8 hours during the shift.

138 Thur 24 May 07

During the early morning hours (as per Jim Jamilkowski):

The physics store from the previous shift ran for 1.25 hours. Problems began when cfe-3b-ps1 required an AC reset after dumping the store. Multiple attempts were required in order to clear the resulting Blue and Yellow QLI's and a QPA fan fault. After returning to injection, it was found that the Blue and Yellow storage RF stations had tripped. Troubleshooting by D. Goldberg, S. Dionarine, and CAS uncovered a missing AC phase for the RF cavity blowers in the Ring. As of the end of the shift, an electrician has traced the problem to a mechanical issue with one of the disconnect switches in 1004A. A linecrew will be needed to secure power to the affected panel. BLIP ran all shift.

During the day (as per Travis Shrey):

Physics ran for 1.5 hours in a single store that continues in the machine.

MCR thoroughly scrubbed the machine during the afternoon, dumping three 103 bunch ramps in succession at the flattop stone. The fourth and ultimately successful ramp was accomplished with considerably lower beam levels. NSRL ran for 9.5 hours using 250 MeV, 500 MeV and 1 GeV proton beam. AGS PP setup ran for 1 hour. BLIP ran all shift. Electricians have to re-torque the QH3 disconnect switch tomorrow morning, taking down BTA. The effort will try to be done behind a RHIC store. AGS PP setup personnel will be in by 0730 in the morning; if a RHIC store is established by that time the machines should be changed to PP mode.

During the evening and overnight hours (as per Lee Hammons):

RHIC physics ran for 8 hours during this shift between two stores. An attempt at establishing a third store was halted by a trip of the STAR trim west magnet on an overvoltage indication and a yellow QLI due to a problem with the line voltage to the regulator for the yellow main quad power supply. As of the end of the shift, C. Schultheiss and F. Orsatti are addressing the yellow QLI, and K. Wokosky is working with CAS to recover the power supply for STAR.

As of the end of the shift, Tandem is also experiencing difficulty transporting iron beam to the Booster for NSRL work. Several of the TTB elements do not appear to have been loaded with the correct setting upon mode switching. Tandem personnel are investigating.

AGS polarized protons ran for 7.04 hours during the shift. W. Glenn worked throughout the shift on polarization measurements and AGS polarized proton development.

BLIP ran for 12 hours during the shift.

139 Fri 25 May 07

During the day (as per Travis Shrey):

Physics ran for 2.25 hours over two stores. The first was lost 10 minutes after declaring physics when a yellow quadrupole tripped on overtemp and pulled the quench link. The second continues in the machine. NSRL ran machine development for 4.2 hours using 600 MeV iron beam. PP setup ran for 1.6 hours. BLIP ran like a champ all shift. TAPE sequences have been created to turn on the cold snake power supplies.

During the evening and overnight hours (as per Jim Jamilkowski):

RHIC physics ran for 11.33 hours between two stores tonight, the second of which has been extended due to a BTA vacuum leak. As of the end of the shift, M. Mapes and C. De La Parra are in to seal the leak.

The vacuum pressure in BTA deteriorated to $1e-5$ torr, and the Ring pressure at F6 and F7 went up to $1e-7$ around 23:00 on Friday. Based on the differences in the gauge readings and the timing of the pressure rise, it appears that a leak occurs when inserting multiwire MW006. This area has been sprayed twice so far, though efforts continue to fix the problem.

140 Sat 26 May 07

During the day (as per Brian van Kuik):

Physics ran for 8.2 hours this shift between two stores. The first continued from the previous shift while Vacuum Personnel repaired a leak in the Booster to AGS transfer line at the MW006 bellows. After the leak was repaired, beam was restored into the AGS and the RHIC Physics store ended in a Blue Quench. Once RHIC recovered from the quench an attempt at a store was put up and died shortly after physics was declared. Chipmunk NMO314 tripped which had caused the physics store to abort. Finally a store was put up and lasted for 4.2 hours when the blue power supply bi8-qb9 tripped off, causing the store to end prematurely. As of the end of shift, the bi8-qb9 power supply has been repaired and recovery is underway.

BLIP ran all shift.

Notes:

MW006 has been disabled due to a vacuum leak at its bellows in the BTA line.

bi8-qb9 had its Voltage Regulator card replaced.

During the evening and overnight hours (as per Jim Jamilkowski):

RHIC physics ran for 9.93 hours between two stores. BLIP ran for 11.89 hours.

Power supply BTA DH1 was not running up to setpoint while in remote during the previous shift. After CAS manually adjusted the setpoint in local for several mode switches overnight, remote control was used successfully after sending multiple standby commands.

141 Sun 27 May 07

During the day (as per Travis Shrey):

Physics ran for 4.8 hours over 3 stores. The first was inherited from the previous shift and lived out a nominal lifetime. The second was aborted after 3 hours by a blue QLI resulting from a quench switch trip. The third was aborted after 30 minutes by a blue QLI when bi8-qb9 tripped on DC overcurrent. As of the end of the shift a new store is being prepared. PP setup ran for 5.9 hours. BLIP ran all shift. Leif attempted to use the I10 snake today. The power supply comes on but the reference when viewed on a scope is flat. CAS reset the controller for the supply but it did not change the situation. The remaining attempts to troubleshoot were thwarted by QLI problems that required CAS assistance. Controls personnel should investigate this on Tuesday.

During the evening and overnight hours (as per Jim Jamilkowski):

RHIC physics ran for 5.12 hours in a store started by the previous shift. The next fill has been delayed by problems retracting the right Yellow stochastic cooling pickup from its inserted position. D. Gassner is investigating from home. AGS pp development ran for four hours. BLIP ran for 5.51 hours. BERT “preparing to dump” messages are regularly not being transmitted to other copies of the application. On at least one occasion, a Java exception error was observed in the application history for the PHENIX copy of the program.

142 Mon 28 May 07

During the early morning hours (as per Lee Hammons):

RHIC physics ran for 1.57 hours during this shift, and the single store of the shift was interrupted by a quench link interlock in the yellow ring originating with a faulty power supply, yi10-dh0. A second attempt at a store was interrupted by an overtemperature indication from the yd13 in the ATR line, accompanied by another quench link interlock due to a failed front-end computer, 6b-qb2. As of the end of the shift, W. Louie and L. Hoff are working to revive the front end.

In addition, beam operations in RHIC were hampered by a jammed stochastic cooler pickup. C. Biscardi was called in to assist with the removal of the right pickup in the yellow ring. Cyrus discovered that the

microswitches for the pickup were broken and, therefore, the stochastic cooler should not be operated until the microswitches are repaired. The pickup will become jammed again should the cooler be operated. The cooler instructions in the Up and Down sequences have been skipped; M. Brennan has also turned off the enable for the pickups, preventing them from operating in response to commands.

Finally, LINAC RF module 7 is mispulsing, preventing polarized proton beam from running in the injectors. CAS was dispatched earlier in the shift to revive the module but they were unsuccessful. Experts will be called this morning to assist in the repair of the module.

During the day (as per Brian van Kuik):

Physics ran for 0.75 hours this shift. Most of the shift was spent in downtime. At the beginning of shift recovery from a QD FEC fault, a Y-line magnet klixon reset, and problems restoring the RF Sector to CA held off beam. Afterwards a store was put up for about 45 min when a Blue quench link interlock (QLI). A Quench Link interface board was replaced for the Blue Quench Switch and another magnet in the Y-line needed its klixon reset. As of the end of shift repairs and resets have been done, RHIC is being prepared for a fill. BLIP ran all shift.

Blue Storage Cavity 3 (BS3) issue:

PASS RF Sector unable to be changed from SA to CA mode.

The DC Power and The Circuit Breaker status on PASS had a "Not Safe" state.

A Crowbar fault was found for BS3.

CAS reset the Crowbar fault, but the PASS State for the RF Zone could not be cleared from SA to CA.

CAS noticed that power from the line was not coming into the BS3 power supply and that the wall breaker for BS3 had tripped.

CAS turned the breaker on the front of BS3 off and reset the wall breaker.

The wall breaker tripped immediately upon the 1st reset attempt.

Resulting in a Electrician being called in.

J. Butler was also notified of the problem and also suggested that the problem could be a PASS fault holding off the BS3 power supply.

When the Electrician came in, he was unable to reset the breaker.

With the wall breaker off and the BS3 power supply breaker off, there was

a change in the PASS status for BS3.

MCR was able to bring the RF Sector of RHIC from SA to CA and then bring the Ring to NA.

Once the RHIC Ring was in NA, the wall breaker for BS3 was able to be reset and the BS3 power supply turned back on.

During the afternoon and evening (as per Travis Shrey):

Physics ran for .75 hours this shift in a single store that was taken down by a blue QLI. As of the end of the shift another store is about to be declared for physics. PP setup ran for 2.4 hours. BLIP ran for 6.8 hours.

143 Tue 29 May 07

During the early morning (as per Lee Hammons):

RHIC physics ran for 6.99 hours during this shift over two stores. Near the end of the shift, a trip of the RHIC YA1 RF cavity caused some debunching and a small decrease in collision rates. As of the end of the shift, gap cleaning is running in the yellow ring.

In addition, 500 MeV proton beam was established at the NSRL target.

BLIP ran for 7.9 hours during the shift.

During the day (as per Travis Shrey):

Physics ran for 2.8 hours this shift in a single store that was inherited from the previous shift. A cryo access followed and a period of machine development began to attempt to improve the yellow ramp transmission.

NSRL ran for 4.2 hours using 250 MeV proton beam. As of the end of the shift they are in 1 GeV proton mode and will be setting up for fast extraction. BLIP ran for 6.6 hours. If there is 1 hour or more of downtime MCR should contact D Bruno and G Ganetis to try a new ramp.

Monopole experiments would like a 15-20 minute access.

During the afternoon and evening (as per Brian van Kuik):

Machine Development to improve RHIC ramp efficiencies ran for the first part of the shift. At the end of Machine Development, there was a short access for Stochastic Cooling personnel to take photos of the equipment. A store was then put up after the access and machine development period.

This store lasted only 15 min before the front end computer (FEC) cfe-6b-qd2 failed and caused the store to be aborted. As of the end of shift,

Controls and Power Supply personnel are in repair the 6b-qd2 FEC.

144 Wed 30 May 07

During the early morning hours (as per Lee Hammons):

Physics ran for 4.32 hours in RHIC over a single store. The shift began with continuing efforts to correct a problem with the 6b-qd2 module. W. Louie, J. Drozd, and L. Hoff ultimately isolated the problem to a faulty V108 RTDL card. The card was replaced and the operation of the quench module was restored. In addition, a blower was installed in the b6-q89 power supply.

The beginning of APEX was delayed, first, by the physics store, allowing the experimenters to collect more data, and later, by a cooling problem for the ATR power supplies, causing numerous power supplies to interlock. The problem was tied to faulty PLC status indications. Once the PLC settings were adjusted, the power supplies were restored to operation. In addition, a clogged strainer in cooling tower 5 briefly hampered the resumption of Booster operations. As of the end of the shift, APEX has begun.

Polarized proton development ran for 2.32 hours. BLIP ran for 8 hours.

During the day (as per Brian van Kuik):

Accelerator Physics Studies (APEX) ran for 5.2 hours this shift. There was some downtime during APEX when a new lattice configuration was tested and quenched the Blue Ring.

NSRL ran for 4.4 hours this shift.

BLIP ran all shift.

Notes:

K. Zeno notes that the C7 correction dipole in Booster needs to stay off. He found it on, when he turns it off the C8 correction dipole also turns off. Then when he turns on the C8 corrector, C7 turns on. He has them both off for now. When there is a break in the action today or tomorrow, they should be looked at.

A. Marusic reset the PS Server and the Magnet monitor to clear a idletime error from the cfe-6a-ps3 front end computer.

During the afternoon and evening (as per Travis Shrey):

APEX ran for 3.25 hours this shift. A physics fill followed immediately and ran for 4.9 hours. As of the end of the shift the prepare to dump is about to be issued. BLIP ran all shift. NSRL ran 1 GeV protons for 9 hours using slow and fast extracted beam. As of the end of the shift the slow extraction setup has been reloaded.

145 Thur 31 May 07

During the early morning hours (as per Lee Hammons):

RHIC physics ran for 5.42 hours during this shift over two stores. The second store of the shift was interrupted by a quench link interlock in the blue ring. The interlock was likely the result of failed power supplies to controllers for the refrigeration system and, as of the end of the shift, cryo personnel are working to isolate and recover from the problem. They are also calling additional personnel to assist with recovery.

AGS polarized proton development ran for 4.92 hours, although this work was severely hampered by difficulty in transporting beam between the Booster and the AGS. By the end of the period, some progress had been made in improving the transmission through BTA, however, additional work is required to restore nominal intensities.

BLIP ran for 8 hours.

During the day (as per Brian van Kuik):

Physics ran for 3.7 hours this shift after recovering from a Cryo System problem at the beginning of the shift. While Cryo was recovering from their communications fault, the stochastic cooler for the Yellow Ring was repaired, Monopole Experimenters removed their equipment from IR2, and Phenix and Star accessed their respective IRs. As of the end of shift, Physics continues to run.

NSRL ran for 5.9 hours this shift using 1 GeV Iron.

Polarized Proton development ran along side NSRL's up time.

BLIP ran all shift.

During the overnight hours (as per Travis Shrey):

Physics ran for 4.2 hours over 2 stores. The first was inherited from the previous shift and dumped after its normal lifetime was up. The second was immediately established, but was terminated prematurely due to

power supply trips related to severe weather power dips. Several hours were required to restore the machines; as of the end of the shift MCR is awaiting experts for the BPM system. NSRL ran for .7 hours using 1 GeV beam. PP setup ran for 2 hours. BLIP ran for 7.1 hours.

146 Fri 1 Jun 07

During the day (as per Brian van Kuik):

Physics ran for 4.9 hours this shift after recovering from a Power Dip from the previous shift. At the end of the store, two blue power supplies caused beam to be aborted approximately 10 min before the scheduled dump time. After restoring those power supplies, a hysteresis ramp was done and failed due to a yellow quench link interlock. Power supply Personnel then replaced a “zfact card” for yellow power supply yo1-qd3 and replaced two cards (a current regulator and 3 channel isolation board) for blue power supply b8-q6. A hysteresis ramp was then successfully done. As of the end of shift, equipment has been turned off due to Severe Weather passing through the lab.

NSRL ran for 5.8 hours this shift with 600 MeV Iron.

Polarized Protons also ran for 5.8 hours while RHIC was at store and during the downtime to repair RHIC power supplies.

BLIP ran for 5.3 hours this shift. The break in BLIP beam time was due to “small emittance studies with protons” between Linac and Booster.

During the evening and overnight hours (as per Lee Hammons):

Physics ran for 5 hours in RHIC over a single store. The shift began with weather delays due to passing thunderstorms in the region. When operations resumed, efforts at establishing a store were hampered by poor efficiency in the injectors. These problems were eventually overcome, and a physics store was established. However, at the end of the physics store, the right yellow stochastic cooler pickup failed to retract. Repeated efforts at removing the pickup were unsuccessful, and C. Biscardi was called in to assist. Cyrus reports that the right pickup is seriously damaged and cannot be moved. The motors for the cooler have been disabled and the sequences skipped until repairs can be effected.

In addition, the polarized proton program was halted due to a failed power supply at the source. A. Zelenski came in to swap the power supply for the

source, but has left polarized protons until he can monitor the power supply for several hours this morning.

Finally, as of the end of the shift, we have encountered difficulty extracting from AGS. There is a small loss near the end of the AGS cycle, and beam will not extract. No green triggers are generated, although blue and yellow triggers seem to come.

147 Sat 2 Jun 07

During the day (as per Jim Jamilkowski):

RHIC physics ran for 0.53 hours today in one store that was aborted by a power supply trip. As of the end of the shift, a low intensity store has been provided for the experiments while preparations for AGS L10 RF station repairs are completed. Thanks to tuning by K. L. Zeno, the only remaining limitation on beam intensity is the lack of the AGS bunch merge due to the L10 cavity being off. F. Severino and M. Harvey were in most of the day clearing problems with AGS to RHIC synchro, a Blue debunching problem at cogging, and oscillations on the Booster A3 RF station. J. Guercio, D. Goldberg, and S. Deonarine are in to access the AGS and clear the L10 RF PA problem. BLIP ran for 10.86 hours. AGS PP development was off all shift.

During the evening and overnight hours (as per Lee Hammons):

Physics ran for 3.53 hours during this shift, but at greatly reduced intensities due to poor performance of the injectors tied to a problem with the L10 cavity. This store, in turn, was abruptly ended by a quench link interlock due to power supply bo6-qd3. D. Bruno instructed CAS to replace the firing card and an isolation amplifier board for the supply.

The entire shift was devoted to repair of the AGS RF L10 power amplifier. A leak of cooling water into the amplifier cabinet caused the amplifier to trip and necessitated that the tube and additional electronic components be replaced. Following the replacement and repair of the cooling water fittings, another, larger leak of cooling water at a different location in the piping required that the water be removed, the cabinet dried, and further testing be conducted. As of the end of the shift, the L10 power amplifier continues to trip, likely due to residual water left in the cabinet.

148 Sun 3 Jun 07

During the day (as per Jim Jamilkowski):

After the innards of the AGS L10 RF PA were sufficiently dried out from the cooling leak that occurred last night, the station was restored along with accelerating beam at nominal intensities. A RHIC physics store was then put up, which has been running for a total of 4.07 hours. The upcoming store may be delayed due to a system hang of the RHIC RTDL FEC. Setup of the AGS low energy Au cycle was performed behind the store by L. Ahrens and N. Tsoupas. BLIP ran for 8.96 hours.

During the afternoon and evening (as per Lee Hammons):

RHIC physics ran for 0.75 hours in this shift, and much of the shift was devoted to repair of cfe-4b-rtdl. The front end initially showed a no heartbeat indication. A reset of the front-end was planned at the end of the store which began the shift, however, this was delayed first, due a quench link interlock caused by a misfire of the blue abort kicker, and later by failure of the power supply to one of the VME chassis that constitute the 4b-rtdl front-end. W. Venegas and P. Zimmerman were called in to replace the chassis and A. Marusic verified that the front-end was restored to proper operation.

Quench recovery of both rings followed the repair of the 4b-rtdl front end. However, this effort was hampered by a problem with 5b-qd1. W. Louie was called for assistance, and, as of the end of the shift, Wing is examining the 5b-qd1 front-end.

In addition, a problem with the CDEV and CNS name servers also hampered operations. R. Lee assisted with the repair, and several efforts to restart the server processes were necessary before proper operation was restored.

In addition, near the end of the shift, AGS RF station K tripped several times, and, as of the end of the shift, the station remains off.

Finally, BLIP has tripped intermittently throughout the shift.

149 Mon 4 Jun 07

During the early morning hours (as per Travis Shrey):

Physics ran for 3.8 hours this shift in a single store that was aborted by a

misfire of the blue abort kicker. As of the end of the shift MCR and cryo are still recovering. BLIP ran all shift. AGS RF station K tripped several times overnight; the trip was caused by the feedback system indicating both On and Off status. CAS had to shut the station down to clear the bits each time. RF personnel should investigate this in the morning. Also, the B3 RF station does not have high voltage when on the PP setup (BU4).

During the day (as per Brian van Kuik):

There was no Physics for RHIC or beam for NSRL this shift. Two Problems with Booster extraction kept beam off for both programs. The first problem was resolve by RF Personnel who increased the Grid Bias Volatage for the Booster A3 and B3 RF Cavities' tubes. This allow RF personnel to increase the control loop gain and allow Gold beam to reach Booster Extraction time. The second problem, which is still ongoing as of the end of shift, is the Booster F3 Extraction Kicker tripping of several times. Pulsed Power Personnel continue to investigate the problem. Other problems under the F3 problem were a QEI replaced for RHIC RF Station YA1 and a Yellow quench link interlock occured and required a house keeping power supply for the yi3-qi3 power supply to be replaced. Star and Phenix both made accesses into their IRs during the downtime.

BLIP ran all shift.

During the afternoon and evening (as per Jen Niedziela):

RHIC physics ran for 1.32 hours in a single store this shift. The store was terminated prematurely by a beam induced quench event that affected several magnets. The source of the beam loss causing the quench was due to the blue abort kicker firing improperly. Significant sources of downtime this shift were due to problems with the Booster F3 extraction kicker, ATR vacuum, RHIC power supplies, the AGS polarimeter, and LINAC mod 7. NSRL ran for 1.33 hours, BLIP ran for 8.89 hours, and polarized proton setup ran for 4.5 hours.

150 Tue 5 Jun 07

During the early morning (as per Travis Shrey):

Physics ran for 6.4 hours over two stores. The first lived out its normal lifetime and was dumped by Operations. Another store followed immediately and continues in the machine. PP setup ran for 2.3 hours.

BLIP ran all shift.

During the day (as per Brian van Kuik):

Physics ran for 5 hours this shift with 0.5 hours of Machine Setup. There was 1.5 hours of downtime to recover from a Yellow quench caused by a UPS failing for the Yellow RF Cavities' PLC. A second store was put up for Physics and continues to run as of the end of shift.

NSRL ran for 5 hours this shift with 1 GeV protons.

BLIP ran all shift.

During the evening (as per Jen Niedziela):

RHIC physics ran for 6.1 hours between 2 stores, and was followed by 1.6 hours of APEX studies. The first store ran out a normal life time, and the second was put up after recovering from a trip of the AMMPS. NSRL ran 1 GeV protons for 5 hours, and polarized proton development ran for 4.2 hours. BLIP ran for 8.12 hours.

Notes to Operations:

The stochastic cooling sequences are again operational for yellow, and have been unskipped in the normal running sequences.

The scope dump program is not working for several scopes in the MCR.

151 Wed 6 Jun 07

During the early morning (as per Travis Shrey):

APEX ran for 7.6 hours with minimal interruption from a blue abort kicker misfire. As of the end of the shift APEX in RHIC continues and access into the AGS for repairs is underway. BLIP ran all shift.

During the day (as per Nick Kling):

After nineteen minutes of APEX to start the shift, scheduled maintenance ran for the remainder of the shift. As of the end of the shift the Booster and AGS are back on and all RHIC zones aside from STAR have been swept. BLIP ran for 6.23 hours.

During the afternoon and evening (as per Brian van Kuik):

Scheduled Maintenance ran until 1545 hours this shift. Afterwards two power supply problems in the yellow ring delayed the start of the Low Energy Development Run. Once the yellow power supplies ramped

through a hysteresis cycle successfully, the Low Energy Development Run began. Problems with the RHIC abort kickers not triggering on a “cogging reset” has since delayed the development work. As of the end of shift, the Blue Abort Kicker is responding normally to cogging resets, but yellow timing is still being looked at by T. Satogata and R. Michnoff.

BLIP ran all shift.

152 Thur 7 Jun 07

During the early morning (as per Travis Shrey):

Machine development ran all night. As of the end of the shift beam has been captured in both rings, the wall current monitor is set up and the bpms have been timed in. Work continues to establish collisions. BLIP ran all shift.

During the day (as per Jim Jamilkowski):

Low energy store development continued for 7.13 hours, after which the RHIC setup for 100 GeV was restored. As of the end of the shift, a 6x6 bunch ramp has been completed successfully though Ring to Ring RF synchro and cogging did not work. K. S. Smith is investigating.

During the evening and overnight hours (as per Brian van Kuik):

Physics ran for 5 hours this shift in a single store with 1.7 hours of Machine Setup. The store was dumped normally, but while tuning the Yellow Ring it quench link interlocked. Then during recovery and the hysteresis ramp the yellow main dipole quench link interlocked (QLI) near flattop. Power supply personnel investigated the QLI's and found that a bad DCCT for the yellow main dipole needed to be replaced. As of the end of shift, the yellow main dipole DCCT electronics have been replaced and quench recovery is running.

NSRL ran 1 GeV Iron for 5.2 hours this shift under the RHIC store and during the RHIC downtime.

Polarized protons setup in AGS was unsuccessful. The Booster Extraction equipment does no pulse on the beam cycle for Booster User 4, but does pulse on the dummy cycle for Booster User 4.

BLIP ran all shift.

153 Fri 8 Jun 07

During the day (as per Jim Jamilkowski):

Physics ran for 6.32 hours over two 103 bunch stores and one special 6x6 bunch store requested by STAR. NSRL ran Biology with 1 GeV Iron ions for 1.98 hours. BLIP ran for 11.90 hours.

During the evening and overnight hours (as per Travis Shrey):

Physics ran for 10.1 hours over two stores. The first was extended for a couple hours due to problems with the Booster main magnet. The second continues in the machine. As of the end of the shift pump room personnel are preparing to access the Booster ring to acid flush the C7 dipole. NSRL completed their biology run after 1 hour. BLIP ran without interruption. PP setup ran for 4 hours.

154 Sat 9 Jun 07

During the day (as per Brian van Kuik):

Physics ran for 2 hours this shift with a store that started on the previous shift. The store that was in RHIC was taken out by a spurious trip of the Sector 1 and 2 Vacuum permit (no valves actually closed). It tripped 2 more times with the last one requiring D. Wilson to come in. He found a loose hose and tightened it back up for bo2-sv3.3. During the permit problem, there were 2 to 3 small power dips that took out various things in AGS, AtR, and Star and Phenix. Star and Phenix had power supplies trip off and it took some time for CAS to bring Star back on and D. Phillips came in for Phenix (problems with one of Phenix's Magnet PS PLCs). As soon as the Experimenter Magents were back online, a smoke detector failed in the 7z1 tunnel which required the sweep to be lost. A Fire Alarm Electrician replaced the faulty detector. The L-10 RF Cavity in the AGS tripped off and required J. Butler to come in and make a ring access. With only one Operator until 1800hrs, the sweep for 7z1 done after CA-LOTO was placed on the AGS to allow J. Butler to proceed with work on the L-10 RF Cavity. As of the end of shift, RHIC zone 7z1 has been swept and work on the L-10 Cavity continues.

BLIP ran for 4 hours this shift. It also had problems this shift after the power dips. B. Briscoe came in and replaced several fuses and SCRs for the BM2 magnet power supply.

During the evening and overnight hours (as per Travis Shrey):

Physics ran for 4.5 hours this shift in a single store that will shortly be dumped. BLIP ran all shift.

155 Sun 10 Jun 07

During the day (as per Nick Kling):

Physics ran for 8.45 hours over three 103x103 bunch stores. The lone failure of the shift was caused by a quench link interlock of the Blue ring while attempting to ramp the second store of the shift. Polarized proton development ran behind the physics stores for 4.66 hours. BLIP ran for all 11 hours of the shift.

During the evening (as per Travis Shrey):

Physics ran for 2.3 hours over two stores. The first began earlier in the day and was aborted after a normal lifetime. The next store followed immediately but was lost after 20 minutes when the loss monitors pulled the permit link. A separate problem has developed with all the power supplies in the 3c alcove. After several hours of troubleshooting with controls hardware it was determined that the node cards or the internal controls for the power supplies are faulty. An expert is coming in. BLIP ran all shift. PP setup ran for 4 hours.

156 Mon 11 Jun 07

During the early morning (as per Brian van Kuik):

Physics ran for 3.7 hours this shift with 1.6 hours of Machine Setup. There was 1.7 hours of downtime which required J. Wilke to reset the Rack Node Cards 1 through 6 in alcove 3C at the beginning of the shift. The first attempt to put up a store was thwarted when a front end computer had problems with two sextupole WFGs. The second attempt at a store was successful and continues to run as of the end of shift.

Polarized proton development ran for 1.7 hours this shift while RHIC was down.

BLIP ran all shift.

During the day (as per Nick Kling):

Physics ran for 5.05 hours over two 103x103 bunch stores. As we were dumping the first store a glitch in the Yellow low level Rf resulted in a beam abort and quench of the Yellow ring. After just over an hour of recovery from this problem another store was put up and remains in the machine as of shifts end. NSRL Biology ran for 3.37 hours with 1 GeV Iron beam. Polarized proton development ran for 3.75 hours Blip ran for isotope production 5.30 hours and ran a 200MeV study for the remainder of the shift.

During the afternoon and evening (as per Jen Niedziela):

RHIC physics ran for 3.55 hours between three stores this shift. The first was inherited from the previous shift, and was dumped after a normal lifespan. The second was put up with little incident, but was aborted early by a loss monitor interlock that may have been due to corrupted wfgs in two sextupoles. The third was put up after restoring systems from the permit link interlock, a quench link interlock in yellow, a severe weather stand-down, and a mini power-dip that occurred during the stand down. That store lasted 45 minutes before a trip of the RHIC RF cooling system tripped off all of the RHIC power amplifiers, bringing the store to an abrupt end. As of the end of the shift, water systems personnel are coming in to remedy problems with the cooling tower.

NSRL ran 1 GeV iron for biology for 2.72 hours, with 0.7 hours of machine development. The end of the running period was conducted in exclusive mode to expedite accesses before the severe weather stand-down. BLIP ran for 5.07 hours, and has been off since a mini-power dip tripped off bending magnet 2. Polarized proton development ran for 4.75 hours, held up by problems with the LINAC after the power dip. As of the end of the shift, LINAC personnel are in to correct problems with BM2.

Notes to Operations:

A small change was made in the AGS LLRF this afternoon, and for normal RHIC running the ARF.SYNCH-LOOP.ST must be turned on and ARF.TRIG-3 DLY.T0 must be set to OFF.

157 Tue 12 Jun 07

During the early morning hours (as per Brian van Kuik):

Physics ran for 6.3 hours this shift with 0.7 hours of Machine Setup. RHIC was held off for an hour due to RHIC RF Cooling Tower fan problems.

Pumproom personnel were unable to bring the cooling tower fans back on. They ended up opening to the bypass valve for the tower to allow domestic water to bring the temperature of the RHIC PA cooling water down. Afterwards a store was put up for Physics and continues to run as of the end of shift.

Booster was down most of the night and required Pumproom Personnel to come in to backflush coils for the C4 dipole and quad magnets. This caused the store in RHIC to be extended until Booster was brought back online.

BLIP was off all night due to problems with the BM2 magnet. Linac personnel will repair the BM2 magnet power supply during the day.

During the day (as per Nick Kling):

RHIC physics ran for 3.92 hours over two stores. The first store, inherited from the previous crew, was extended due to problems restoring the Booster after the overnight repairs that took place. Once the Booster was restored another store was successfully put up and ran for 3 hours until it was dumped to facilitate scheduled repairs to the PHENIX drift chamber. NSRL ran Biology ran 5 hours with 1 GeV Iron ions. Polarized proton development ran for 4.17 hours. BLIP ran for 3.25 hours after repairs to the BLIP bending magnet BM2 was completed.

During the afternoon and evening (as per Jen Niedziela):

RHIC physics ran for 2 hours this shift in a single store that was put up after recovery from an experimenter access period, a reset of the 720Hz timing chassis, a quench detector problem in sector 7, a trim quad power supply replacement, and attempts to correct or work around a tripped AGS RF power amplifier. As of the end of the shift, high level RF personnel are in to repair station KL.

NSRL ran 1 GeV biology for 1.33 hours, and requests that no iron beam be extracted down the line due to new equipments that has been installed. Polarized protons ran for 5.75 hours, and BLIP ran for 8.65 hours. BLIP and polarized proton setup were held up briefly while the test for the B15 current transformer was performed, and during troubleshooting to restore the permit status after the test.

Notes to Operations:

The BTA multiwire gain has been changed to allow better resolution of protons in the transport line. Until the gain is adjusted back, the gold beam may saturate the multiwires.

The MonoPole experiment has been steered out of collisions, and collisions have been established at IR 10 for LARP experimenters.

158 Wed 13 Jun 07

During the early morning hours (as per Brian van Kuik):

Physics ran for 1.4 hours this shift with 1.6 hours of Machine Setup. Two store this shift were dumped prematurely due to quench protection assembly (QPA) problems with the QPA for the yo8-tq5 power supply. CAS replaced the QPA for yo8-tq5 twice this shift under the direction of D. Bruno. APEX ran for 0.5 hours this shift. As of the end of shift, the yo8-tq5 power supply is being recovered and RHIC is being restored to Inejction energy.

BLIP ran all shift.

Notes:

AGS RF Station KL had its Crowbar Chasis replaced.

AGS RF Station JK tripped off 3 times this shift on a tuning supply fault.

AGS RF Station K tripped off 2 times on an anode feedback fault.

yo8-tq5 power supply had its QPA replaced twice.

During the day (as per Nick Kling):

APEX ran for 6.85 hours after a slight delay recovering from a failure on the previous shift. NSRL Biology ran for 4 hours with 1 GeV Protons from Linac. Blip ran for all 7 hours of the shift. Note To Operations: J. Guercio has requested that MCR not send CAS to reset AGS Rf station K if it trips off at any time. If the station trips off it should be left off for the Rf group to investigate.

During the afternoon and evening hours (as per Jen Niedziela):

APEX ran for 4.3 hours at the beginning of the shift, followed by 3.5 hours of physics running. There were two spurious resets of cfe-2b-ps2, one at the first attempt to put up a physics store which caused the store to be lost, and the second after ramping up to flat top and declaring physics. Controls personnel investigated, and reported that there might be a hardware issue.

NSRL ran 1 GeV protons for 3.33 hours, and has requested that no beam be restored to the target area until after experimental arrival tomorrow morning. Polarized proton setup ran for 3.2 hours, and BLIP ran for 8.66

hours.

159 Thur 14 Jun 07

During the early morning hours (as per Brian van Kuik):

Physics ran for 1.6 hours this shift with 0.1 hours of Machine Setup. Towards the end of the store, which started on the previous shift, ended when the bi4-tq6 power supply tripped off. D. Bruno examined the power supply from home and instructed CAS to replace the power supply. After the power supply a leak in a pipe fitting caused water to get into the control panel for the Star Modified Chilled Water System, causing it to trip off. With the Star Modified Chilled Water System being down will keep Star Experimenters from gathering data from any physics store, but the Water System for the Star Main Magnet is still functioning so a store in RHIC is possible. After taking care of the pumproom alarm for Star, an attempt to tune RHIC for a Physics store was thwarted by the bi4-tq6 power supply not ramping to its injection reference setpoint. D. Bruno again plus Controls Personnel were consulted for the bi4-tq6 power supply. A. Marusic confirmed that there was not a problem with cfe-4b-ps5 front-end computer that is associated with the bi4-tq6 power supply. CAS with the aid of D. Bruno found a bad fiber optic cable going into the fiber optic control board for the bi4-tq6 power supply. As of the end of shift, R. Schoenfeld is in from Controls Hardware is in to repair the end of a fiber optic cable to the fiber optic control board for the bi4-tq6 power supply. BLIP ran for 7 hours shift. BLIP was down due to Linac Mod 4 tripping off on an ignitron water fault.

Polarized proton development in AGS ran for an hour this shift.

During the day (as per Nick Kling):

Physics ran for 6.05 hours over two RHIC stores. The first store, which by all standards was a quality physics store, was of little use to either experiment due to various detector/power supply problems at both experiments. Following this store an access was made to the STAR IR to reset a breaker that had tripped during the first store. While this access was underway there was a trip of all of the STAR magnet power supplies that prolonged the recovery. As we were setting up to re-inject after the accesses one of the VME chassis in the RTDL system failed and needed replacement. Following this chassis replacement another store was put up

and remains in the machine as of shifts end. It should also be noted that a lingering effect of the RTDL problems seem to be a loss of LogView data for this latest store. NSRL ran Biology with 1 GeV iron ions for 6.30 hours. Polarized proton development ran for 3.5 hours. BLIP ran for 12 hours.

During the evening and overnight hours (as per Jen Niedziela):

RHIC physics ran for 10.9 hours between 3 stores this shift. The first was inherited from the previous shift, and ran out a normal lifetime. The second store was established without incident and ran for five hours. The third store was again established immediately, and continues in the machine as of the end of the shift.

NSRL ran 1 GeV iron for 1 hour, and polarized proton development ran for almost five hours. BLIP ran all shift.

160 Fri 15 Jun 07

During the day (as per Nick Kling):

Physics ran for 4.88 hours during this shift. 4.38 of those hours were from a store inherited from the previous crew. This initial store was dumped during end of store activities by a loss monitor interlock caused by a collimator moving to an incorrect position due to corrupted data in the collimator manager. After one failed ramp attempt a physics store was successfully put up. Unfortunately soon after reaching flattop the STAR main tripped and the ensuing vacuum pressure rise killed the store after only 30 minutes. After 2.5 hours repairing the STAR main magnet supply there was one final ramp attempt that failed due to what appears to have been a bad orbit around the Stochastic Cooling kicker location that created enough losses to pull the yet another loss monitor permit. Minutes before the BLAM alarms had cleared from the latest round of losses a fire alarm in PHENIX originating from the high sensitivity smoke detector system halted RHIC operations for the remainder of the shift. NSRL ran for 5.28 hours with 1 GeV iron ions. Polarized proton development ran for 6.66 hours. BLIP ran for all 12 hours of the shift.

During the evening and overnight hours (as per Brian van Kuik):

Physics did not run this shift. At the beginning of shift Fire Alarm Electricians were troubleshooting and checking out the Phenix Fire Alarm System. The Fire Alarm Electricians found no problems and Phenix Personnel restored their equipment prior to Operations sweeping the

Phenix IR. Upon restoring the RHIC ring to injected beam and preparing for a physics store, problems arose when bringing on the Xarc90 power supply. It would not turn on. CAS went out the power supply, inside bldg. 1000P, and found out that power was not going to the 480V the power supply. Line Crew were contacted to reset the breaker for the Xarc90 power supply in the 1000P Subyard. D. Bruno was also contacted to troubleshoot the power supply, with phone consultations from J. Sandberg. While the troubleshooting of the Xarc90 power supply was ongoing, power was lost to racks of equipment in 1000P which contained various power supply, vacuum, and instrumentation equipment. The Sector Valves in W, X, and Y lines all closed. All of them except xsv5 and ysv1 opened. D. Wilson came in and as of the end of shift is replacing the solenoid valves for the xsv5 and ysv1 Sector Vacuum Valves. The Xarc90 power supply is back on with D. Bruno being assisted by Line Crew and CAS found that the Master Interlock Relay-K16 was the source of the Xarc90 power supply's problem.

Polarized Proton development ran for 5 hours this shift.

BLIP ran all shift.

161 Sat 16 Jun 07

During the day (as per Nick Kling):

Physics ran for 4.12 hours on one physics store that remains in the machine as of shifts end. The first 4 hours of the shift were spent recovering from the power issues at 1000P that occurred on the previous shift. The first two store attempts were brought down by losses associated with the insertion of the Stochastic Cooling kickers at the beginning of store. Additional problems with the YS3 Rf station masked this problem somewhat and the repairs to it delayed operations for an additional 2 hours. Since it is not yet known what is the underling source of these Stochastic Cooling related losses, it has been decided that we will not enable Stochastic Cooling until the problem is fully understood. Polarized proton development ran for the final 3.66 hours of the shift. BLIP ran for all 12 hours.

During the evening and overnight hours (as per Brian van Kuik):

Physics ran for 6.4 hours this shift between two stores. The first store began on the previous shift and was dumped normally. The second store

was put up right after the previous shift's store and also was dumped normally.

The three attempts at a store afterwards all ended with slow beam losses. The first and third slow beam losses happened when the multi-bunch gap cleaning was turned on. The second attempt also was pulled due to slow losses, but before the multi-bunch gap cleaning was turned on. Yellow Storage RF Cavity 3 never came up to voltage during rebucketing, even though it was on and ready according to the redi-panel display. D. Goldberg is coming in for YS3 Storage cavity as of the end of shift.

Polarized Proton development work ran while RHIC was at store until 0100hrs this shift.

BLIP ran all shift.

162 Sun 17 Jun 07

During the day (as per Travis Shrey):

Physics ran for 7.23 hours between two stores this shift. The first was put up after problems with early store losses were resolved and ran until a loss monitor permit interlock was incurred after a trip of a RHIC trim quad. The second store was put up after recovering from the interlock, a trip of the AMMPS, and was put up with lower than normal intensities to avoid complications due to high temperatures in the W-Line power supply house.

BLIP ran for 1.59 hours, held off due to complications from a loss of cooling water early in the shift. Polarized protons are off until repairs can be affected to the AGS horizontal tune quad - one of the eight power modules is off, and the supply can not ramp to sufficiently high current for polarized operation. Power supply personnel will affect repairs later, as the repair is extensive.

Notes to Operations:

The emergency off HSSD zone 3 detector functionality at PHENIX has been bypassed after consultation with Y. Makdisi and C. Pearson. In the event of an emergency, the redundant system will still activate the appropriate response.

During the evening (as per Brian van Kuik):

Physics ran all shift.

163 Mon 18 Jun 07

During the early morning hours (as per Jen Niedziela):

RHIC physics ran for 6.45 hours between two stores this shift. The first was inherited from the previous shift, and the second was put up immediately after the first ran out a normal 5 hour lifetime. The second store has just reached the end of its lifetime as of the end of the shift. BLIP ran for 6.7, only off due to minor drift of the null phase buncher, which was reset by CAS.

During the day (as per Jim Jamilkowski):

RHIC physics ran for 5.03 hours in one store, followed by a short access for STAR and MonoPole experimenters. Diagnostics were also performed on the Yellow stochastic cooling kicker tank insertion mechanisms, which yielded that the movement of tanks one and two shows coupling between the left and right sides. J. M. Brennan has issued a Ring entry request in order to continue investigating the problem. As of the end of the shift, we are ramping the next store.

D. Bruno reports that the current reference readback for yo4-qs will need to be fixed when the opportunity arises.

The air conditioning in 1000P appears to be running well since a trip circuit was replaced and the trip threshold was raised for the unit. Note to Operations: The Controls Group beeper is not currently in service.

During the evening (as per Nick Kling):

Physics ran for 6 hours over two stores. The first store was ramping up when the shift began and remained in the machine for 2.43 hours before it was aborted by a loss monitor interlock caused by a trip of the yi3-tq6 power supply. After replacing the offending power supply another store was put up and remains in the machine as of shifts end. NSRL Biology ran with 1 GeV iron ions for 6.18 hours. Polarized proton development ran for 7.18 hours. BLIP ran for all 9 hours of the shift.

Note to Operations: The output cables of the AGS horizontal tune quad power supply have been reversed to accommodate polarized proton development requirements. Archives the AGS tune function from prior to this shift will no longer work without expert modifications.

164 Tue 19 Jun 07

During the early morning hours (as per Jen Niedziela):

RHIC physics ran for 7.6 hours between two stores this shift. The first store was inherited from the previous shift, and was extended 2.5 hours past its expected end time due to problems with AGS beam losses at the polarimeter, and then failure of a circuit breaker in the ATR vacuum controller house in building 1000P. When the first store finally ended, a second store was quickly established, and continues in the machine as of the end of the shift.

Polarized proton setup ran for one hour, and BLIP ran all shift.

During the day (as per Jim Jamilkowski):

RHIC physics ran for 5.65 hours between two stores, the second of which is still underway. NSRL radiobiology experiments using 1 GeV proton beam ran for 3.8 hours. AGS pp development ran for two hours, though efforts were stymied by problems establishing BTA transport, a lingering warm snake power supply problem, and Booster orbit corrector controls problems. BLIP ran for 7.0 hours.

During the evening (as per Nick Kling):

Physics ran for 6.02 hours over two RHIC stores that progressed without incident. The final 2 hours of the shift were spent attempting to repair RHIC cfe-7c-bpm1. As of the end of the shift controls hardware personnel are en route to replace a processor for this computer. NSRL Biology ran for 1.83 hours with 1Gev protons from LINAC. Following Biology 1.2 GeV protons were set up for use later in the week. Polarized proton development ran for 6 hours. BLIP ran for all 9 hours of the shift.

165 Wed 20 Jun 07

During the early morning hours (as per Jen Niedziela):

RHIC physics ran for 3.1 hours in a single store that was established after replacement of a processor in a BPM chassis in RHIC, and an attempt at a ramp failed due to a beam induced quench in the blue ring. As of the end of the shift, APEX studies have begun after being delayed two hours due to problems establishing a RHIC store. Polarized proton setup ran for 2.25 hours, and BLIP ran all shift.

During the day (as per Jim Jamilkowski):

APEX ran for 4.73 hours after a delayed start. A Blue beam induced quench interrupted APEX when a beam dump was attempted after the Blue abort kicker voltage had started to drop out. An error in the Down tape sequence that caused the voltage problem to remain unchecked before the beam was dumped has since been corrected. A planned NSRL fault study has been deferred. BLIP ran for 7.0 hours.

During the afternoon and evening (as per Nick Kling):

APEX ran without interruption for the first 4.50 hours of the shift. After 35 minutes of setup Physics was declared and ran for the remaining 3.92 hours of the shift. Development of the NSRL Solar Particle Simulator ran for all 9 hours of the shift. Polarized proton development ran for the final 2.83 hours of the shift. BLIP ran for all 9 hours of the shift.

166 Thur 21 Jun 07

During the early morning hours (as per Jen Niedziela):

RHIC physics ran for 4.62 hours in three stores this shift. The first store was inherited from the previous shift, and ended after five hours. The dump of this store pulled the loss monitor permit, and registered a 90% BLAM alarm in the blue ring which prevented injection for an hour. The second store lasted for almost two hours before being prematurely terminated by a blue abort kicker prefire, which resulted in beam induced quenches in several magnets. The third store was established after the quench recovery, and remains in the machine as of the end of the shift.

NSRL machine development of the solar particle simulator ran for 2.67 hours, and several NSRL proton energies have been established. Polarized proton development ran for an hour at the beginning of the shift. BLIP ran all shift.

During the day (as per Jim Jamilkowski):

RHIC physics ran for 10.45 hours between three stores. NSRL radiobiology experiments using 1000 MeV, 250 MeV, and 2000 MeV protons ran for 6.55 hours. AGS pp development ran for 2.25 hours. BLIP ran for 11.58 hours. A planned LINAC emittance study has been cancelled for tonight.

During the evening and overnight hours (as per Nick Kling):

Physics ran for 10 hours on two RHIC stores. The shift began ominously

with a weather induced power dip taking down a physics store one minute into the shift. This was followed by a ramp attempt that failed soon after getting to flattop. On this attempt a front end computer became unresponsive on the ramp and generated WFG errors that could not be corrected before the beam was aborted by a loss monitor permit interlock. After an hour of waiting for the ensuing BLAM alarms to clear we were able to put up a successful ramp that remained in the machine for the standard 5 hour period. After this another 5 hour physics store followed but injection of this store was delayed for close to an hour by a Tandem water flow interlock and a crowbar fault and breaker trip of the YS3 Rf station. As of the end of the shift the experiments are ramping down their detectors and we are setting up for another fill. NSRL ran Biology with protons at various energies for 4.88 hours of the shift. This was followed by 2.67 hours of tuning with the 250MeV proton setup. Polarized proton development ran for 3.1 hours. BLIP ran for 13.07 hours. LINAC mod two tripped twice on water faults and was off for a half hour to back-flush Mod2.

167 Fri 22 Jun 07

During the day (as per Jim Jamilkowski):

RHIC physics ran for 4.22 hours between three stores. The first was aborted due to lead flow interlocks that are attributed to overpressurization of the LN2 valve actuation system that controls the Helium supply to the Ring. The second store was delayed by circuit breaker trips at 1000P, and then was terminated by a trip of bo6-tq5 that was caused by quench protection threshold adjustments. The third store continues unabated. NSRL radiobiology experiments using 1 GeV Fe beam ran for 5.55 hours. AGS pp development ran for 4.1 hours. BLIP ran for 11.87 hours.

Notes to Operations:

G. Marr has created a TAPE sequence for restoring tripped RHIC corrector power supplies, under
RHIC/Systems/PowerSupplies/Correctors/CorrectorsOn.

A. Zelenski has issued revised idling, restoration, and sparking instructions for the polarized source, which have been entered in the operations wiki.

During the evening and overnight hours (as per Jen Niedziela):

RHIC physics ran for 6.62 hours in three stores this shift. The first was

inherited from the previous shift, and ended after a normal lifetime. The second store was established after resetting the yellow RF DSPs and issuing a home to the stochastic cooling kickers. This store ran for 3.5 hours before it was prematurely terminated by a loss monitor permit pull and beam induced quenches caused by a blue abort kicker prefire. The third store was put up after recovery from the prefire event, and remains in the machine as of the end of the shift.

NSRL ran biology for 1 hour, ultimately ending the biology program early due to problems with the 20 degree arc power supply that required line crew and engineer assistance. Polarized proton development ran for 2 hours, and BLIP ran for 11.75 hours.

Notes to Operations:

The power amplifier for YS3 has been tripping before rebucketing.

Stochastic cooling kicker tank 2 has not fully retracted on the down ramp, indicating "Slip detected". We have been able to issue additional "Home" commands, and this has remedied the problem. LLRF personnel were consulted, and indicate that this is a normal condition.

168 Sat 23 Jun 07

During the day (as per Lee Hammons):

RHIC physics ran for 10.22 hours over three stores during the shift. NSRL physics ran for 8.47 hours, and AGS polarized proton development ran for 7.55 hours. Sparking was observed on the polarized proton source early in the shift, and the ECR low-level voltage was adjusted in order to stabilize the source. After the sparking was eliminated, the voltage was restored to its nominal value. In addition, we encountered difficulty with the RHIC RF frequency, leading to difficulty with AGS-to-RHIC synchronization. After the yellow RF DSPs were rearmed, AGS-to-RHIC synchro was restored. Finally, the yellow right stochastic kicker is exhibiting difficulty during retraction. It has been necessary to use issue a home command using the stochastic cooler application.

BLIP ran for 12 hours during the shift.

During the evening and overnight hours (as per Jen Niedziela):

RHIC physics ran for 7.52 hours in three stores this shift. The first was terminated early when a quench link interlock occurred, stemming from a

trip of the 24 V power supply on the Yellow Main power supply. The second was put up after recovering from the failure, and lasted for five hours. The start of the third store was delayed by failure of the stochastic cooling kickers, which were unable to be retracted, and required instrumentation personnel to come in and assist. A store was put up after recovering, and remained in the machine for the final eight minutes of the shift.

BLIP ran for 11.63 hours, and AGS gold development ran for m hours.

Notes to Operations:

The stochastic cooling kicker tanks should not be inserted, due to potential failure of ball bearings on the device.

AGS RF station K is off, and the functions of the other cavities have been adjusted to compensate.

169 Sun 24 Jun 07

During the day (as per Lee Hammons):

RHIC physics ran for 7.65 hours during this shift over two stores one of which was inherited from the previous shift. AGS polarized proton development also proceeded during the shift for 5.37 hours. However, proton operation was hampered by a repeated failsafe interlocks from chipmunk NM222 on the U-upstream berm. Members of the access controls group were consulted and, ultimately, R. Atkins was called in to replace the chipmunk. In addition, the PHENIX central magnet tripped repeatedly. After consulting with the system engineer, the voltage tolerance for the supply was adjusted, and no further trips were encountered.

BLIP ran for 12 hours during the shift.

Note:

The UWBERM key appears to be missing. It could not be located in the MCR. The CAS copy was used for the access to the berm.

During the evening (as per Travis Shrey):

Physics ran for 2.9 hours in a single store this shift that was taken down by a blue abort kicker prefire. After waiting out the 1 hour BLAM alarms another store was ramped and lost at store due to large yellow losses

resulting from corrupt wfgs for two sextupoles in 7 o'clock. As of the end of the shift MCR is waiting out the latest BLAM alarm and preparing for the next store. PP setup ran for 3.5 hours. BLIP ran all shift. There is a STAR tower common alarm caused by a malfunctioning pump in a test tank. CAS spoke to J Deboer via phone; pump room will investigate in the morning.

170 Mon 25 Jun 07

During the early morning hours (as per Nick Kling):

Physics ran for 5.83 hours over two RHIC stores. The night began waiting for BLAM alarms to clear from losses encountered during the previous shift. Once these alarms cleared there was another slight delay due to a trip of the X and Y arcs from a phantom PASS interlock. When this problem was resolved a physics store was successfully put up and remained in the machine for 5.52 hours. This store was extended for a half hour due to a failure of Controls Server II (acnsun68). Once the servers running on this machine were moved to a working machine we were able to dump the beam and inject a new store that remains in the machine as of shifts end. Rf personnel worked on machine development on the gold cycle behind stores throughout the shift. BLIP ran for all 7 hours of the shift.

During the day (as per Lee Hammons):

RHIC physics ran for 4.48 hours during this shift over a single store. The first store was inherited from the previous shift, however, an attempt to establish a second store was aborted by a quench link interlock in the blue ring originating from the 8 o'clock sector. Attempts at determining the cause of the quench were inconclusive, however, a distinct loss of blue beam occurred just before the quench. As of the end of the shift, quench recovery is complete, and we prepare for a new store.

Polarized proton development in the AGS ran for 3.89 hours during the shift. AGS RF station K was restored to operation near the beginning of the shift. In addition, LINAC RF module 8 was repaired and the 7651 tube for the module was replaced.

NSRL physics ran for 3.26 hours. The C5 orbit corrector in the Booster malfunctioned during the shift with minor impact on the NSRL program. To correct the problem, CAS rebooted the PLC controller.

Finally, BLIP ran for 6.09 hours. Several BLIP target changes occurred

during the shift.

During the afternoon and evening (as per Jim Jamilkowski):

RHIC physics ran for 7.18 hours between two stores after a short access to disable the Yellow stochastic kicker drives. NSRL radiobiology experiments ran for 3.43 hours using 1 GeV Fe beam. AGS pp development ran for 6.3 hours. BLIP ran for 8.82 hours.

171 Tue 26 Jun 07

During the early morning hours (as per Nick Kling):

Physics ran for 6.18 hours over 2 RHIC store. These store were shortened by 45 minutes each to try to maximize the luminosity over the final hours of the run. Unfortunately the latest store attempt died shortly after physics was declared because of a tripped corrector power supply. The experiments have agreed to try for one more store attempt after the BLAM alarms from the latest attempt have cleared. Polarized proton development ran for the first 1.5 hours of the shift. NSRL machine development ran for 2 hours. BLIP ran for all 8 hours of the shift.

During the day (as per Lee Hammons):

RHIC physics ran for 3.17 hours during this shift, ending the FY07 run. NSRL ran for 3.75 hours during the shift. The program suffered two interruptions due to the attempt to switch from gold running to polarized proton running in the AGS. The problem with mode switching turned out to be that the dwell field for the Booster main magnet was incorrect for AGS polarized proton and NSRL proton operation. After the correct main magnet function was loaded in the Booster, no further program interruptions were encountered.

In addition, AGS polarized proton operation ran for 0.87 hours. The program was delayed both by the difficulties mentioned above as well as a problem with chipmunk 222, requiring that the chipmunk be replaced. After the replacement, polarized proton ran for the remainder of the shift.

BLIP ran for 5.74 hours during the shift. A number of different BLIP targets were setup during the shift.

During the afternoon and evening (as per Jim Jamilkowski):

NSRL radiobiology and physics experiments using 250 MeV and 1 GeV proton beam ran for 8.75 hours. As of the end of the shift, Booster setup

for using protons from Tandem is underway. AGS pp development ran for most of the shift. BLIP ran for 8.71 hours.

The RSC checklist for protons in TTB has been completed.

172 Wed 27 Jun 07

During the early morning hours (as per Nick Kling):

NSRL machine development ran throughout the shift. Polarized proton development ran for the 1.5 hours of the shift. The heat run in the AGS is underway. BLIP ran all shift.

During the day (as per Lee Hammons):

NSRL physics ran for 3.87 hours during this shift. Beam operations were hampered by A. Rusek's desire for higher intensities at the NASA experiment requiring that we switch from the Tandem to the LINAC as the source for protons. Following the machine switch, NSRL operations began. Beam operations will switch back to Tandem later in the day.

BLIP ran for 6.68 hours during the shift.

During the afternoon and evening (as per Jim Jamilkowski):

After completing an NSRL fault study using proton beam from LINAC, work began on developing the NSRL Solar Particle Simulator using proton beam at various energies from Tandem. AGS pp development continued for most of the shift. BLIP ran for 6.5 hours.

During the evening and overnight hours (as per Nick Kling):

NSRL Solar Particle Simulator development ran for the first three hours of the shift. The remainder of the time was spent setting up Titanium for NSRL. Polarized proton development ran for the first 3 hours of the shift.

BLIP ran for 8.53 hours.

173 Thur 28 Jun 07

During the day (as per Lee Hammons):

NSRL physics ran for 5 hours today using titanium beam. Beam operations at NSRL began after an initial tuning effort by Tandem to increase the output intensity. A second effort later in the shift was

necessary to reestablish the requisite intensity.

AGS polarized proton development ran for 4.7 hours during the shift.

BLIP ran for 5.87 hours during the shift.

During the afternoon and evening (as per Jim Jamilkowski):

NSRL radiobiology and physics experiments using 1 GeV Ti beam ran for 6.72 hours. AGS pp development ran for 7.5 hours. BLIP ran for 6.87 hours due to a trip of BM2. As of the end of the shift, AGS RF bunch merge development work using Au beam is underway.

174 Fri 29 Jun 07

During the early morning hours (as per Brain van Kuik):

Machine Development in AGS ran for most of the shift with Gold. For the last hour of shift, AGS Machine Development switched back to Polarized Protons with Tandem preparing titanium for today's NSRL Experimenters.

BLIP ran for 7.75 hours this shift, after V. Lodestro replaced the Phase 9 fuse and adjusted the output water flow switch for the BM2 power supply.

During the day (as per Lee Hammons):

NSRL physics ran for 2.88 hours during this shift, concluding the 7B run. The setup for the NSRL program was hampered by low intensity from Tandem early in the shift. Tandem personnel worked on tuning until nominal intensities were restored. Beam operations were also delayed during the program because of an object foil change and the associated conditioning.

AGS polarized proton development ran for 6.8 hours during the shift. Operation was briefly interrupted by a security interlock at the LINAC requiring a reset.

Finally, the BLIP physics program was also concluded during this shift. BLIP ran for 5.92 hours.

During the afternoon (as per Jim Jamilkowski):

AGS pp and NSRL Ti beam activities ceased at 16:00.

The readback for BTA power supply QH8 is about 15 A lower than the requested setpoint.