

RHIC SHUTDOWN SCHEDULE – REV. 1

R. Zaharatos – March 11, 2003

RESULTS – 1830HRS WEDS. MARCH 12, 2003

**SHUTDOWN REQUEST PRIMARILY FOR ACCESS TO BY STAR
EXPERIMENTERS**

**SHUTDOWN PERIOD: WEDNESDAY MARCH 12, 2003, 0900 TO
1700HRS(MOST SYSTEMS READY FOR BEAM BY 1630HRS)**

AGS – CONTROLLED ACCESS(1030-1400HRS)

BOOSTER RESTRICTED ACCESS – 1030-1430HRS

**RHIC TUNNEL RESTRICTED ACCESS PERIOD - 0915 to 1330(START OF
SWEEPS WHERE JOBS HAVE BEEN COMPLETED) – HP surveys required
for beam dump and injection line.**

**RHIC IR's – RESTRICTED ACCESS FOR STAR AND BRAHMS(SWEEPS
BEGIN AT 1700 OR SOONER)**

PRIMAY JOBS:

JOBS STATUS CODE: **C** complete **IP** in-process **RS** reschedule **CAN**
cancelled
* additions

AGS RING ACCESS JOBS

- RS** 1. Main Magnet serial number inventory(M. Hemmer)
- RS** 2. Test Ring exhaust fans(AC Grp)
- RS** 3. Modify North Conjunction Gate for simultaneous release(Acc. Ctrls.)
- RS** 4. Modify North Gate for simultaneous release
- C** 5. Fire Safety inspection
- C** 6. IPM – Investigate C5 and E15 Steerer Magnet wiring
- C** 7. Change PA tube in RF station E
- C** 8. RF System – replace feedback amplifiers in stations B, DE, and IJ

AGS EXTERNAL

- C 1 Check out CDC.AGS.AUXRF – Bldg. 929Ctrls. Grp.)
- C 2 Firmware change in CDC-ABI-L18 device controller for L20 Septum and A4 Kicker – L18 Hse.(Ctrls. Grp.)
- C 3 Replace ion pump power supplies where possible in A10/E18/H10 Hses.
- C 4 Repair all IPPS as required(A10/E18/H10 Hses.)
- RS 5 Replace control card for C-17 turbo(may shut down sector)
- C 6 Troubleshoot vacuum problem with Splitter BB3 P.S.(E18 Hse.)
- C 7 Siemens – replace pressure meter on pedestal #3, replace 2 questionable brushes for the generator exciter, clean exciter brush rigging insulators.
- RS 8 Investigate power ref. for cycloconverter(Bannon/Ctrls. Grp.)
- RS 9 Siemens pedestal #2 south – check intermittent loosing of signal for pressure trending(Bannon)
- RS 10 Siemens – install preamp. for accelerometers for ped. #2(Bannon)
- C 11 BB3 vacuum – check tripped P>S. in E18Hse(reset okay)

BOOSTER RING ACCESS JOBS

- RS 1. Replace emergency light batteries at plug door
- RS 2. Check and drain air lines
- C 3 Replace RF station E6 measure flow with flow control valve.
- C 4 Inspect D3 and take pictures for future job plan
- C 5 Check D6 area and alcove for possible air problem(Water Sys.)

BOOSTER EXTERNAL

- RS 1 Check Bldg. 914 Pump Hse. spare air compressor unit
- RS 2 Replace switches on timing decoder board with jumpers.(Ctrls Grp)
- C 3 Install PPMR service switch(Bannon)
- C/IP 4 Terminate BPM cables(only if machine is off)
- RS 5 Quad Reference Magnets(2) – remove measure flows(Bldg. 930A)
- C 6 Modify logic for DH1 and LTB Beam Stops(Access Ctrls.)
- C 7 PPMR – hook up old computer and wire new and old PPMR in parallel(Bannon)
- RS 8 Horizontal Quad P.S. – install modified reg. brd(Bannon)
- C 9 Replace tunnel lighting relay(Access Ctrls.)
- C 10 Change/Modify regulator board for DC Bumps

LINAC TUNNEL

- RS 1 Check HEFT 5 SEM
- RS 2 SNS Laser work(Sikora)
- RS 3 Install cover plate in HEFT

LINAC EXTERNAL

- C 1 Change hydrogen bottle for proton source
- RS 2 Install new 400w RF Ampl. in LL Drive

NSRL EXTERNAL

- IP 1 Bldg. 958 heating – check heaters at outdoor A/C units inside berm fence

NSRL TUNNEL

- IP 1. Complete and test light controls for target area(Access Ctrls.)

X/Y ARCS

- C 1. Check water filter bag(FES) – Gate WEG2
- C 2 Replace H.V. card for Yip1.

RHIC TUNNEL

- C1 P.S.'s – repairs(See List)
- RS 2 Stochastic Cooling(sect. 2) – install thermocouple equip.(Gassner)
- C 3 Inspect entire tunnel for condition of ice balls.(Zapasek)
- C 5 Install p/p outlets in 1002(Elect.)
- C 6 Check/read SRD's at 1C, 7A, 9C, and 11A
- C 7 Stochastic Cooling – start thermocouple installation
- C/RS 8 Injection Kickers – Swap out Blue #3 and #4(replaced #3)
- RS 9 Roman Pots – Modifications/repairs/testing for administrative controls(sect 1&2)
- C 10 Cryo controls: access to cabinets at 7Q6(7GE1 Gate) and cabinet at 9Q14(Gates 10GE1 and 9Gi1)
- C 11 Cryo - 6Q3 vibration measurements with circulator off(Gate 6GE3)

Controls Systems:

- RS 1. 1004B – remove SIS Scaler board from 4b-ps4 and install in 4b-ps5.
Install V102 time line decoder board in 10a-ps3.
- RS 2 1010A – Install V102 time line decoder board in 10a-ps3.
- C 3 Check AC power reset modules(1003C/3Z1, 9C/9Z1)
- C 4 Replace Lo Res Module for bi9-snk7-1.4ps(1009C/9Z1)

FOLLOW-UP REPAIRS FROM RESULTS OF TUES. ICE BALL INSPECTION

Ice Team:

ALL COMPLETE

Fred Orsatti

Gregory P. Heppner

Location:

Type of Fault:

O10Q3 Magnet

(Triplet) Found Thermostat not connected to the tree, Ice beginning to form around the flange.
(Access thru Bldg. 1010A, gate 10GE1)

11-DX Magnet

(DX) Heater does not appear to be working, floor fan seems to be keeping the ice off for now. However, Ice is forming on the opposite side flange where the fan is not cooling.
(Access thru Bldg. 1012A, gate 12GE1)

O12Q2 Magnet

(Triplet) Heater does not appear to be working, floor fan seems to be keeping the ice off for now. However, Ice is forming on the opposite side flange where the fan is not cooling.
(Access thru Bldg. 1012A, gate 12GE1)

O-03Q21 Magnet

(CQS370) Heater does not appear to be working, Ice is forming up the horizontal top portion of the tree towards the power lead box.
(Located at Alcove 3C, access thru gate 2GE2)

I02Q4 Magnet

(Cold to Warm) Heater does not appear to be working, Ice is forming up the horizontal top portion of the tree towards the power lead box. (Access thru gate 2GE2, turn left towards alcove 3A)

O-09Q10 Magnet

(CQS10) Found the Thermostat bypassed.
(Access thru gate 8GE1, turn right)

Ice Team:
Rich Conte
Joe Drozd

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4-DX Magnet (DX) Heater does not appear to be working, floor fan seems to be keeping the ice off for now. However, Ice is forming on the top portion of the tree where the fan is not cooling.
(Access thru RF area)

VACUUM

- C 1. Check remote operation: g7-tmp-pi3.1(sect. 7)
- C 2. Remove screen from sector valves(sect. 1002/1010)
- RS 3. Replace gauges: Cryostat – bi12-cc-pi21, bi4-cc-pi21, g12-cc-pi2
TMP – bi9-tmp-pi21, g3-tmp-pi1(sect. 3,4,9,12)
- RS 4. Bad cold bore gauge – yi11-cc-pc18(sect. 11)
- RS 5. Reconnect/replace TMPS cold cathode gauges:
 - a/ y012-cc-pi14.2
 - b) y05-tmp-pi6.1
 - c) bi5-tmp-pi13.1
 - d) bi5-tmp-pi21
 - e) g7-tmp-pi1
- C 6. Replace leaking rough pump at g2

RHIC EXTERNAL

- 1. Power supplies. See P.S. List
- 2. Pull cable to 4GE1, 4GE2, and 4GE3 gates from 1004B(Acc. Ctrls.)
- 3. PHOBOS – tower fan maintenance
- 4. 1004 – switch tower pumps
- C 5. Install PLC software upgrade in 1010 / *possible access required*

Control Systems:

- 1. Check V113 in 5C-PS3(1005C)

RHIC POWER SUPPLIES(Bruno)

Maintenance Performed on 3/12/03

IR Power Supplies

1. Ice Ball Checks were done on 3/11/03. On 3/12/03 the thermostat that was replaced at O10Q15D15. O10Q2 had a thermostat mounted on it, it was connected electrically but not strapped to the tree properly. 11-DX heater had both conductors loose at O-11Q1 terminal strips. O12Q2 replaced thermostat. O-03Q21 replaced thermostat. I02Q4 has a heater that is not working, we mounted a fan on it for now. O-09Q10 replaced thermostat. O10Q8D8 heater current is only 0.23A, this means only half the heater is working, it needs to be replaced.
2. In 1010A, if there is time we may want to check more tq power supplies for shorted IGBT's by looking at the AC current during a turn ON. **Seven tq's were checked and one was found shorted, yo9-tq4-ps.**
3. Move new current regulator card from bi4-qd6-ps to y2-q6-ps because that p.s. runs up to 25A and I want to make sure this card is stable at higher currents. **Y2-q6 was stable with the new q6 current reg card. Then the new q6 curr reg card was moved to y12-q6 and it was stable there as well while the new y12-q7 and b12-q7 cards were being tested.**
4. Have a new current regulator card ready for q7 to reduce error. Maybe put new q6 card inside the new q7 at the same time. Test at 1012A. **y12-q7 and b12-q7 have 2 different current reg cards in them that were tested and are stable. Their dynamic error is reduced by a little over 2 times. Next I will bring up gain until it becomes unstable so I know my limits.**
5. Remove voltmeter and clamps from b12-q7-qp qpa. **This was done.**
6. Screw in more 3u chassis cards. 1012A and 1004B were started. **Rich K finished half of 1004B and some of 1002B. Mitch finished all of 1012A**
7. Possibly swap out firing card of y8-dh0-ps. **Nothing was done here.**
8. Inspect buildings 1004B, 1006B, 1008B 1012A for broken internal fans on stand alone dynapowers. 1010A and 1002B were checked. **Did not get too.**
9. Gasket doors of tq racks in 1004B. **Done.**
10. Swap out current regulators and Time constant cards for yo4-qd3-ps (error=-760mV) and yo9-qd9-ps (error = 680mV). **Done**
11. y12-dh0-ps tripped to the Off state 3/8/03, swap out Control Card or hkps?. **Joe D and Gregg Control card and hkps swapped out.**
12. y6-dh0-ps tripped the link on 3/9/03. the voltage was oscillating and then took off. The same thing happened on 12/19/03. We re-seated housekeeping p.s. connectors and the problem did not return until now. Replace hkps this time. **Joe D and Gregg swapped out hkps.**

QPA Work

- a. Start replacing all QPA D connector hardware?? (b2-dh0-qp, yo8-ql8-qp and yo8-qd1-qp done) **Nothing done.**

Gamma-T Power Supplies

1. Go into alcoves and tighten AC connections of Gamma-T's in 3C, 7A, 7C, 9A.
Nothing done.

Magnet Work

1. Ceramic Feedthrough cleaning in sector 3 where ground fault was found. This was done Tues 3/11/03

Snake and Spin rotator p.s. Work

1. More p.s. testing to high current. I think this is done.
2. Label the rest of the circuit breakers. Not done.
3. Replace DAC for bi9=snk7-1.4-ps and make sure setpoint has a small positive offset at zero. Also make sure p.s. still runs up properly. Done
4. Try and have a new time constant ready for spin rotators and/or go check snakes and rotators with a small step input and compare response. Done – switched over from resistive load time constants to inductive load time constants and that fixed the overshoot and high error problems Wing was seeing.

Quench Detector

1. 4b QD 5v QL bypass p.s.'s hooked up to UPS.
2. 4b qd1 ac cord bad, it was replaced.
3. 4b qd aux chassis p.s. burned up and replaced. This was a 12v p.s. for a fan. Jumper not set correctly so when the fan failed it was not reported back. This jumper was set up correctly now. All other quench detectors will be checked for this jumper setting by Dan O next time.

Corrector Power Supplies: See Table below Brain and Gene

1. If there is time and people start checking looking for broken corrector fans by checking all alcoves.

Corrector P.S.	Action (3/12/03) On all of these check AC connections and DC connections at the magnet and power supply.	Comments – What was really done- What was found	Serial Number
Bo2-th6-ps C	Indicates STBY-ERROR yet the p.s. is ON. Replace node card cable and inspect node card chips that were replaced. This p.s. also indicated Overvoltage once that may have been due to a quench. Check tightness of all DC and AC connections. Especially DC. Do not replace p.s. Record what was loose and tightened.	Loose magnet connections (1 full turn). Node cable changed-	
Bi8-tv10-ps C	Tripped OFF. Replace micro since a p.s. with R and C mod is not available.	Replaced micro-No Off sw r/c mod	335
Yi3-tv16-ps C	Trips on ERROR fault. The current and voltage takes off while the setpoint stays at zero. Swap out complete p.s. with one that has new micro and if possible R and cap mod. Check all AC connections and DC connections at the p.s. and magnets too. Loose AC or DC connections could cause this problem as well. See one trip 3/6/03 07:26, many others on 3/6/03.	Tighten all magnet connections. Old supply s/n 130 had errors at high ramp rates. New supply same. Burning smell in alcove, cannot locate source.	130
Yi3-tv16-ps C	Gregg and Mitch went down later on this day to swap out this p.s. again because it was tripping on an error and Overtemp.		466
Yo4-th12-ps C	Tripped OFF on 3/2/03. Replace micro since a p.s. with R and C mod is not available.	Already REV 14 No action taken	163
Yo8-dod3-ps C	Tripped OFF. Replace micro since a p.s. with R and C mod is not available.	New micro- no OFF sw r/c	452
Yo8-tv11-ps C	Tripped OFF. Replace micro since a p.s. with R and C mod is not available.	Already rev 14 No action taken	
Bi9-tv18-ps C	Tripped on an Overvoltage, 3/9/03 00:14 but voltage and current looked very noisy. Check all AC and DC connections. Do not replace p.s. Record what was loose and tightened.	Tighten all magnet connections. Same problem as yi3-tv16 with ramp rates	

Ramp rates: 15 sec rate seems safe. Errors result from 1 through 5 sec rates, sometimes 10 sec. Errors predominately ramping negative high current through zero to high + current. Some supplies may be more sensitive to higher rates. **-From Brian**

Valve Box Work

1. Need to replace flashers at top of valve boxes for 2b and 6b.??
2. Check light control chassis at 10A because no green lights work. ??
3. Check light control chassis at 12A because no red light on yellow valve box. ??
4. Check green light above blue valve box in 1002B. ??
5. Light control chassis in 1008B needs to be fixed. Opto logic is reversed. ??

Sextupole P.S.

1. yi7-sxd-ps tripped on a quench fault on 3/5/03 at 02:27. The setpoint, current, voltage and error glitched. Wfg was clean. Keep an eye on. This magnet string was already re-tightened once this year. **I have not seen this trip again so I am taking it off the list.**

ATR Power Supplies

1. Run X-ARC90 in voltage mode. **Nothing done.**
2. Test SWM p.s. setpoint buffer. **Nothing done.**
3. Tom Nehring may swap circuit breakers 42 and 44, probably won't happen anytime soon. **Nothing done.**
4. If ground fault comes back on WQ3 p.s. try something else. AFB board was replaced 9:50 Wed 3/5/03. **Nothing done.**
5. XARC90 and YARC90 phase sequence relay jumpered out. Decide what to do for fix. YARC90 phase sequence relay probably still good because LED lights. **Nothing done.**
6. Try ramping YARC90 with Costas, do we see spikes? **Nothing done.**