

RHIC Machine/Detector Planning Meeting

15 December 2004

Agenda

- **Schedule Issues – update on Shorts (Yip)**
- **Budget update (Kirk/Lowenstein)**
- **General Remarks (Pile)**
- **Report from Accelerators (Pilat)**
- **Polarized Proton Update (Bai)**
- **Report from experiments (STAR,PHOBOS,PHENIX,BRAHMS)**
- **RCF Issues (Throwe)**
- **Other business**

Planning Meeting Web Site: http://server.c-ad.bnl.gov/esfd/RMEM/rhic_planning.htm

RHIC Machine/Detector Planning Meeting

- **Overall Plan** (based on presidential budget)
 - **18 Nov 04 - Cryo on**
 - **19 May 05 – RHIC Run 4 ends**
 - **26 May 05 – RHIC cryo switched to LN₂ (27 weeks total)**
- **Details – as run/planned** (*some details based on '04 run and are subject to change*)
 - **18 Nov 04 – Cool down begins**
 - ~~25~~ **23 Nov 04 – Blue Ring Cold**
 - ~~2 Dec~~ **28 Nov 04 – Yellow Cold**
 - **29 Nov 04 – Short in D6-D8 dipoles Yellow Ring, schedule delay**
 - **3 Dec 04 – quad bus-bus short in sector 12, shutdown to repair**
 - **5 Dec ?? - “2 week” RHIC setup with beam begins**
 - ~~16 Dec 04~~ - **?? Jan 05 – “2 week” ramp-up with colliding beams begins**
 - **Late evening stores for experiments**
 - **2, 8 hr accesses for experiments if needed (based on last year’s plan)**
 - ~~30 Dec 04~~ **???** – **8 week physics with 100 GeV/n x 100 GeV/n Cu-Cu begins**
 - ~~12 Jan 05~~ - **First experiment access, bi-weekly thereafter (all up to 8 hrs and only if needed)**
 - ~~5 Jan 05~~ - **First beam experiment, weekly thereafter (up to 12 hrs/week)**
 - **24 Feb 05 – Nominal end of 8 week Cu-Cu run**
 - **24 Feb 05 – begin 3 week pp setup**
 - **17 Mar 05 – Begin 9 week pp Physics run**
 - **19 May 05 – end 9 week pp run, RHIC Run 5 ends**
 - **26 May 05 – Cryo switch to LN₂ complete, 27 weeks of RHIC cryo operation ends**

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- **Details – as run/planned** *(based on DOE expectation of 30 cryo weeks)*
 - 18 Nov 04 – Cool down begins
 - 23 Nov 04 – Blue Ring Cold
 - 28 Nov 04 – Yellow Cold
 - 29 Nov 04 – Short in D6-D8 dipoles Yellow Ring, schedule delay
 - 3 Dec 04 – quad bus-bus short in sector 12, shutdown to repair
 - **26 Dec 04 (est)** - “2 week” RHIC setup with beam begins
 - 3.3 calendar weeks lost → 1.7 program weeks (est) → 5.4 calendar weeks used to this point – 1.7=3.7 program weeks used → 26.3 weeks to go (18.3 physics weeks)
 - 9 Jan 05 – “2 week” ramp-up with colliding beams begins
 - 23 Jan 05 – 9 week physics with Cu-Cu begins
 - 27 Mar 05 – Nominal end of 9 week Cu-Cu run
 - 27 Mar 05 – begin 3 week pp setup
 - 17 Apr 05 – Begin 9.3 week pp Physics run
 - 15 Jun 05 – BNL Power Curtailment Program begins?
 - 21 Jun 05 – end 9.3 week pp run, RHIC Run 5 ends
 - 28 Jun 05 – Cryo switch to LN₂ complete, **30 effective (31.7 actual)** weeks of RHIC cryo operation ends

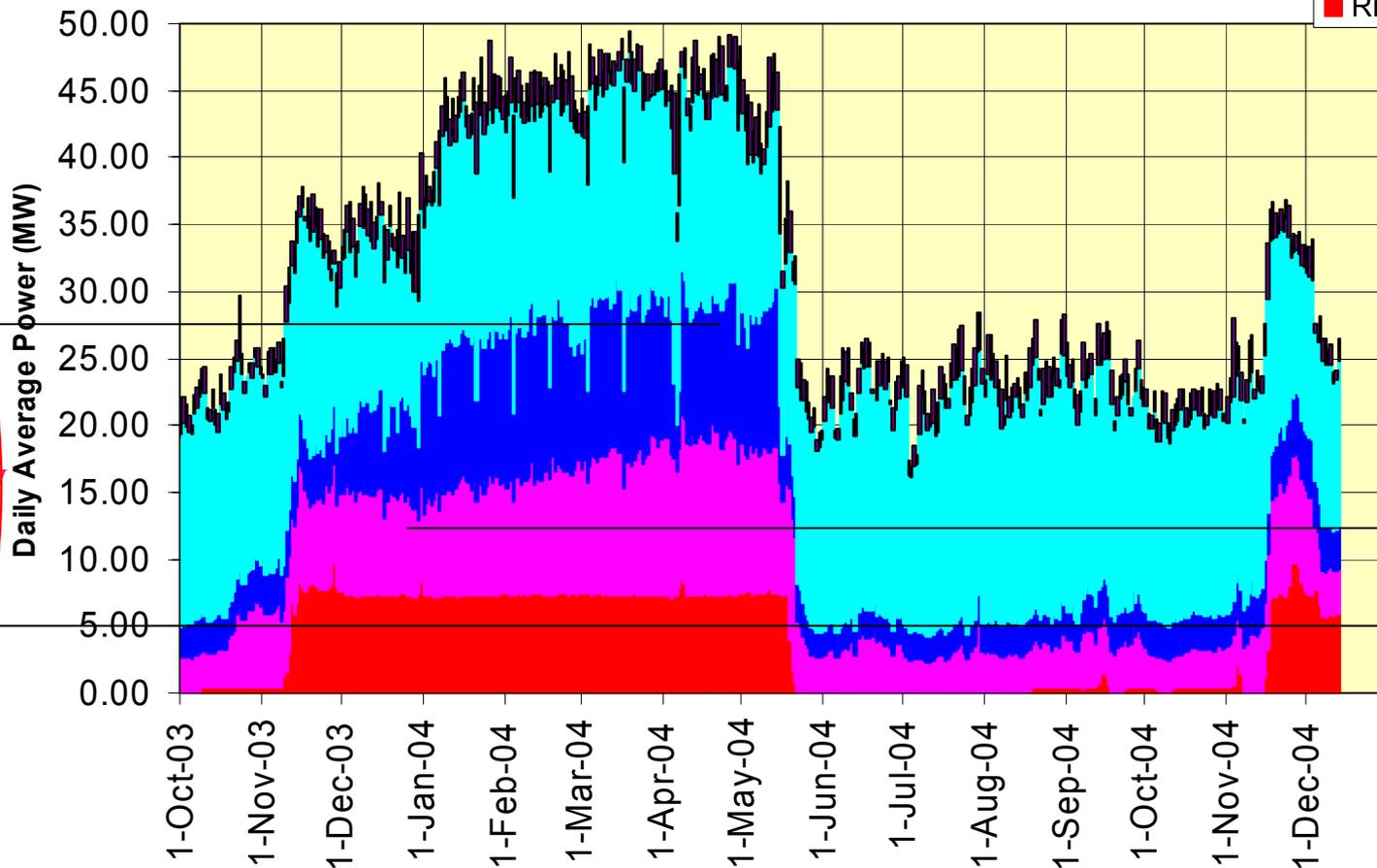
We'll develop an actual plan once we get a budget from DOE!

as of 13 Dec

BNL Energy Use FY 2004-5

(C-AD Bldg power is in site base)

- Peak-Av
- Site Base
- RHIC other
- AGS
- RHIC Cryo

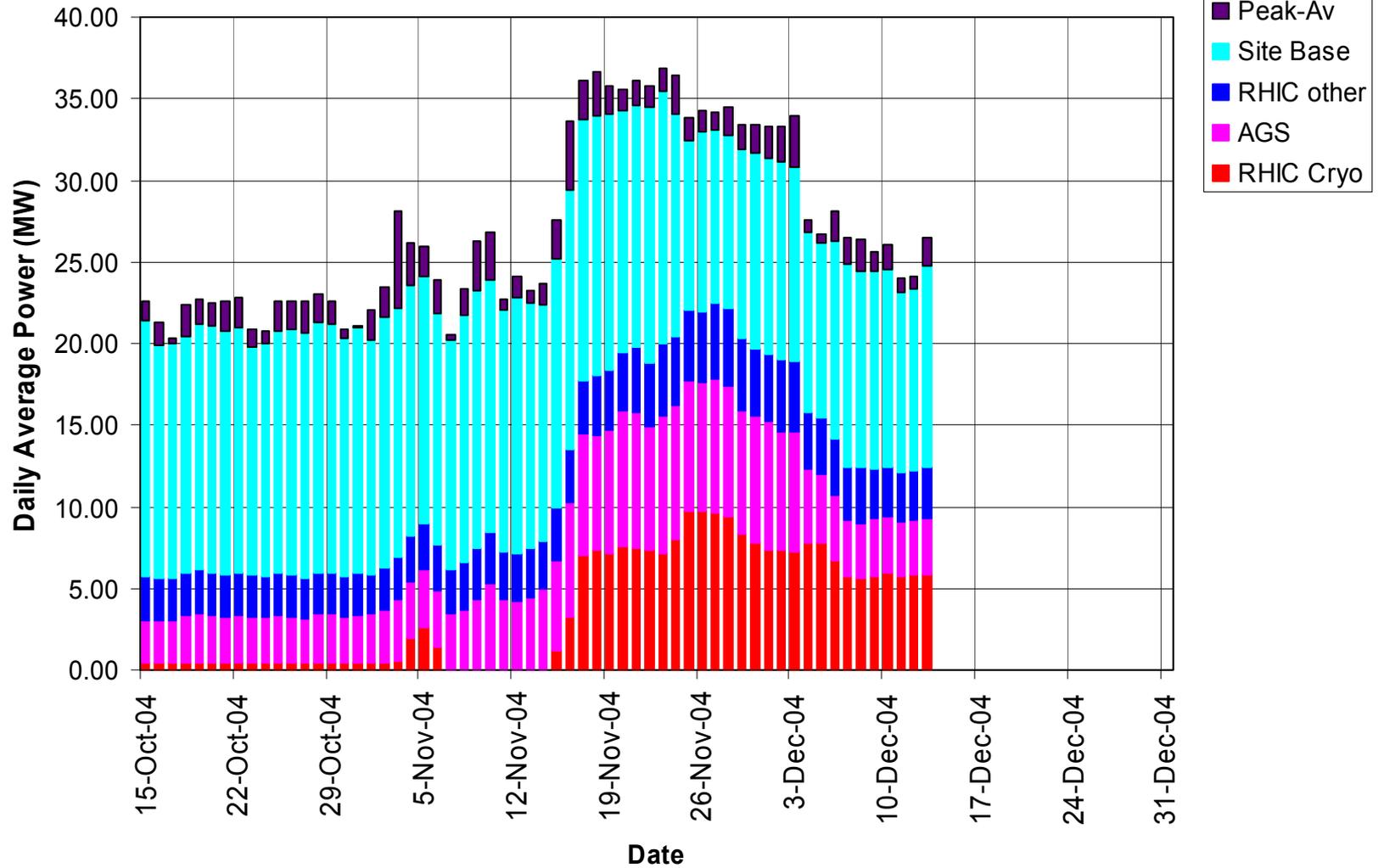


$\Delta \sim 23 \text{ MW}$

$\Delta < 8 \text{ MW}$

BNL Energy Use FY 2004

(C-AD Bldg power is in site base)



Translating the short fix time into lost running days...UPDATE

- Now (Shutdown for short fix) <8 MW above the 5 MW C-AD base
- Full RHIC Program ~23 MW above the 5 MW base
- Dec electricity will cost about \$55/MW compared to about \$52 for full running
- Lost helium due to partial warm-up will cost ~\$30-\$35K or about 1 day power cost equivalent...so
- Each day in this "shutdown mode" will cost us
 - $8/23 * 55/52 = 0.4$ days so...14 days shutdown translates into
 - $0.4 * 14 + 1$ day = 6.6 days lost to RHIC experiment running
- or roughly we loose < 1 day of running for every 2 days we spend in the shutdown mode...

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Archive

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Purpose of this meeting:

- To address issues and priorities relating to the optimization of physics output from RHIC experiments.
- To discuss and promulgate policy (when needed).

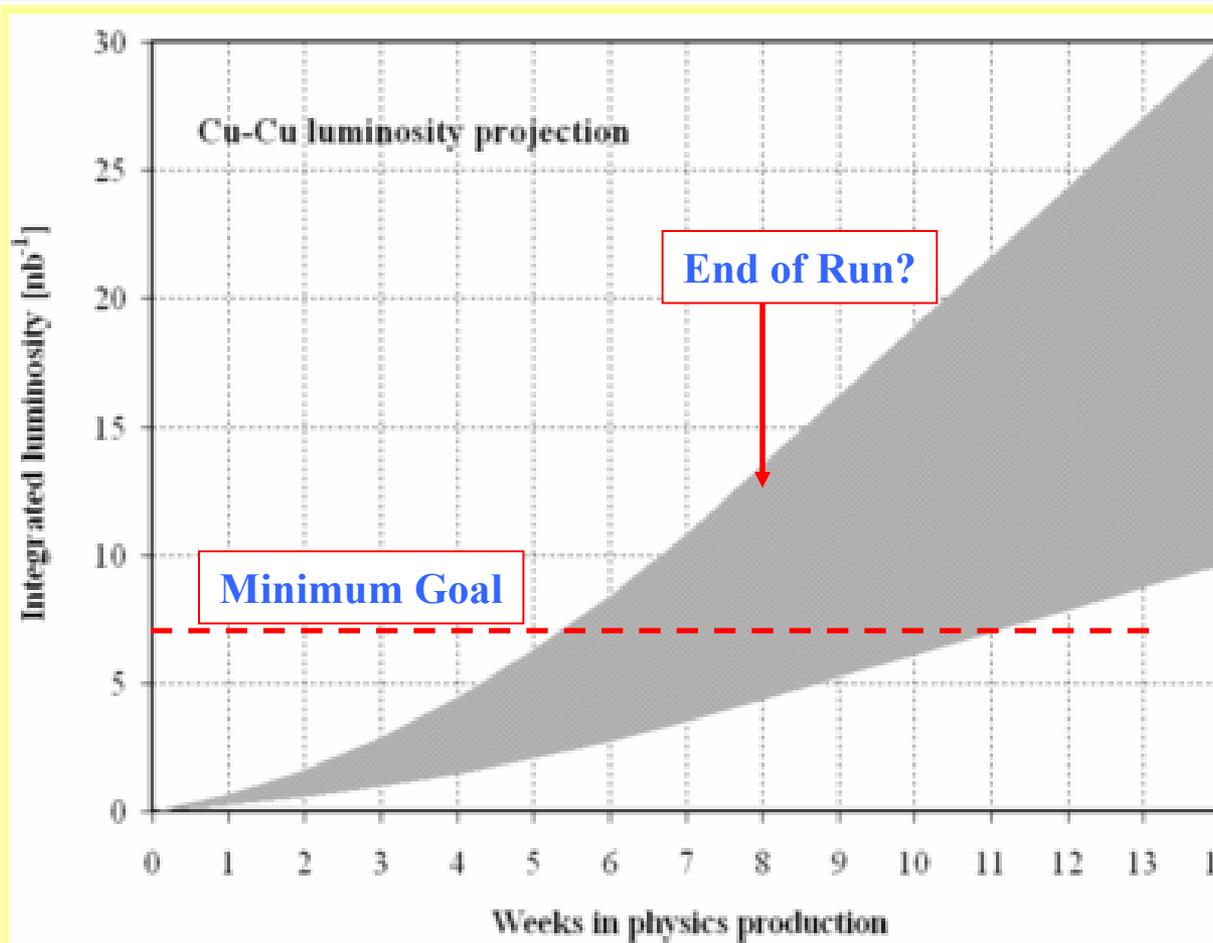
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PAC Recommendations (very short summary):

- 8-10 week pp run should have highest priority
- Cu-Cu run should accumulate an integrated delivered luminosity of at least 7 nb^{-1} at $\sqrt{s} = 200 \text{ GeV}$
- Cu-Cu at $\sqrt{s} = 62.4 \text{ GeV}$ and 1 day at injection is advisable if above goals are met
- 1-2 day pp (unpolarized) run at $\sqrt{s} = 400\text{-}500 \text{ GeV}$ desirable

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Projections based on the following beam intensity:

Minimum :
 $45 * 2.9 * 10^9$

Maximum:
 $28 * 6.6 * 10^9$

Luminosity evolution:
8 weeks ramp-up during physics production

$\beta^* = 1$ meter