Phone Bridge Number

(631) 344-8261

Machine Status

July 3, 2009

- Store lost at 15:41 due to QLI in Yellow. Dump was scheduled for 16:30.

- Several attempts at providing a new store failed. Backgrounds are high. Roman pots can't go closer than 15 mm, even after scraping multiple times.

- Finally, back in physics after 12 hours.

- Collimator controls problem; John Morris, Angelika,... working on it.

Plan of the Day

July 3, 2009

- Check collimators, scrape some more to improve store conditions for pp2pp (John, Angelika).

- Physics stores. Proceed through spin patterns.

- Fill only 90 bunches, in 109 bunch pattern. 0.6e11/bunch.

- Scrape/collimate to below 5e12 total at store. Repeat if necessary (Angelika).

- Polarization measurements during stores on pp2pp's request ONLY. Roman pots have to be retracted for each measurement.

July 2, 2009

- Physics stores. Proceed through spin patterns.

- Fill only 90 bunches, in 109 bunch pattern. 0.6e11/bunch.

- Scrape/collimate to below 5e12 total at store. Repeat if necessary (Angelika).

- Vernier scans (Angelika, MCR).

- Polarization measurements during stores on pp2pp's request ONLY. Roman pots have to be retracted for each measurement.

July 1, 2009

- AGS access during physics store.

- Two 12x12 ramps for optics measurements (Mei, Vadim).

- Physics stores. Proceed through spin patterns.

- Fill only 90 bunches, in 109 bunch pattern. 0.6e11/bunch.

- Scrape/collimate down to 5e12 total at store. Repeat if necessary (Angelika).

- Vernier scans (Angelika, MCR).

- Polarization measurements during stores on pp2pp's request ONLY. Roman pots have to be retracted for each measurement.

June 30, 2009

- Check Roman pot/permit behavior (Greg).

- Store tuning for lifetime (shift leader/MCR).

- Measure IR6 store optics with AC dipole/quad knobs (Mei/Vadim).

- Vernier scans (Angelika, MCR).

- Physics stores. Proceed through spin patterns. Polarization measurements to be requested by pp2pp.

June 29 − 30, 2009

- 1 h access for pp2pp and PHENIX.

- Start pp2pp ramp development (pp100-90pp2pp).

- Copy trim settings from pp100-90rot into new ramp (Todd).

- Check design orbit along the ramp (Vadim).

- Check Roman pot/permit behavior (Greg).

- Tune and coupling feedback ramps, orbit correction along the ramp (Michiko, Al, shift leader).

- Wiggles ramp (or chromaticity feedback ramp?) (Michiko, Al, MCR).

- Measure polarization (MCR).

- Check IR6 BPMs (Rob, Todd).

- Measure IR6 store optics with AC dipole/quad knobs (Mei/Vadim).

- Store tuning (MCR, shift leader).

- 3 - 4 h overnight collisions for pp2pp setup. Set up collimation. Some scraping later on Wlodek's request.

- Vernier scans (Angelika, MCR).

- Calibrate luminosity measurements (STAR, Roger Lee, Michelle, Angelika).

- Goal: 40-50 h of physics with 109x109, 0.5e11 (need scraping to get small emittances; Angelika).

- Proceed through spin patterns. Polarization measurements to be requested by pp2pp.

June 25 − 29, 2009

- Physics

- 10 h LLRF development on Thursday (RF group); short access for experiments during set-up, for JET afterwards

- Test improved main power supply coefficients/software Friday morning (Carl)

- Start pp2pp ramp development (pp100-90pp2pp) on Monday, 8 AM

- Daily meetings during pp2pp run

- Physics stores, incrementally increase Blue intensity by 0.05e11/bunch per store. Keep Yellow at 1.4e11.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization.
  If
  $$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$
  do not ramp. Work on polarization.

June 22 − 25, 2009

- Physics

- Adjust STAR rotators (Waldo)

- 1.5 h spin flipper commissioning (Thomas)

- AtR needs tuning (MCR)

- 10 h LLRF development on Thursday (RF group)

- Physics stores, incrementally increase Blue intensity by 0.05e11/bunch per store. Keep Yellow at 1.4e11.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization.
  If
  $$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$
  do not ramp. Work on polarization.

June 18 − 22, 2009

- Stochastic cooling 1 - 3 PM (Blaskiewicz)

- IR multipole scanning (Wolfram)

- Set IR nonlinear correctors to theoretical values (end of store; Yun)

- 2 h spin flipper commissioning at injection (Thomas)

- Continue store orbit correction work (Todd, Vadim)

- Reduce Yellow separation bumps early in the ramp

- Physics stores, incrementally increase Blue intensity by 0.05e11/bunch per store. Keep Yellow at 1.4e11.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

June 15 − 18, 2009

- 1.5 h spin flipper work (Mei)

- Work on automatic orbit correction improvement (Vadim, Todd)

- Set IR nonlinear correctors to theoretical values (end of store; Yun)

- Investigate poor Yellow ramp efficiency, and polarization issues.

- Physics stores, incrementally increase Blue intensity by 0.05e11/bunch per store. Keep Yellow at 1.4e11.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization.
  If
$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$
  do not ramp. Work on polarization.

June 11 − 14, 2009

- Find better polarimeter target (Anatoli)

- Check local orbit at rotators to investigate possible Yellow polarization lifetime issue (Waldo)

- Physics stores, incrementally increase Blue intensity by 0.05e11/bunch per store. Keep Yellow at 1.4e11.

- 4 h 9 MHz RF work, afternoon (RF group)

- Work on automatic orbit correction improvement (Vadim, Todd)

- Spin flipper work Friday, 1.5 h (Mei)

- 9 AM meetings Monday and Thursday only, until pp2pp run begins

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Waldo), Eve: (Greg), Owl: (Dmitry)

June 9 − 10, 2009

- Physics stores, incrementally increase Blue intensity by 0.05e11/bunch per store. Keep Yellow at 1.35 - 1.4e11.

- 30 min spin flipper development at injection

- Wed. 9 − 12 AM access for experiments, then APEX till midnight

- No 9 AM meeting on Wednesday

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Tue. Day: (Dmitry), Eve: (Guillaume), Owl: (Yun)

Wed. Day: (access/APEX), Eve: (APEX), Owl: (Vincent)

June 8, 2009

- Physics stores, with asymmetric intensities

- 2 h 250 GeV near-integer ramp development after store 10881

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Vincent), Eve: (Waldo), Owl: (Greg)

June 5 − 7, 2009

- Machine Development on Friday 14:00 (pp100-90rot):

  1. Feedback ramp

  2. Chromaticity and coupling correction at store

  3. Separate tunes by moving Blue above .70

  4. Systematic tune scans

- Physics stores with pp100-90rot over the weekend

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Fri.: Day: (Mei), Eve: (Vincent), Owl: (Waldo)

Sat.: Day: (Greg), Eve: (Dmitry), Owl: (Guillaume)

Sun.: Day: (Yun), Eve: (Vadim), Owl: (Mei)

June 3, 2009

- Back to pp100-90rot ($\beta^* = 70\,\text{cm}$)

- Look for noise sources: power supplies, RF, instrumentation, …

- Physics stores, 109x109

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

do not ramp. Work on polarization.

Shift leaders:

Day: (Waldo), Eve: (Yun), Owl: (Dmitry)

June 2, 2009

- Continue ramp development for pp100-92

- One store with transverse polarization for STAR

- If luminosity lifetime recovers, add a rotator ramp (pp100-92rot)

Shift leaders:

Day: Greg, Eve: Mei, Owl: Vincent

June 1, 2009

- One store with transverse polarization for STAR:

  1. Clone pp83 as pp100-92

  2. Copy trim settings (dipole correctors) from pp100-90rot

  3. Re-commission pp100-92

  4. Provide a store for STAR

- If luminosity lifetime recovers, add a rotator ramp tomorrow (pp100-92rot)

Shift leaders:

Day: Dmitry, Eve: Guillaume, Owl: Yun

May 29 - 31, 2009

- Machine Development: pp100-91rot

- Physics stores, 109x109.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Greg), Eve: (Dmitry), Owl: (Guillaume)

May 28, 2009

- Machine Development. Store tuning in pp100-90rot ($\beta^* = 70\,\text{cm}$) and pp100-91rot ($\beta^* = 80\,\text{cm}$): tunes, (nonlinear) chromaticities, coupling, orbits,...

- Physics stores, 109x109.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Machine Development), Eve: (Vincent), Owl: (Waldo)

May 26 – 27, 2009

- Physics stores, 109x109.

- APEX 7 PM – 7 AM

- Maintenance Day 7 AM – 7 PM

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

do not ramp. Work on polarization.

Shift leaders:

Tue.: Day: (Waldo), Eve: (Greg/APEX), Owl: (APEX)

Wed.: Day: (Maintenance), Eve: (Yun), Owl: (Vadim)

May 23 – 25, 2009

- Physics stores, 109x109.

- Slow RF voltage ramp at store, to 200 kV/cavity in 9 h.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Sat.: Day: (Vincent), Eve: (Waldo), Owl: (Greg)

Sun.: Day: (Dmitry), Eve: (Guillaume), Owl: (Yun)

Mon.: Day: (Vadim), Eve: (Mei), Owl: (Vincent)

May 22, 2009

- Physics stores, 109x109.

- One more store without RF voltage ramp.

- Two stores with low bunch intensity, 1.0e11.

- After weekend: relax nonlinear chromaticity correction, unsqueeze at store.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Yun), Eve: (Vadim), Owl: (Mei)

May 21, 2009

- 8 h scrubbing, with emphasis on Yellow (Waldo, Peggy, Keith/Leif, ...)

- Physics stores, 109x109, no RF voltage ramp.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: Greg, Eve: (Dmitry), Owl: (Guillaume)

May 19 − 20, 2009

- Physics store(s) with 84x84, high bunch intensity (start with 1.45e11)

- Center BBQ pick-ups at end of store (T. Russo)

- 30 min access for STAR and PHENIX; spin flipper test without beam

- APEX tomorrow, 7 AM − 7 PM

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Guillaume), Eve: (Greg), Owl: (Vadim)

May 18, 2009

- Clean magnet feedthroughs connected to yo5-sxf1-ps (Don)

- 30 min spin flipper commissioning at injection (Mei)

- Physics stores. Increase bunch intensity by 0.05e11 every other store. Fine-tune Yellow at store.

- Center BBQ pick-ups at end of store (T. Russo)

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2.
  If

$$\sqrt{\frac{B1 + B2}{2} \cdot \frac{Y1 + Y2}{2}} < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Waldo), Eve: (Yun), Owl: (Dmitry)

May 15 − 17, 2009

- Physics stores. Increase bunch intensity by 0.05e11 every other store.

- Check orbit correctors at end of a store (Vadim, daytime preferred).

- Sublimate IR 12 pumps between stores (vacuum group).

- Watch vacuum in IR 12 during injection.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2.
  If

$$\sqrt{\frac{B1 + B2}{2}} \cdot Y2 < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Vincent), Eve: (Waldo), Owl: (Greg)

May 14, 2009

- Physics stores. Vernier scans at end of store (STAR and PHENIX).

- Sublimate IR 12 pumps between stores.

- Watch vacuum in IR 12 during injection.

- Measure AGS polarization before and after filling RHIC.

- Measure injection polarization with B1, B2, and Y2.
  If

$$\sqrt{\frac{B1 + B2}{2}} \cdot Y2 < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Yun), Eve: (Vadim), Owl: (Mei)

May 12, 2009

- Physics.

- APEX 7 PM − 7 AM, then Maintenance Day.

- 4 h Machine Development on Thursday (chromaticity on the ramp, orbits, RF voltage on the ramp to help bucket area, nonlinear chromaticity,...)

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2}} \cdot Y2 < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Mei), Eve: (Vincent/APEX), Owl: (APEX)

May 11, 2009

- Limit intensity to 1.45e11 to check whether Yellow ramp efficiency improves.

- Physics stores. 30 min at end of store for pp2pp tests.

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2}} \cdot Y2 < 50\%,$$

  do not ramp. Work on polarization.

Shift leaders:

Day: (Dmitry), Eve: (Guillaume), Owl: (Greg)

May 6, 2009

- Access for spin flipper, STAR $(1 - 2\,\mathrm{h})$

- Physics stores, keep RF injection voltage at $75\,\mathrm{kV/cavity}$.

- Measure injection polarization with B1, B2, and Y2.
  If
  $$\sqrt{\frac{B1 + B2}{2}} \cdot Y2 < 50\%,$$
  do not ramp. Work on polarization.

Shift leaders:

Day: (Waldo), Eve: (Greg), Owl: (Dmitry)

May 5, 2009

- Physics stores, lower RF injection voltage by 5 kV/cavity on each store

- Measure injection polarization with B1, B2, and Y2. If

$$\sqrt{\frac{B1 + B2}{2}} \cdot Y2 < 50\%,$$

do not ramp. Work on polarization.

Shift leaders:

Day: (Greg), Eve: (Dmitry), Owl: (Guillaume)

May 4, 2009

- 6 h APEX, after current store

- Physics stores

- Investigate Blue noise problem

- Before tuning store for lifetime, check noise status. If noise is present, don't even think about tuning.

Shift leaders:

Day: (Angelika), Eve: (Guillaume), Owl: (Waldo)

May 1 − 3, 2009

- Investigate Blue noise problem

- Before tuning store for lifetime, check noise status. If noise is present, don't even think about tuning.

- Physics stores

Shift leaders:
Fri.: Day: Vadim, Eve: (Mei), Owl: (Vincent)
Sat.: Day: (Waldo), Eve: (Greg), Owl: (Dmitry)
Sun.: Day: (Guillaume), Eve: (Waldo), Owl: (Todd)

April 30, 2009

- Physics stores

- Tune Blue store lifetime, at end of store (?)

- Measure emittances at injection

- 15 min spin flipper DC dipole commissioning at injection (Mei)

Shift leaders:
Day: (Dmitry), Eve: (Guillaume), Owl: (Yun)

April 28 – 29, 2009

- 6x6, 0.5e11 store for STAR

- Back to physics, 1.4e11

- APEX 7 PM – 7 AM, then Maintenance Day

- No 9 o'clock meeting tomorrow!

Shift leaders:

Tue.: Day: Yun, Eve: (Vadim/APEX), Owl: (APEX)

Wed.: Day: Maintenance, Eve: Waldo, Owl: (Greg)

April 27, 2009

- 30 min access for PHENIX, starting on down ramp.

- Yellow ramp transmission needs improvement, down to 90 percent.

- 12x12 ramp for ramp orbit correction, and possible ramp transmission improvement

- Try RF counterphasing (Alex, Mike)

- Continue providing physics stores. Store length: 9 h.

- No AGS quad mode pumping.

- Measure injection polarization in Blue ring only, while Yellow is being filled.

- Increase bunch intensity by 0.05e11 for each store, starting at 1.4e11.

Shift leaders:
Day: Greg, Eve: (Dmitry), Owl: (Guillaume)

April 25 − 26, 2009

- Continue providing physics stores. Store length: 9 h.

- Measure emittances with a single bunch at injection, using polarimeters. Document together with AGS quad mode pumping settings in elog. After fill 10656, use "0.65" quad mode pumping setup.

- Measure injection polarization in Blue ring only, while Yellow is being filled.

- Increase bunch intensity by 0.05e11 for each store, starting at 1.25e11.

Shift leaders:

Sat.: Day: (Guillaume), Eve: (Yun), Owl: (Vadim)

Sun.: Day: (Mei), Eve: (Vincent), Owl: (Waldo)

April 24, 2009

- Vernier scans at end of store (Angelika)

- Propagate nonlinear chromaticity settings back to "beta" stone; may help losses there (Guillaume, Vadim)

- Tune up longitudinal matching (Keith, Mike, CM)

- Physics stores. Try to find better working point for Blue.

- Start increasing RF voltage in steps of 10 kV 30 minutes into the store:

- Increase bunch intensity by 0.05e11 for each store, starting at 1.25e11.

Shift leaders:

Day: Waldo, Eve: (Greg), Owl: (Dmitry)

April 23, 2009

- Reduce Blue chromaticity through rotator ramp

- Ramp tuning to address 200 sec loss (Vadim, on shift)

- Verify nonlinear chromaticity correction, with 12x12 ramp (Guillaume)

- Start increasing RF voltage in steps of 10 kV 30 minutes into the store.

- Increase bunch intensity by 0.05e11 for each store, starting at 1.20e11.

- Vernier scans at end of store (Angelika)

Shift leaders:

Day: Vadim, Eve: (Mei), Owl: (Vincent)

April 22, 2009

- Adjust PHENIX rotators with present store (Waldo)

- Vernier scans at end of present store, if time allows (Angelika)

- Document recovery access 12:30 (Les Bland/STAR)

- Check cogging procedure once more (RF group)

- Tune up AGS quad mode pumping/matching to RHIC (Keith, Blasko)

- Change pattern from 109x107 to 109x109 (Wolfram)

- Physics stores, 109x109, starting with 1.1e11. Measure injection polarization.

- Start with RF voltage of 110 kV/cavity; ramp up slowly halfway through the store

- Increase bunch intensity by 0.05e11 for each store

Shift leaders:
Day: Dmitry, Eve: (Guillaume), Owl: (Yun)

April 21, 2009

- Check cogging procedure (RF group)

- Nonlinear chromaticity correction (Yun)

- IR nonlinear correction (Fulvia)

- Vernier scans

- Set-up quad mode pumping in AGS (Keith)

- Physics stores, 109x109, 1.1e11, with rotators (pp100-90rot). Start around 4 PM

- Start with higher RF voltage of 100 kV/cavity (now at 75 kV/cavity); ramp up slowly halfway through the store

- Enable automatic store orbit corrections

- Run JET (Yousef)

Shift leaders:
Day: Vincent, Eve: (Waldo), Owl: (Greg)

April 20, 2009

- Continue rotator ramp development, pp100-90rot

- Polarization tuning, if necessary

- Collimation, store setup for pp100-90rot

- Vernier scans

- Overnight collisions, 56x56, with rotators (pp100-90rot)

- Run JET

- Ramp up cavity voltages in steps halfway through the store.

- Tomorrow: nonlinear chromaticity correction (Yun), IR nonlinear correction (Fulvia)

Shift leaders:
Day: Yun, Eve: Vadim, Owl: Mei

April 19, 2009

- Rotator ramp development, pp100-90rot (Waldo)

- Polarization tuning

- Collimation, store setup for pp100-90rot if time allows

- Overnight collisions, 56x56 in 60-bunch pattern, without rotators (pp100-90)

- Ramp up cavity voltages in steps halfway through the store.

Shift leaders:
Day: Greg, Eve: Dmitry, Owl: Guillaume

April 18, 2009

- Work on store lifetime (IR orbits, (nonlinear) chromaticity, tunes. Check emittances.

- Increase intensity/number of bunches.

- Measure and tune polarization transmission.

- Vernier scan and collimation (Angelika).

- Overnight collisions, starting during evening shift

- Tomorrow: Rotator ramp development

Shift leaders:

Day: Mei, Eve: Vincent, Owl: Waldo

April 17, 2009

- Check injection drift correction, and radii.

- Measure emittances at injection and store (Anatoli).

- Fix design orbits up to gg63 (Greg, Vadim).

- Continue ramp tuning for transmission, esp. Yellow.
  Increase intensity/number of bunches. Steer a STAR.

- Measure and tune polarization transmission.

Shift leaders:
Day: Guillaume, Eve: Vadim, Owl: Yun

April 16, 2009

- Continue ramp development: orbits, chromaticity (wiggles)

- Increase bunch intensity, then number of bunches

- Measure chromaticity at store, as starting point for nonlinear chromaticity correction

Shift leaders:
Day: Waldo, Eve: Greg, Owl: Dmitry

April 15, 2009

- Maintenance Day 8 AM - 4 PM

- 100 GeV ramp test 4 PM - 9 PM, ramp pp100-90

- Copy trim settings from pp93 (Todd)

- 100 GeV ramp development, pp100-90

- Check radii, best guess for bend trim: Blue 15e-6, Yellow 17e-6 (from pp83)

Shift leaders:
Eve: Mei, Owl: Vincent, Day: Waldo