PRIME Lab Wheel Change Procedure

Operator Name(s): _____
Date of change: _____ Time of change: _____

Old Wheel: Isotope: _____ csv #: _____ wheelnumber: _____
New Wheel: Isotope: _____ csv #: _____ wheelnumber: _____

Place a check mark next to each step as completed. **BOLD are iPad instructions.**

1. Prepare the new wheel about 1 hour prior to the finish of the current wheel's run.
   a. If the new wheel is for I129, please refer to the special procedures for Iodine.
2. On monitor GAMMA stop the run.
3. At the *Accelerator Control Terminal*, record Cathode Voltage and Current, then set voltage to zero.
   a. Cathode Voltage: _____ b. Cathode Current: _____
4. If wheel is not already made, or if system will be idle for a long period, record Oven Current and Temperature, then set current to zero.
   a. Oven Current: _____ b. Oven Temperature: _____
5. Go out to the *Tank Room*.
6. Turn the key in the *High Voltage Rack* to "DISABLE" position and remove door key.
7. On the way to the cage door, check the Argon gas pressures on the gas cylinder chained to the cage to ensure the pressures are not zero on either gauge.
8. Use door key to unlock cage door and wait for weighted arm to extend to deck.
9. Remove grounding hook, touch it to all 3 deck levels, then hook it to the labeled bar.
10. Check digital vacuum readouts:
    a. Ion Source Turbopump: _____
    b. Bellows Turbopump: _____
    c. Object Turbopump: _____
11. Close *Injector Object Gate Valve.*
12. **Isolate the *Sample Changer.***
13. Verify the *Sample Chamber Gate Valve* is closed (white bar indicator set to "CLOSED").
14. Verify the *Bellows Turbopump Gate Valve* is open (valve knob to extreme counterclockwise position).
15. Close *Ion Source/Bellows Hand Gate Valve* by turning knob clockwise 2-1/2 turns to "CLOSED" position.
16. Open *Sample Chamber Door Knob* until it swings clear.
17. Turn off *Sample Chamber Turbopump* by pushing on the ON/OFF button.
18. Verify *Ion Source/Bellows Hand Gate Valve* is closed.
19. Wait for *Sample Chamber Turbopump* to wind down to about 1400 Hz.
20. Turn off *Sample Changer Adixen Roughing Pump* by pushing down on the START/STOP switch on back of the pump.
21. Wait *for Sample Chamber Turbopump* to wind down to about 400 Hz.
22. Open *Sample Chamber Vent Gas Toggle Valve*.
23. After *Sample Chamber Door* pops open, make sure you are wearing gloves and remove the old wheel.
24. Insert the new wheel according to the guide pins.
25. Close *Sample Chamber Vent Gas Toggle Valve*.
26. Close *Sample Chamber Door* and tighten *Sample Chamber Door Knob* until finger tight.
27. Turn on *Sample Changer Adixen Roughing Pump* by pushing up on the START/STOP switch on back of the pump.
28. Wait till *Sample Chamber TC* reads about 150 mTorr.

29. Turn on *Sample Chamber Turbopump* by pushing on the ON/OFF button.
30. Check water levels in all 3 ThermoCube coolers.
31. Once *Sample Chamber TC* reads less than 1.0 mTorr open *Ion Source/Bellows Hand Gate Valve* by turning counterclockwise 2-1/2 turns to "OPEN" position.
32. Verify that all 3 digital vacuum readouts are within an order of magnitude of their previous values.
33. Verify the *Ion Source/Bellows Hand Gate Valve* is open.
34. **Reconnect the *Sample Changer.***
35. Recheck digital vacuum readouts:
    a. Ion Source Turbopump: _____
    b. Bellows Turbopump: _____ (may rise to 10^{-6} range, is okay)
    c. Object Turbopump: _____.
36. Open *Injector Object Gate Valve.*
37. Verify cage is vacant by a visual check.
38. Replace grounding strap to wall socket, close cage door and remove the door key.
39. Place door key back into *High Voltage Rack* and turn to "ENABLE" position.
40. Turn on *Pre-Acc Power Supply* (push green button).
41. Return to the *Control Room.*
42. At *Accelerator Control Terminal* return Cathode Voltage to previous value recorded in step 3 above.
    a. Cathode Voltage: _____ b. Cathode Current: _____
43. If Oven Current was changed, return Oven Current to previous value recorded in step 4 above.
    a. Oven Current: _____ b. Oven Temperature: _____
44. On monitor GAMMA click the "Prime Lab" menu and choose "Change Wheel".
45. In the *popupwheel.vi* box type in the new wheelnumber, e.g. 7. New wheelnumber = _____.
46. Click on the right hand side file folder symbol.
47. In the new *Open* box locate the new csv file folder, open the file folder and locate the new csv file, e.g. csv 4. Note that sometimes the *Open* box will open to the new csv file folder. New csv file = csv_____.
48. Click on the file to highlight it.
49. Click "OK".
50. After the csv file appears under Wheel Name in the *popupwheel.vi* box, click "OK" at the bottom gray button.
51. Check the BETA monitor for the run order displayed on the *run order display.vi* and make sure it is correct. Modify run order as needed.
52. On monitor GAMMA start the run to begin taking new data.
53. After a few cycles have run update the *Data Analysis 2013.vi* on the DELTA monitor by clicking on the gray "current wheel" button.
54. Click on the Standard plot to update the plot and the *std seq norm* values in the table.
55. Once the new wheel is verified to be running correctly return old wheel to the *Sample Loading Room* (B176) and return the cathodes to their csv container box(s).
56. Place this completed check sheet in the *Check Sheets 3-Ring Binder*.