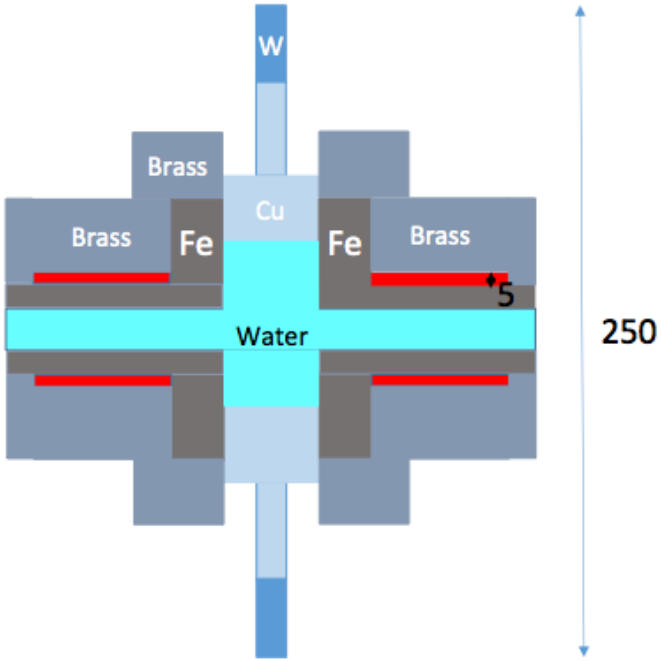
2014 Plan of Radiation Damage Test of the Ferromagnetic Fluid

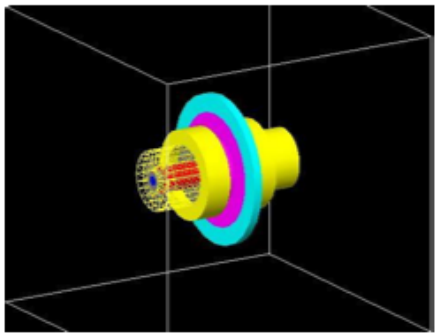
ILC-CLIC e+ studies
24-July-2014
T. Omori

Status:
Results & Plans
Presented at AWLC14

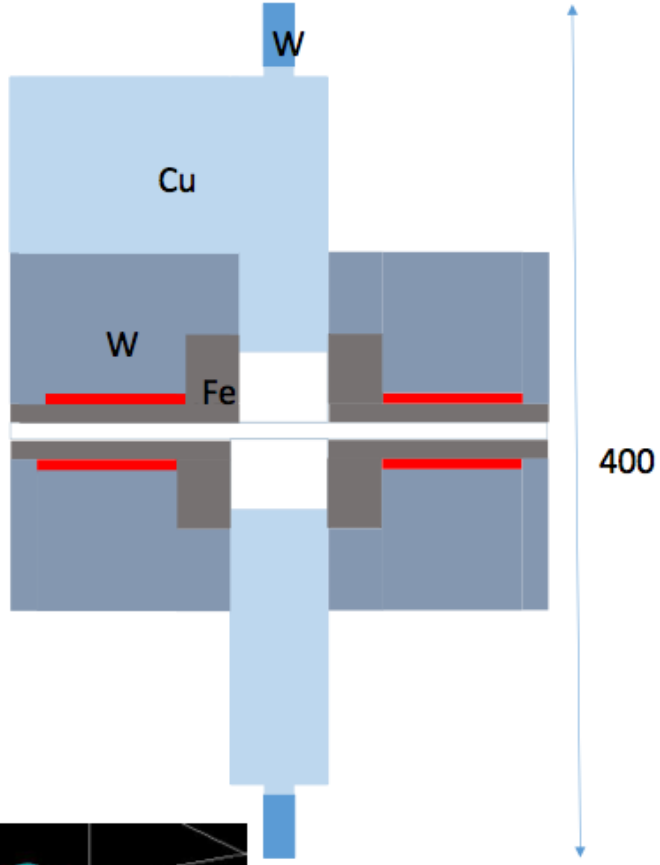
T. Takahashi, AWLC14@FermiLab (May 2014)

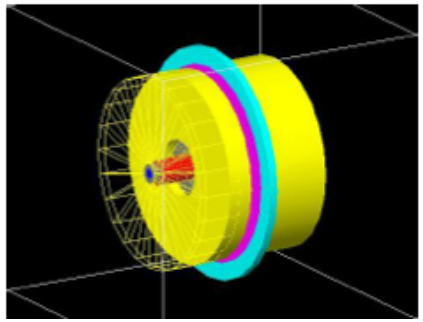
LCWS2013



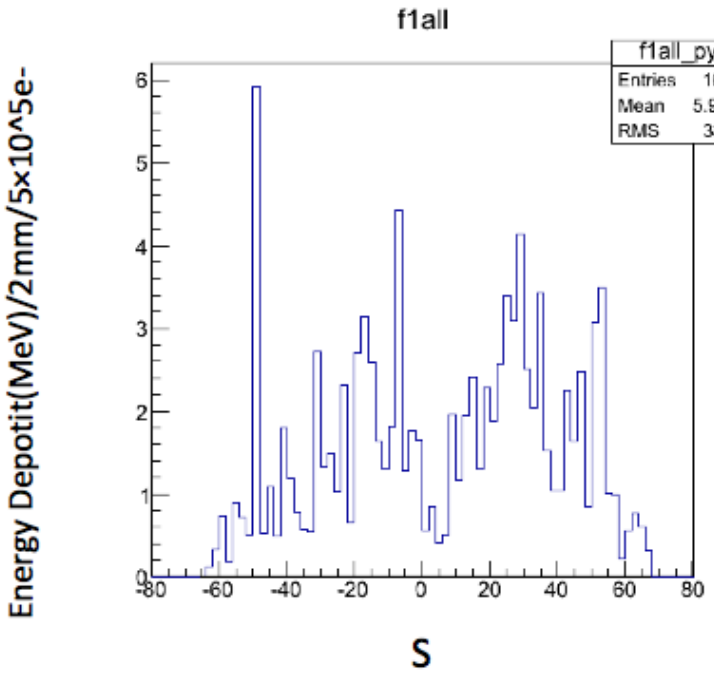


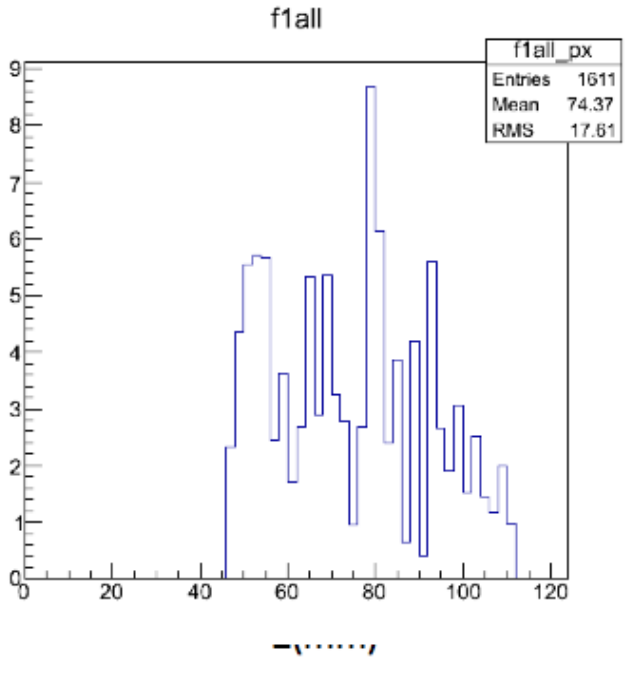
New Geometory

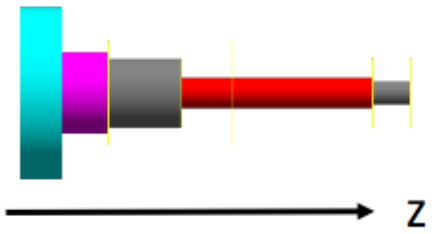




Results







Peak 1.5MGy/year

(2630bunch 5Hz 2e10/bunch 1 year = 10^7s)

Rotation target: Next Steps (1)

(1) Geometry
- (a) d=25 cm, No shield: we don't employ
- (b) d=40 cm, W shield: continue study

(2) Radiation test at Takasaki — Today's Talk
- We continue the test.
- Test CN only.
- 0.1 MGy (half day) – 3 MGy (15 days), with small steps

(3) Test after radiation
- Viscosity measurement (the same as it is now)
- Use irradiated fluid in real rotation seal

(4) Leak Rate Test
- Long term (1 week) continuous operation.
- We will see spikes?

Takasaki

Advanced Radiation Research Institute, JAEA

TEST: Radiation Tolerance

Takasaki Advanced Radiation Research Institute, JAEA

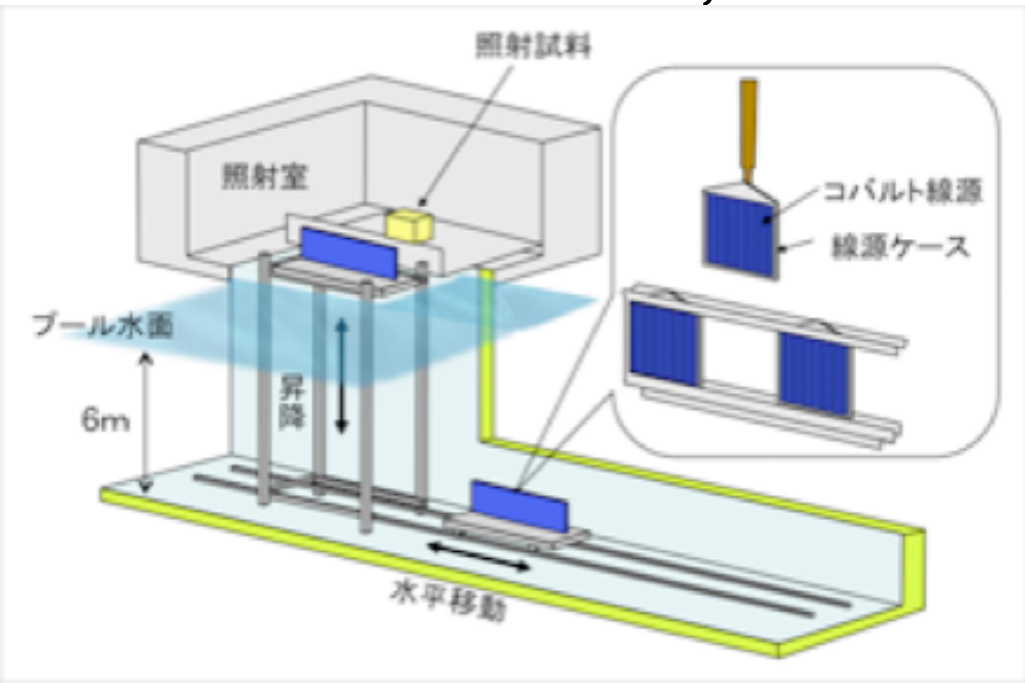
TEST: Radiation Tolerance

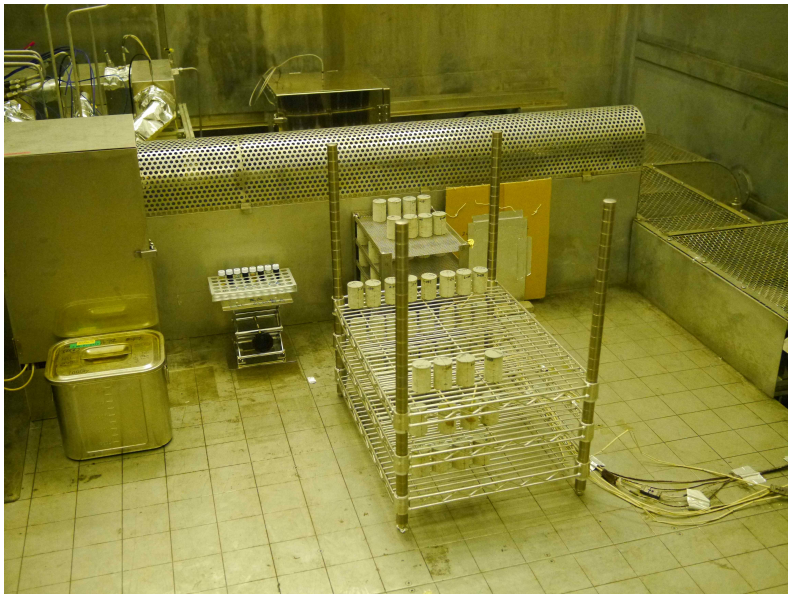
Takasaki Advanced Radiation Research Institute, JAEA

Takasaki: One of most famous homes of Daruma dolles

TEST: Radiation Tolerance

Takasaki Advanced Radiation Research Institute, JAEA





Gamma-ray source: Co-60

1.1 x 10^4 Gy/h

Photo: Dec/2013

TEST: Radiation Tolerance

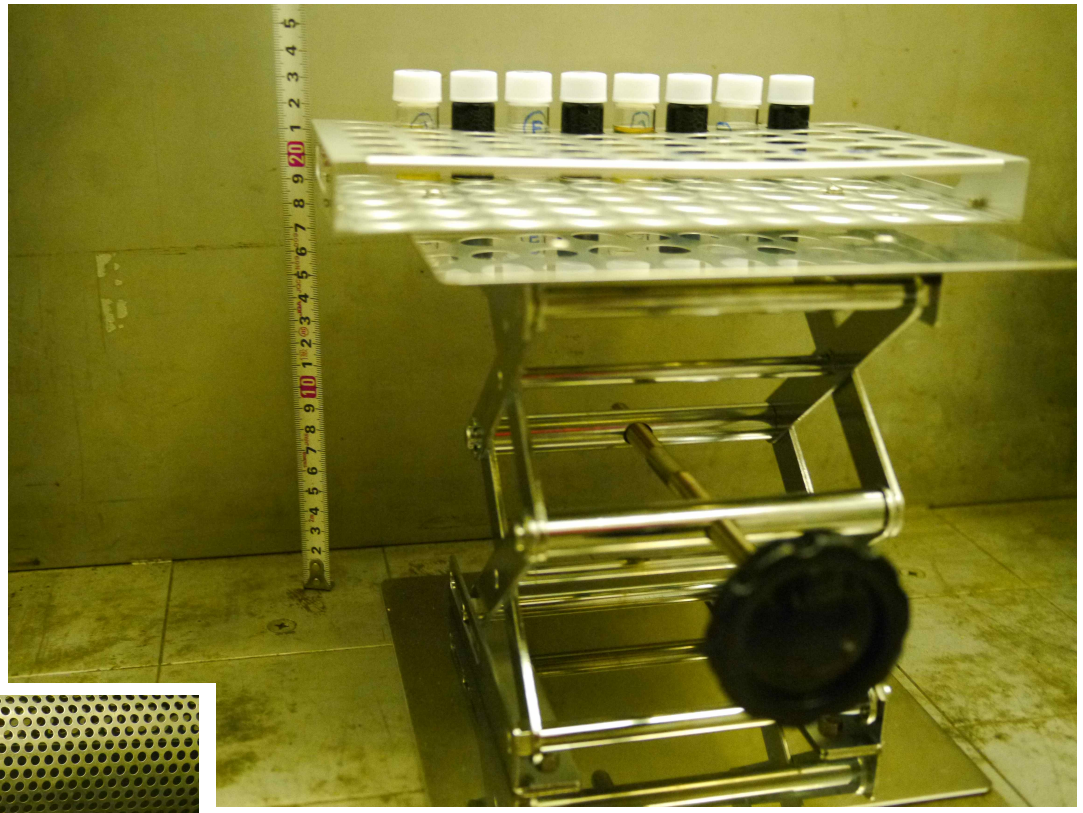
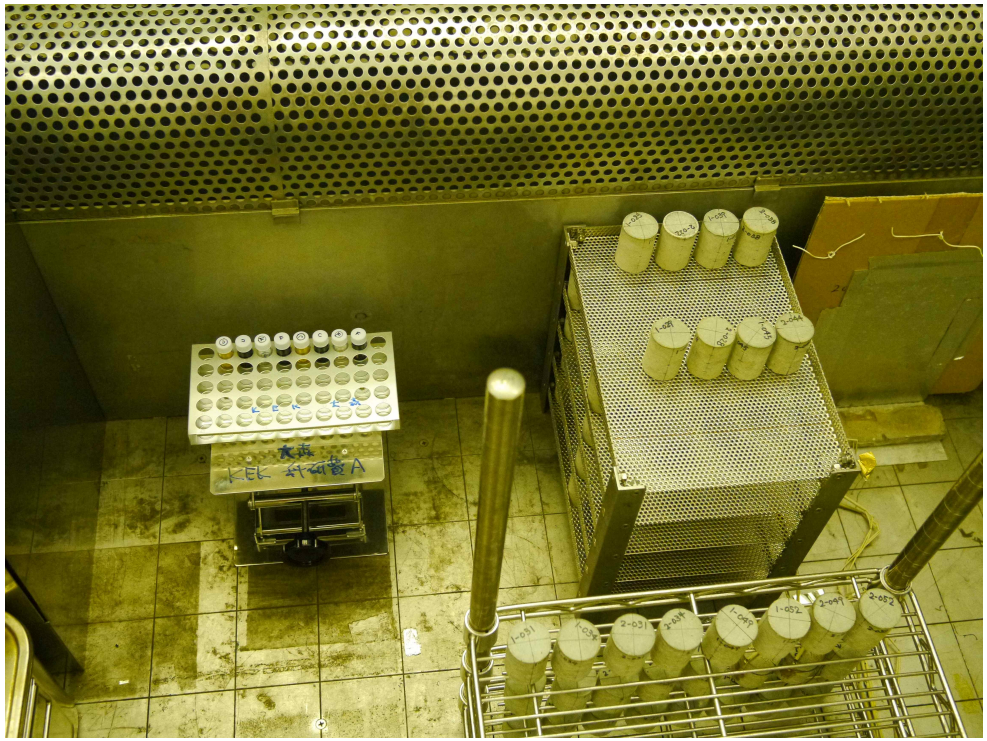
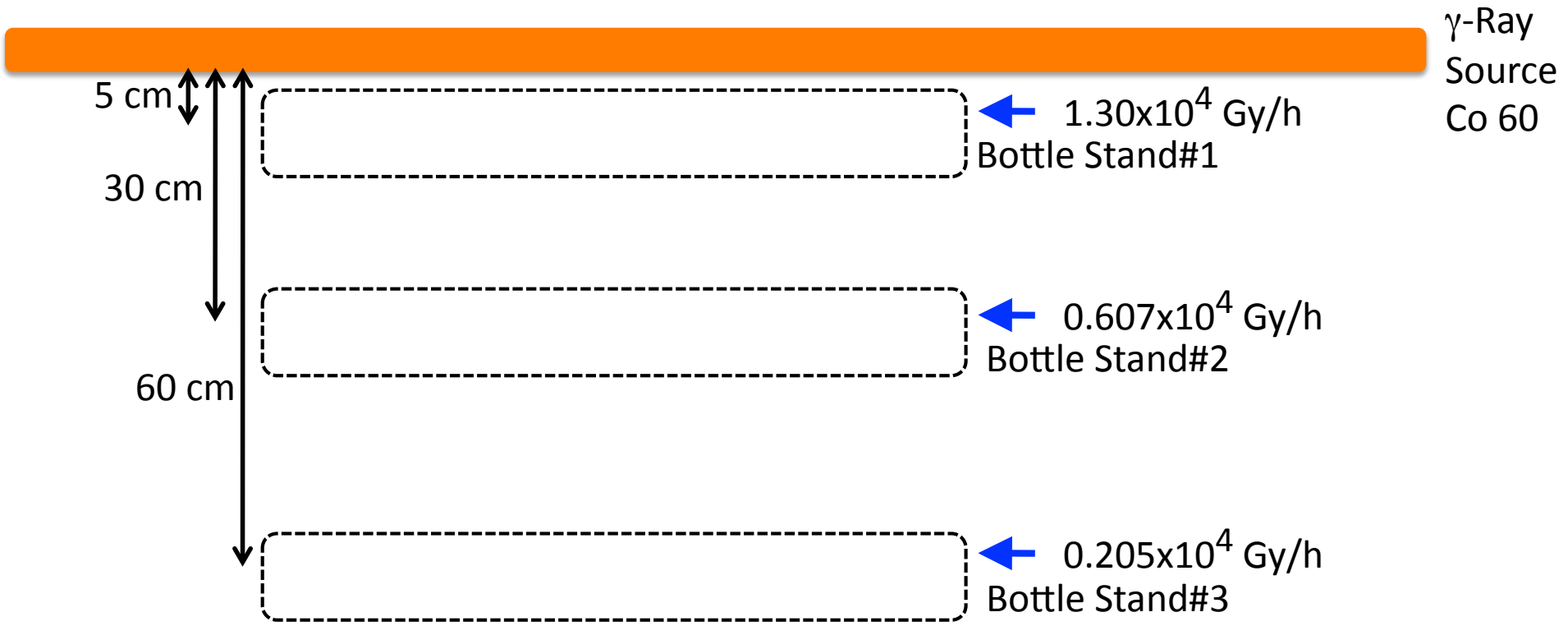


Photo: Dec/2013



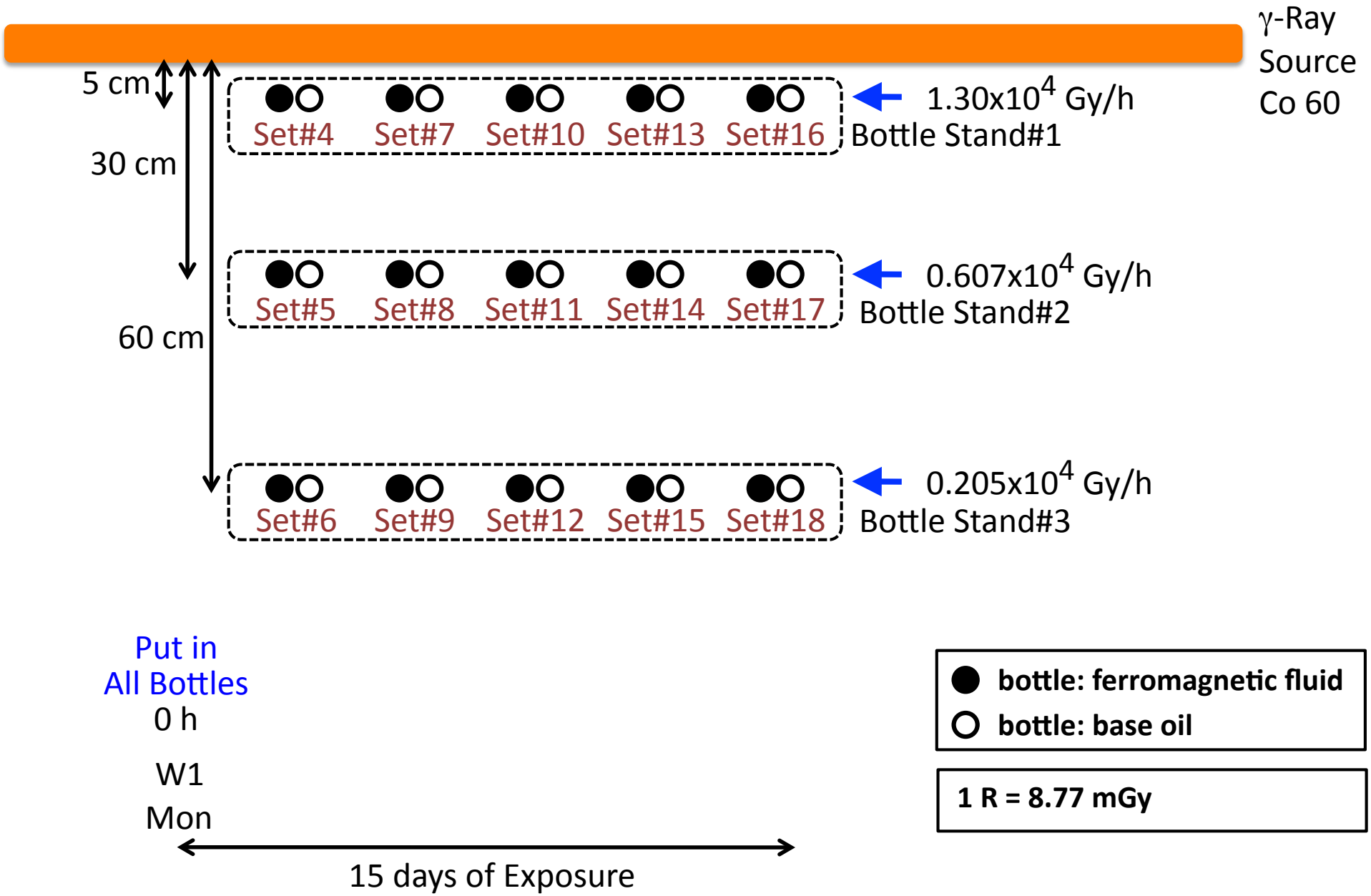
2004 Plan of Radiation Test

2004 Plan: 15 days of Exposure



1 R = 8.77 mGy

2004 Plan: 15 days of Exposure



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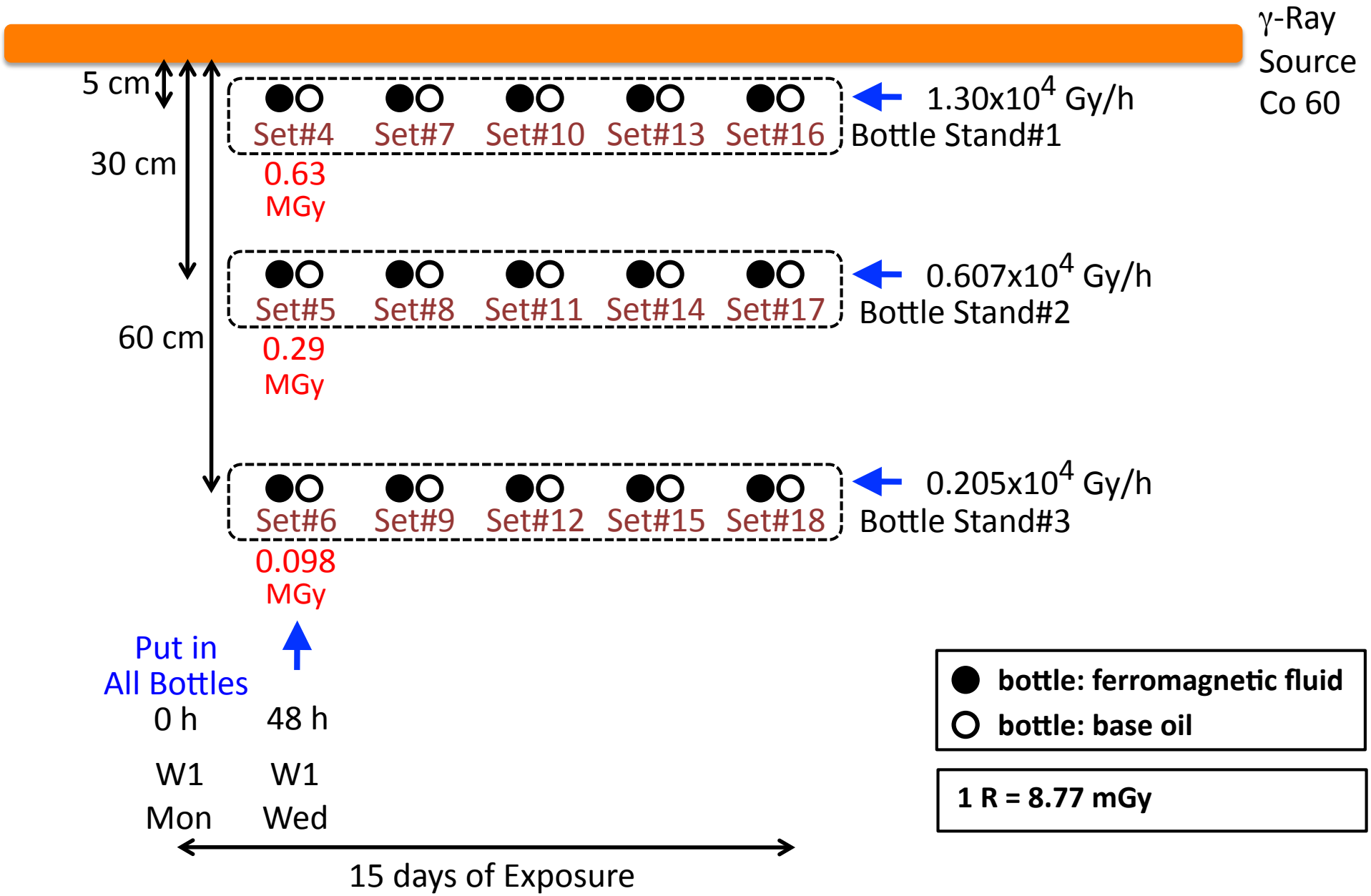
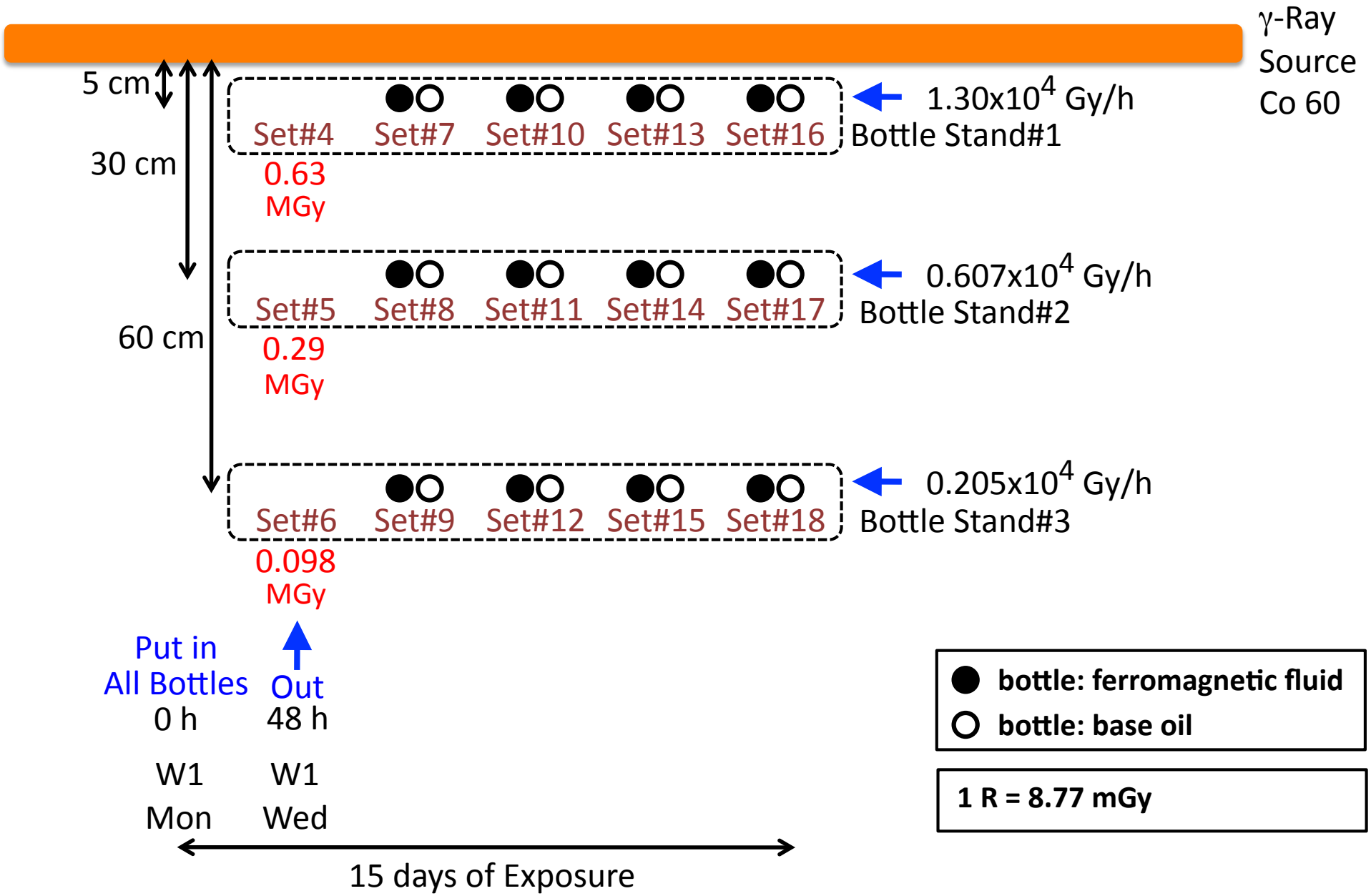
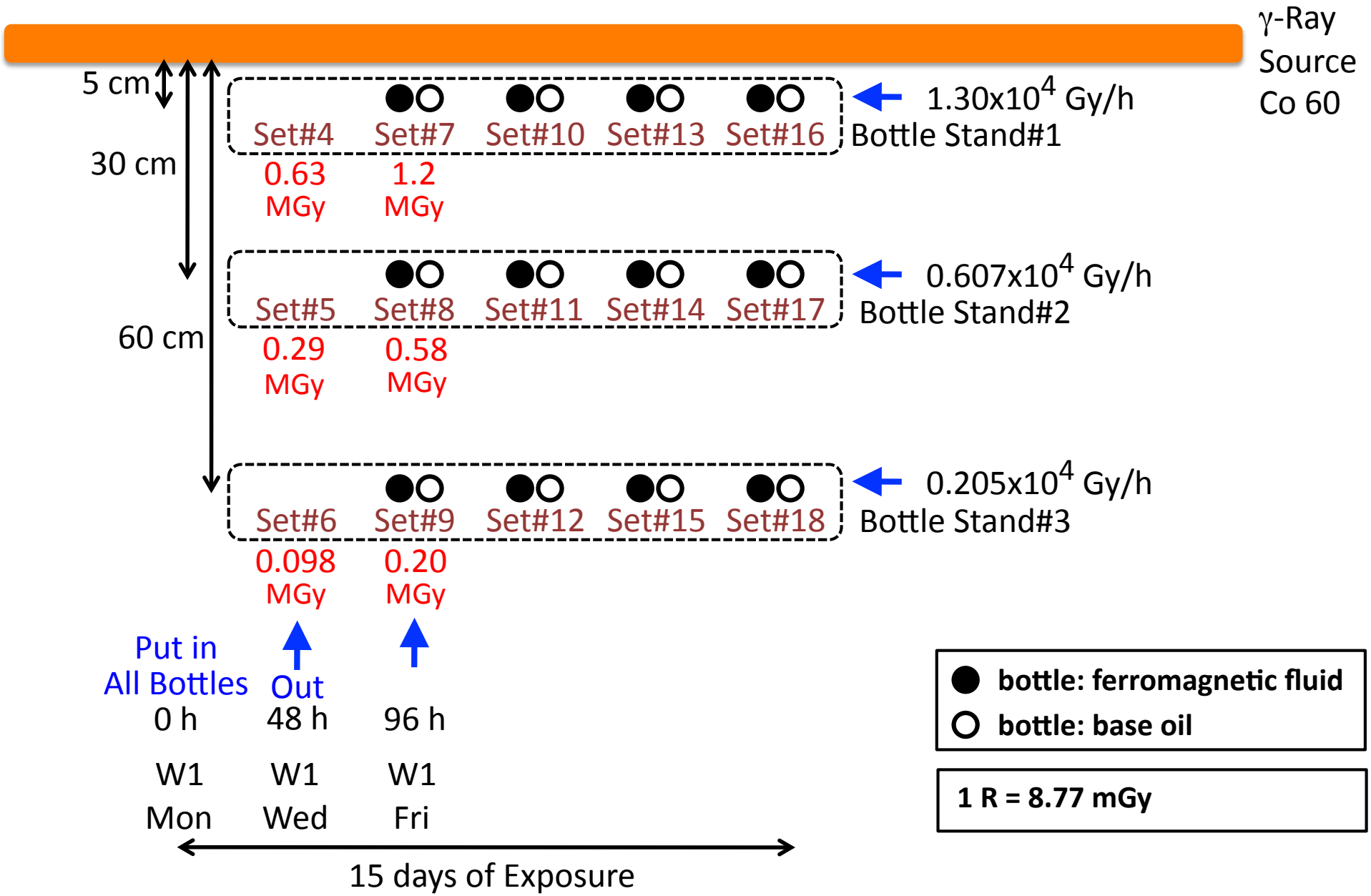


2004 Plan: 15 days of Exposure



2004 Plan: 15 days of Exposure



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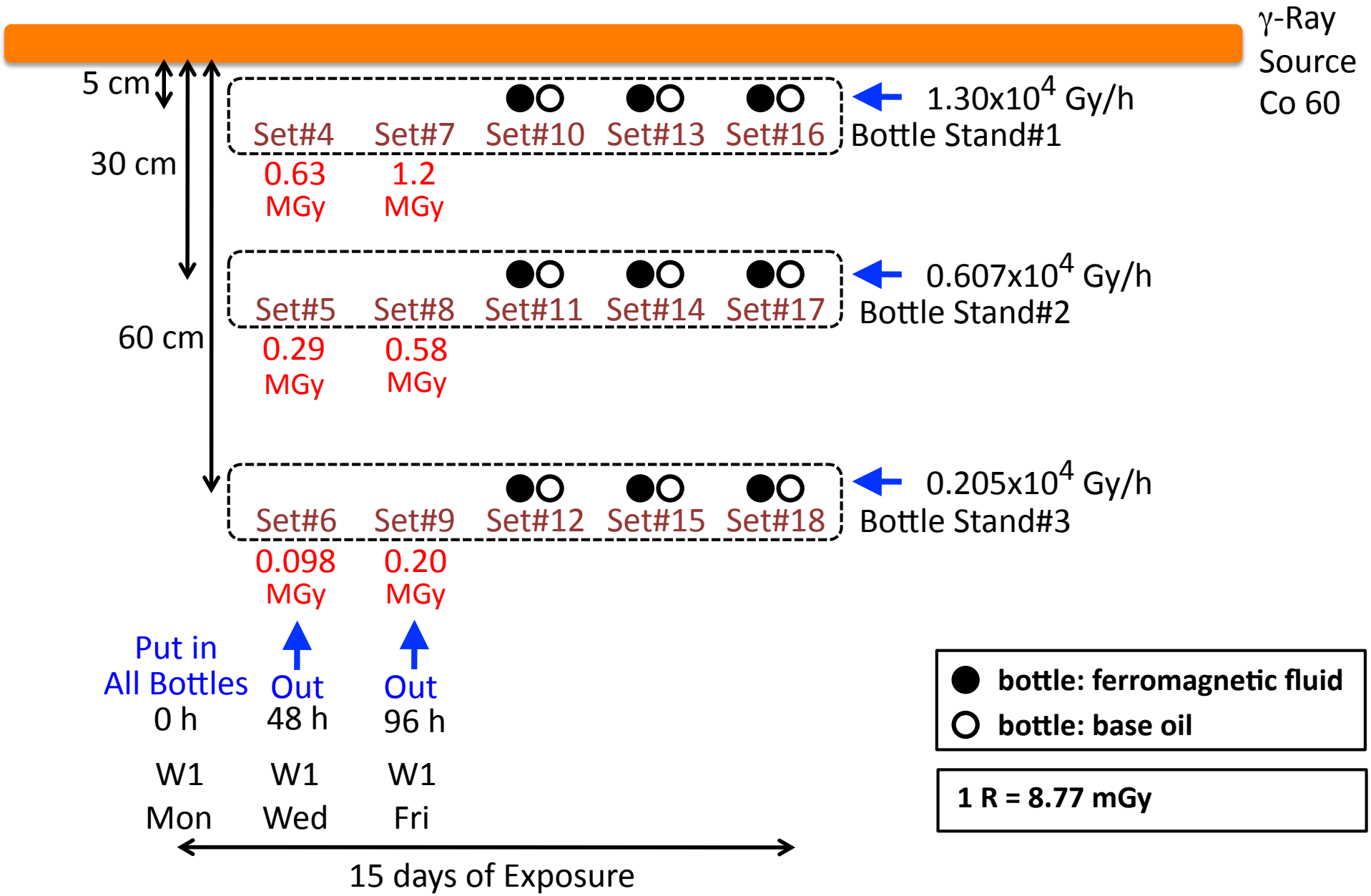

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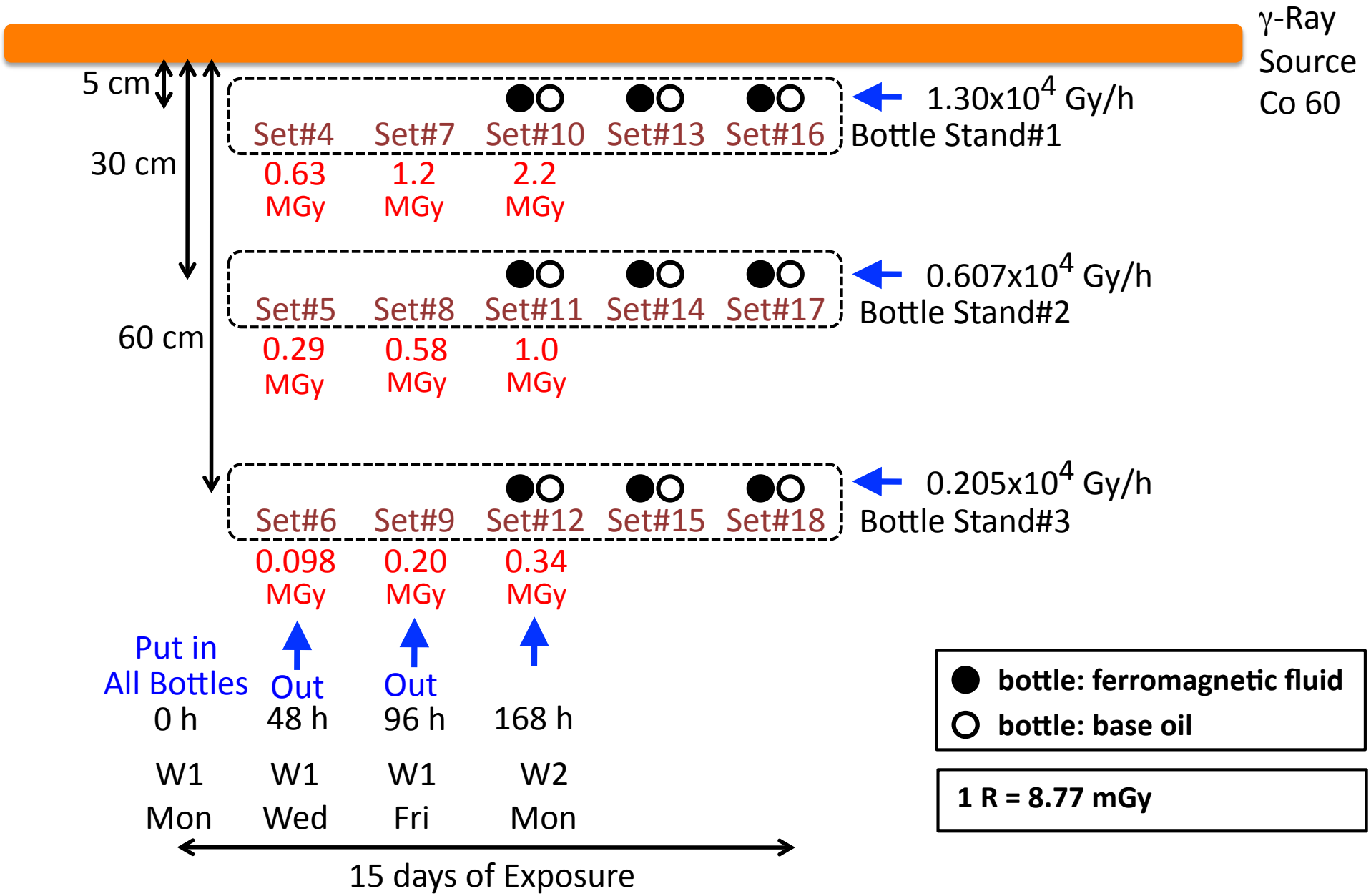

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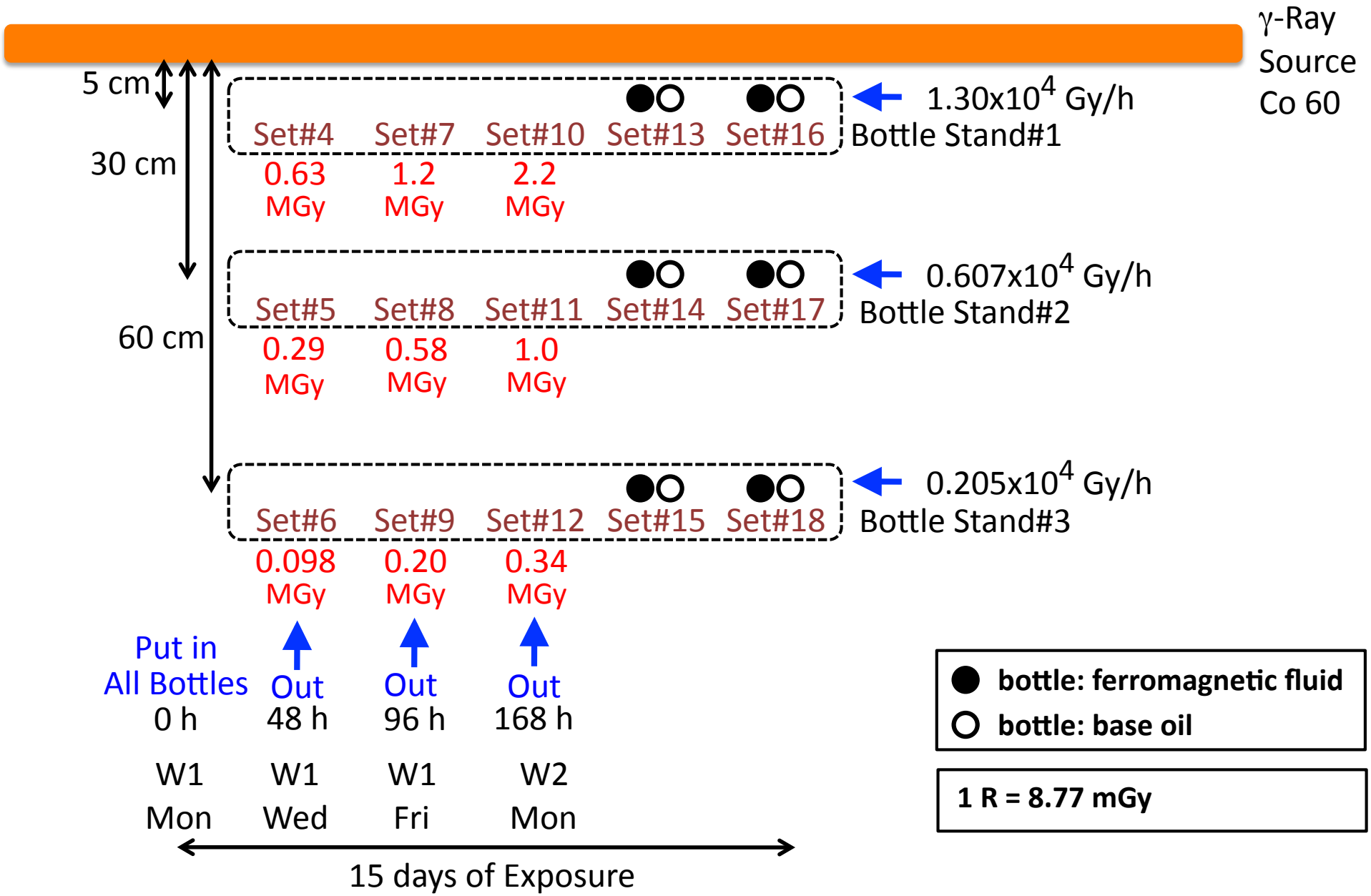

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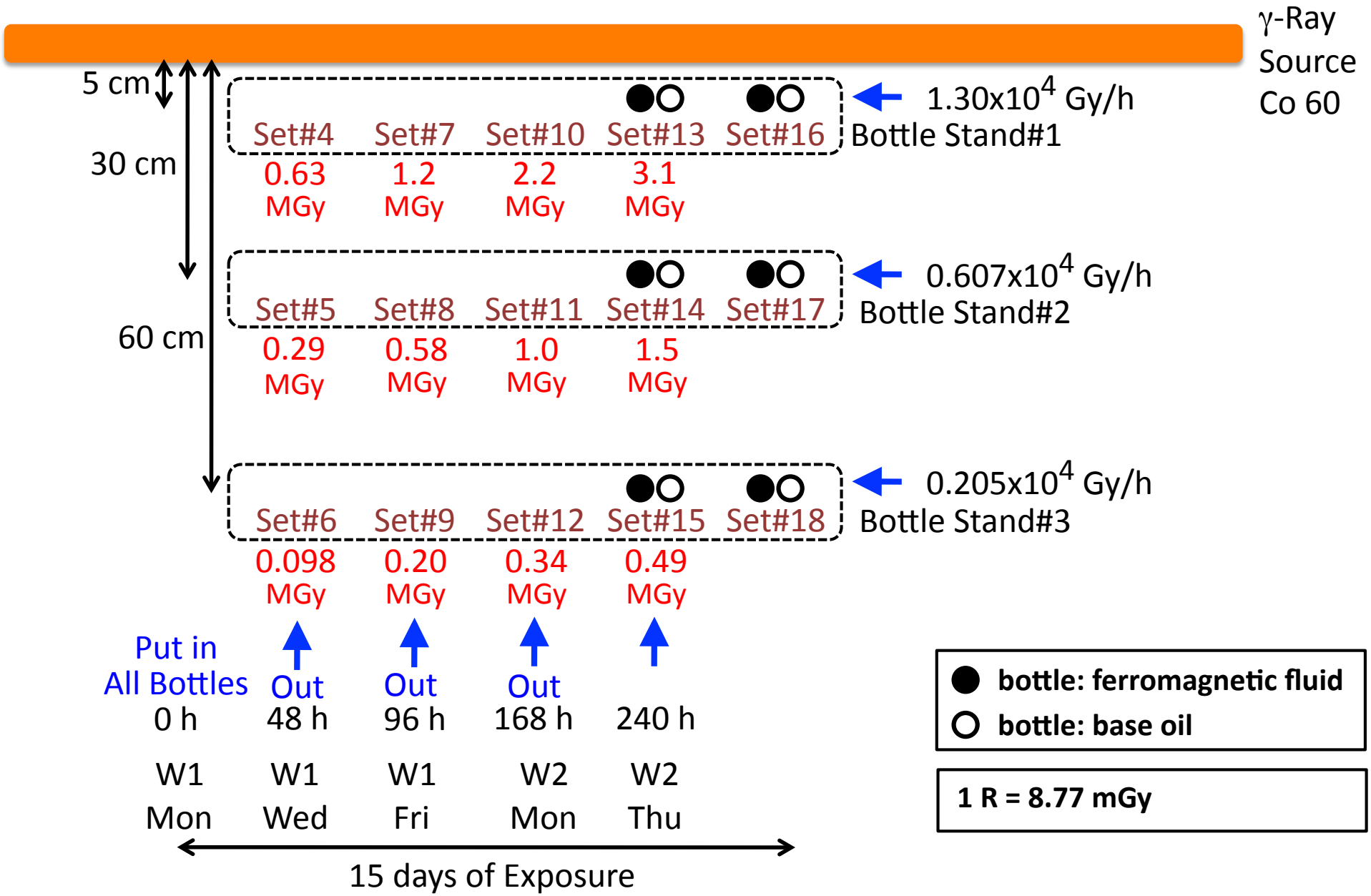

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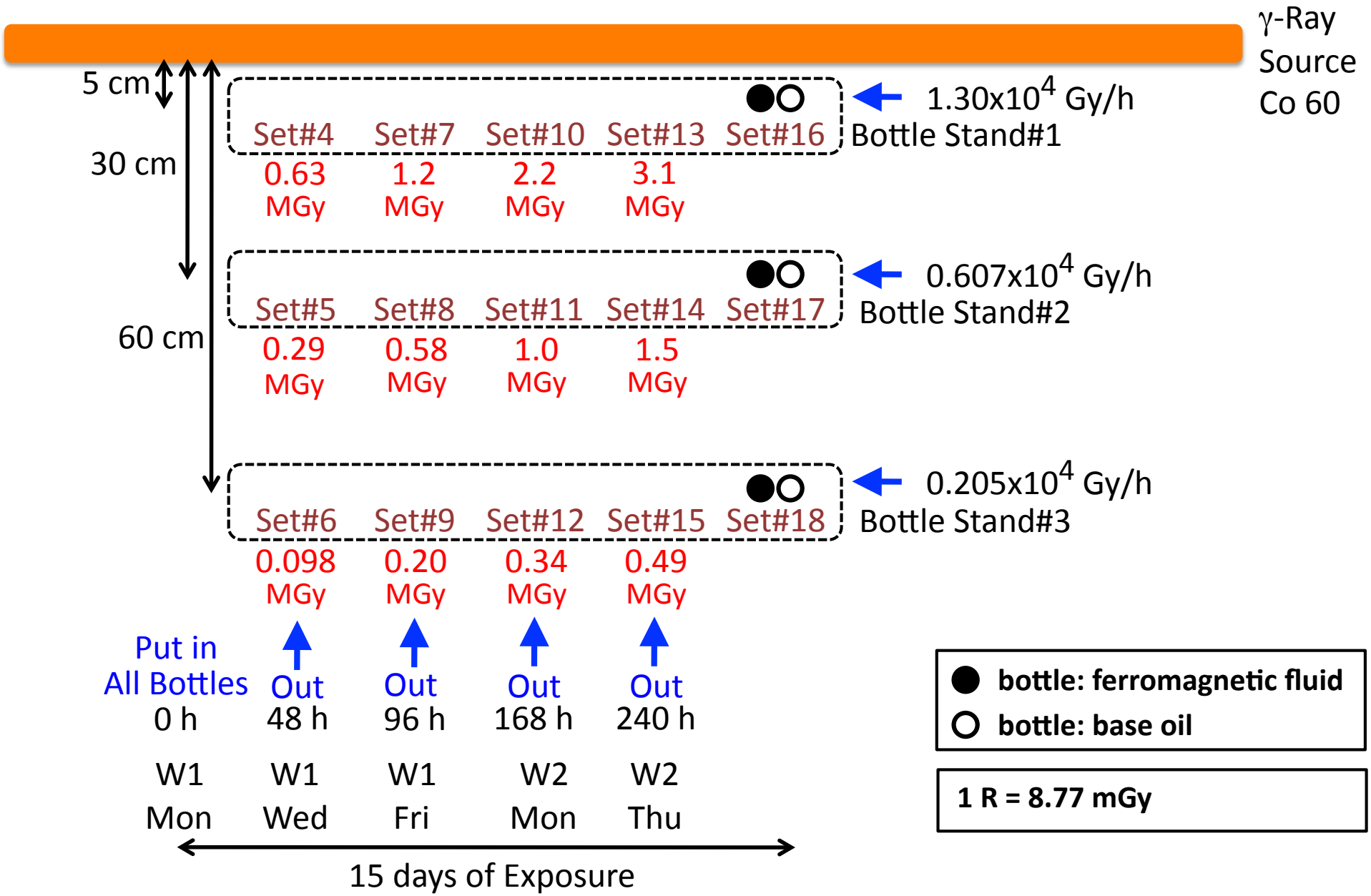

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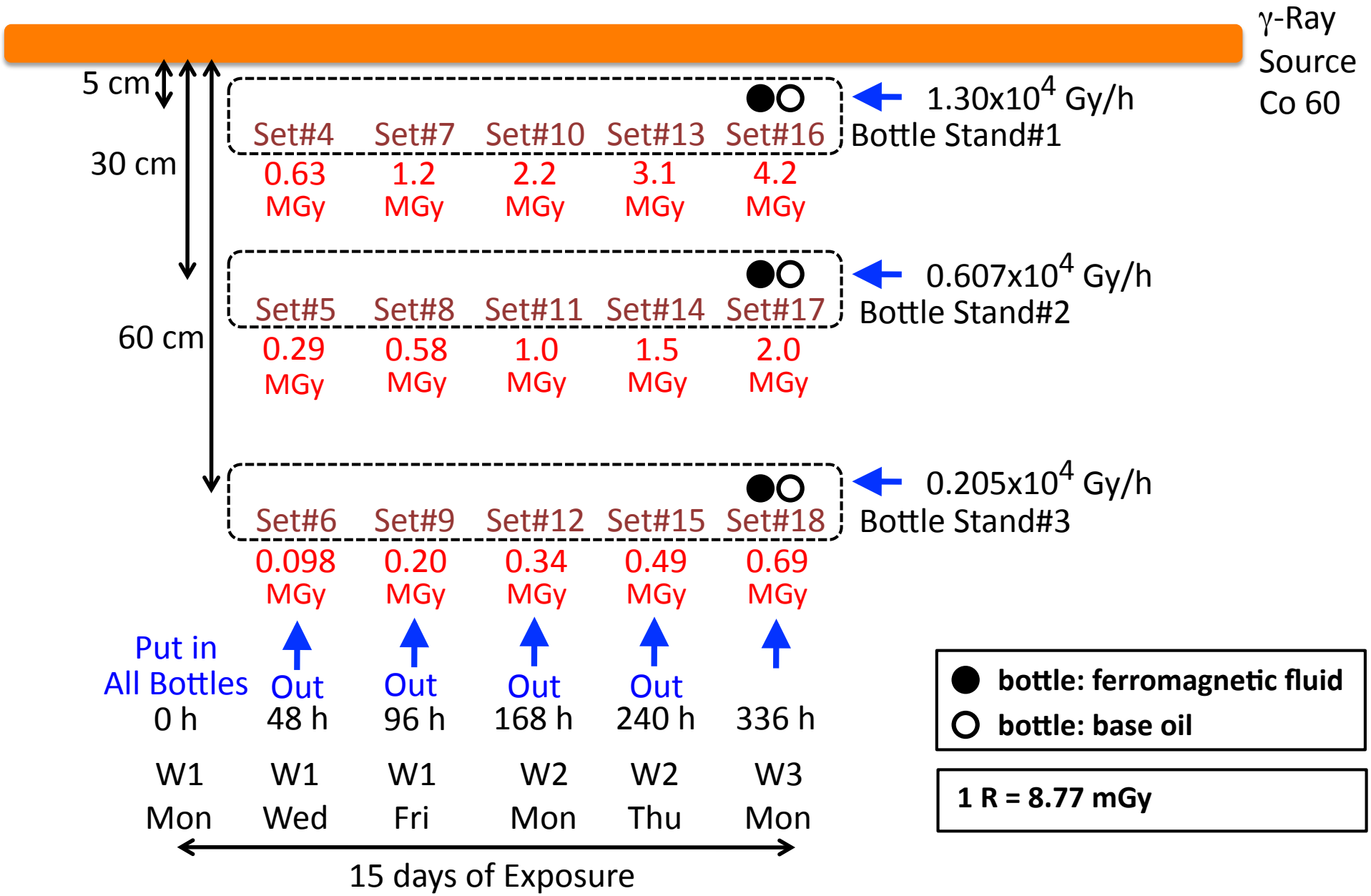

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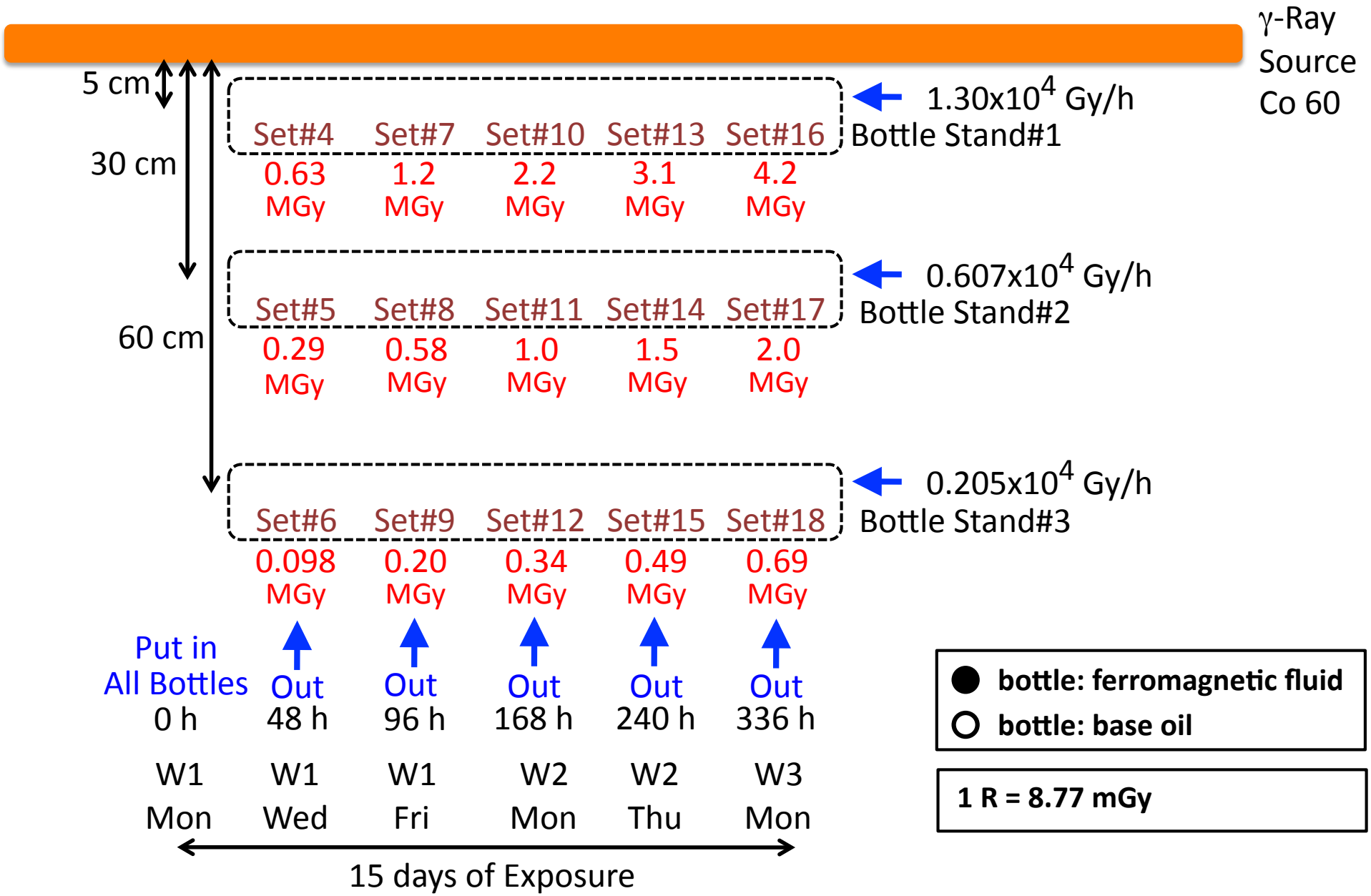
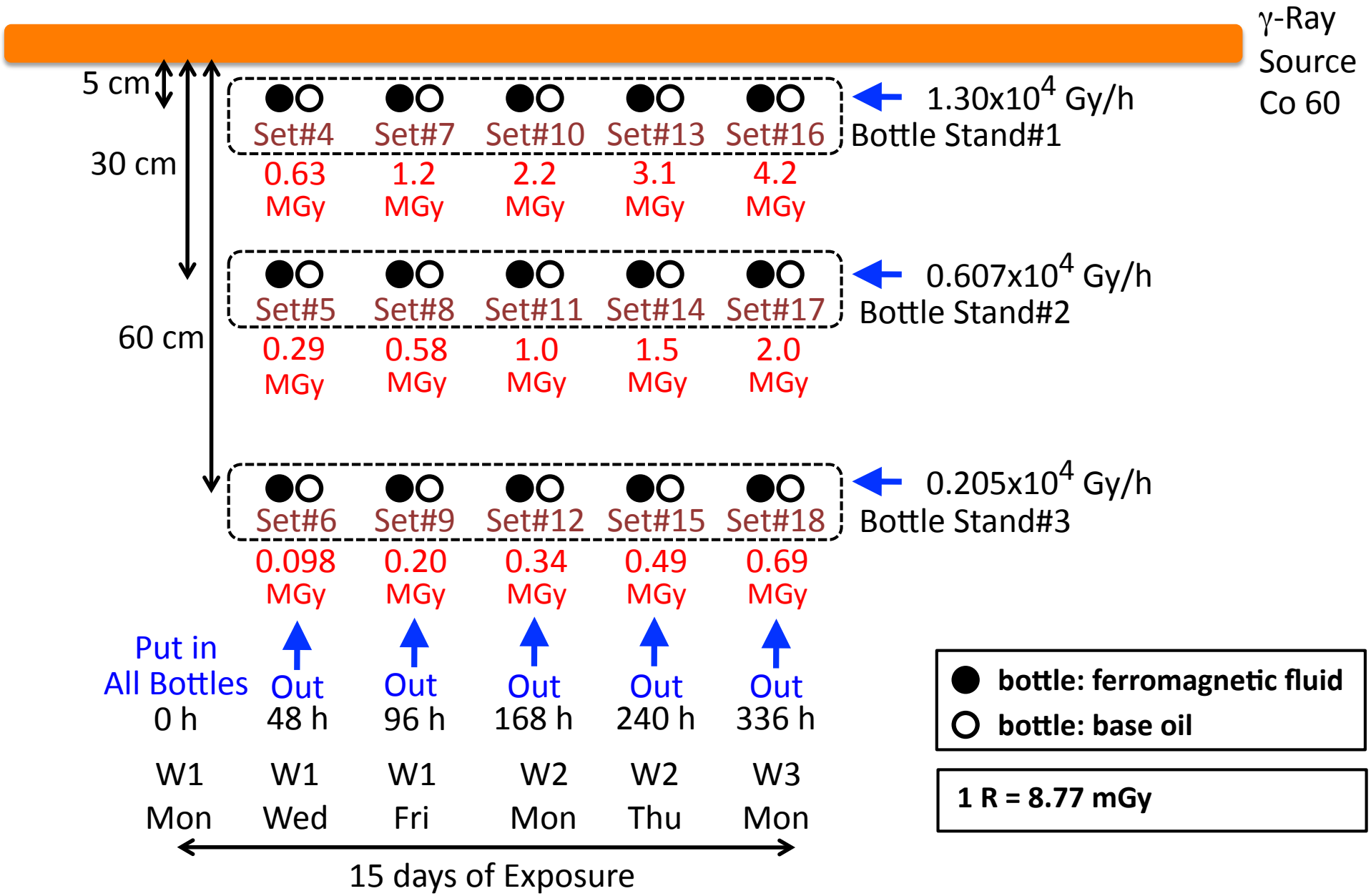


Summary: 15 days of Exposure



Summary

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1. Target Dose Simulation

   1.5 MGy/year (2600 bunches) T. Takahashi, AWLC14

2. Plan in 2014 of Radiation Test

   The plan was made.

   0.1 MGy (2 days) – 4 MGy (15 days), with small steps

   We need 6 accesses to put in and pull out the samples.

   Too many accesses? (Takasaki is far from KEK)

   Can we reduce number of accesses?

   Can we get a supporter in Takasaki Lab.?