

GE Silicone Sealants ^{222}Rn Emanation Measurement

H. Ryott Glayzer

December 2023

Lab Assistant

SD Mines



Sample Photos



Figure 1: photo not yet available

Overview of Emanation

- Two samples were emanated throughout the latter half of 2023
 - GE All-Purpose Silicone Sealant was emanated four times with a total of 465 hours of usable assay data.
 - GE Advandced Silicone Sealant was emanated three times with a total of N hours of usable assay data.



Rate vs. Time, Run 717

Rate vs Time Run 717, with Model Background

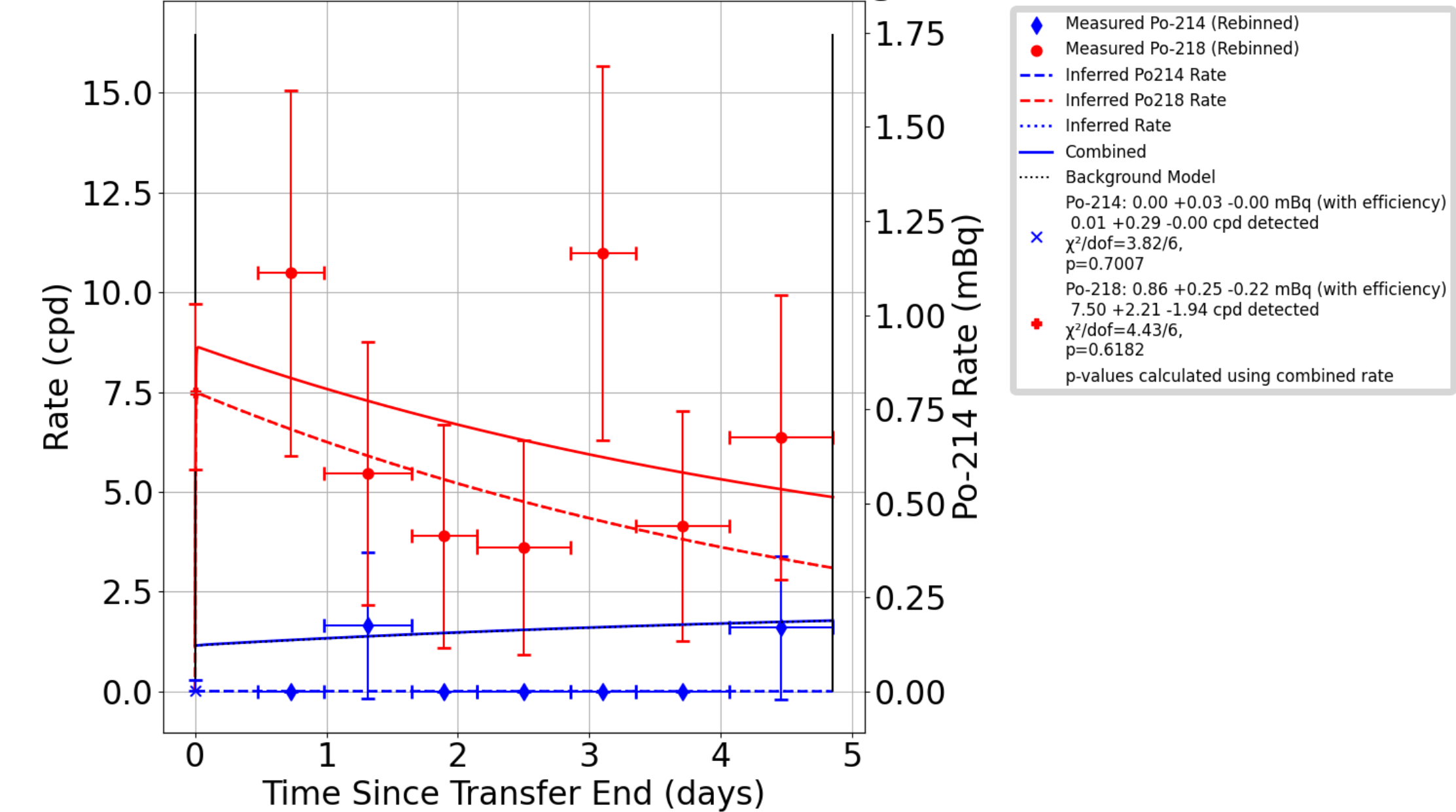


Figure 2: ^{222}Rn Emanation Rate: $0.00^{+0.03}_{-0.00}$ mBq (from ^{214}Po Rate)



Run 717 Analysis

- Emanation Rate was determined to be 0.00 ± 0.03 mBq.
- This determination was based on the observed emanation rate of ^{214}Po .
- The ^{218}Po rate wasn't used as poor resolution between the peaks of ^{218}Po and ^{210}Po likely caused ^{210}Po events to spill over into the ^{218}Po ROI



Rate vs. Time, Run 720

Rate vs Time Run 720, with Model Background

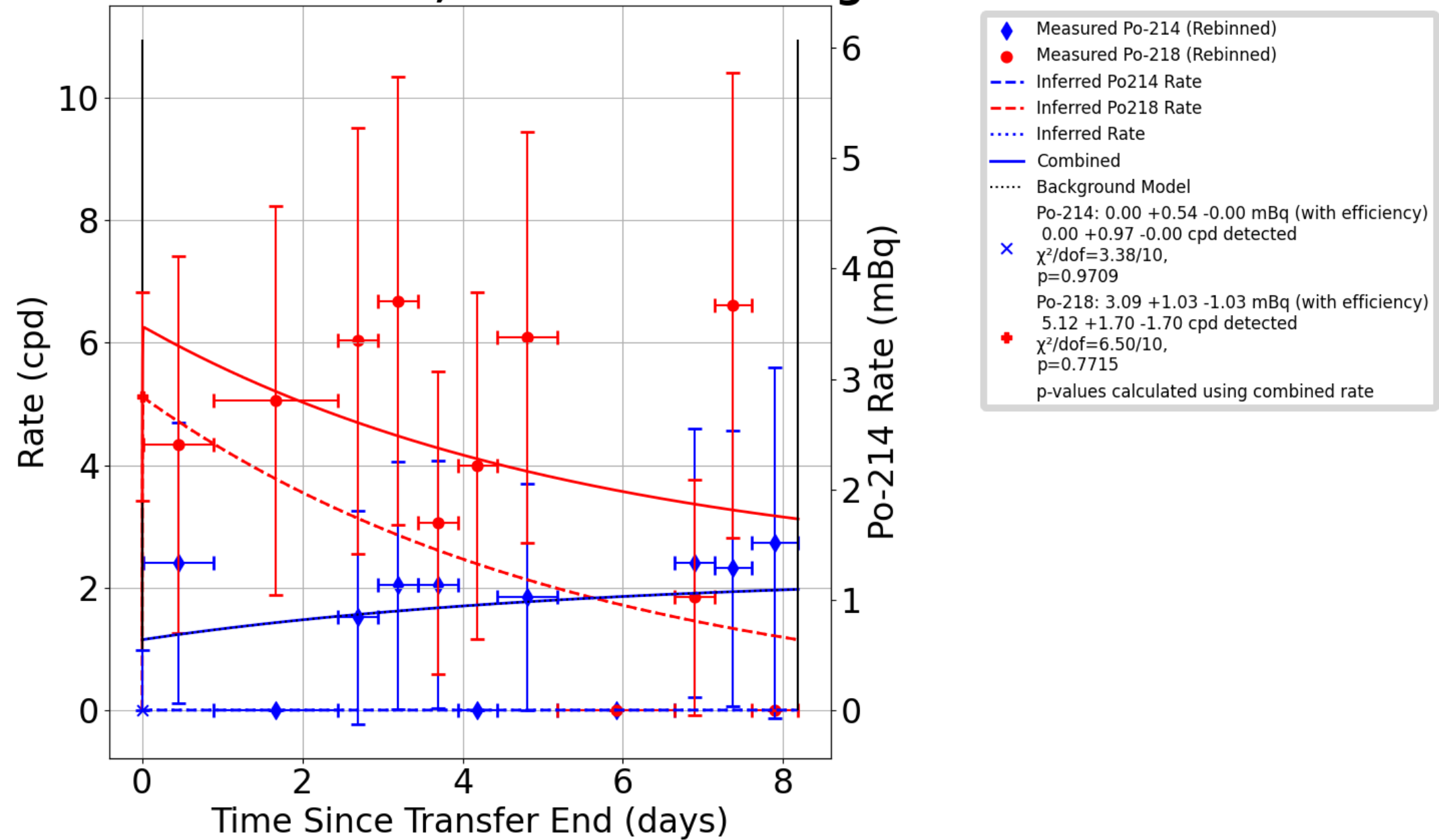


Figure 3: ^{222}Rn Emanation Rate: $0.00^{+0.54}_{-0.00}$ mBq (from ^{214}Po rate)



Run 720 Analysis

- Emanation Rate was determined to be **0.00** $^{+0.54}_{-0.00}$ **mBq**.
- This determination was based on the observed emanation rate of ^{214}Po .
- The ^{218}Po rate wasn't used as poor resolution between the peaks of ^{218}Po and ^{210}Po likely caused ^{210}Po events to spill over into the ^{218}Po ROI



Rate vs. Time, Run 721

Rate vs Time Run 721, with Model Background

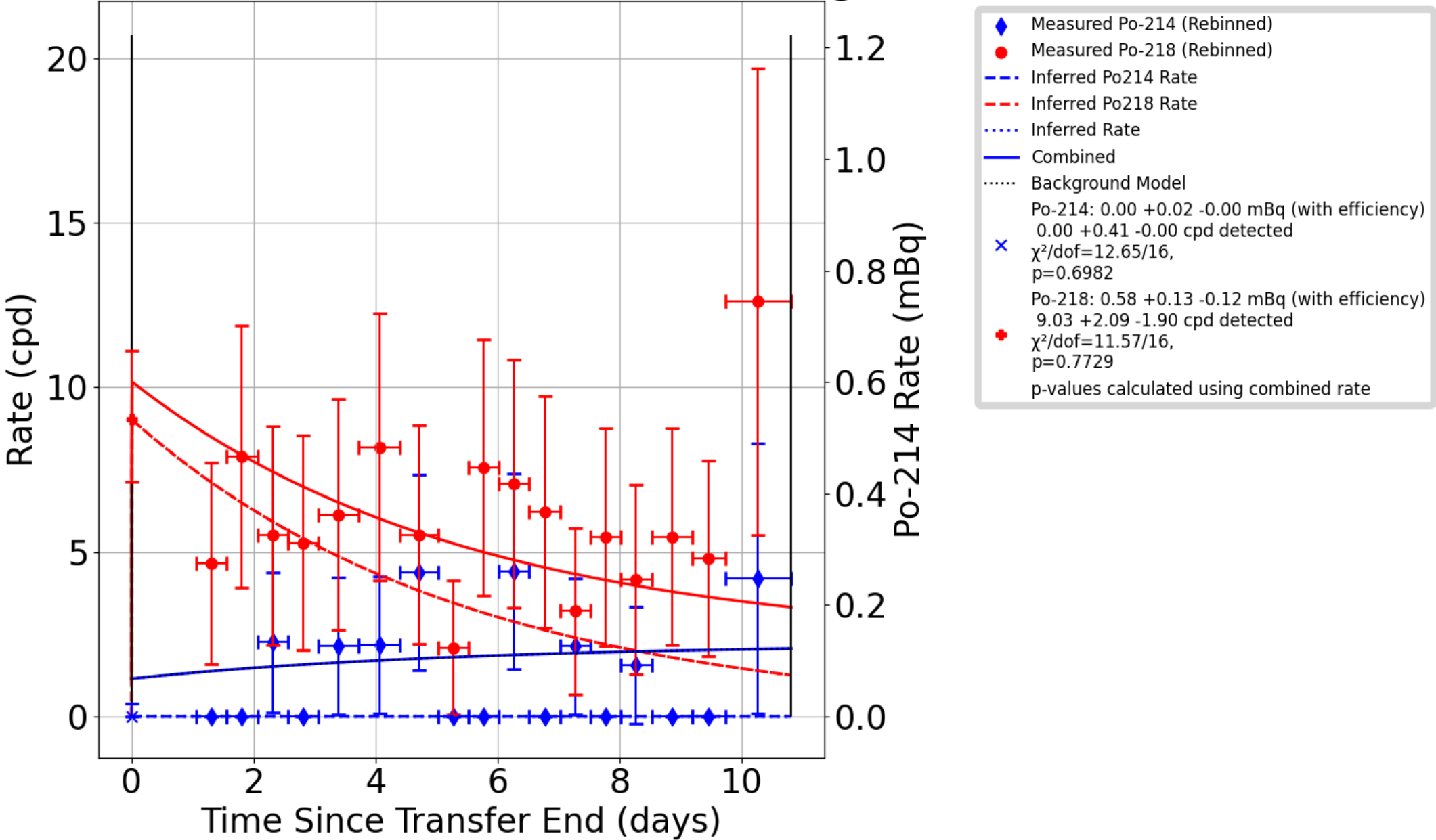


Figure 4: ^{222}Rn Emanation Rate: $0.00^{+0.02}_{-0.00}$ mBq (from ^{214}Po rate)



Run 721 Analysis

- Emanation Rate was determined to be **0.00** $^{+0.02}_{-0.00}$ **mBq**.
- This determination was based on the observed emanation rate of ^{214}Po .
- The ^{218}Po rate wasn't used as poor resolution between the peaks of ^{218}Po and ^{210}Po likely caused ^{210}Po events to spill over into the ^{218}Po ROI



Rate vs. Time, Run 722

Rate vs Time Run 722, with Model Background

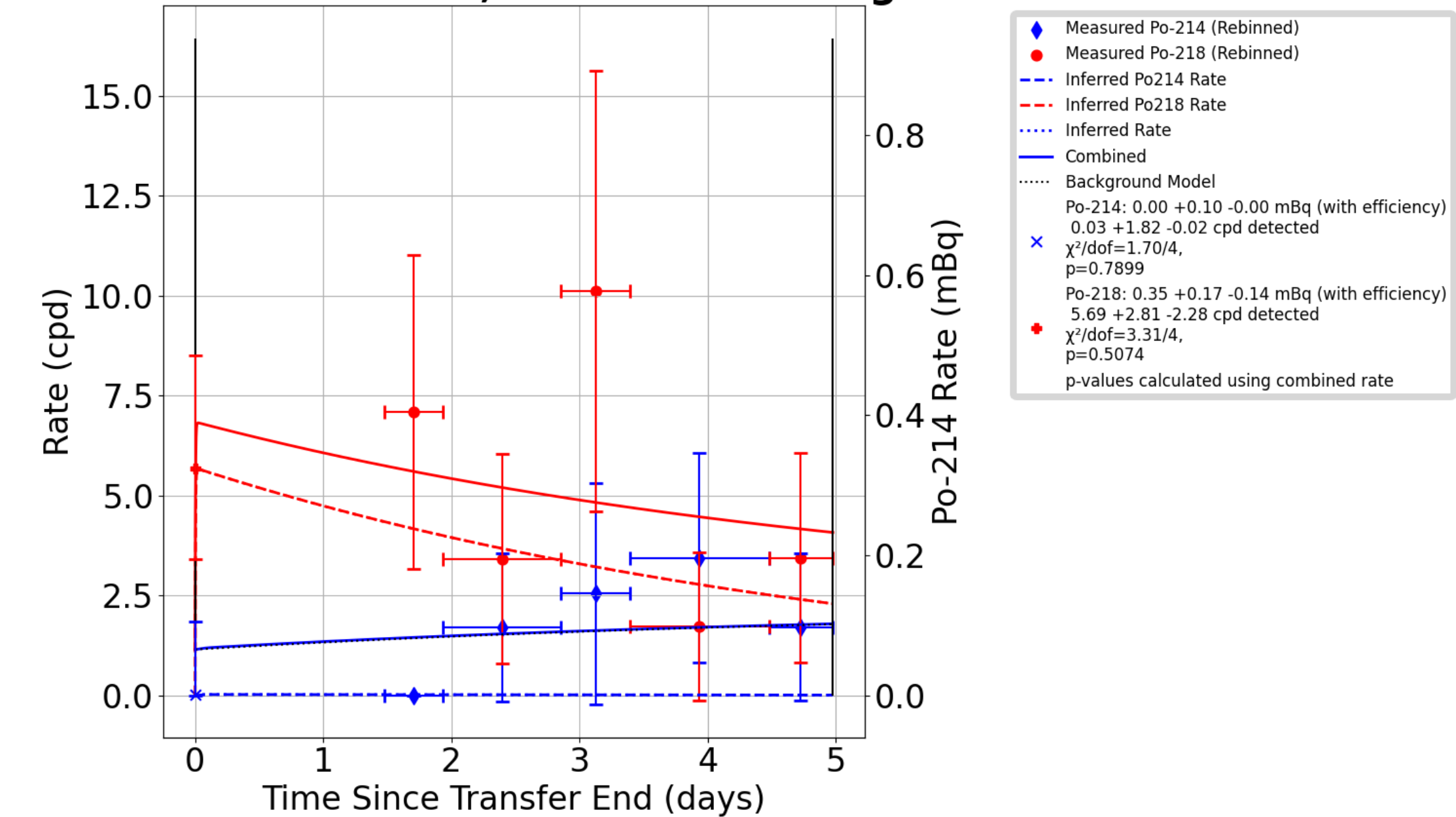


Figure 5: ^{222}Rn Emanation Rate: $0.00^{+0.10}_{-0.00}$ mBq (from ^{214}Po rate)



Run 722 Analysis

- Emanation Rate was determined to be **0.00** $^{+0.10}_{-0.00}$ **mBq**.
- This determination was based on the observed emanation rate of ^{214}Po .
- The ^{218}Po rate wasn't used as poor resolution between the peaks of ^{218}Po and ^{210}Po likely caused ^{210}Po events to spill over into the ^{218}Po ROI



Backup Slides contain additional data and information that may be helpful to provide context if questions come up.

