Reactor 28 | August 2023 - October 2023 Summary

**\*\* The project lead is responsible for double checking all laboratory normalizations and applying any additional corrections, as needed.**

**Session information:**

## Responsible for QC and corrections to final lab data: Kirsten Andrews [November 2023]

Add any significant updates in a different color or link to a new summary file: here.

## Description of session:

## Reactor 28 lasted 3 months from the middle of August to the end of October. After running House DI, SMOW, and SLAPS on Reactor 28, carbonate standard IAEA-C1 was analyzed thus beginning the carbonate run for this reactor. 108 carbonates were run on R28 before switching to waters. In total, 108 carbonates, 36 primes, and 55 water samples went through the reactor. Reactor 28 ended due to the filament going out on 10/19/2023. A new reactor was packed, ending Reactor 28 because it made more sense to start with a new reactor and filament at the same time rather than install and new filament, start running samples, then have the reactor go out shortly after. SMOWs and SLAPs were run twice on this reactor, once in the beginning and once towards the end.

## Decisions about correction of data (breaks, linear vs basic correction etc):

SMOWs and SLAPs were only run twice during this reactor, once at the beginning and once towards the end of the reactor. Therefore, Reactor 28 was reduced using a linear correction with no segment breaks. SMOW and SLAP values stayed fairly consistent throughout the reactor, ranging from -7 to 8 per meg in residual for SMOW standards, and -11 to 9 per meg for SLAPs. Overall, both SMOW and SLAP values stay close to 0 per meg. All standards in this reactor (including SMOW, SLAP, USGS45, IAEA-C1, and 102-GC-AZ01) ranged from -24 to 20 per meg (see [R28\_3allCorr\_std.pdf](https://drive.google.com/file/d/167IYazDDg3KixVgVy_ab3S6rG36cijNA/view?usp=drive_link)). The average of SMOW and SLAP waters run on Reactor 28 were 0 per meg and 0 per meg respectively, which match well with the overall average values for SMOW (0 per meg) and SLAP (0 per meg) values. The same can be said for IAEA-C1 carbonate standards. The IAEA-C1s run during this reactor had an average of -100 per meg, while the overall average for IAEA-C1s is -100.09 per meg. USGS45 waters for this reactor had an average of 22 per meg while the overall average for USGS45 waters is 14.39 per meg. Carbonate standard 102-GC-AZ01 had an average value of -60 per meg for Reactor 28, while the overall average for this stand is -66.75 per meg (see [R28\_summaryStd\_linear.csv](https://drive.google.com/file/d/18SJIoTIKKAtehKIXzKRhXnHfUv4QjXih/view?usp=drive_link) and [cor.data.all.avg.csv](https://drive.google.com/file/d/1LSVi8j1YtNaC_haqzzi8mPgx7dsKuNdn/view?usp=drive_link)).

Version info:

* One version with a linear correction and no segments.

## Changes to script or file structure/formatting

* None

## Notable Events:

* 8/7/23: Jungpyo and Kirsten changed the tip seals on the scroll pump backing the carbonate line (aka Nancy)
* 8/10/23: New Reactor started - Reactor 28
  + HF flow (waters): 28.3 mL/min @ 48 psi
  + CoF3 Reactor Variac set to 55 w/a temp of 364 C
  + New septum
  + Switched He Tanks
  + Added ref gas - 1 aliquot - 20 nA @ 82.1%
* 8/15/23: Kirsten Updated Computers
* 8/16/23: Kirsten decreased regular E back down to 32 psi (GC2 ff was @ 75 psi due to increasing regulator earlier)
* 8/28/23: U of M wifi out - did not run triple
* 8/29/23: Kirsten purged ballasts for 15 mins
* 8/29/23: Kirsten added reg gas - 1 aliquot - 20 nA @ 78.7%
* 8/29/23: Wifi still out, tried running triple but Auto IT wasn’t working due to needing to talk to discord through the internet
* 8/30/23: Started successfully running triple again
* 9/12/23: Acid bath gauge high ~310 mtorr (usually between 100 and 200 mtorr)
* 9/13/23: Sarah purged gas ballasts for 15 mins
* 9/15/23: Sarah having trouble getting acid bath gauge down - gauge was staying around 240 mtorr, scroll pump backing the carbonate line is failing, waiting to get scroll pump rebuild kit
* 9/20/23: Sarah having trouble getting acid bath gauge down - gauge was staying around 450 mtorr, scroll pump backing the carbonate line is failing, waiting to get scroll pump rebuild kit
* 9/21/23: Sarah having trouble getting acid bath gauge down - gauge was staying around 300 mtorr, scroll pump backing the carbonate line is failing, waiting to get scroll pump rebuild kit
* 9/21/23: Access to ethernet out all morning. Could not access the research drive or run samples for the rest of the day.
* 9/28/23: Sarah changed septum
* 9/28/23: Sarah loaded ref gas - 1 aliquot - 83% at 20 nA
* 9/28/23: Sarah changed the injection syringe - end of the syringe was smashed in and ruining the septa everytime a sample was getting injected.
* 9/29/23: Nick installed a “enable Discord” button on labview for when we have lost internet and/or ethernet access in order to still run samples.
* 10/20/23: Kirsten and Jada did a filament change