

11 – Installation Report

Client:	Louisiana State University		
Quotation Number:	18309	Date:	18/02/2026
Job Number:	IN1378	Date:	20/02/2026

Contact:	Thomas Blanchard		
Date of Visit:	13 th – 17 th July 2026	No. of Days:	5
Engineer:	David Harris		

Details of visit:

Engineer arrived on site and inspected delivered boxes. No damage noted – All OK.

Unboxed instruments and setup on desktop. Desktop space is limited, VerSA setup on top of CryoPrep as required – All OK.

Unboxed PC, setup on desktop. Established comms with all instruments – All OK.

Issue with power supply IEC cables to UPS unit. Only cables supplied by Sercon were to 115V power outlets. Instrument has been built to 230V specifications (IEC c20-c13 required for 230V power outlets). Adaptors ordered by customer and arrived by Wednesday during the week install. Comms was able to be established with the units on 115V but unable to start vacuum pumps. Also no MFC/EPC or Furnace control. Unable to establish comms with VerSA.

Customer required back line plumbing installing. 1/8th Stainless Steel tubing and fittings used. Engineer built lines, customer fitted to gas cylinders.

Software edited as required for bespoke unit layout. Node for IsoEarth set to U, E node required. Altered dip switch settings on Prep PCB. Unit now set to node E.

CryoPrep set to node U also. Unable to reach Prep PCB due to lack of access to rear of CryoPrep. Altered all events to operate with node U command.

Power adaptor arrived and installed onto power lines. All systems now have 230V and function as expected – All OK.

No issues with software. All components and controls are as expected – All OK.

Pumped down instrument. Turbo-pump speeds reached 93k RPM. Vac pressure of 1.7e⁻⁰⁸ mBar achieved overnight. 6.0e⁻⁰⁹ mBar achieved over 2 days – All OK.

Activated Ion source & fired filament. No issues – All OK.

User does not require Ref Gas on system. Closed Ref Gas He carrier flow to save on He usage. If Ref Gases are installed on system at a future date, engineer advises to set flow to 15ml/min.

Adjusted isolation valve crimps as required. Issue with blocked trapping loop valve. Replaced for spare part. Issue resolved.

Peak shapes tuned from trapping loop via IsoEarth combustion method (AS Beet Mix samples used). Magnet moved as required and system tuned for optimum linearity, sensitivity and peak shapes – All OK
 2/1 Peak shapes all good – Pass

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2/1 stability checks all good – Pass

CryoPrep

Setup CryoPrep system. No faults noted. Plumbed in connections between systems as required – All OK.
Fitted GC columns and baked out at 140°C overnight. No leaks noted post-bake out. Set GC oven to room temp for analysis.

Demonstrated to users how to make up CryoPrep combustion tube and fit to system/furnace (1 tube damaged in process)– All OK.

Changed VerSA sample bed to 12ml exetainer function. Screws missing for correct build of sample bed.

Parts provided by customer. Adjusted XY coordinates as required – All OK.

Issue with VerSA sampling needle, part damaged. Sercon had been sent incorrect spare parts. (WES needle type). User has old needle from Gilson autosampler setup from previous (decommissioned) instrument. Fitted older needle and adjusted Z depth settings as required – All OK.

N.B. If the user changed to larger sample bottle types they will need to check the XY coordinates and the Z depth for injection.

Calibrated He flow meter – All OK.

User is interest primarily in ¹³C & ¹⁵N analysis applications on the CryoPrep.

Peak shapes tuned from trapping loop via IsoEarth combustion method and copied over to CryoPrep Project.

Adjusted methods and timings as required to optimise sample retention – All OK.

Tested batches from air for N₂ and CO₂ – Results good. (see below for details).

LN₂ used for ¹³C batches. LN₂ not required for subsample trapping loop method with the ¹⁵N method.

Customer ran N₂ samples as part of training session. Results also good.

IsoEarth

Made up reaction tubes for IsoEarth. User has experience of making tubes from previous systems.

All tubes installed. System He leak checked – No He leaks present – All OK.

Issue with Reduction furnace. No response from commands. Investigated issue – found power input cable to be detached. Reattaching restored control. Furnaces heat with no issue.

GC column baked out at 140°C overnight – All OK.

Furnaces heated up to required temps.(Comb, 1000°C, Reduc 600°C). GC oven set to 60°C for analysis – All OK.

Calibrated He flow meters – All OK.

MFC readback displays lower value than entered, but does produces correct set speed. Bug to be investigated by Sercon. Currently main He carrier flow correct at approx. 60ml/min, 25PSI. O₂ set to matching flows of 60ml/min & 25PSI.

O₂ leak present on system. No leaks detected on back line plumbing or within instrument. Customer swapped over cylinder gauge. Leak seemed to be resolved.

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Leak was also yielding high blank peak during testing. This issue was also resolved with the change in cylinder gauge – All OK. Blank peak under $>3.0 \times 10^{-10}$ (Major beam response) during final day of installation – All OK.

Ran DUAL analysis for precision & linearity. Results good (see below for details) – All Pass.

Precision batch: AS Beet Mix (n=5, N=100 μ g, C=400 μ g, Ref - N=100 μ g, C=400 μ g).

Linearity batch: AS Beet Mix (n=6, N=10-200 μ g, C=25-500 μ g, Ref- N=100 μ g, C=250 μ g).

Results:

IsoEArth + HS2022

CO₂ 2/1 Peak Shape = OK

N₂ 2/1 Peak Shape = OK

AS Beet Mix ¹³C Precision =0.081‰ S.D.

AS Beet Mix ¹⁵N Precision =0.139‰ S.D.

CO₂ 2/1 Stability = OK

N₂ 2/1 Stability = OK

AS Beet Mix ¹³C Linearity =0.218‰ S.D.

AS Beet Mix ¹⁵N Linearity =0.261‰ S.D.

CryoPrep

CO₂ from air ¹³C Precision =0.054‰ S.D.

N₂ from air ¹⁵N Precision =0.044‰ S.D.

Training

Gave overview of MS system and the component parts, (Flight tube, magnet, turbo pumps, gauges, etc)

Gave overview of GSL and component parts.

Demonstrated how to change source filament. This includes...

- How to power off Ion Source correctly.
- How to safely vent the instrument and monitor pump speed readbacks via Callisto.
- How to pump down instrument to correct pressure levels to condition filament.
- How to successfully condition filament and how long to allow system to out gas for.
- How to make up and fit reaction/scrubber tubes.
- Explained different plumbing setups on all systems
- How to leak check system and check background levels.

Gave training in Callisto usage. This includes...

- Navigation of Callisto & Reprocessor software
- Comms, settings and calibration functions.
- Overview of Bitmap, flow/pressure/temp readbacks and valve setup.
- Explanation on what the beams demonstrate and the isotopic ratio meanings.

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- Scan functions (Peak shape, stability, background scans, etc)
- Method building (timings, events, reference files, etc)
- Demonstrated how to edit Event & timing files.
- Sample list building and saving of data.
- How to set XY coordinates and set Z depth within method building.
- “Normal mode” for data analysis. (System does not have Ref Gases installed for RGI mode).
- How to reprocess data and improve standard deviation/mean of gathered data.
- Location of data within PC, (original data vs reprocessed data locations. Raw vs drift corrected data).
- Preferred set up of Blank, Test/Ref, sample during a sample list.
- Explained the importance of the magnet position in the tuning of the beams.
- Advised on preferred daily peak shape/stability checks that should be performed on system before use.

Visit complete. Systems installed and passed specifications.

Recommendations:

- Install Ref Gases for ease of tuning and stability checks.
- Check XY coordinates on VerSA sample bed if changing sample bottle type. Also check and set Z depth within method.

Faults and Shortages:

- IEC c20-c13 required for 230V power outlets.
- Screws for VerSA sample bed build.
- Exe12 replacement needles for CryoPrep (Only WES needles supplied).

Follow up:

N/A

Engineer: **David Harris**

Date: **17th July 2026**

Signed:



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Notes:

N/A