Ticket #3594 QCLAS coolant tubings melted

Stanley Huang (Aerodyne Research) <support@aerodyne.com>

Fri 23/02/2024 18:07

To: Ouma Turry Atieno <turry.ouma@sdsc.ethz.ch>;

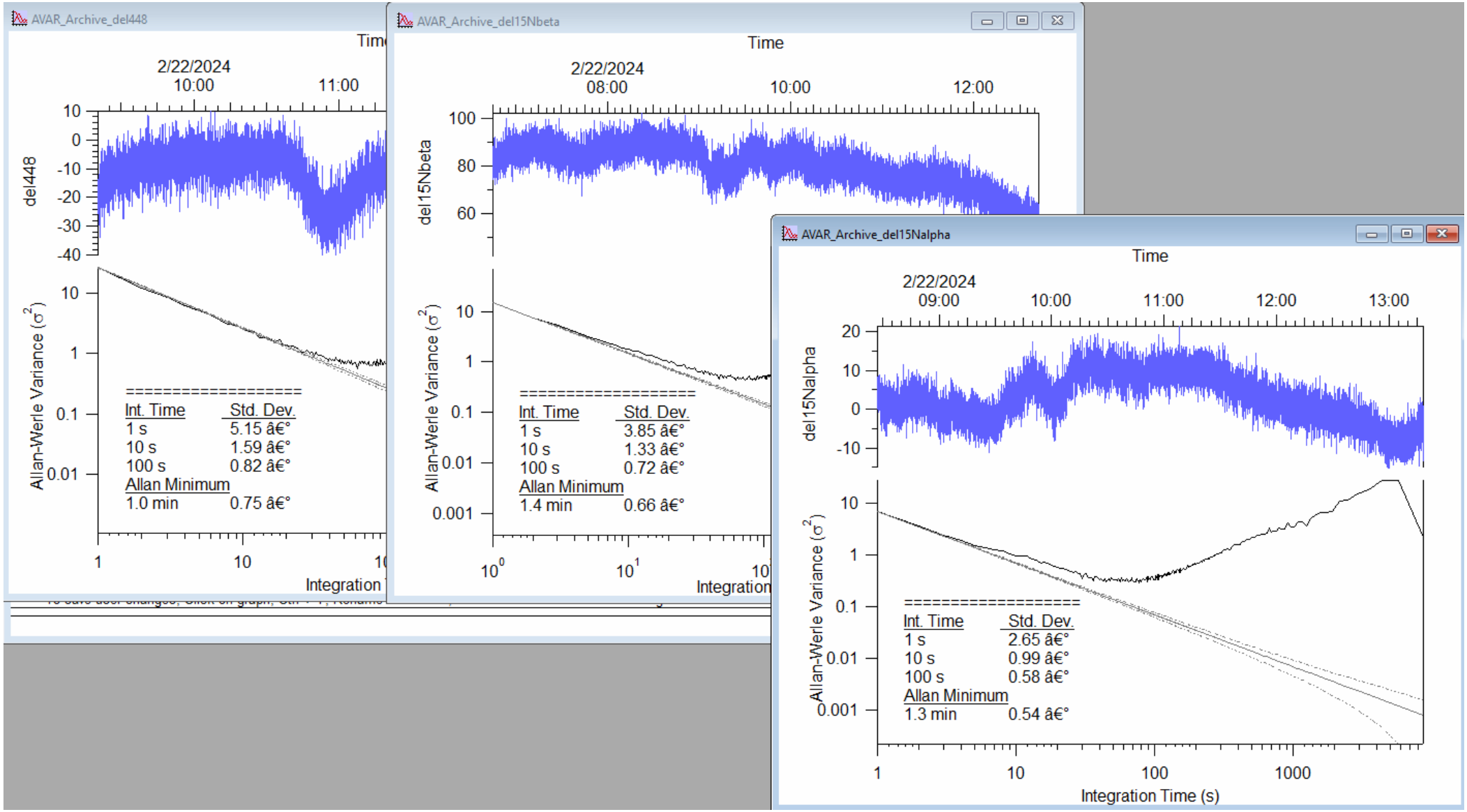
Cc: Stanley Huang <huangs@aerodyne.com>; Harris Eliza Jean <eliza.harris@sdsc.ethz.ch>; Barthel Matti <matti.barthel@usys.ethz.ch>; Agredazywczuk Phillip <phillip.agredazywczuk@sdsc.ethz.ch>;

Hi All

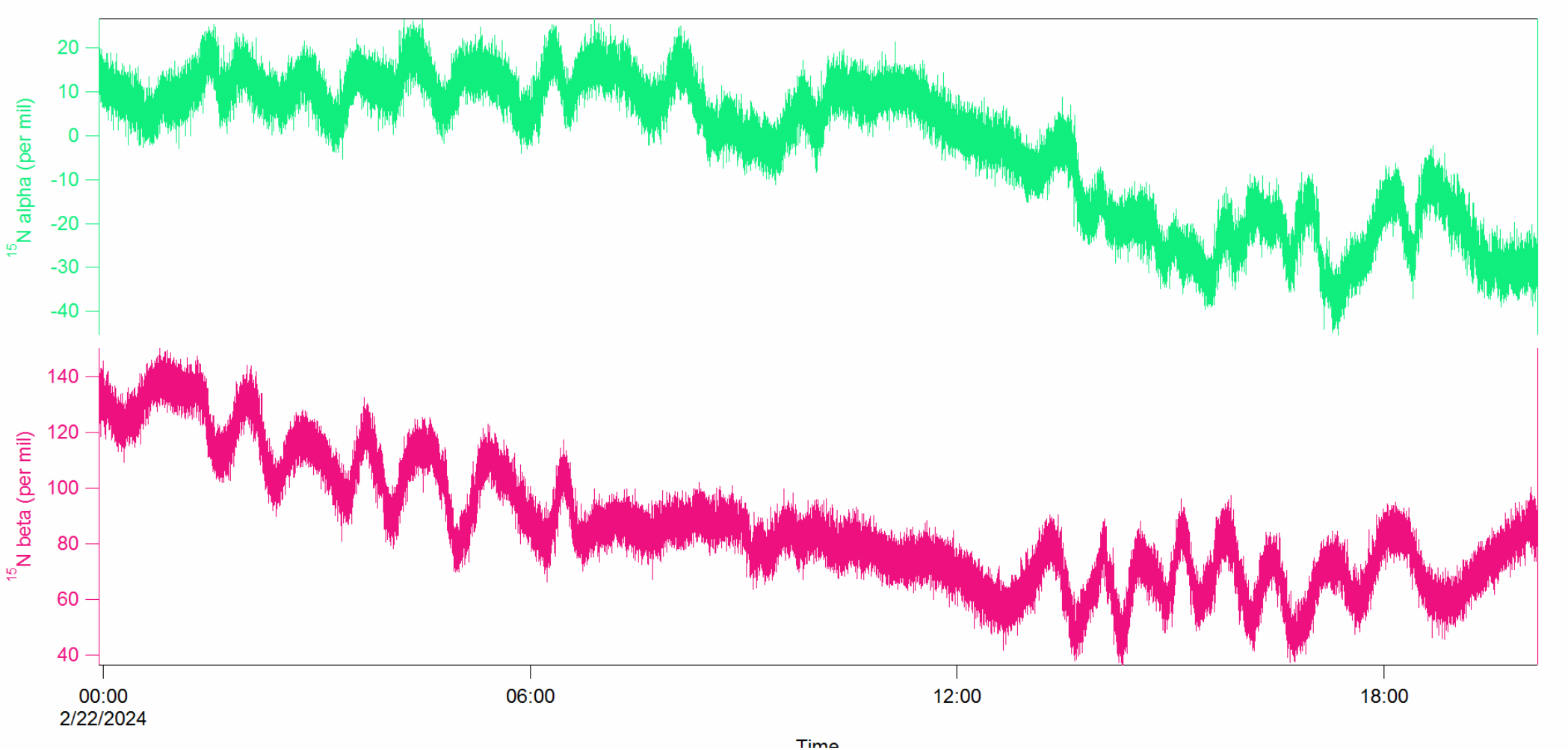
Here's the updated instrument status:

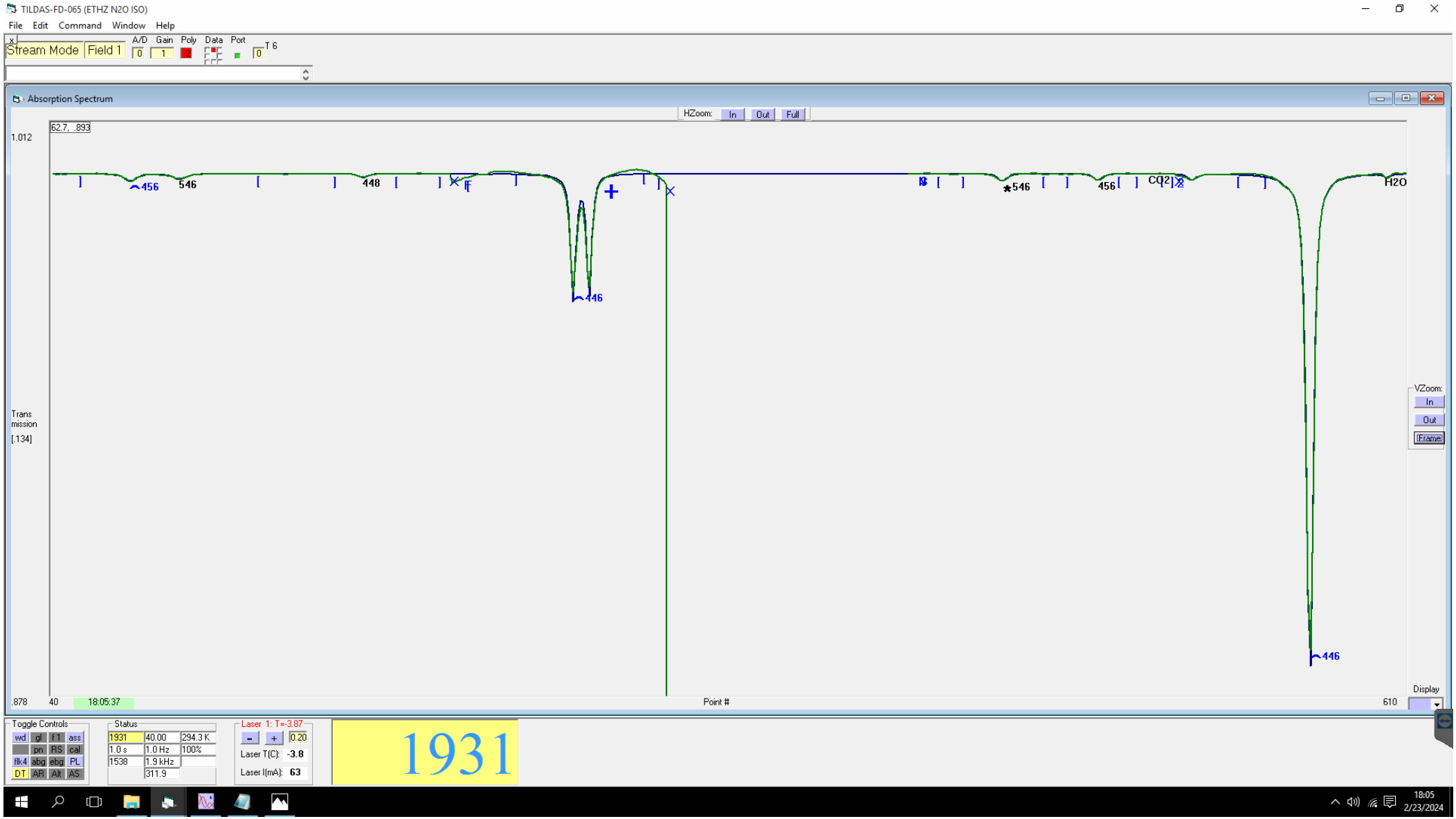
- **Laser 1**: Measures Del 456, Del546, **Del448**.
- **Laser 2**: Measures **Del546** and **Del456**.

The Allan plot is displayed below:
This data was obtained with **Sample Tank air**, using a flow rate of **500 Sccm** and a pressure of **40 torr**.
All this isotope noise meets our specifications.



It appears that the instrument experiences some drift over time. Here's the data plot:


20
10
0
-10
-20
-30
-40
15N alpha (per mil)
140
120
100
80
60
40
15N beta (per mil)
00:00
2/22/2024
06:00
12:00
18:00
Time



Please let us know if this performance is good enough to ship it back to you.

Best,

Stanley

On February 22, 2024 at 7:54:27 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike,
>
> Just checking in - hope things are running well. Do you think it will be feasible to send the QCLAS by the end of February? This would roughly allow a week to arrive in Zurich and a week from Zurich to Kenya to keep with our timeline.
>
> Would you already be able to send the packing list and commercial invoice? So we can avoid delays with the tax exemption.
>
> Thanks,
>
> Eliza
>
> ---
> ETH Zurich
> Dr. Eliza Harris
> Senior Scientist
> Swiss Data Science Centre
> Andreasstrasse 5
> 8050 Zürich, Switzerland
> Phone +41 76 749 1871
>
> ---
>
> **From:** Harris Eliza Jean
> **Sent:** 12 February 2024 13:06:40
> **To:** Ouma Turry Atieno; Aerodyne Research
> **Cc:** Stanley Huang; Barthel Matti; Agredazywczuk Phillip
> **Subject:** Re: Ticket #3594 QCLAS coolant tubings melted
>
> Hi Mike,
>
> Great to hear, thanks for the update!
>
> It would be super if you can send the details of the shipment as soon as you have the documents. The tax exemption for Kenya takes a while to process so good if we are able to start that as early as we can.
>
> Best wishes,

Eliza

ETH Zurich
Dr. Eliza Harris
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 12 February 2024 13:00:35
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

Stanley let me know that both lasers are looking relatively stable so far. The temperature drift is well below spec. He saw one glitch in the data, but will continue monitoring it. With respect to performance, we're within about a factor of 2 of the original spec for the 3 deltas; we'll do what we can to bring it down within reason, keeping in mind time restraints and the age of the instrument. Stanley will continue working on the instrument and its performance.

I did see the other chain re: shipping. We can send the commercial invoice and packing list to Thomas prior to shipping, shouldn't be a problem.

Best,
Mike

Mike Moore
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On February 9, 2024 at 7:28:37 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

Hi Mike,

How are the lasers going? Just wondering if you can update on the rough timeline.

Did you see my email to Aerodyne also about the shipping/documents? I started a new thread because I needed to include a few people so I hope it got to you okay.

Cheers,

Eliza

ETH Zurich
Dr. Eliza Harris
Senior Scientist
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Andreasstrasse 5
8050 Zürich, Switzerland
Phone +41 76 749 1871

From: Harris Eliza Jean
Sent: 30 January 2024 08:02:46
To: Ouma Turry Atieno; Aerodyne Research
Cc: Stanley Huang; Barthel Matti; Agredazywczuk Phillip
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

Great news, thanks!

ETH Zurich
Dr. Eliza Harris

Senior Scientist
Swiss Data Science Centre
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 29 January 2024 17:07:07
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

Apparently they arrived some time last week - I received them this morning. I've handed them off to our tech to have them mounted and then pumped on. They should, hopefully, be ready to install around the end of the week.

Best,
Mike

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On January 26, 2024 at 3:49:34 PM UTC, Mike Moore support@aerodyne.com wrote:

Hi Eliza,

They've been ordered and shipped. We're in the dreaded waiting period for delivery.
I'll let you know when they're in-house.

Best,
Mike

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On January 25, 2024 at 2:33:21 PM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

Hi Mike,

Just touching base - how are the lasers going?

Cheers,

Eliza

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Dr. Eliza Harris
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From: Harris Eliza Jean
Sent: 12 January 2024 11:58:27
To: Ouma Turry Atieno; Aerodyne Research
Cc: Stanley Huang; Barthel Matti; Agredazywczuk Phillip
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

Hi Mike,

Thanks for the great news! Glad to hear things can move ahead. Looking forward to further updates.

Cheers,

Eliza

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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 11 January 2024 13:51:44
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

Happy New Year!

The manufacturer did actually have more to offer after the holidays. I'm in the process of getting the pair at present.

I'll let you know as things progress.

All the best,
Mike

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On January 8, 2024 at 3:43:17 PM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike,
>
> Just writing to check up on this again after the holidays. I hope there will be a laser shipped soon! We hope to soon have our chambers, Picarro and precon unit running in Kenya and look forward to adding the laser to the set up in March.
>
> Best wishes and a happy new year to you and others at Aerodyne :)
>
> Cheers,
>
> Eliza
>
> ---
> ETH Zurich
> Dr. Eliza Harris
> Senior Scientist
> Swiss Data Science Centre
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> 8050 Zürich, Switzerland

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From: Harris Eliza Jean
Sent: 19 December 2023 16:26:06
To: Ouma Turry Atieno; Aerodyne Research
Cc: Stanley Huang; Barthel Matti; Agredazywczuk Phillip
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

Dear Mike,

Thanks very much for the update. Your plan sounds good and we can see the status again in the new year.

Enjoy the holidays and thanks a lot for your support!

Eliza

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Dr. Eliza Harris
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 18 December 2023 22:37:00
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

I did get a response today and he mentioned the delay was due to some observed mode-jumping in the device being tested. He said they've put more into the testing queue and "hope to find a better one to show" us.

I'm going to be away from the office into the new year (and so is my tech who does laser mounting), so I think it's worth it to just wait and see - since even if we purchased the older device now, nothing would happen with it. I plan to check in on my email every now and again while I'm away, so if I see that there is a good device on offer, I can always forward it along to our purchasing department. If worse comes to worst and they can't find anything in the period I'm away, we can always fall back to the older device they offered.

Best wishes,
Mike

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On December 17, 2023 at 8:21:08 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

Hi Mike,

Let's hope then that the laser will be sent soon so that we can have the instrument sent back to us before March. Did you hear yet? Or should we consider going for the older material laser you mentioned they had for the right wavelength?

Cheers,

Eliza

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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 12 December 2023 12:36:14
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

I have not received an update. I reached out to them last week about an unrelated topic and haven't heard back about that either. I'll ping them again later in the week.

I noticed I didn't respond to your previous email. [Sorry, I have a horrible habit of drafting emails in my head and later thinking I've responded.]
Yes, I think if we can receive the laser by early January, I think March is within reason given what we know now. If things change (like unforeseen work required), we can reassess.

Best,
Mike

Mike Moore
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On December 7, 2023 at 2:26:21 PM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike,

Any more news from the manufacturer about the lasers with the new materials?

Cheers,

Eliza

ETH Zurich
Dr. Eliza Harris
Senior Scientist
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From: Harris Eliza Jean
Sent: 30 November 2023 07:46:15
To: Ouma Turry Atieno; Aerodyne Research
Cc: Stanley Huang; Barthel Matti; Agredazywczuk Phillip
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

Hi Mike,

Thanks for the detailed account of the timeline, much better to work with this than just hope it'll come!

So, it sounds like we can realistically expect they send the lasers by the end of next week, so with two months from that + a bit more for Christmas, it should be ready by late February?

We should then have it in Kenya by early March, since it'll already be packed and will go straight on to Kenya.

I think this sounds realistic, right?

Please keep us updated if anything changes.

Cheers,

Eliza

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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 29 November 2023 17:44:48
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Dear Eliza,

I share your feelings re: timeline. Had we been able to get the lasers in November, I think we could've had a fighting chance. At this point, I don't think December is possible at all, especially factoring in the holidays.

I was in contact with the manufacturer yesterday and was informed that they have an older option for 2196 cm-1. I asked when testing on newer material would complete and he said early next week, possibly by the end of this week. I think it's worth waiting to see what becomes available - especially since accepting the older device wouldn't make much difference in the timeline.

If we say about a week for shipping (sometimes less, sometimes far more with customs); a couple days for mounting and verifying leak tightness; you're already looking at 1-2 weeks before we could get it in the instrument at all. And we typically want to burn-in new lasers for a few weeks to make sure there aren't any underlying issues that don't get caught in the manufacturer's testing. [They're unable to measure frequency stability as accurately as we are, relying primarily on FTIR.] Plus shipping, it starts looking like an approximately 2 month timeline from lasers shipping to us; that's not including ancillary work which we mentioned may need to be done (objective replacement, realignment, mirror cleaning), and assuming the lasers are perfectly behaved.

Best wishes,
Mike

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On November 28, 2023 at 7:32:42 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Dear Mike, Stanley,
>
> Any updates yet on when the lasers will be available and when the instrument might be returned to Switzerland? We are slowly getting nervous about our deadline; it would be really great if we had the instrument in Switzerland in December so that we can have it at the field site by mid-Jan. If this won't be possible at all, it'd be good to know sooner rather than later!
>
> Thanks,
>
> Eliza
>
> ---
> ETH Zurich
> Dr. Eliza Harris
> Senior Scientist
> Swiss Data Science Centre
> Andreasstrasse 5
> 8050 Zürich, Switzerland
> Phone +41 76 749 1871
>
> ---
>
> **From:** Harris Eliza Jean
> **Sent:** 14 November 2023 15:55:10
> **To:** Ouma Turry Atieno; Aerodyne Research

Cc: Stanley Huang; Barthel Matti; Agredazywczuk Phillip
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

It sounds like 2196 would be the best option, giving us some redundancy. That said, if the availability of 2203 is better, I prefer that, since the main purpose of L2 is 448.

ETH Zurich
Dr. Eliza Harris
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Swiss Data Science Centre
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 14 November 2023 15:43:38
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

That's correct, 2188cm-1 gives the better 456 & 546 (good separation) and also a water line.

As far as I can tell, 2196 and 2203 have very comparable lines for 448 (both in depth and separation), but each has a different secondary benefit. Typically, if we had only 1 laser to measure 456/546/448, we would (and do) use 2196; it gets all 3, with the 456 and 546 being not quite as good as at 2188.
At 2203, you're only getting 448, but there is also a CO line available.

If you don't care about CO at all, then 2196 might be preferable as the 'prepare for the worst' option - if one laser were to fail, you'd have 456/546 no matter which failed.
On the other hand, 2203 minimizes species overlap and gets you the bonus CO.

Hopefully that clarifies. Let me know your thoughts.

Best,
Mike

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On November 14, 2023 at 2:26:16 PM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Oh no that's fine, I just assumed 2203 because I've used that before. 2188 is the one for 456 and 546, right? So that is essential? And 2196 / 2203 gives us 448 so either of them is fine.
>
> ---
> ETH Zurich
> Dr. Eliza Harris
> Senior Scientist
> Swiss Data Science Centre
> Andreasstrasse 5
> 8050 Zürich, Switzerland
> Phone +41 76 749 1871

From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 14 November 2023 15:24:38
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

I had them looking for a laser for 2196 cm-1. Did you want to return to 2203 cm-1? I can ask them to adjust their search.
I apologize, I should've checked with you first.

Best,
Mike

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On November 14, 2023 at 1:24:32 PM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Okay good to hear they are on it! Does that mean they found one at 2203?
>
> Cheers,
>
> Eliza
>
> ---
> ETH Zurich
> Dr. Eliza Harris
> Senior Scientist
> Swiss Data Science Centre
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> 8050 Zürich, Switzerland
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>
> ---
>
> **From:** Mike Moore (Aerodyne Research) <support@aerodyne.com>
> **Sent:** 14 November 2023 14:11:52

To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

I was told last week by the manufacturer they're still searching for an acceptable laser for 2188 cm-1; "we have a few units under test".
I expect (hope) they'll have something available this week.

Best,
Mike

Mike Moore
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On November 14, 2023 at 7:35:52 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike, Stanley,
>
> Do you have any update yet on the lasers, and when the QCLAS is likely to be shipped back to Switzerland?
>
> Cheers,
>
> Eliza
>
> ---
> ETH Zurich
> Dr. Eliza Harris

Senior Scientist
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Andreasstrasse 5
8050 Zürich, Switzerland
Phone +41 76 749 1871

From: Harris Eliza Jean
Sent: 31 October 2023 14:07:46
To: Ouma Turry Atieno; Aerodyne Research
Cc: Stanley Huang; Barthel Matti; Agredazywczuk Phillip
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

Thank you Mike for the quote.

We will be glad if you keep us updated regarding the lasers, thanks.

Cheers,

Eliza

ETH Zurich
Dr. Eliza Harris
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8050 Zürich, Switzerland
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 31 October 2023 13:52:16
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

I've requested the manufacturer start looking for material for replacement lasers. I'll let you know when they find something, for timeline purposes.

Attached is the formal quote, as requested.

All the best,
Mike

Mike Moore
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On October 24, 2023 at 2:23:32 PM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike,
>
> I think we have no choice but to proceed; I feared the lasers would not be in good shape following the meltdown. At any rate, the data from L2 was very poor even before this so it will be good to have the instrument in much better condition.
>
> We will hope it goes relatively quickly, and November may still be feasible. Please keep us updated as you hear more.
>
> The rough quote looks fine, it will come in at just under 50k CHF, so it would be good to have an official quote for this that we can use to request the funding. Thanks!
>
> Best wishes,
>
> Eliza
>
> ---

ETH Zurich
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 24 October 2023 16:01:05
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

Feeling well enough to be back in the office today, at least; thank you for asking.
Stanley sent me a photo of one of the peltiers Friday, attached if you wanted to see. You can see the pellets were damaged and falling apart.

The laser bases can now be cooled down to their respective operating temperatures, but Stanley informed me yesterday evening that he is getting nothing out of them - no detected output. For the sake of a second set of eyes, I double checked this morning and also saw no signal; current and temperature look right and everything looked properly aligned. Unfortunately, this points to the lasers likely having overheated and been destroyed during the event that melted the coolant lines.

Replacement lasers are $21k USD each; note that the peltier replacement cost is waved if replacement lasers are purchased since much of the labor component overlaps. I can start the manufacturer looking for material, but it can take weeks to months before we receive the laser for mounting and testing, to give you a general idea of time frame. It's typically less than a month, though, especially for 5um devices as you're using. I can keep you updated to some extent; I don't know material is ready until it's ready, for instance.
I will start looking for replacement devices, but please confirm that you do want to proceed.

I can't guarantee this, of course, but depending on laser availability, the end of November may be possible. I think we'll need to update semi-regularly, though.
An official quote isn't an issue. We can always make revisions, if necessary. I'll have one produced, but for the sake of getting you something to work with now:
- Shipping crate

  - $1k
- Replacement optics, including retrofit
  - $4500
- Electronics repairs
  - $1000
- Replacement laser
  - $21k per laser
- Replacement objective
  - $4200 per objective
- Super cell mirror cleaning
  - $2000

I add the objective price because Stanley also mentioned that the objectives show some oxidation. I haven't given this a second set of eyes yet, but it could be something we'll suggest changing as it could limit performance. I also add the mirror cleaning as a 'maybe', but I've no reason to suggest it at this time.

Again, I wish I had better news to report, but this is the current status.
Best,
Mike

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On October 23, 2023 at 6:52:11 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike,

I hope you are feeling better, and the replacement of the peltiers is going well.

Are you able to say, by when you expect to be able to ship the instrument? To plan the shipping onwards to Kenya it would be important to have an idea of this.

Another point:
We will apply for some funding to cover these repairs. Are you able to provide us with a cost estimate by early November? I know it can't be official until you are done but as detailed as possible would be really great. Items you are not sure you'll need, you could just put on the list anyway.

Thanks a lot,

Eliza

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Dr. Eliza Harris
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From: Harris Eliza Jean
Sent: 19 October 2023 08:01:06
To: Ouma Turry Atieno; Aerodyne Research
Cc: Stanley Huang; Barthel Matti; Agredazywczuk Phillip
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

Hi Mike,

That sounds good, we are for sure glad if you do that.

Cheers,

Eliza

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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 19 October 2023 03:14:33
To: Ouma Turry Atieno
Cc: Stanley Huang; Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza,

Unfortunately, I managed to get sick and have been away from the office since last week. However, Stanley was kind enough to step in and pick up where I left off.

He let me know that both laser peltiers need replacement in order to properly test the lasers as neither can be cooled. Before I ask Stanley to have them replaced, I wanted to let you know and get your approval to proceed. I may be slightly off on the pricing, but hopefully an unofficial estimate will suffice; I believe the cost is $3,000 USD per peltier.

Once you give your approval, Stanley can remove the housings and have the peltiers replaced before returning to the testing. The remounting takes a couple of days. Let us know if you have any questions.

Best,
Mike

Mike Moore
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On October 16, 2023 at 9:01:39 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

Hi Mike,

Do you have any further updates at this stage?

We are planning the shipping of our equipment to Kenya and it would be really good if you can give us a timeline to plan with.

The rest of the equipment is planned to ship out from Zürich on about Nov 20 - would it be possible to have the QCLAS by then? If not, by early December perhaps?

We will make sure to order the coolant you recommend and keep an eye on this. @Turry, Phillip, can you order this and also add the notes about regularly checking the flow switch to the documentation?

Cheers,

Eliza

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Dr. Eliza Harris
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 03 October 2023 22:35:23
To: Ouma Turry Atieno

Cc: Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza, Turry,

That's correct - if the chiller failed *and* the flow switch was jammed in the **on** position, then the lasers would remain on and continually heat until the TECs could no longer keep the base temperature below the shutoff threshold in TDLWintel. For this, I have a couple of tips:

1. We've started recommend switching to Koolance brand LIQ-702 coolant. Corrosion can be an issue and the manufacturer of the chillers started recommending this coolant because it has anti-corrosion agents in it.
2. With TDLWintel closed and the chiller on, unplug the flow switch from the back of the instrument and make sure that the FLOW LED on the front changes from blue to red. It doesn't have to be done regularly, but every now and again it's worth checking. I recommend doing so with TDLWintel closed so that you don't force shutoff your laser(s).

Sorry, to clarify, I didn't/don't expect the computer to have been the issue. I measured the voltage *to* the computer and it was 0V. So, the suspected culprit, now confirmed, was the computer power supply. In addition, I was able to track down the issue with the DC-DC board and fixed it.
Before I leave for the day [shortly after I hit send here!], I checked that the computer turns on with the new power supply, and that the electronics come on in general.

I will update you when I know more. For now, I need to get my hands on a chiller to check the lasers.

Best,
Mike

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On October 3, 2023 at 9:09:31 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike,
>
> Thanks for the update. I guess the flow switch corrosion is why the lasers didn't turn off when the cooler stopped functioning, thus causing the laser meltdown?
>
> I hope the computer is okay, we replaced it less than a year ago, so hope it's not gone again.
>
> Good luck with these problems and we'll hope to hear more soon.
>
> Cheers,
>
> Eliza
>
> ---
> ETH Zurich
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 02 October 2023 16:04:29
To: Ouma Turry Atieno
Cc: Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Turry,

I was able to start looking at it last week after an instrument station finally opened up in our lab, but I haven't been able to give it my full attention. It hasn't been turned on completely yet, as I ran into a few issues.

- While reinstalling the cell fittings, the 1 inch bulk head retention ring rivet snapped. I'll be replacing it with a bolt.

- When turning it on, got no response from the computer. Checking the supply voltage, got nothing.
- While I was looking into the above, there was an audible *pop* that seemed to be coming from the DC-DC board (computer power is separate, so these should be unrelated).

Obviously, the power supplies are the biggest issue, and I need to look at them closer to assess the extent of the problem.
Also, the flow switch plunger was jammed open due to corrosion (the Flow OK LED was always blue, even with no chiller hooked up). So, I took it apart and cleaned the internals.

I wish I had more positive news, but that's the current status, unfortunately. I will update you again as I look into the electrical faults.

Best wishes,
Mike

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On October 2, 2023 at 1:51:53 PM UTC, Turry Ouma turry.ouma@sdsc.ethz.ch wrote:

> Hi Mike,
>
> Hope all is well on your end.
> Just wondering if you got time to look at our instrument and if you have some updates for us.
>
> Best,
> Turry

From: Harris Eliza Jean <eliza.harris@sdsc.ethz.ch>
Date: Thursday, 7 September 2023 at 09:44

To: Ouma Turry Atieno <turry.ouma@sdsc.ethz.ch>, Aerodyne Research <support@aerodyne.com>
Cc: Barthel Matti <matti.barthel@usys.ethz.ch>, Agredazywczuk Phillip <phillip.agredazywczuk@sdsc.ethz.ch>
Subject: Re: Ticket #3594 QCLAS coolant tubings melted

Thanks for the update, crate for sure sounds good 😊

ETH Zurich
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 06 September 2023 19:36:11
To: Ouma Turry Atieno
Cc: Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Eliza, et al.,

I'm still waiting for the cover to be modified and reinstalled, but I did get an estimate for a new crate. The number comes in at $1k USD. While I was away, I was told there was some cleanup done of the baseplate, but the mirrors looked okay. Once the instrument is back in one piece and I've got it on, I'll be able to give you a more thorough update.

Best,
Mike

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On August 30, 2023 at 6:46:23 AM UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi Mike,
>
> Great that you have the instrument. Thanks for the initial estimate - that sounds like the ball park we expected for that part of the work. I wonder how the lasers themselves will look...
>
> It would be super if we could purchase a new crate for the shipping. We definitely want it to be safe going to and around Kenya.
>
> Best wishes,
>
> Eliza
>
> ---
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> Dr. Eliza Harris
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> Swiss Data Science Centre
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From: Mike Moore (Aerodyne Research) <support@aerodyne.com>
Sent: 29 August 2023 17:22:02
To: Ouma Turry Atieno
Cc: Harris Eliza Jean; Barthel Matti; Agredazywczuk Phillip
Subject: Ticket #3594 QCLAS coolant tubings melted

Hi Turry, et al.,

So, I've gotten the chance to take a relatively quick look over things but haven't gotten to turn it on.
I can say without a doubt, the optics card needs to be replaced. As I had alluded to, there will be retrofitting, which involves taking the optics walls apart; so I'm going to need to add labor in.
Informally, I'm estimating about **$4500** for this; it may need to change a bit depending on how much labor actually has to go into it - this is our first time doing this retrofit.
I can have my tech get started on it this week.

Looking inside, I didn't see as much damage as I thought there might be from the coolant and humidity, but we'll be able to get a better look at the mirrors with the walls off. I can update you on what we think about cleaning/replacements. I also left it to air out as the coolant smell was quite potent upon first opening; likely saturated well into the foam.

Once the optics board is replaced, then I can actually get the instrument turned on and check the state of the lasers and the rest of the system, and I can update the informal estimate based on what we find. As of now, it seems like the electronics work fine independent of the optics card; i.e., the damaged optics card was likely causing the power issues you were seeing.

On a related note, our shipping/receiving guys *strongly* suggested we sell you a new crate as they have little faith in the 'pop-up pallet' it was sent in. He said he was able to move the dual around inside by pushing even with the foam in there, and the walls were so thin there would be no way to properly brace the instrument. I asked him to get me an estimate for a crate; I'll let you know when I find out. Let me know your thoughts.

Best,
Mike

P.S., I will be away from the office into next week, so I won't be able to respond until then.

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On 2023 M07 24 10:51:56 UTC, Mike Moore support@aerodyne.com wrote:

> Dear Eliza,
>
> Thanks for looking into that. Our shipping agent contact was on her way out the door when getting back to us, so we didn't get much

on my end - just that Kenya is not part of the carnet network.
Roger that, when the time comes, we'll need to ship back to ETHZ and then you can get it to Kenya from there.

So, sounds like you're good to ship the instrument back whenever you're ready.
Acknowledged, chiller will *not* be accompanying the instrument to ARI.

What date does the campaign start?

Best,
Mike
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On 2023 M07 24 06:58:37 UTC, Eliza Harris eliza.harris@sdsc.ethz.ch wrote:

> Hi all,
>
> Thanks for this overview of the situation. I hope the situation with the instrument won't be too bad but glad it is in safe hands with you.
>
> Re the shipping: I looked into this more too, and think it will not be possible to ship from the US to Kenya direct. We need to ship to Kenya with a Swiss ZAVV so that the instrument can return to Switzerland without us needing to pay import taxes. So perhaps instead we will receive the instrument and send it straight on to Kenya, but shipping from the US to Kenya would probably be difficult to organise.
>
> Best wishes,
>
> Eliza
>
> ----------

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On 2023 M07 24 06:41:28 UTC, Matti Barthel matti.barthel@usys.ethz.ch wrote:

> Dear Mike,
>
> Thank you for giving this nice quick overview of the situation re timeline and costs. We will prepare the instrument for shipment this week and hopefully it can be in Billerica by next week. We understand that you are busy and that things might take a couple of weeks especially given the complexity of the problem. For now, I would refrain from shipping the Oasis since it is only semi-related and cannot be repaired at Aerodyne (unless you think it would be really helpful at your end).
>
> Thanks again for your quick response.
>
> Best,
> Matti
>
> ETH Zurich I SAE N_2O Isotope Laboratory **I Matti Barthel**
> ---
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