

# E1039 Polarized Target Monitoring & Maintenance Guide

*SpinQuest (E1039) Polarized Target group*

Revised on 10/07/2022

Link to the spreadsheet to record the values:

<https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhml0PLw8/>

(navigate to the tables using the labels at the bottom)

# Outline

Target Shift Helper tasks can be categorized into two main sections in these slides:

- Target System Monitoring **A**
- Target Maintenance & ECL entry information **B**

Please don't forget record the numbers on the spreadsheet below when you get readings for the elog entry:

<https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhmlloPLw8/>

(navigate to the tables using the labels at the bottom)

# A Target System Monitoring

Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

The screenshot shows a web browser interface with the following elements:

- Address bar: <https://e906-gat1.fnal.gov/data-summary/e1039/>
- Navigation buttons: **Semi-Online Reco. Status** and **Online Reco. Status**
- Section header: **Slow Control Data**
- Buttons: **ACNET**, **Hodo HV**, **Chamber HV**, **Hall Env**
- Section header: **Target Control Data**
- Buttons: **All Parameters** (highlighted with a red arrow), **QT HMI**, **Cryo Control**, **Roots-Pump P & T**, **Roots-Pump LCW**
- Section header: **Tools**

Click on "All Parameters"

# A Target System Monitoring

Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

## All Target Parameters

[to]

Show | From 2022 / 10 / 07 22 : 55 : 15 to 2022 / 10 / 07 23 : 55 : 15 | Auto Update |

← Click on “Auto Update”

QT LiqA	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT LiqB	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT Purifier	<input type="checkbox"/> T1A <input type="checkbox"/> Level B <input type="checkbox"/> Level A <input type="checkbox"/> PRTY_Calibrated <input type="checkbox"/> PRTY <input type="checkbox"/> PBB <input type="checkbox"/> PBA <input type="checkbox"/> PRTY_Calibrated_B_Out <input type="checkbox"/> PRTY_Calibrated_B_Mid <input type="checkbox"/> PRTY_Calibrated_A_Out <input type="checkbox"/> PTB <input type="checkbox"/> PRTY_Calibrated_A_Mid <input type="checkbox"/> Flow Controller Flow <input type="checkbox"/> Vfc <input type="checkbox"/> DPfc <input type="checkbox"/> Pfc <input type="checkbox"/> T2B <input type="checkbox"/> T1B <input type="checkbox"/> T2Amv <input type="checkbox"/> T1Amv <input type="checkbox"/> T2A <input type="checkbox"/> PTA
QT System	<input type="checkbox"/> Manifolds PT8 <input type="checkbox"/> Manifolds Magnet Dewar Level <input type="checkbox"/> Manifolds TCD_Smooth <input type="checkbox"/> Manifolds TX1 <input type="checkbox"/> Manifolds FMR <input type="checkbox"/> Manifolds Magnet Dewar Pressure <input type="checkbox"/> Manifolds PC1 <input type="checkbox"/> ODH EV-105-N <input type="checkbox"/> ODH TE-104N <input type="checkbox"/> ODH TE-107N <input type="checkbox"/> ODH TE-108N <input type="checkbox"/> ODH LL-106-N <input type="checkbox"/> ODH TE-109N <input type="checkbox"/> HR3 Enabled
Cryo Pressure	<input type="checkbox"/> IVC <input type="checkbox"/> Fridge/1000 <input type="checkbox"/> Fridge/100 <input type="checkbox"/> He3 Probe <input type="checkbox"/> Return Manifold <input type="checkbox"/> Main Return #1 <input type="checkbox"/> Roots-Pump Top <input type="checkbox"/> Roots-Pump Middle <input type="checkbox"/> Separator Return <input type="checkbox"/> Magnet Return <input type="checkbox"/> Main Return #2 <input type="checkbox"/> n/c
Cryo Purity	<input type="checkbox"/> He Purity
Cryo Fridge Valve	<input type="checkbox"/> He Level <input type="checkbox"/> Run Valve <input type="checkbox"/> Bypass Valve
Cryo Temperature	<input type="checkbox"/> Tank T <input type="checkbox"/> Tank B <input type="checkbox"/> Coil T <input type="checkbox"/> Coil B <input type="checkbox"/> Coil T1 <input type="checkbox"/> Coil T2 <input type="checkbox"/> Coil T3 <input type="checkbox"/> Coil T4 <input type="checkbox"/> Coil B1 <input type="checkbox"/> Coil B2 <input type="checkbox"/> Coil B3 <input type="checkbox"/> Coil B4 <input type="checkbox"/> IVC Bottom <input type="checkbox"/> IVC Top <input type="checkbox"/> Fridge Top <input type="checkbox"/> LHe FL Stinger <input type="checkbox"/> LHe FL #1 <input type="checkbox"/> LHe FL #2 <input type="checkbox"/> Sep. Line <input type="checkbox"/> Annealing A <input type="checkbox"/> Annealing B <input type="checkbox"/> Microwave A <input type="checkbox"/> Microwave B <input type="checkbox"/> Fridge #1 <input type="checkbox"/> Fridge #2 <input type="checkbox"/> Fridge #3 <input type="checkbox"/> Fridge #4 <input type="checkbox"/> Fridge #5 <input type="checkbox"/> Fridge #6 <input type="checkbox"/> Fridge #7 <input type="checkbox"/> Fridge #8 <input type="checkbox"/> QT 1A <input type="checkbox"/> QT 2A <input type="checkbox"/> QT 3A <input type="checkbox"/> QT 4A <input type="checkbox"/> QT 5A <input type="checkbox"/> QT 1B <input type="checkbox"/> QT 2B <input type="checkbox"/> QT 3B <input type="checkbox"/> QT 4B <input type="checkbox"/> QT 5B
Cryo Flow	<input type="checkbox"/> Magnet Return <input type="checkbox"/> Separator Return <input type="checkbox"/> Main Return
Roots-Pump P&T	<input type="checkbox"/> P1 <input type="checkbox"/> P2 <input type="checkbox"/> P3 <input type="checkbox"/> T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3
Roots-Pump LCW	<input type="checkbox"/> M1 <input type="checkbox"/> M2 <input type="checkbox"/> M3 <input type="checkbox"/> M4 <input type="checkbox"/> WFS1
ACNet	<input type="checkbox"/> F:NM4LCWFLOW <input type="checkbox"/> F:NM4LCWP1 <input type="checkbox"/> F:NM4LCWP2 <input type="checkbox"/> F:NM4LCWP3 <input type="checkbox"/> F:NM4LCWT1 <input type="checkbox"/> F:NM4LCWT2 <input type="checkbox"/> F:NM4LCWT3

No parameter is selected.

# Target Magnet Insulation Vacuum IVC

A

Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

Here you can enter how many hours you want to look for

All Target Parameters

You can change how frequent you want to update the plot by changing this value ( 5s or less is recommended)

For 1 h 0 m 0 s |  Auto-Update in 8 / 30 sec |  |  
Chart Width 1200 px, Height 600 px,  Y in Log Scale,  Y in Scientific Notation |  
No parameter is selected.

QT LiqA	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT LiqB	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT Purifier	<input type="checkbox"/> T1A <input type="checkbox"/> Level B <input type="checkbox"/> Level A <input type="checkbox"/> PRTY_Calibrated <input type="checkbox"/> PRTY <input type="checkbox"/> PBB <input type="checkbox"/> PBA <input type="checkbox"/> PRTY_Calibrated_B_Out <input type="checkbox"/> PRTY_Calibrated_B_Mid <input type="checkbox"/> PRTY_Calibrated_A_Out <input type="checkbox"/> PTB <input type="checkbox"/> PRTY_Calibrated_A_Mid <input type="checkbox"/> Flow Controller Flow <input type="checkbox"/> Vfc <input type="checkbox"/> DPfc <input type="checkbox"/> Pfc <input type="checkbox"/> T2B <input type="checkbox"/> T1B <input type="checkbox"/> T2Amv <input type="checkbox"/> T1Amv <input type="checkbox"/> T2A <input type="checkbox"/> PTA
QT System	<input type="checkbox"/> Manifolds PT8 <input type="checkbox"/> Manifolds Magnet Dewar Level <input type="checkbox"/> Manifolds TCD_Smooth <input type="checkbox"/> Manifolds TX1 <input type="checkbox"/> Manifolds FMR <input type="checkbox"/> Manifolds Magnet Dewar Pressure <input type="checkbox"/> Manifolds PC1 <input type="checkbox"/> ODH EV-105-N <input type="checkbox"/> ODH TE-104N <input type="checkbox"/> ODH TE-107N <input type="checkbox"/> ODH TE-108N <input type="checkbox"/> ODH LL-106-N <input type="checkbox"/> ODH TE-109N <input type="checkbox"/> HR3 Enabled
Cryo Pressure	<input checked="" type="checkbox"/> IVC <input type="checkbox"/> Fridge/1000 <input type="checkbox"/> Fridge/100 <input type="checkbox"/> He3 Probe <input type="checkbox"/> Return Manifold <input type="checkbox"/> Main Return #1 <input type="checkbox"/> Roots-Pump Top <input type="checkbox"/> Roots-Pump Middle <input type="checkbox"/> Separator Return <input type="checkbox"/> Magnet Return <input type="checkbox"/> Main Return #2 <input type="checkbox"/> n/c
Cryo Purity	<input type="checkbox"/> He Purity
Cryo Fridge Valve	<input type="checkbox"/> He Level <input type="checkbox"/> Run Valve <input type="checkbox"/> Bypass Valve
Cryo Temperature	<input type="checkbox"/> Tank T <input type="checkbox"/> Tank B <input type="checkbox"/> Coil T <input type="checkbox"/> Coil B <input type="checkbox"/> Coil T1 <input type="checkbox"/> Coil T2 <input type="checkbox"/> Coil T3 <input type="checkbox"/> Coil T4 <input type="checkbox"/> Coil B1 <input type="checkbox"/> Coil B2 <input type="checkbox"/> Coil B3 <input type="checkbox"/> Coil B4 <input type="checkbox"/> IVC Bottom <input type="checkbox"/> IVC Top <input type="checkbox"/> Fridge Top <input type="checkbox"/> LHe FL Stinger <input type="checkbox"/> LHe FL #1 <input type="checkbox"/> LHe FL #2 <input type="checkbox"/> Sep. Line <input type="checkbox"/> Annealing A <input type="checkbox"/> Annealing B <input type="checkbox"/> Microwave A <input type="checkbox"/> Microwave B <input type="checkbox"/> Fridge #1 <input type="checkbox"/> Fridge #2 <input type="checkbox"/> Fridge #3 <input type="checkbox"/> Fridge #4 <input type="checkbox"/> Fridge #5 <input type="checkbox"/> Fridge #6 <input type="checkbox"/> Fridge #7 <input type="checkbox"/> Fridge #8 <input type="checkbox"/> QT 1A <input type="checkbox"/> QT 2A <input type="checkbox"/> QT 3A <input type="checkbox"/> QT 4A <input type="checkbox"/> QT 5A <input type="checkbox"/> QT 1B <input type="checkbox"/> QT 2B <input type="checkbox"/> QT 3B <input type="checkbox"/> QT 4B <input type="checkbox"/> QT 5B
Cryo Flow	<input type="checkbox"/> Magnet Return <input type="checkbox"/> Seperator Return <input type="checkbox"/> Main Return
Roots-Pump P&T	<input type="checkbox"/> P1 <input type="checkbox"/> P2 <input type="checkbox"/> P3 <input type="checkbox"/> T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3
Roots-Pump LCW	<input type="checkbox"/> M1 <input type="checkbox"/> M2 <input type="checkbox"/> M3 <input type="checkbox"/> M4 <input type="checkbox"/> WFS1
ACNet	<input type="checkbox"/> F:NM4LCWFLOW <input type="checkbox"/> F:NM4LCWP1 <input type="checkbox"/> F:NM4LCWP2 <input type="checkbox"/> F:NM4LCWP3 <input type="checkbox"/> F:NM4LCWT1 <input type="checkbox"/> F:NM4LCWT2 <input type="checkbox"/> F:NM4LCWT3

Check this "IVC" box: Then a plot will automatically appear when the next "Auto-Update" cycle completes.

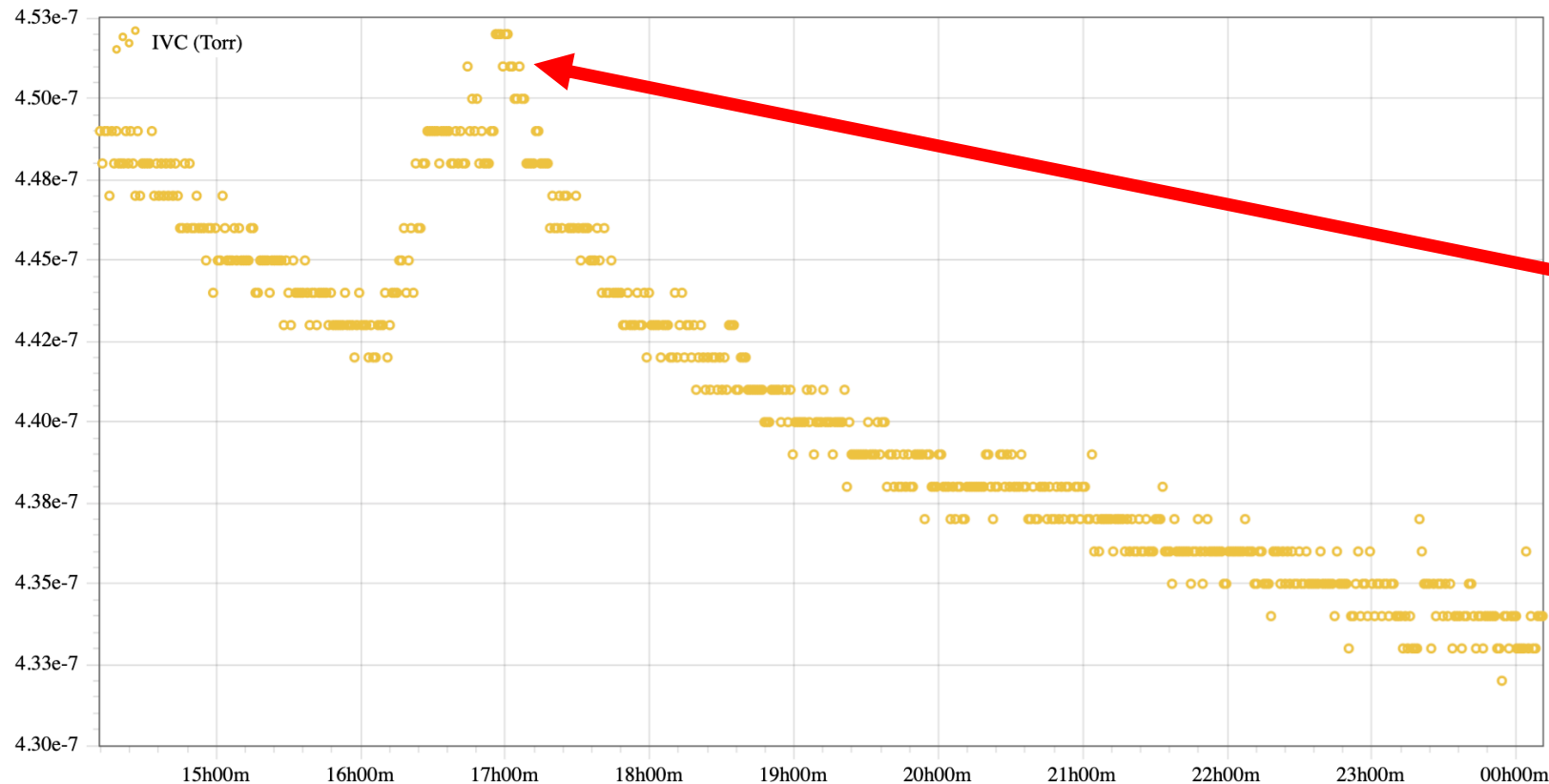
# Target Magnet Insulation Vacuum IVC

A

Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

For  h  m  s |  Auto-Update in  sec |  |  
Chart Width  px, Height  px,  Y in Log Scale,  Y in Scientific Notation |  
Last updated @ 2022/10/08 00:11:04

Last Record	IVC (Torr)
2022/10/08 00:10:59	4.34E-7



Check whether there is any peak(s) higher than  $1 \times 10^{-5}$  Torr. If you see any, please **immediately** inform the target expert on shift!

The peak in this plot is just an example. And, pay attention to the horizontal axis scaling!

# QT Dewar Liquid He levels

A

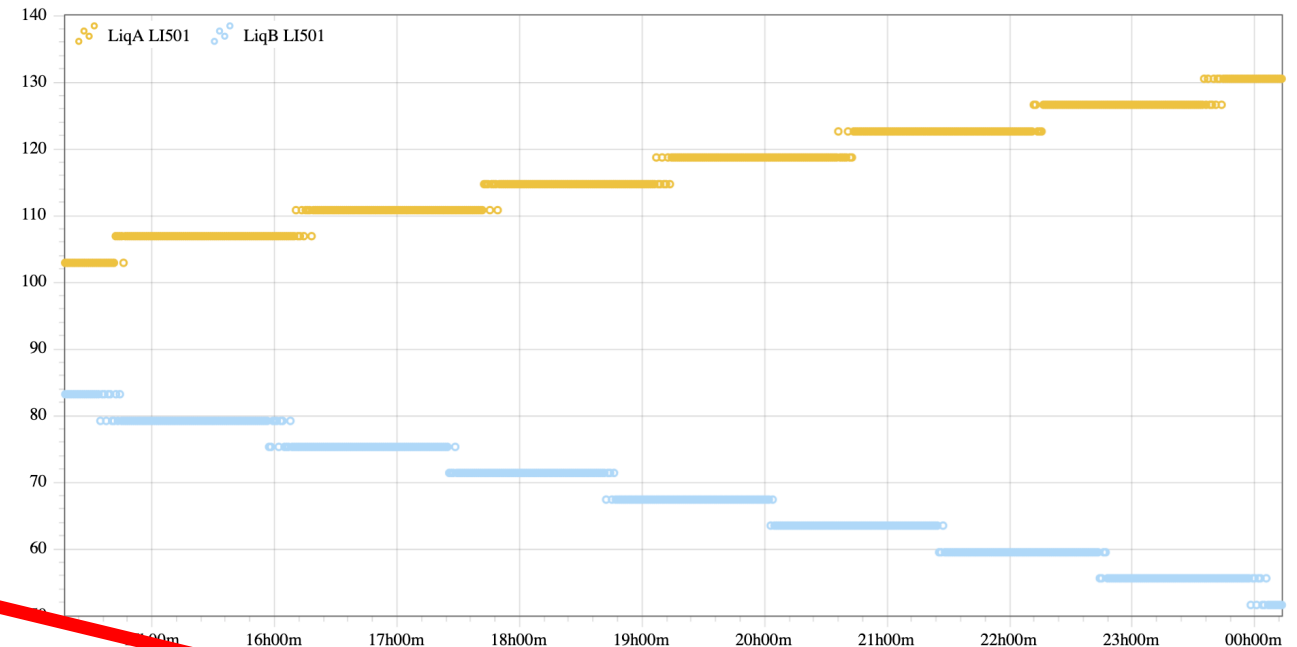
Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

Check the both QT Dewar levels. If you see any of the two Dewar levels are below 40 L, please **immediately** inform the target expert on shift!

Check "LI501" boxes on "QT LiqA" and "QTLiqB" rows

For 10 h 0 m 0 s  Auto-Update in 2 / 2 sec |  Manual-Update |  
Chart Width 1200 px, Height 600 px,  Y in Log Scale,  Y in Scientific Notation |  
Fetching recorded data... Last updated @ 2022/10/08 00:17:23

Last Record	LiqA LI501	LiqB LI501
2022/10/08 00:13:08	130.5	51.6



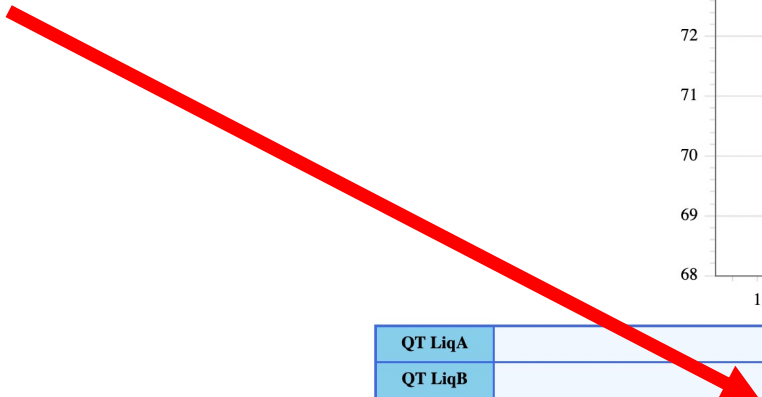
QT LiqA	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input checked="" type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT LiqB	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input checked="" type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT Purifier	<input type="checkbox"/> T1A <input type="checkbox"/> Level B <input type="checkbox"/> Level A <input type="checkbox"/> PRTY_Calibrated <input type="checkbox"/> PRTY <input type="checkbox"/> PBB <input type="checkbox"/> PBA <input type="checkbox"/> PRTY_Calibrated_B_Out <input type="checkbox"/> PRTY_Calibrated_B_Mid <input type="checkbox"/> PRTY_Calibrated_A_Out <input type="checkbox"/> PTB <input type="checkbox"/> PRTY_C <input type="checkbox"/> Flow Controller Flow <input type="checkbox"/> Vfc <input type="checkbox"/> DPfc <input type="checkbox"/> Pfc <input type="checkbox"/> T2B <input type="checkbox"/> T1B <input type="checkbox"/> T2Amv <input type="checkbox"/> T1Amv <input type="checkbox"/> T2A <input type="checkbox"/> PTA

# QT Purifier Dewar LN2 level

**A** Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

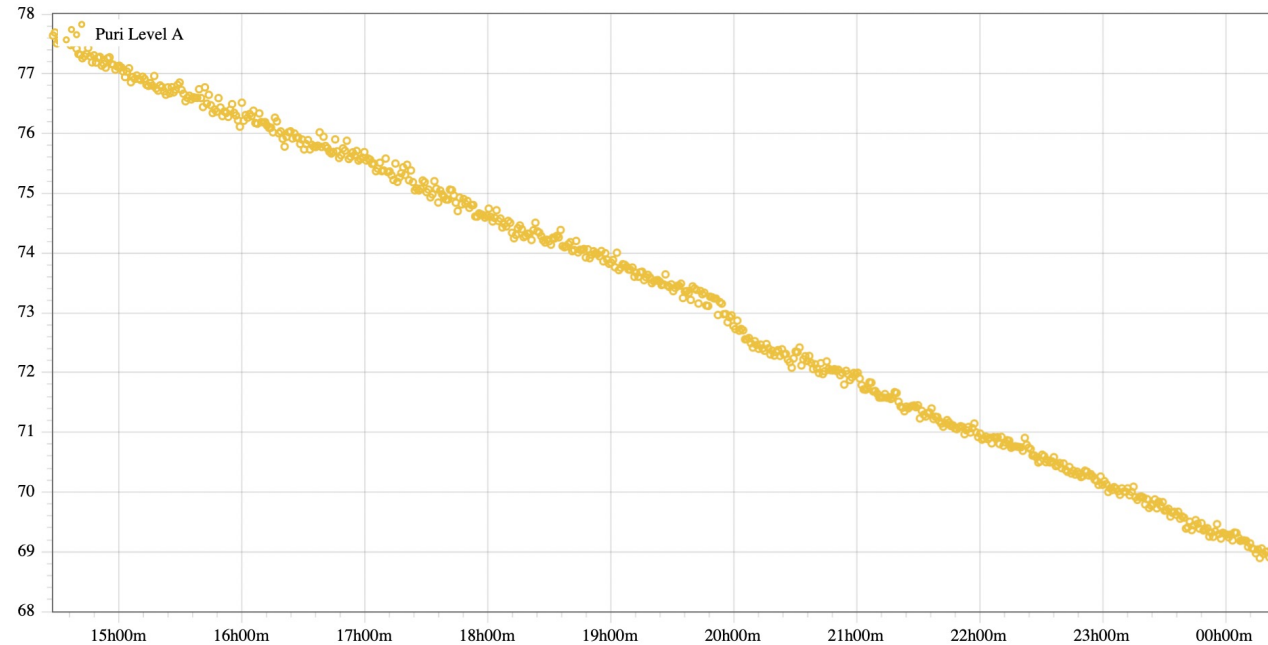
Check the QT Purifier LN2 Dewar levels. If you see the Dewar level is below 50%, please coordinate with the target expert on shift! to fill as soon as possible!

Check "Level A" box on "QT Purifier"



For 10 h 0 m 0 s |  Auto-Update in 1 / 2 sec |  Manual-Update |  
Chart Width 1200 px, Height 600 px,  Y in Log Scale,  Y in Scientific Notation |  
Last updated @ 2022/10/08 00:26:54

Last Record	Puri Level A
2022/10/08 00:22:26	68.96397



QT LiqA	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT LiqB	<input type="checkbox"/> PT501 <input type="checkbox"/> PT502 <input type="checkbox"/> PT503 <input type="checkbox"/> PD <input type="checkbox"/> LI501 <input type="checkbox"/> PT <input type="checkbox"/> TID <input type="checkbox"/> TI502 <input type="checkbox"/> TI504 <input type="checkbox"/> TI506 <input type="checkbox"/> TI508 <input type="checkbox"/> TI510 <input type="checkbox"/> FC501Q <input type="checkbox"/> FC501I <input type="checkbox"/> FCQ <input type="checkbox"/> FCI
QT Purifier	<input type="checkbox"/> T1A <input type="checkbox"/> Level B <input checked="" type="checkbox"/> Level A <input type="checkbox"/> PRTY_Calibrated <input type="checkbox"/> PRTY <input type="checkbox"/> PBB <input type="checkbox"/> PBA <input type="checkbox"/> PRTY_Calibrated_B_Out <input type="checkbox"/> PRTY_Calibrated_B_Mid <input type="checkbox"/> PRTY_Calibrated_A_Out <input type="checkbox"/> PTB <input type="checkbox"/> PRTY_Calibrated_A_Mid <input type="checkbox"/> Flow Controller Flow <input type="checkbox"/> Vfc <input type="checkbox"/> DPfc <input type="checkbox"/> Pfc <input type="checkbox"/> T2B <input type="checkbox"/> T1B <input type="checkbox"/> T2Amv <input type="checkbox"/> T1Amv <input type="checkbox"/> T2A <input type="checkbox"/> PTA



# Main LCW Inlet/Outlet P & T

A

Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

Roots-Pump P&T	<input type="checkbox"/> P1 <input type="checkbox"/> P2 <input type="checkbox"/> P3 <input type="checkbox"/> T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3
Roots-Pump LCW	<input type="checkbox"/> M1 <input type="checkbox"/> M2 <input type="checkbox"/> M3 <input type="checkbox"/> M4 <input type="checkbox"/> WFS1
ACNet	<input checked="" type="checkbox"/> F:NM4LCWFLOW <input checked="" type="checkbox"/> F:NM4LCWP1 <input type="checkbox"/> F:NM4LCWP2 <input checked="" type="checkbox"/> F:NM4LCWP3 <input checked="" type="checkbox"/> F:NM4LCWT1 <input checked="" type="checkbox"/> F:NM4LCWT2 <input type="checkbox"/> F:NM4LCWT3

Check the LCW flow, pressures and temperatures by checking the boxes as shown.

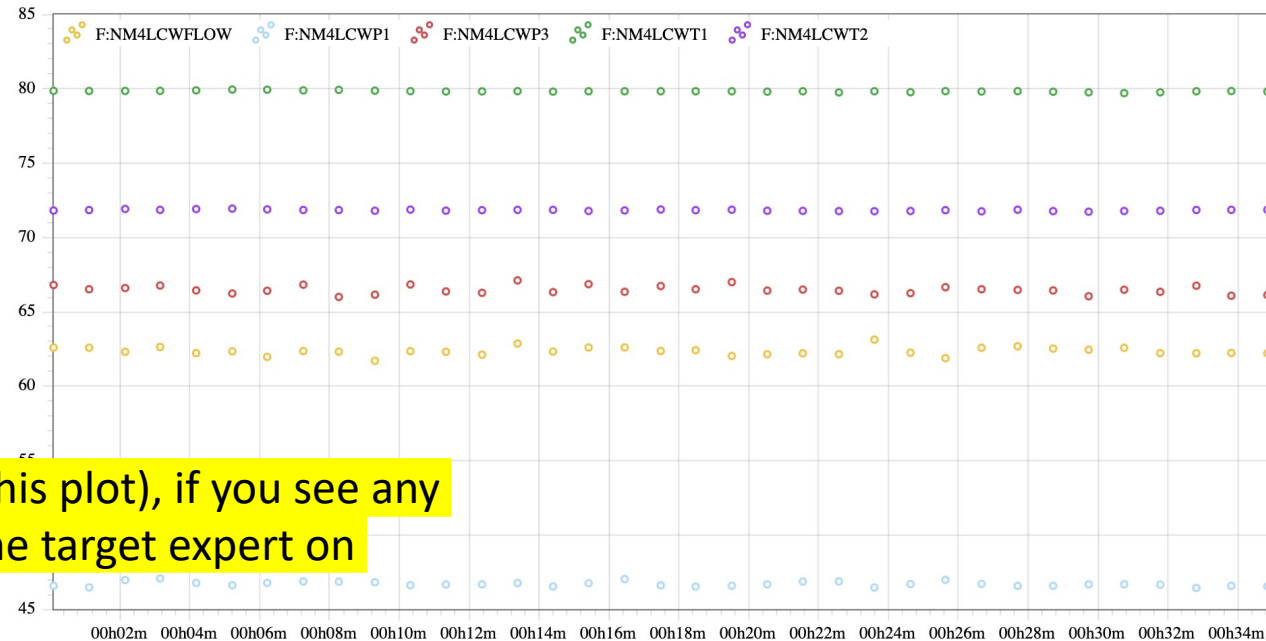
Please contact target expert on shift if you notice any of the following (in magnitude).

- 1) If the flow is less than "30"
- 2) If P\_in is less than "55"
- 3) If P\_out is less than "30"
- 4) If T\_in is higher than "90"
- 5) If T\_out is higher than "100"

P1=P\_out  
P3=P\_in  
T1=T\_out  
T2=T\_in

For 10 h 0 m 0 s  Auto-Update in 2 / 2 sec | Manual-Update |  
 Chart Width 1200 px, Height 600 px,  Y in Log Scale,  Y in Scientific Notation |  
 Last updated @ 2022/10/08 00:35:31

Last Record	F:NM4LCWFLOW	F:NM4LCWP1	F:NM4LCWP3	F:NM4LCWT1	F:NM4LCWT2
2022/10/08 00:34:51	62.2131347656	46.5396910191	66.1285565712	79.8141479492	71.8643188477



Usually these curves should be flat (as shown in this plot), if you see any spikes, or unusual behavior, then please inform the target expert on shift immediately!

# Magnet Thermocouples Temps.

A

Navigate to : <https://e906-gat1.fnal.gov/data-summary/e1039/>

Check the Magnet Thermocouple temperatures by checking the boxes as shown.

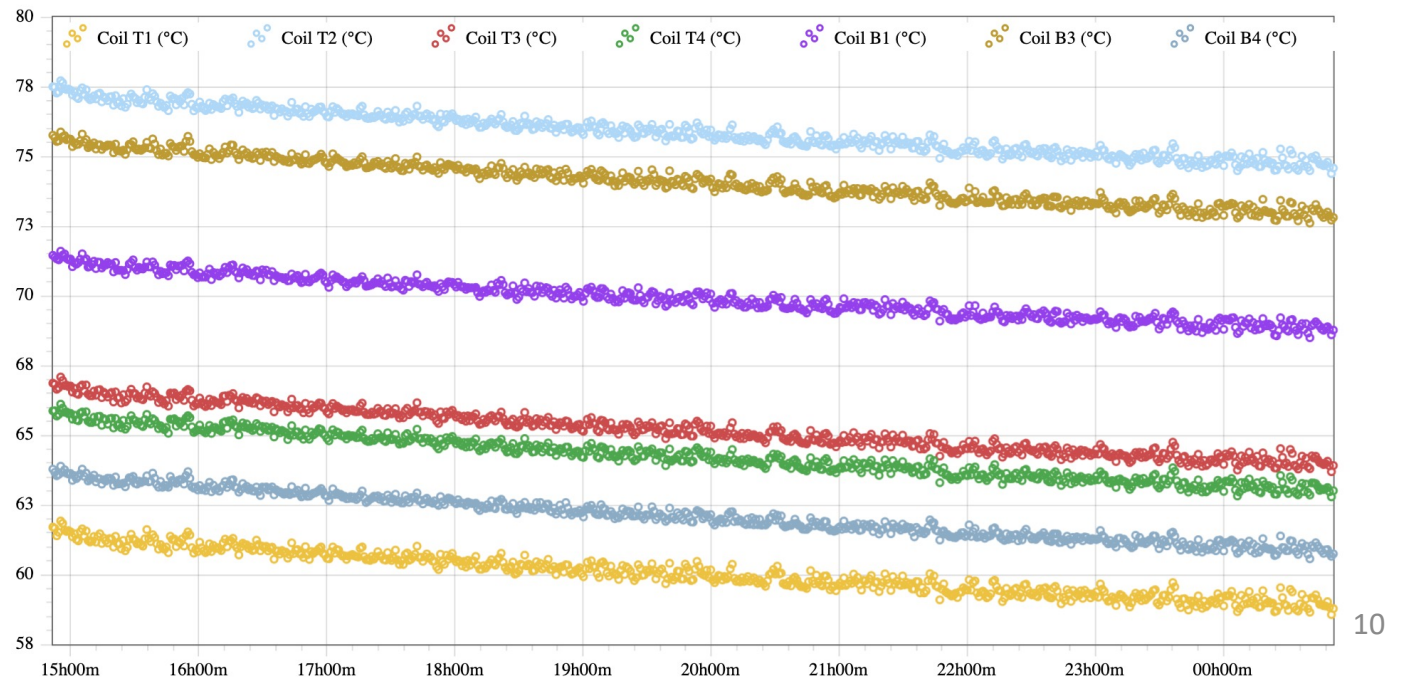
Please contact target expert on shift **immediately** if you notice any rapid increments / unusual behavior!

These curves should be going down towards 4 K during the cooldown (the gradient can vary based on how fast the cooldown process is going and then will be flattened).

Cryo Fridge Valve	<input type="checkbox"/> He Level <input type="checkbox"/> Run Valve <input type="checkbox"/> Bypass Valve
Cryo Temperature	<input type="checkbox"/> Tank T <input type="checkbox"/> Tank B <input type="checkbox"/> Coil T <input type="checkbox"/> Coil B <input checked="" type="checkbox"/> Coil T1 <input checked="" type="checkbox"/> Coil T2 <input checked="" type="checkbox"/> Coil T3 <input checked="" type="checkbox"/> Coil T4 <input checked="" type="checkbox"/> Coil B1 <input type="checkbox"/> Coil B2 <input checked="" type="checkbox"/> Coil B3 <input checked="" type="checkbox"/> Coil B4 <input type="checkbox"/> LHe FL #2 <input type="checkbox"/> Sep. Line <input type="checkbox"/> Annealing A <input type="checkbox"/> Annealing B <input type="checkbox"/> Microwave A <input type="checkbox"/> Microwave B <input type="checkbox"/> Fridge #1 <input type="checkbox"/> Fridge #2 <input type="checkbox"/> Fridge #3 <input type="checkbox"/> Fridge #4 <input type="checkbox"/> QT 3A <input type="checkbox"/> QT 4A <input type="checkbox"/> QT 5A <input type="checkbox"/> QT 1B <input type="checkbox"/> QT 2B <input type="checkbox"/> QT 3B <input type="checkbox"/> QT 4B
Cryo Flow	<input type="checkbox"/> Magnet Return <input type="checkbox"/> Separator Return <input type="checkbox"/> Main Return

For 10 h 0 m 0 s |  Auto-Update in 1 / 2 sec |  Manual-Update |  
Chart Width 1200 px, Height 600 px,  Y in Log Scale,  Y in Scientific Notation |  
Last updated @ 2022/10/08 00:51:23

Last Record	Coil T1 (°C)	Coil T2 (°C)	Coil T3 (°C)	Coil T4 (°C)	Coil B1 (°C)	Coil B3 (°C)	Coil B4 (°C)
2022/10/08 00:51:20	58.785538	74.581436	63.914185	63.010681	68.769440	72.807022	60.747894



# B

# Target Shifts & elog entry

Thanks Steve! for helping setting this up



## SpinQuest (E-1039)

### Electronic Logbook

Logbook Members Projects Shifts

Entries

#### Logbook entries

Search

(sorted by Created) [Sort by Updated](#)

RSS

[Show Entries ID in collapsed mode](#)

New Entry

[Show Sticky Entries First](#)

Preferences

[Who is on shift now](#)

Category: (all)  subcategories

Quick search:

[< newer](#)

[collapse all](#) [expand all](#)

Legend for symbols: Private entry. Entry has new

11:27

**Target** [zji] Target Maintenance

14:47

**Target** [zji] Target Maintenance

#### Create New Entry

Form:

Chamber Gas Walkthrough

**Target Maintenance**

✓ default

Category:

--select category-- (required)

Private:

Entry will be visible only to authenticated users



## SpinQuest (E-1039)

### Shift Scheduler

Logbook Members Projects Shifts

Calendar

#### Shifts for August 2022

Schedule intervals

[week view](#) [< July 2022](#) [August 2022](#) [September 2022 >](#)

Shift quotas

Target Shift

Shifts by institution

Open shifts

My shifts

Who is on shift now

Mon 01	Tue 02	Wed 03	Thu 04
Mon 08	Tue 09	Wed 10	Thu 11
Mon 15	Tue 16	<b>Wed 17</b>	Thu 18
<b>Target Shift</b> Mon-Sun 00:00-23:59			
Target Expert (0.0) Ishara Fernando			
Target Helper (0.0) Zhaohuizi Ji			

Please sign-up for target shifts!

# B

# Target Shifts & elog entry

## List of tasks (current list: will be updated)

Number of gHe and gN2 bottles at the outside rack:

Record the number of gHe and gN2 bottles at the outside rack order gas bottles (gHe and gN2) if the counts are less than 2.

Also record here: <https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhmlPLw8/edit>

Check gHe pressure and LN2 pressure of the outside tanks.

Also record here: <https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhmlPLw8/edit>

Check QT HR3 gauges: <https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhmlPLw8/edit>

Check QT liquid (Dewar/purifier) levels.

<https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhmlPLw8/edit#gid=1727227200>

Check LCW main inlet, an outlet to NM4.

<https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhmlPLw8/edit#gid=558588447>

Monitoring QT compressor LCW temperatures.

Alarm conditions: T\_inlet > 95F or T\_out > 115F: inform Target Expert.

Filling LN2 to the QT purifier using portable Dewar. Mark the date, time, and levels before and after filling.

- Need to be qualified with large portable liquified gas dewar handling training (FN000475 / OJ) \*\*

Procedure: <https://confluence.its.virginia.edu/display/twist/Filling+LN2+on+Purifier+Dewar>

### Create New Entry

Chamber Gas Walkthrough

Target Maintenance

✓ default

Use

Form:

Category:

--select category-- (required)

Private:

Entry will be visible only to authenticated users

Textile formatted:

Textile help

The next set of tasks are for the Root Pumps System.

# B

## Trainings needed on your ITNA

➤ Please contact Rick to add the following training modules to your ITNA.

FN000213 Compressed Gas Cylinder Safety

FN000304 Fall Protection

FN000654 Ladder User Safety

FN000271 Pressure Safety Orientation

FN000115 Cryogenic Safety (General)

FN000475 Large portable Dewar handling

Please don't forget record the numbers on the spreadsheet below when you get readings for the elog entry:

<https://docs.google.com/spreadsheets/d/1EDTHSeUDGJ9b6beYizHEAJ8-Z1rAiQbZMgKhmlPLw8/>

(navigate to the tables using the labels at the bottom)

# Checking the gHe bottles' levels on the west-wall of the cryoplatform



Location: Hall

B

Do not do this without FN000213/CR training

1. Close the regulator (by turning this handle anti-clockwise until you feel it freely rotating)
2. Open the Gas bottle using the **rotating knob** on the top of the bottle (turning anti-clockwise) to read the value of this **meter** on the right hand-side. Close the rotating knob (turning clockwise). once you are done reading the pressure.
3. If this level is below 100psi then replace this bottle with a new one.
4. Make sure to close the bottle (tightening clockwise) and close the regulator (as step 1).



# Check the number of LN2 portable Dewars outside the loading dock



- Check the number of “full” Dewars which are usually placed near this door (whereas the empty ones towards the East side of the loading dock door).
- On some of the Dewars there is a liquid level indicator on the top.
- If there isn't a liquid level indicator or it's not clear, then contact the target expert on shift.
- If the number of portable Dewars are less than or equal to 2, then please send an email to Kun Liu ([liuk.pku@gmail.com](mailto:liuk.pku@gmail.com)) to order more.

# Record the number of gHe and gN2 bottles at the outside rack



- Read the labels on each bottle to identify for gHe or gN2
- If the number of bottles from either type is less than 4, then please send an email to Kun Liu ([liuk.pku@gmail.com](mailto:liuk.pku@gmail.com)) to order more bottles

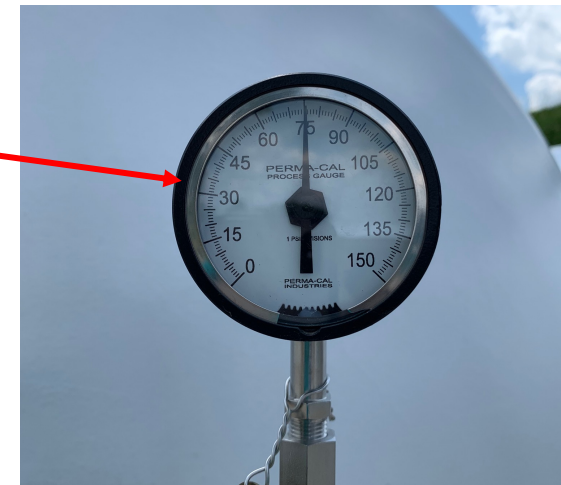


# Check gHe pressure and LN2 pressure of the outside tanks



LN2 Tank Pressure  
(Notify Kun if the pressure is less than 10 psi)

[liuk.pku@gmail.com](mailto:liuk.pku@gmail.com)



gHe Tank Pressure  
(Notify Kun if the pressure is less than 25 psi)

# Filling gHe outside tanks using tube-trailer

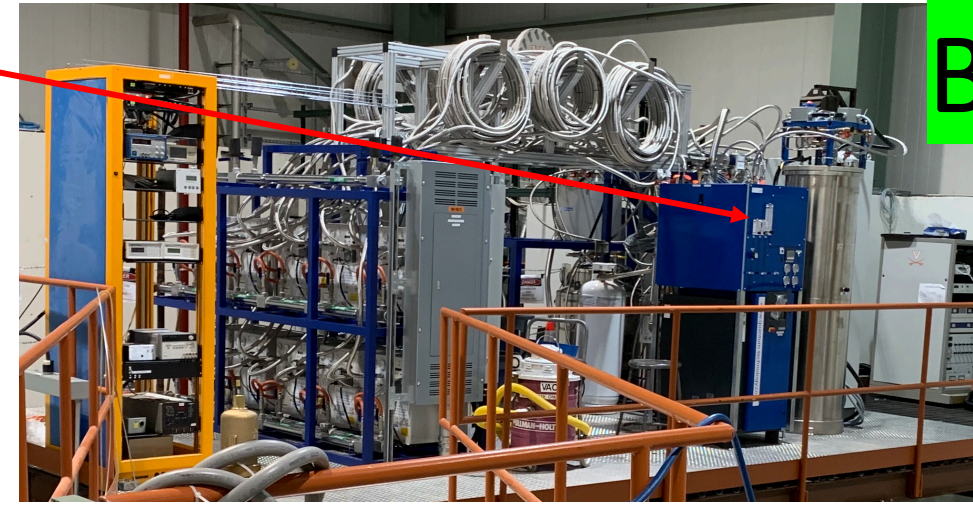


At this time, for this task: **Please contact the Target Expert on Shift**

Item #06

# Check QT HR3 gauges

Location



Check for the labels P10, P6, P8, P40, P41 and record on the spreadsheet

# Check QT liquid (Dewar/purifier) levels

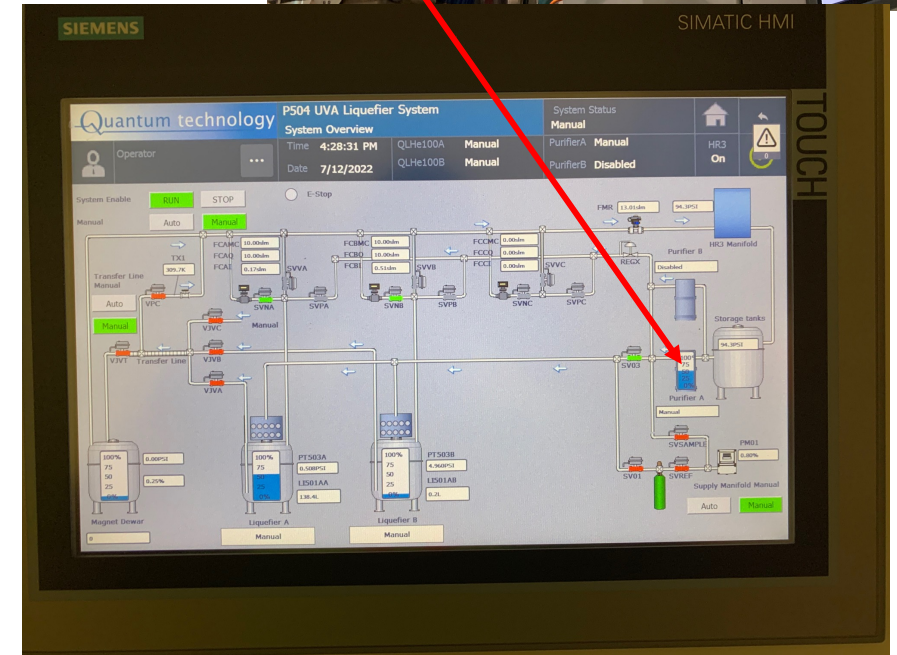
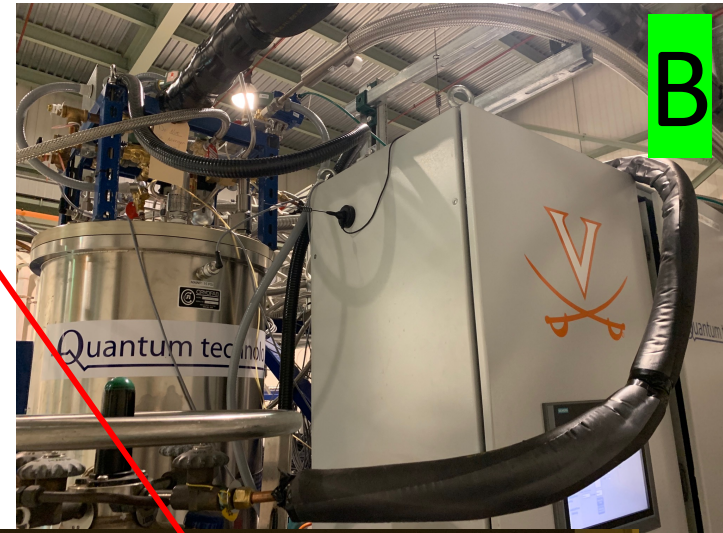
B

Item #07

LHe levels

Do Not handle these large LN2 Dewars if you don't have FN0000473/OJ training

You do Not required this training for reading LHe levels



Steps to fill LN2 to the purifier Dewar if it's below 50% <https://confluence.its.virginia.edu/display/twist/Filling+LN2+on+Purifier+Dewar>

Please contact Target Expert shift contact before performing fill/replace LN2 Dewar

★ LHe Dewars A and B

Liquid levels can be read using this meter on each Dewar separately

# Monitoring QT compressor LCW temperatures

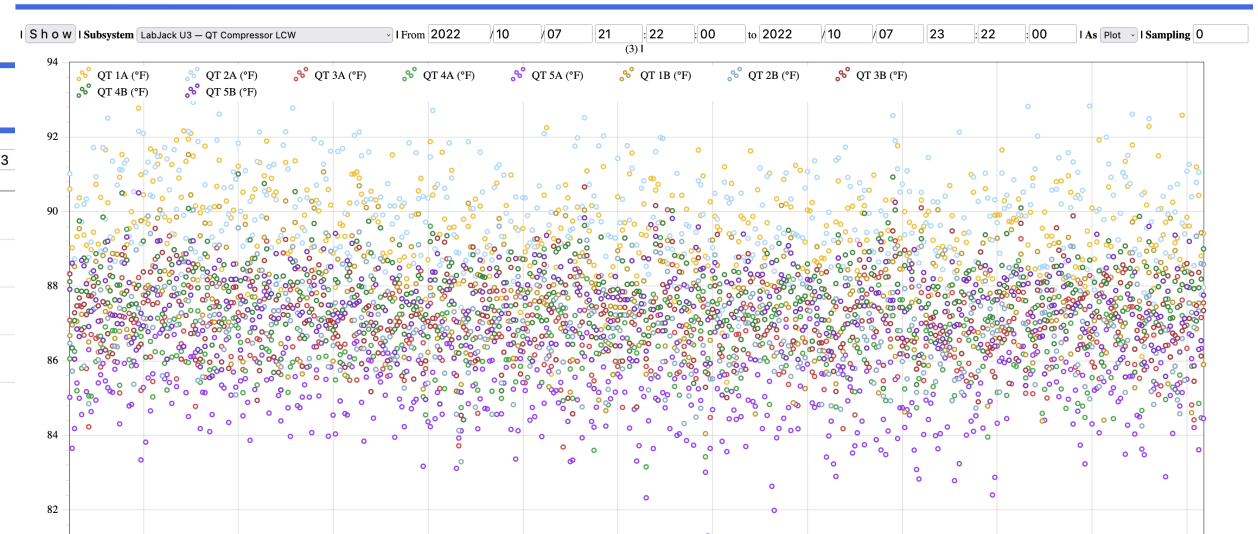
Navigate to: <https://e906-gat1.fnal.gov/data-summary/e1039> then select “Cryo Control” under “Target Control Data” Section.

Select the “LabJack U3 – QT Compressor LCW” from the drop down menu under “Subsystem” field selection.

Leave the default times as it is and hit “Show” button

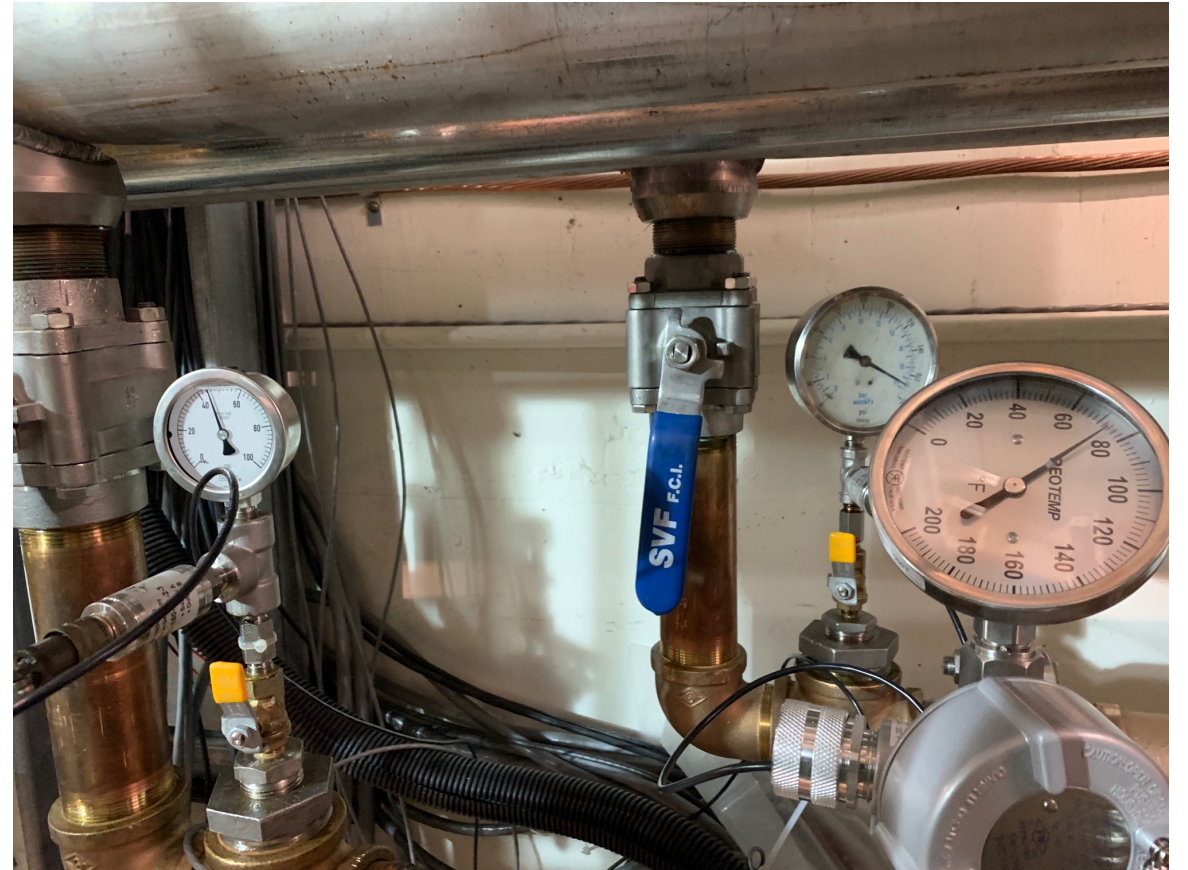
[Direct link: [https://e906-gat1.fnal.gov/data-summary/e1039/target-cryo-cont.php?subsys=LabJack+U3&Y0=2022&M0=10&D0=07&h0=21&m0=22&s0=00&Y1=2022&M1=10&D1=07&h1=23&m1=22&s1=00&show\\_type=Plot&SF=0](https://e906-gat1.fnal.gov/data-summary/e1039/target-cryo-cont.php?subsys=LabJack+U3&Y0=2022&M0=10&D0=07&h0=21&m0=22&s0=00&Y1=2022&M1=10&D1=07&h1=23&m1=22&s1=00&show_type=Plot&SF=0) ]

Look at the plot and confirm that the last recording time is within one minute and all the temperature readings are below the limit (115 F).



# Check LCW main inlet, an outlet to NM4

If you are on the cryoplatfom, take the stairs (towards the lower level) and stop mid-way when you see these gauges towards the East-wall of the hall. You will see labels "LCW Supply" and "LCW Return" on those two separate piping.



Both "LCW Supply" and "LCW Return" has a pressure gauge and a temperature gauge. Mark those values on the spreadsheet.

# Check LCW inlet and outlet parameters to the ROOTS

When you are on the cryoplatfrom proceed to the end of the wall on the west-side as shown on the pictures.

You will see two water panels (top & bottom). There are 5 yellow handles on each panel.

Read the values on each meter  
Inlet meters: manual  
Outlet: digital

Also, read the main supply pressure gauge towards the left of the panels.

Mark the vales on the spreadsheet



# Check ROOTS pumps pressure and temperature using HMI

### Location(s)

1. At the control-room
2. On the cryoplatform



Mark these pressure and temperature values on the spreadsheet as shown in the display



# Check oil levels of all 4 pumps

There are 4 pumps in the ROOTs pumps setup

- Check the oil level on each pump
- Oil-level indicators
- When the pumps are running
  - > Level should be around the middle
- When the pumps are not running
  - > Level should be close to “full”

Notify Target Expert shift contact if the levels are different from the above mentioned levels.

