

4 Creating and Processing Runs

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Chapter Overview

This chapter describes ARGO HT On-Premises Instrument software used to create and process runs. ARGO HT On-Premises Instrument software is also used for user management, analysis of NULISAqpcr data and processing, QC and export of NULISAsq data.

Note

This chapter describes **ARGO HT On-Premises Instrument software** version 1.3.1.XXXX. Any other software version may have different features and functionality. You can check the software version on the bottom right corner of the Settings screen. See Figure 4-11.

Workflow Overview

For a workflow overview of single-plex and multiplex workflows, see Alamar Biosciences ARGO HT On-Premises Instrument Workflows on page 1-4.

Import or Manually Enter Sample Names

If you have a custom Microsoft Excel sheet or .csv file containing sample names and attributes, you can upload it to the Sample Names folder on the ARGO HT On-Premises Instrument (C:\ProgramData\AlamarBiosciences\Sample Names), and then access it when you Create a Run in the ARGO HT On-Premises Instrument software. Otherwise, you can manually edit the sample names on the instrument when creating a run or run group. There are three options for inputting sample information into the instrument.

Option 1: Import Sample Names via Microsoft Excel Spreadsheet

You can input the sample information by creating and then uploading a custom sample spreadsheet to the ARGO HT On-Premises instrument:

Input with .xlsx File (preferred method; 96-well format): This option allows for input of Sample Name, Type and additional sample annotations in a 96-well plate format which is useful when designing a sample plate in a 96-well plate format.

To import a .xlsx file into NRA, create an Excel file. See Figure 4-1 for an example of how to fill in the sample names.

It will be easier to create the file if you follow some basic rules:

- 1) First sheet of the Excel file must be **Sample Name**.
- 2) In the first row, indicate the Sample Plate positions 1 through 12 from column B through column M.
- 3) In the first column, indicate the sample plate positions A through H from row 2 through row 9.
- 4) Fill in the sample names as you plan to do for the sample plate.
- 5) All wells must be populated. When an empty sample name is found, all subsequent wells are assumed to be empty.
- 6) While not required, it helps to use color coding to know which cells require sample names and which cells do not as shown in Figure 4-1.
- 7) No blank tabs are allowed in the file. All tabs must have data and a name.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	1	2	3	4	5	6	7	8	9	10	11	12		
2	A	X252L	X253L	X254L	X255L	X256L	X257L	X258L	X259L	X260L	X261L	X262L	X263L	
3	B	X264L	X265L	X266L	X267L	X268L	X269L	X270L	X271L	X272L	X273L	X274L	X275L	
4	C	X276L	X277L	X278L	X279L	X280L	X281L	X282L	X283L	X284L	X285L	X286L	X287L	
5	D	X288L	X289L	X290L	X291L	X292L	X293L	X294L	X295L	X296L	X297L	X298L	X299L	
6	E	X300L	X301L	X302L	X303L	X304L	X305L	X306L	X307L	X308L	X309L	X310L	X311L	
7	F	X311L	X312L	X313L	X314L	X315L	X316L	X317L	X318L	X319L	X320L	X321L	X322L	
8	G	X323L	X324L	X325L	X326L	X327L	X328L	X329L	X330L	X331L	X332L	X333L	X334L	
9	H	X335L	X336L											
10														
11														
12														

Sample Name | Matrix Type | Sex | Age | +

Ready Accessibility: Good to go

Note: Coloring the cells is optional and is used here for clarity.

Figure 4-1. Excel File Format for Importing Sample Name (Plate Layout Format)

To add additional annotations such as the Sample Type, create a new tab naming it as the desired annotation name. **Sample Type** is shown as example in Figure 4-2. In this example, we are naming the tab **Sample Type** and defining the type of sample (**Plasma, Serum, CSF, Other**) assigned to each cell. Assign a value to each cell in the 96-well plate format as shown in Figure 4-2.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	1	2	3	4	5	6	7	8	9	10	11	12		
2 A	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other		
3 B	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other		
4 C	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other		
5 D	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other		
6 E	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other		
7 F	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other		
8 G	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other	Plasma	Serum	CSF	Other		
9 H	Plasma	Serum												
10														
11														

< > Sample Name Matrix Type Sex Age +

Ready Accessibility: Good to go

Note: Coloring the cells is optional and is used here for clarity.

Figure 4-2. Excel File Format for Importing Matrix Type (Plate Layout Format)

To add additional annotations, create a new tab naming it as the desired annotation name. **Sex** is shown as example in Figure 4-3 using the 96-well format.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	1	2	3	4	5	6	7	8	9	10	11	12		
2 A	Male	Male	Female	Not Specified	Male	Male	Female	Male	Male	Female	Female	Male		
3 B	Male	Male	Not Specified	Female	Male	Male	Female	Male	Male	Male	Female	Male		
4 C	Male	Male	Female	Female	Male	Not Specified	Female	Male	Female	Female	Female	Female		
5 D	Female	Female	Not Specified	Male	Female	Male	Female	Female	Female	Not Specified	Female	Female		
6 E	Not Specified	Male	Male	Male	Female	Male	Female	Female	Male	Male	Male	Male		
7 F	Not Specified	Male	Female	Female	Male	Female	Male	Female	Male	Female	Female	Female		
8 G	Male	Not Specified	Female	Female	Male	Female	Male	Not Specified	Male	Female	Not Specified	Female		
9 H	Female	Not Specified												
10														

< > Sample Name Matrix Type Sex Age +

Ready Accessibility: Good to go

Note: Coloring the cells is optional and is used here for clarity.

Figure 4-3. Excel File Format for Importing Annotations for Sex (Plate Layout Format)

After creating the file, save the file as a .xlsx file and store it in your Sample Names folder on the ARGO HT instrument (C:\ProgramData\AlamarBiosciences\Sample Names). Then, when creating a run on instrument, select the **IMPORT SAMPLE NAME FILE** button and select the .xlsx file. The sample names and any annotations are displayed in the sample name section on the CHANGE SAMPLE NAMES window.

Note We recommend saving the input .xlsx file using the same name as the run created on the instrument. This allows for easy identification of the input files used for that specific NULISA run.

Note This Excel file was imported for the CHANGE SAMPLE NAMES window shown in Figure 4-4

CHANGE SAMPLE NAMES				
IMPORT SAMPLE NAME FILE				
sample_plate_oct15_seq 3.xlsx				
Well	Sample Name	MatrixType	Sex	Age
A7	X258L	CSF	Female	65
A8	X259L	Other	Male	57
A9	X260L	Plasma	Male	86
A10	X261L	Serum	Female	24
A11	X262L	CSF	Female	24
A12	X263L	Other	Male	77
B1	X264L	Plasma	Male	54
B2	X265L	Serum	Male	52
B3	X266L	CSF	Not Specified	45
B4	X267L	Other	Female	24
B5	X268L	Plasma	Male	57
B6	X269L	Serum	Male	61
B7	X270L	CSF	Female	24
B8	X271L	Other	Male	24
B9	X272L	Plasma	Male	25
B10	X273L	Serum	Male	51
B11	X274L	CSF	Female	65
B12	X275L	Other	Male	22
C1	X276L	Plasma	Male	64
C2	X277L	Serum	Male	58
C3	X278L	CSF	Female	44

Figure 4-4. CHANGE SAMPLE NAMES Window with Sample List and Sample Plate

Option 2: Import Sample Names and Attributes via .csv File

To import a .csv file, create an Excel file and label Column A as **Name** and Column B as **Well**. Assign well positions in Column B (A1–A12, B1–B12, etc.) and sample names in Column A. You can also add annotations such as **Matrix Type** and other annotations by adding additional columns starting at Column C. See Figure 4-5.

After creating the file, save the file as a .csv file. Copy the file to C:\ProgramData\AlamarBiosciences\Sample Names. Then begin creating a run on instrument. In the SAMPLE PLATE LAYOUT section, touch **Change Sample Names**, then touch **IMPORT SAMPLE NAME FILE** drop-down arrow. Select your .csv file from the options in your instrument's Sample Names folder.

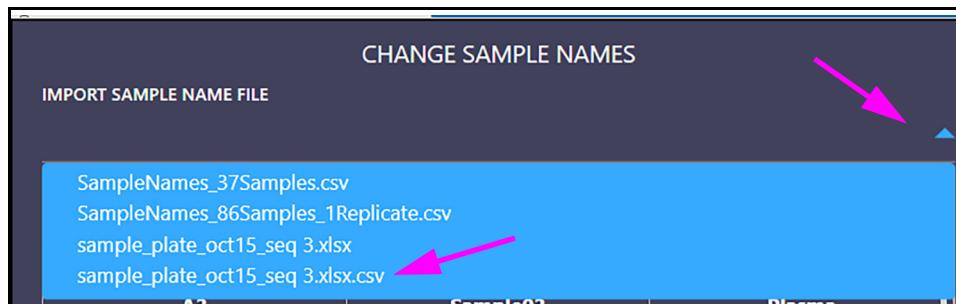


Figure 4-5. .csv File Selection

Option 3: Manually Input Sample Names and Attributes

Within the instrument software, import the most relevant sample name file from IMPORT SAMPLE NAME FILE drop-down list. Then, double-tap the sample name to load the touchscreen keyboard and edit the name and other attributes as desired. Repeat for all changes. See Figure 4-6.

Note

This option does not allow for assignment of calibrator (antigen) standard curve, automated calibrator curve fitting and automated determination of unknown sample concentration in the NULISAqpcr results or additional annotations.

CHANGE SAMPLE NAMES				
IMPORT SAMPLE NAME FILE				
Well	Sample Name	MatrixType	Sex	Age
A1	X1234	Plasma	Male	19
A2	X253L	Serum	Male	56
A3	X254L	CSF	Female	44
A4	X255L	Other	Not Specified	34
A5	X256L	Plasma	Male	33
A6	X257L	Serum	Male	70
A7	X258L	CSF	Female	65
A8	X259L	Other	Male	57
A9	X260L	Plasma	Male	86
A10	X261L	Serum	Female	24
A11	X262L	CSF	Female	24
A12	X263L	Other	Male	77
B1	X264L	Plasma	Male	54
B2	X265L	Serum	Male	52
B3	X266L	CSF	Not Specified	45
B4	X267L	Other	Female	24
B5	X268L	Plasma	Male	57
B6	X269L	Serum	Male	61
B7	X270L	CSF	Female	24
B8	X271L	Other	Male	24
B9	X272L	Plasma	Male	25

Figure 4-6. Modify Sample Names Manually

Note

We recommend saving and not submitting the run until the sample plate is prepared and the ARGO HT instrument is ready to load. This allows the user to quickly edit the run, if necessary, without needing to cancel the submitted run and create a new run.

1. Inspect all of the items on this page. Make any required corrections before continuing. After all of the information has been entered and reviewed on the CHANGE SAMPLE NAMES screen, then touch one of three buttons along the bottom of the screen (see **Box** in Figure 4-6):
 - **Change Sample Folder...** – Select the **Change Sample Folder** button to navigate to another location where you have saved Microsoft Excel spreadsheets for sample names import.
 - **Cancel** – Select the **Cancel** button to close the CHANGE SAMPLE NAMES screen and go back to the Create New Run screen immediately.

Important

Once you start creating a run group, you must enter all runs into the run group in one session.

- **Done** – Touch the **Done** button to save the run.

Note

If you save each run individually, you will need to submit them individually to the instrument in the future. You cannot combine them into a run group after they have been saved.

Creating a New Run

To create a new run:

1. Touch Anywhere to Begin.
2. Select User from drop-down menu and enter your PIN. Touch -->.
 - Supervisor – A supervisor can invite additional users to the software. They can also deactivate or delete users.
 - Operator – An operator can create runs, start runs, and export run results.

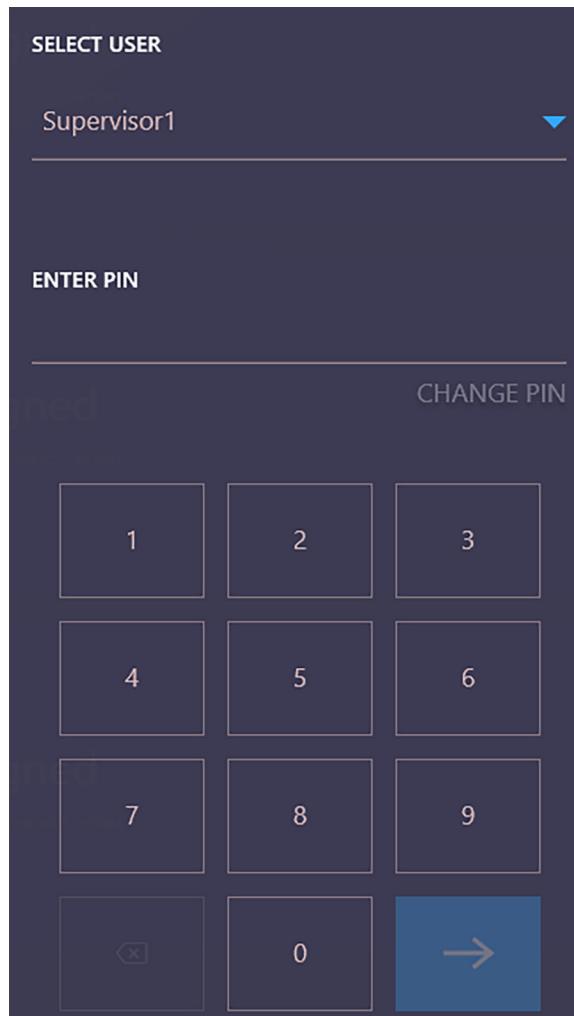


Figure 4-7. ARGO HT On-Premises Login

3. Touch **Create New Run** button at the bottom of the instrument software screen.

4. Product Type: Select **NULISAqpcr** or **NULISAsq** from the drop-down menu to specify the assay type.
5. Assay: Select the assay name from the drop-down menu.
 - For NULISAqpcr, choose between IL4 and Ptau217.
 - NULISAqpcr assays are all absolute quantification assays and provide a concentration value for analytes (pg/mL).
6. For NULISAsq, choose between CNS Disease Panel 120 (V2) and Inflammation Panel 250. The NULISAsq multiplex assays are available as relative or absolute quantification assays. Relative quantification assays compare protein levels to a standard, such as a control group, where individual measurements are given as NPQ (NULISA Protein Quantification) units. Absolute quantification provides a concentration value for analytes (e.g. pg/mL) and requires use of an AQ assay, indicated by an AQ at the end of the assay name.
7. Run Name: Tap the Run Name field to load the touchscreen keyboard. Enter the name of the run in the field. Maximum number of characters for the run name is 50. Run names must be unique.

Note

Each run name must be unique. Duplicate run names are not allowed even if they are used on other projects. A message will be displayed indicating if a duplicate run name has been entered.

Change default sample volume if required.

Touch **Change Sample Names** to edit default sample names, if required. If you hover over a location on the plate layout, additional information will be displayed in a pop-up. On the SAMPLE LAYOUT screen, you can enter information relevant to the samples. You can edit the **Sample Name** column. Select the text box in the column and edit the field with the desired sample name. You can enter your sample names into a spreadsheet in a single column. Copy that column from the spreadsheet. Select the first cell of the sample name column and paste the information into the entire sample name column for all samples.

Note

The first character of a sample name or an annotation must start with a letter or an underscore. Subsequent characters can be an underscore, letter, digit, period '.' or hyphen '-'. Names can be 1 to 40 characters long. If you have illegal sample or annotation names, the error will be indicated in ACC.

Note

.xlsx or .csv file names can be up to 40 characters long and cannot contain control characters '\', '/', ':', '?', '*', '>', or '<'.

You can select the type of sample in the **Matrix Type** column using the drop down menu. Choose from **Plasma**, **Serum**, **CSF** or **Other ***.

Caution

* Using unvalidated sample types may result in unexpected results. Prior to running a sample type not listed above, contact Alamar Technical Support.

8. Touch **IMPORT SAMPLE NAME FILE** drop-down arrow and select a .csv template from your instrument's sample name folder (C:\ProgramData\AlamarBiosciences\Sample Names).

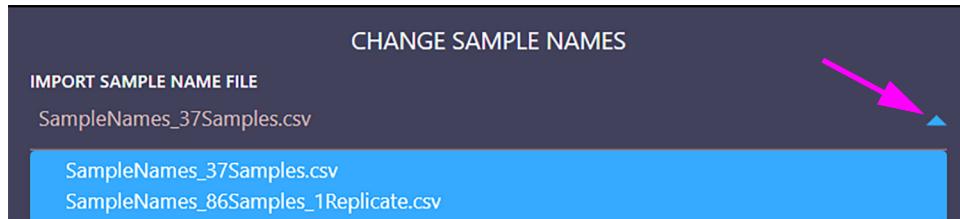


Figure 4-8. IMPORT SAMPLE NAME FILE Drop-Down List

9. To import from a different sample folder, touch **Change Sample Folder** if desired and navigate to the new sample folder location.

Well	Sample Name	MatrixType
A1	Sample01	Plasma
A2	Sample02	Plasma
A3	Sample03	Plasma
A4	Sample04	Plasma
A5	Sample05	Plasma
A6	Sample06	Plasma
A7	Sample07	Plasma
A8	Sample08	Plasma
A9	Sample09	Plasma
A10	Sample10	Plasma
A11	Sample11	Plasma
A12	Sample12	Plasma
B1	Sample13	Plasma
B2	Sample14	Plasma
B3	Sample15	Plasma
B4	Sample16	Plasma
B5	Sample17	Plasma
B6	Sample18	Plasma
B7	Sample19	Plasma
B8	Sample20	Plasma
B9	Sample21	Plasma

Change Sample Folder... Cancel Done

Figure 4-9. Change Sample Folder

10. Touch **Done**.

CREATE NEW RUN: Bay 1

PRODUCT TYPE NULISAqpcr	RUN NAME 20241113-0831_Bay1_IL4
ASSAY IL4	
SAMPLE COUNT 74	
NUMBER OF REPLICATES 1	TOTAL SAMPLE VOLUME (UL) 35

SAMPLE PLATE LAYOUT

[↓ Change Sample Names](#)

	1	2	3	4	5	6	7	8	9	10	11	12
A	Sample01	Sample02	Sample03	Sample04	Sample05	Sample06	Sample07	Sample08	Sample09	Sample10	Sample11	Sample12
B	Sample13	Sample14	Sample15	Sample16	Sample17	Sample18	Sample19	Sample20	Sample21	Sample22	Sample23	Sample24
C	Sample25	Sample26	Sample27	Sample28	Sample29	Sample30	Sample31	Sample32	Sample33	Sample34	Sample35	Sample36
D	Sample37	Sample38	Sample39	Sample40	Sample41	Sample42	Sample43	Sample44	Sample45	Sample46	Sample47	Sample48
E	Sample49	Sample50	Sample51	Sample52	Sample53	Sample54	Sample55	Sample56	Sample57	Sample58	Sample59	Sample60
F	Sample61	Sample62	Sample63	Sample64	Sample65	Sample66	Sample67	Sample68	Sample69	Sample70	Sample71	Sample72
G	Sample73	Sample74										
H												

[Restore To Default Sample Wells](#)

Buttons:

- Cancel
- Create Another Run for Bay 2
- Finish

Figure 4-10. CREATE NEW RUN Screen

11. Touch **Create Another Run for Bay 2**, if desired.

NULISA Single-Plex Assay Results

A single-plex assay opens to a table of the results and the standard (Std) curve. The table contains concentration information about the results for each sample. To the right is the Std curve of the results. You can get additional details about each sample by hovering over the dots in the Std curve.

Upload from Local Computer

To upload the NGS data from your local computer:

1. Click the RUN FOLDER in NULISA Results Viewer and navigation to the folder location where you have stored the FASTQ file.
2. Click on the run name to view the results.

Analyzing Data

After a run has been completed, the data will be saved to your runs folder. You can use the analysis tools in NULISA Results Viewer or export the data for further analysis using Microsoft Excel or other tools.

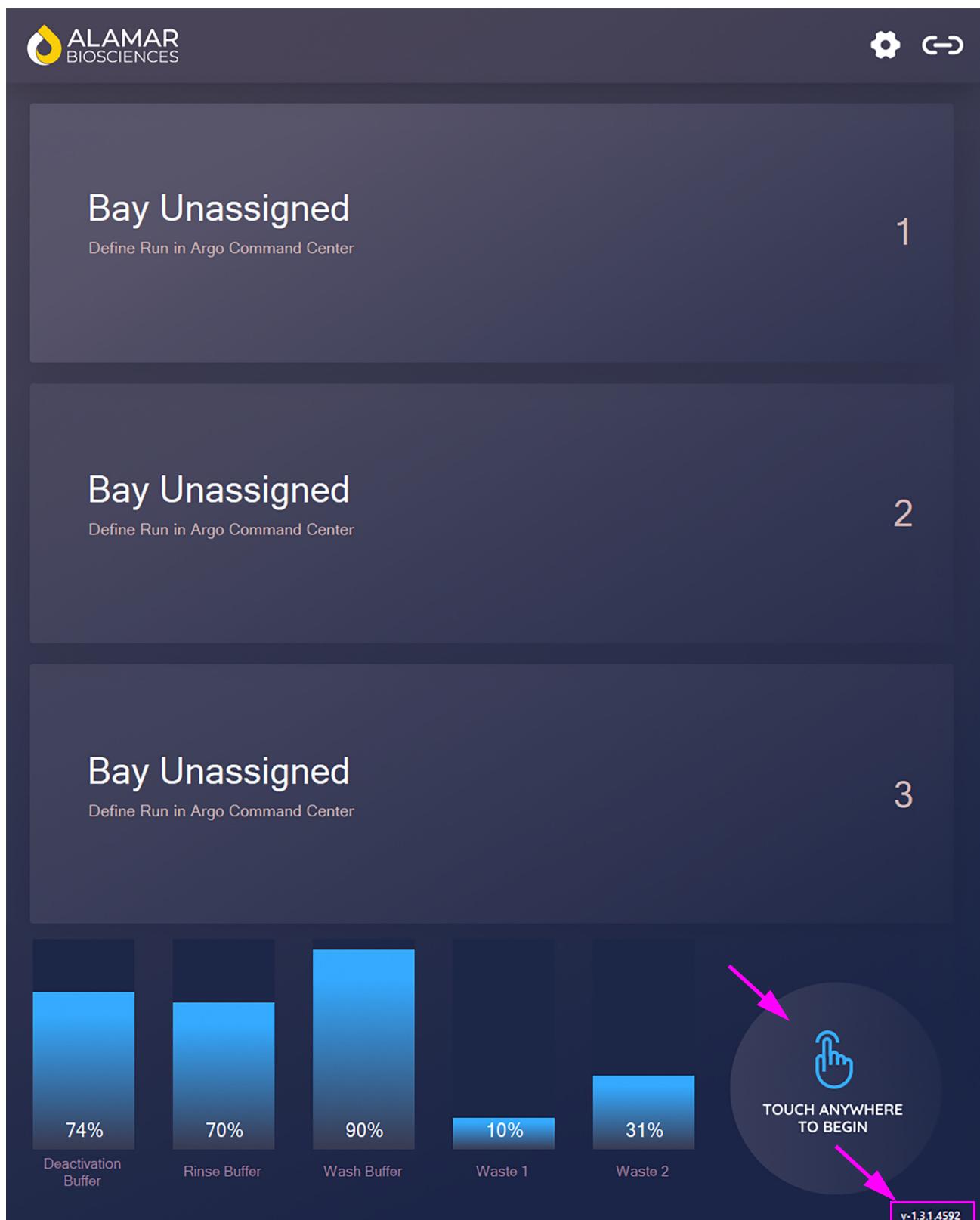


Figure 4-11. Figure 4-11 Display Before Login

Logging in to ARGO HT

To log in to the ARGO HT instrument:

1. On the ARGO HT touchscreen display, touch anywhere on the display. See Figure 4-11. The login screen will be displayed (see Figure 4-12).

Note

The instrument software version is shown at the bottom right-hand corner of the display. See Figure 4-11.

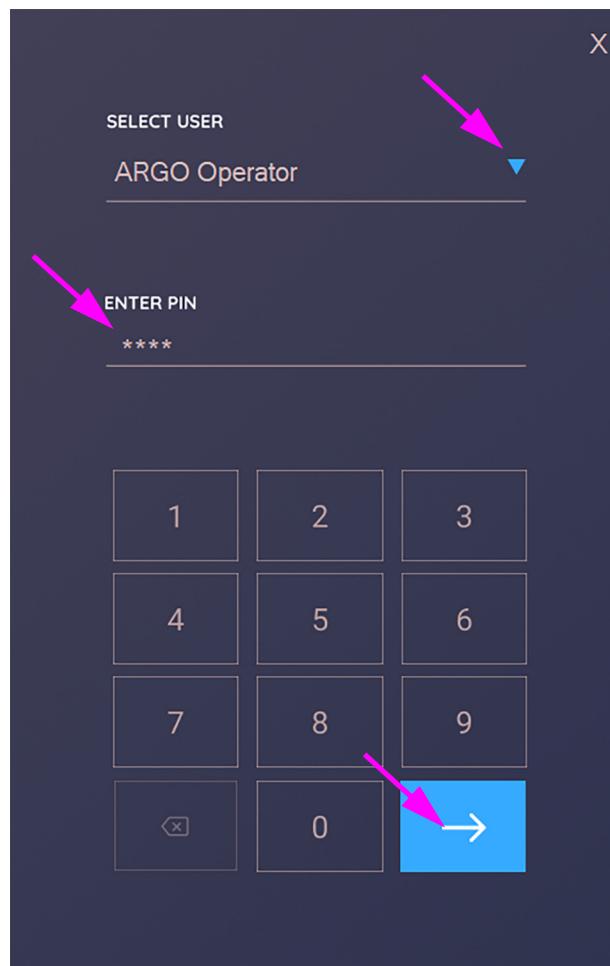


Figure 4-12. ARGO HT Login Screen

2. On the Login screen, select the drop-down arrow to view the list of authorized users.
3. Select your name from the drop-down list.

Note

Your name will only be displayed in the drop-down list if you are authorized to use this instrument. Logins are created for instruments using ARGO Command Center. If you cannot log in to the instrument, contact your ARGO HT system administrator.

4. Enter your PIN using the keypad and select the → key. You will be logged into the ARGO HT instrument and your name will be shown at the top of the display.

Once you are logged in, you will remain logged in as long as you are actively using the instrument (interacting with the touchscreen). If you do not perform any actions, you will be automatically logged out after 10 minutes of no activity. This does not apply while loading the assay and samples into the bays.

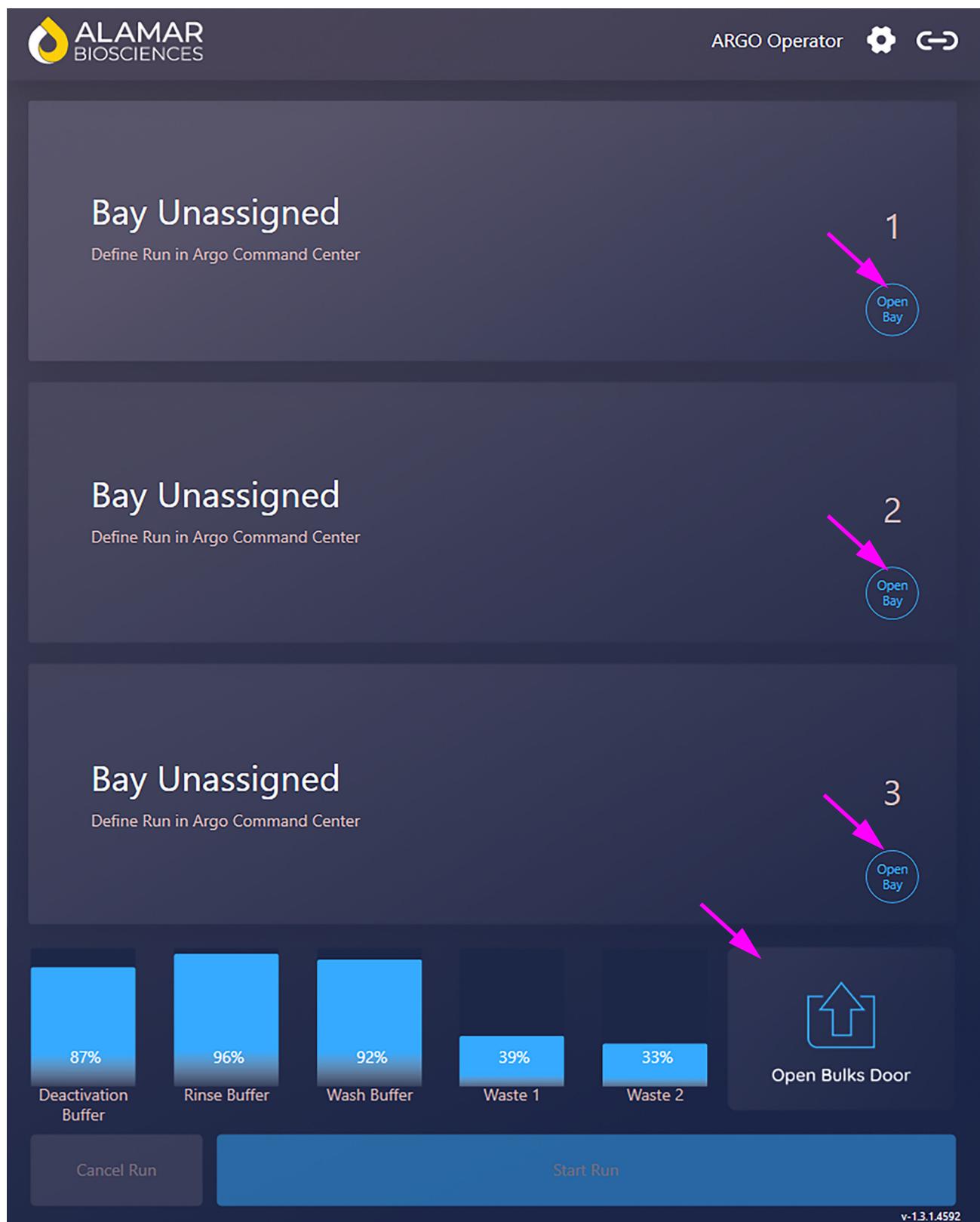


Figure 4-13. ARGO HT Main Screen After Login

Once you log in to the instrument, the ARGO HT Main screen is shown. See Figure 4-13. If no runs have been downloaded to the instrument, you can open bay doors by selecting the **Open Bay** button for each bay. The button changes to **Close Bay** so you can close the bay door. You can also open the bulk consumables bay by selecting the **Open Bulks Door** button and close it by selecting the **Close Bulks Door** button.

Note

You can only open one bay door at a time.

Note

The **Start Run** button at the bottom of the screen will be grayed out. Runs must be created using the instrument software.

Preparing to Process the Run(s)

On the ARGO HT instrument, the run(s) are visible on the instrument touchscreen. A run is assigned to each bay in the case of a run group.

For this example, we show three manually loaded runs on the instrument. See Figure 4-14.

Note

Depending on how the run or runs have been submitted, there may only be one run loaded or a run group of two or three runs. The samples, assays and consumables for all runs must be loaded into the instrument at the same time before the run(s) can begin.

Note

You can run any combination of NULISAseq and NULISApCR runs within the same run group.

To load the run(s):

Note

The ARGO HT instrument monitors the bulk consumables status. If there are not sufficient bulk consumables to complete a run, the Load button is grayed out. You cannot start the run until you have serviced the bulk consumables.

1. Log in to the instrument if you are not already logged in. See Logging in to ARGO HT on page 4-14.
2. Select the **Load** button on the ARGO HT touchscreen (see Figure 4-14) for the first bay to be loaded. The bay door opens and the ASSAY RUN LOADING CHECKLIST is displayed indicating that the assay and samples should be loaded into the bay. See Figure 4-17.

If you decide not to load the assay and samples at this time, select the **BACK** button in the upper left corner of the touchscreen or you can cancel the run or run group by selecting the **Cancel** or **Cancel Run Group** button at the bottom of the touchscreen.

Caution

EQUIPMENT DAMAGE. Do not lean on or place any objects on the bay door when it is open. Doing so will cause damage to the instrument.

3. Ensure that all items are available for loading into the instrument for each bay. These should have already been prepared and labeled for each bay as described in Preparing to Process the Run(s) on page 4-17.
4. Load the assay from the kit, sample plate and consumables cartridge and tip boxes into the bay. See Assay Run Loading Overview on page 4-19 for detailed instructions on loading the kit components into the bay.



Figure 4-14. Samples Ready to Load into Bays

5. After all items have been loaded, select the blue **Close Bay Door** button at the bottom of the ASSAY RUN LOADING CHECKLIST (see Figure 4-17). The sample bay door will close.
6. Repeat Step 2 through Step 5 for each of the following bays until all items have been loaded into the instrument. The **Start Run** or **Start Run Group** button will be displayed at the bottom of the touchscreen.

After the run has been loaded, continue with Process the Run or Run Group on page 4-23.

Assay Run Loading Overview

The components of the assay kit, sample plate, consumables cartridge and tip boxes are loaded into the bay prior to processing a run.

An overview of the loading is shown in Figure 4-15.

Biological Risks



BIOLOGICAL RISKS: Wear disposable gloves, eye protection and other personal protective equipment (PPE) mandated by your institution's safety policies while processing runs using the Alamar Biosciences ARGO HT On-Premises. Wearing PPE prevents exposure to chemical and biologically hazardous materials.

Important

When loading components for the run, all items should have the label facing the front of the instrument and the bar code, if applicable, should be facing the back of the instrument.

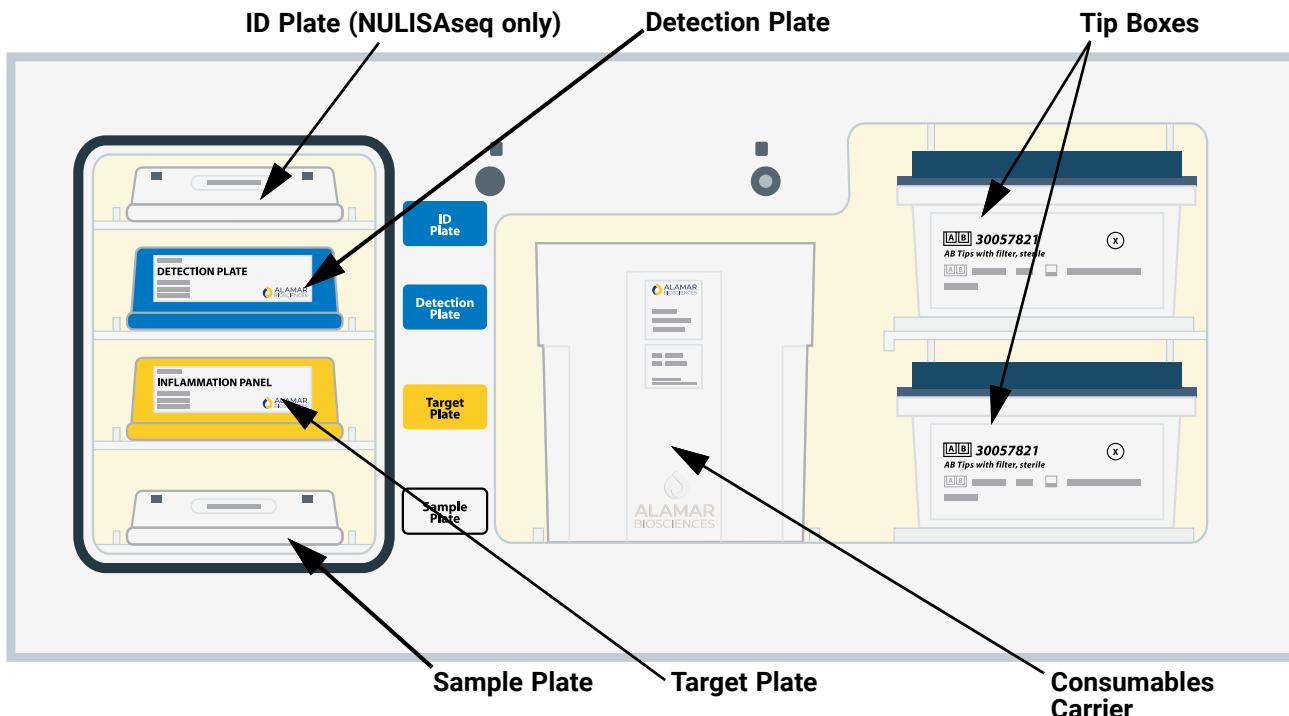


Figure 4-15. Assay Kit Loading Overview

Loading Assay Runs into the ARGO HT

When you are ready to process a run, load the assay kit, sample plate, consumables cartridge and tip boxes into the ARGO HT instrument using the ASSAY RUN LOADING CHECKLIST screen as a guide. See Figure 4-15 and Figure 4-17.

Caution



EQUIPMENT DAMAGE. Do not lean on or place any objects on the bay door when it is open. Doing so will cause damage to the instrument.

As you load each item into the instrument, check the corresponding check box on the touchscreen to indicate that the item has been loaded. When all items have been loaded, the **Close Bay Door** button turns blue and you can press the button to close the sample bay door.

Alternatively, if you know the loading process very well, you can load all of the materials and then check the **ALL ITEMS LOADED** check box. This checks all of the boxes for the run, the **Close Bay Door** button turns blue and you can press the button to close the sample bay door.

To load reagent kits:

1. Obtain the following materials from the kits:
 - A. ID Plate (NULISAseq only)
 - B. Detection plate
 - C. Target plate
 - D. Sample plate
 - E. Consumables carrier
 - F. Two tip boxes (Tecan, 200 µL)
2. Invert the target and detection plates 15 times quickly and centrifuge both plates (at the same time) at 500 g for 20 seconds at 4 °C.

Caution



Plate Damage. Centrifuging the target and detection plates at >500 g may cause damage to the plates. Do not exceed 500 g.

3. If running a NULISAseq assay, centrifuge the ID plate at 2,200 g for 1 minute at 4 °C.

Important

Do not remove the foil seal on the ID plate.

4. If running a NULISAseq assay, load the ID plate into the top slot on the left side of the bay. Press the plate firmly into the channel until it stops.
5. If running a NULISAseq assay, select the **ID Plate** check box on the ASSAY RUN LOADING CHECKLIST.

Note

For a qPCR run, the ID Plate is not shown in the ASSAY RUN LOADING CHECKLIST.

6. Load the detection plate into the slot below the ID plate. Press the detection plate firmly into the channel until it stops. The detection plate is loaded so that the label is at the front.
7. Select the **Detection Plate** check box on the ASSAY RUN LOADING CHECKLIST.
8. Load the target plate into the slot below the detection plate. Press the target plate firmly into the channel until it stops. The target plate is loaded so that the label is at the front.

9. Select the **Target Plate** check box on the ASSAY RUN LOADING CHECKLIST.
10. Load the sample plate into the bottom slot to the left side of the bay. Press the box firmly into the channel until it stops.
11. Select the **Sample Plate** check box on the ASSAY RUN LOADING CHECKLIST.
12. Squeeze the center of the orange lock on the top of the consumables carrier. See Figure 4-16.
13. Lift the lock from the carrier and dispose of it.
14. Inspect the consumables carrier from the back to ensure that all of the plates are aligned properly and the film seal frame is aligned with the notches in the carrier.

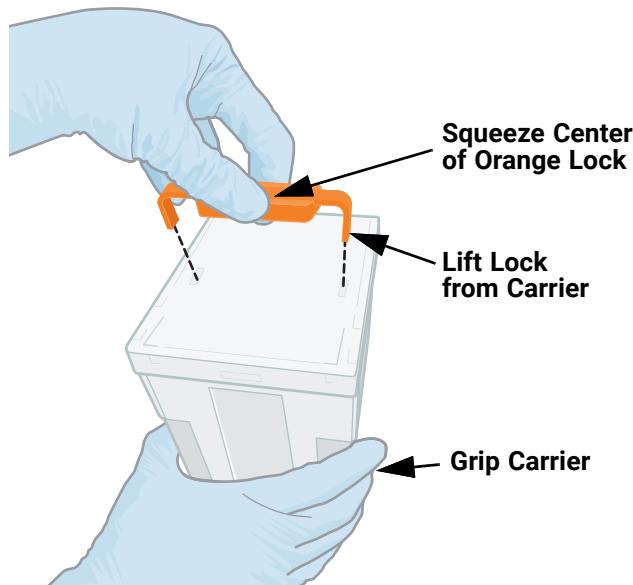


Figure 4-16. Remove Lock from Consumables Carrier

Important

Viewing the carrier from the back, check that the film seal frame is properly seated in the notches at the top of the carrier before loading the consumables carrier into the instrument. The film seal frame must have the glossy side of the film facing up.

15. Load the consumables carrier into the slot in the center of the bay. The carrier is loaded so that the Alamar Biosciences logo is at the front of the box. Press the box firmly into the channel until it stops.
16. Select the **Consumables Carrier** check box on the ASSAY RUN LOADING CHECKLIST.
17. Remove the round lid stickers holding the clear plastic covers onto the tip boxes and remove the covers.

Important

Do not remove the rectangular sticker holding the tip trays to the tip boxes.

18. Load the first tip box into the bay into the bottom slot. Tip boxes should be loaded on the right side of the bay with part number label to the front. Press the box firmly into the channel until it stops.
19. Load the second tip box into the slot above the first tip box following the instructions in Step 18.

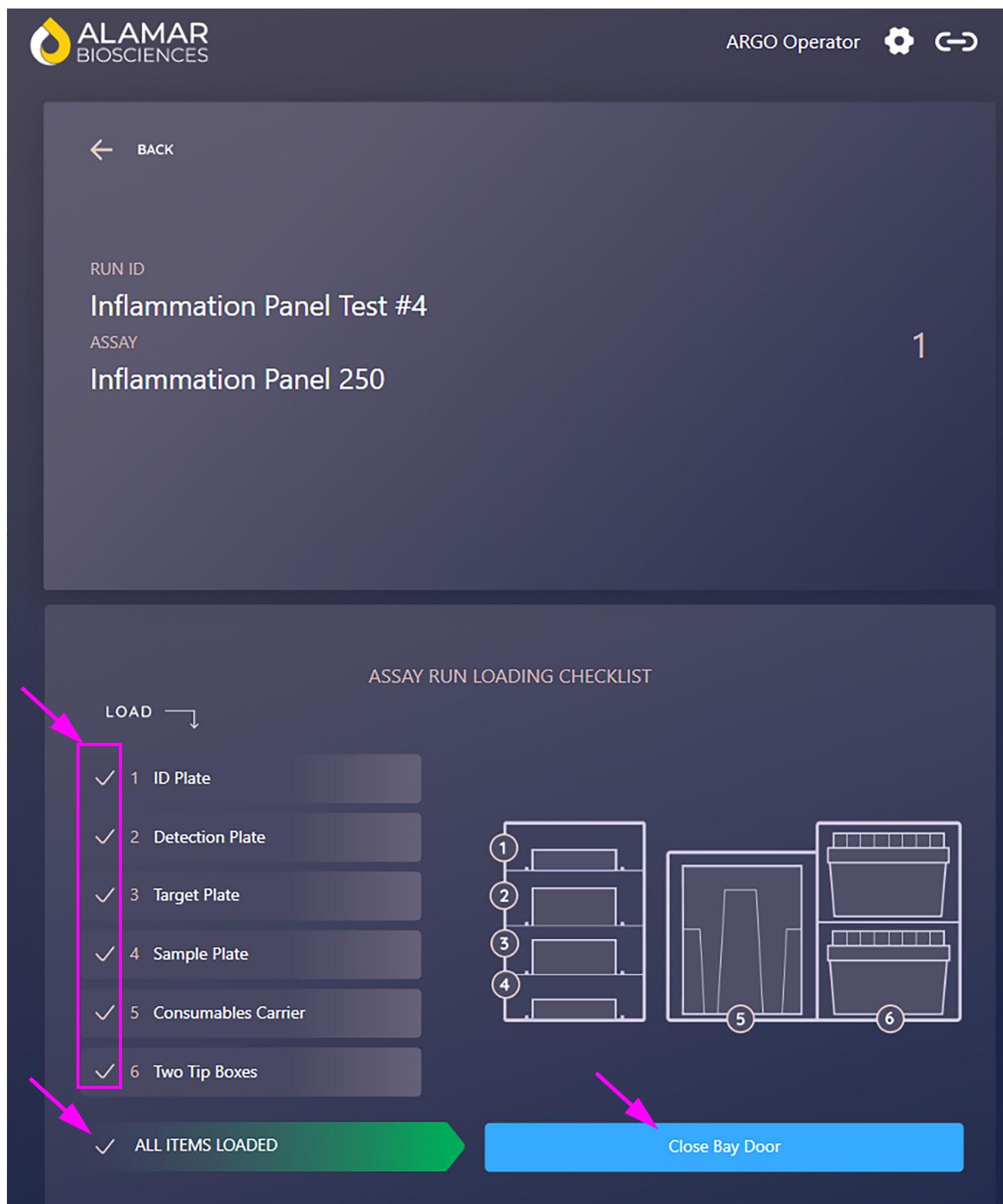


Figure 4-17. ASSAY RUN LOADING CHECKLIST (NULISAsq Assay)

20. Select the **Two Tip Boxes** check box on the ASSAY RUN LOADING CHECKLIST.

Important

Lightly push all items loaded into the bay back to ensure that they are fully inserted before starting the run.

After all items from the kit have been loaded and all of the boxes have been checked on the ASSAY RUN LOADING CHECKLIST, the **ALL ITEMS LOADED** check box is checked and turns green. The **Close Bay Door** button turns blue.

Continue with the Process the Run or Run Group section.

Process the Run or Run Group

After all of the reagent kit(s) have been loaded, select the blue **Close Bay Door** button at the bottom of the ASSAY RUN LOADING CHECKLIST (see Figure 4-17). The sample bay door closes.

Scan Barcodes

After the sample bay door closes, the barcodes on the back of each consumable are read. If all consumables are correct for the run, the display indicates that it is ready to start the run(s). See Figure 4-24. Select the **Start Run Group** or **Start Run** button to begin processing the run(s).

If you do not want to process the run now, select the **Cancel Run Group** or **Cancel Run** button at the bottom of the display. The run(s) are canceled. Remove all kits and samples from the instrument and the bay(s) indicate that they are available for processing.

Note

After the run has started, the **Cancel Run Group** or **Cancel Run** button are grayed out. A run or run group cannot be canceled once it has started processing.

Target and Detection Plate Scan Errors

If the target or detection plate barcodes are determined to be incorrect for the expected run, an error message appears indicating which items have not scanned correctly and the location of those items in the instrument (see Figure 4-18). To correct the error:

1. Note the items that scanned incorrectly using the error message and the location of the items shown with the red **X**.
2. Select **OK** to acknowledge the scan error.
3. Select the **Open Bay Door** button. The bay opens.
4. Remove the incorrectly scanned items from the bay and inspect the items to ensure that it is the correct item for that location. Ensure that the barcode on the back of the item is legible.
5. Reinsert the items back into the bay ensuring that they are firmly seated in the channel and pushed all the way to the back of the bay.

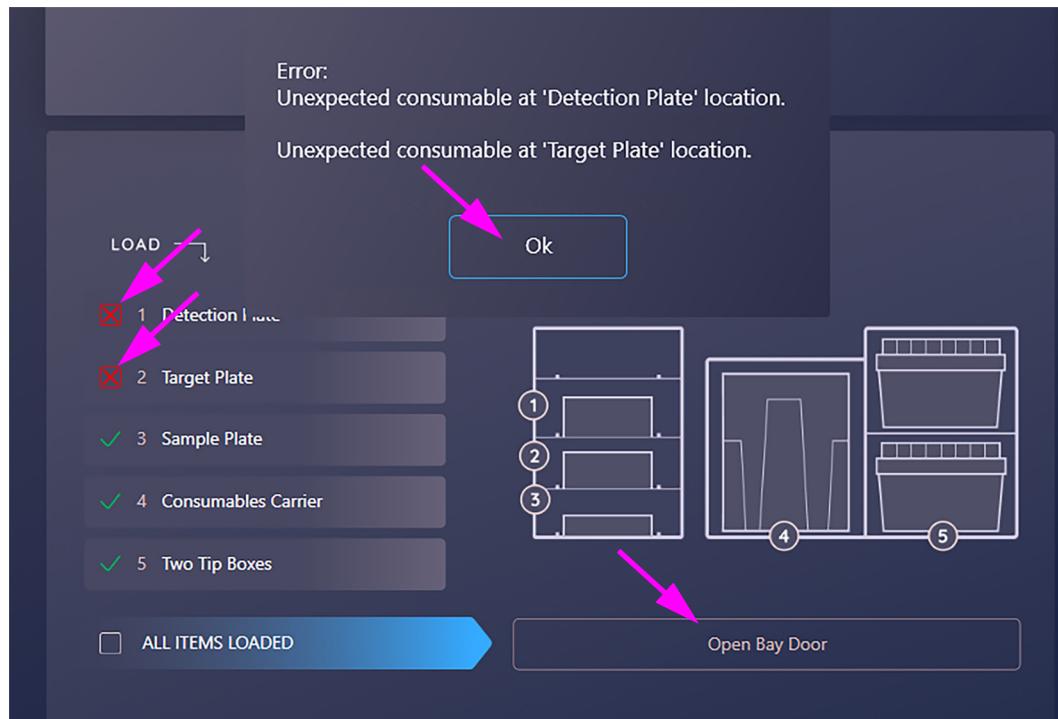


Figure 4-18. Barcode Scan Error for Detection Plate and Target Plate

6. After inspecting the items, select the **ALL ITEMS LOADED** button or select the items individually.
7. Select the **Close Bay Door** button. The items in the bay are scanned again.
8. If the scan is successful, the **Start Run Group** or **Start Run** button is active. Select the **Start Run Group** or **Start Run** button to begin processing the run.
If the barcode scan fails again, you are requested to manually enter the reagent kit information (see Figure 4-20).
9. To manually enter, open the bay door and write down the information from the Detection or Target plate barcode label, found at the back of the plate, and then enter it into the ARGO HT instrument software.

Note

Enter the entire barcode for the Detection or Target plate that failed to scan. Include all numbers, letters and dashes.



Figure 4-19. Plate Barcode Example

10. After entering all of the reagent kit information, select the **Confirm** button. The instrument indicates that it is ready to process the run(s). See Figure 4-20.

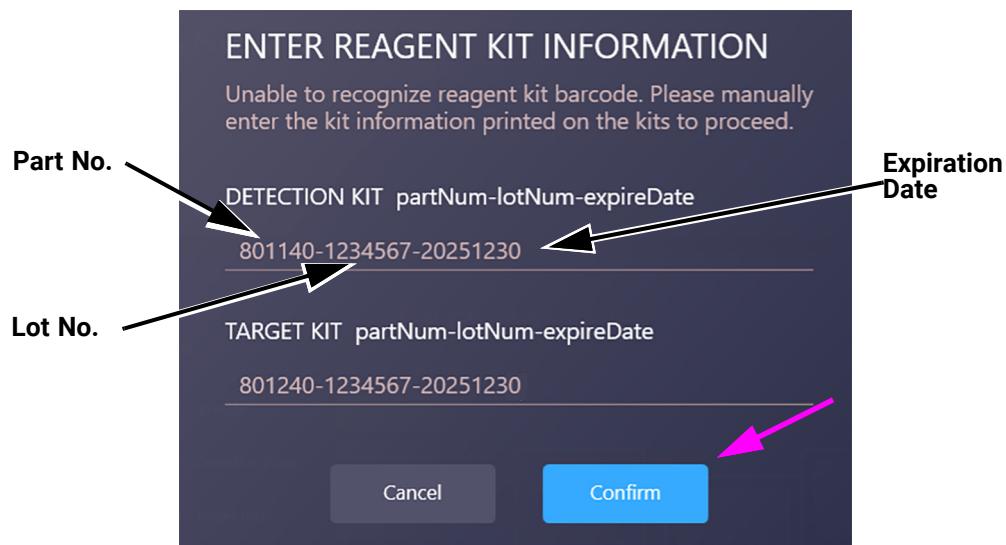


Figure 4-20. Enter Detection and Target Kit Information

11. Select the **Start Run Group** or **Start Run** button to begin processing the run.

Other Consumables Scan Errors

If the ID plate, sample plate, tip boxes or consumables carrier barcodes are determined to be incorrect or cannot be read, an error message appears indicating which items have not scanned correctly and the location of those items in the instrument (see Figure 4-21). To correct the error:

1. Note the items that scanned incorrectly using the error message and the location of the items shown with the red **X**.
2. Select **OK** to indicate that you want to try to scan the items again.
3. Select the **Open Bay Door** button. The bay opens.
4. Remove the incorrectly scanned items from the bay and inspect the item to ensure that it is the correct item for that location. Ensure that the barcode on the back of the item is legible.
5. Reinsert the items back into the bay ensuring that they are firmly seated in the channel and pushed all the way to the back of the bay.

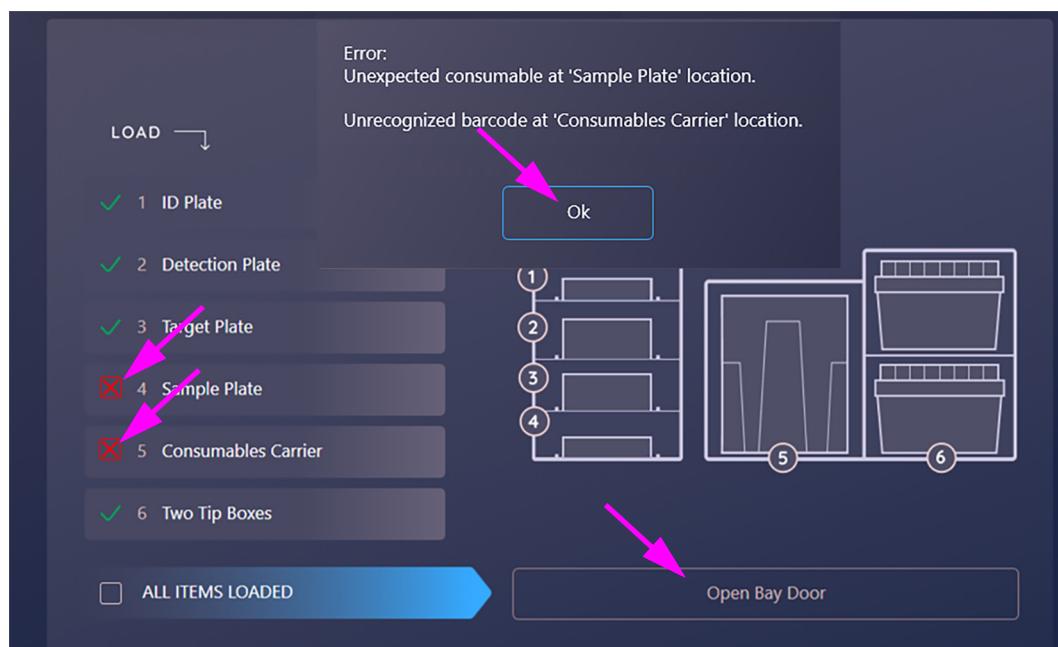


Figure 4-21. First Barcode Scan Error

6. If the scan is successful, select the check boxes to indicate that the consumables are loaded. The **Start Run Group** or **Start Run** button is active. Select the **Start Run Group** or **Start Run** button to begin processing the run.
If the barcode scan fails again, an error message displays indicating that the scan failed again (see Figure 4-22).
7. There are two options for this error message:
 - Select the **OK** button to repeat the procedure to inspect the consumables and repeat the scan again (see Step 3 through Step 6).
 - Select the **Proceed** button to begin processing the run and ignore the error message.

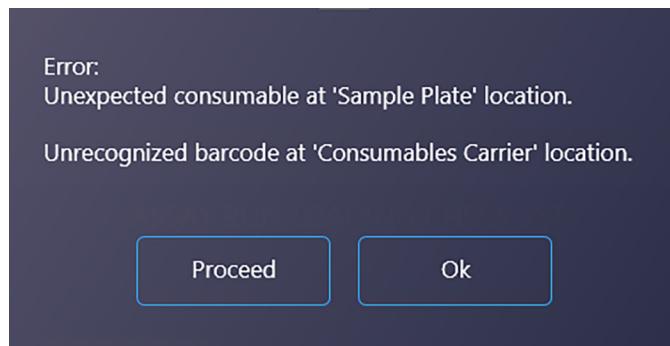


Figure 4-22. Second Barcode Scan Error



If you proceed with the run and the consumables are not in the correct location or the incorrect consumables are loaded, the run will fail, the samples will be lost and the instrument may be damaged. Confirm that the expected consumables are in place before selecting the **Proceed** button and starting the run.

8. Select the **Start Run Group** or **Start Run** button to begin processing the run.

A countdown timer displays the time remaining for the run, a progress bar and an estimated time of completion. See Figure 4-23. A STAGE DESCRIPTION provides updates as the run progresses.

When the run has completed, a **Done** indicator is displayed. See Figure 4-26. If there are multiple runs on the instrument, the next run starts automatically. You may remove the reagent kit(s) for completed runs while other runs are processing.

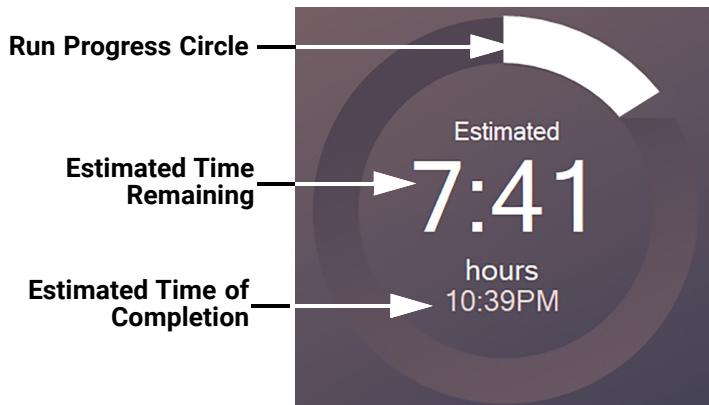


Figure 4-23. Run Progress Indicator

This completes the processing of the run. At this point, you can unload the run that has just been completed (see Unloading the ARGO HT After Run Completion in this chapter).



Figure 4-24. Ready to Start Run(s)



Figure 4-25. Run Being Processed in Bay 1

Unloading the ARGO HT After Run Completion

After a run has completed, remove the reagent kits and consumables from the ARGO HT instrument.

Note

You may remove each run as it is completed. You do not need to wait until all runs have been completed if processing a run group.

Note

The NGS library generated by NULISAseq assay can be held for up to 16 hours in the bay.

Biological Risks



BIOLOGICAL RISKS: The tip boxes and sample plate may have biological materials after processing a run. Biological samples such as tissues, body fluids, and blood of humans and/or animals have the potential to transmit infectious diseases. Follow your local, state/provincial, and national safety regulations for handling and disposing of the tip boxes.

1. Touch the **Remove NULISAseq** or **Remove NULISApqr** button to begin the unload process. See Figure 4-26. The bay door will open.

Caution



EQUIPMENT DAMAGE. Do not lean on or place any objects on the bay door when it is open. Doing so will cause damage to the instrument.

2. Remove the tip boxes from the bay by pulling them forward from the instrument and dispose of them according to your lab's biohazard procedures.
3. Remove the consumables carrier from the bay by pulling it forward from the instrument and dispose of it according to your lab's biohazard procedures.
4. Remove the sample plate and frame sealing film (FSF) from the bay by pulling it forward from the instrument. Dispose of them according to your lab's biohazard procedures unless the sample plate requires further processing.

Note

At the end of the run, the frame sealing film is placed onto the sample plate.

5. Remove the target plate from the bay by pulling it forward from the instrument and dispose of them according to your lab's biohazard procedures.

Important

When running a NULISAseq assay, the detection plate may need further processing on another instrument. Do not dispose of the detection plate if it is needed for further processing.

6. Remove the detection plate from the bay by pulling it forward from the instrument.
 - A. **For a NULISApqr run, dispose of the detection plate.**
 - B. For a NULISAseq run, keep the detection plate for further processing.
7. If running a NULISAseq assay, remove the ID plate from the bay by pulling it forward from the instrument. Dispose of it according to your lab's biohazard procedures.
8. When all of the consumables have been removed, touch the **Close Bay Door** button. The bay door will close and the run will no longer be displayed in the bay. The status of the bay will change to Bay Unassigned.



Figure 4-26. Run Completed in Bay 1

- For a NULISAseq run, using a filtered pipette tip, transfer the volume from the well labeled **NGS LIBRARY** of the detection plate to a DNA LoBind 1.5 mL Eppendorf tube.

Note

If the library from the well labeled **NGS LIBRARY** is being transferred later than 16 hours after completion of the run, evaporation may result in low volume (less than 10 μL or a dry tube). If <10 μL or dry, use a filtered pipette tip to add 20 μL of molecular biology grade water to the well labeled **NGS LIBRARY**. Pipette the entire contents of well labeled **NGS LIBRARY** up and down ten times then wait 5 minutes. Transfer the contents to the Eppendorf tube.

- For a NULISAseq run, quantify the library using Qubit. Dilute the library to 2nM with molecular biology grade water for sequencing.

$$\frac{\text{Concentration on Qubit (ng/uL)}}{77800 \text{ (MW, g/mole)}} \times \frac{1,000,000 \text{ uL}}{L} = \text{library concentration (nM)}$$

- (Only if sequencing on site) 2nM library should be diluted with RSB buffer provided by Illumina for the final 400 pM sequencing library:

Component	Volume (uL)
2nM Library	4.8
RSB Buffer	19.2
Total	24

- For a NULISAseq run, process the library on the Illumina instrument following the instructions provided by Illumina and using the guidelines in the next section.

Note

Sequencing of NULISAseq libraries require customer Illumina sequencing recipes that are specific to each sequencer. To attain the required recipe, contact Alamar Technical Support.

Sequencing a NULISAseq Library on an Illumina Sequencer

After processing a run on the ARGO HT instrument, the NULISAseq library must be processed on an Illumina sequencer.

Sequencing a NULISAseq library on an Illumina sequencer requires a custom recipe be installed on the sequencer. By providing the sequencer model to Alamar Support, the required recipe will be provided and can then be installed on the sequencer with support from Illumina.

Once the recipe is installed, the run can be initiated using either Illumina BaseSpace or an Illumina Sample Sheet. When setting up the run, the following important settings must be used:

- Run Name:** Use a name that can be unambiguously associated with the run name on the ARGO HT from which this library is derived. This will ensure the correct FASTQ file is processed for the correct run in ARGO Command Center.
- Library Prep Kit:** Not Specified
- Index Adapter Kit:** Not Specified
- Index Reads:** No Index
- Read Type:** Single Read

- **Read Length:**
 - **Read 1:** 34
 - **Index 1:** 0
 - **Index 2:** 0
 - **Read 2:** 0
- **Override Cycles:** Y34
- **Sample ID:** Enter only 1 unique sample name.

Ensure that the **Denature and Dilute On Board** check box is selected to automatically denature and dilute the library on-board the instrument. Use the 20 μ L loading volume from the 400 pM diluted library.

Check Bulk Consumables Status

The ARGO HT instrument notifies you, the operator, when bulk consumables servicing is required. If there is not sufficient bulk consumables to complete a run, the **Load** button is grayed out and the **Open Bulks Door** button remains active (blue). The bulk consumables that require servicing are displayed in red (see Figure 4-27). You cannot start the run until the bulk consumables are serviced.

The bulk consumables need to be serviced approximately every 6–12 runs. To service bulk consumables, see Bulk Consumables Servicing on page 8-4.

Error Status

If an unrecoverable error occurs during your run (see Figure 4-28), you need to call Alamar Technical Support for assistance. Alamar Technical Support information is located in the Technical Assistance section in the Chapter , Instrument Overview.

You can remove your samples and other components in the bay by pressing the **Remove NULISAsq** or **Remove NULISAqpcr** button. The bay door will open and you can remove your samples and other items from the bay.

Important

If this error message is displayed, call Alamar Technical Support immediately. Do not try to reset the system by turning the power off and then back on. Do not open any panels except the bay door to remove your samples and other components.

If a recoverable error occurs during your run, the run will complete. You may be able to clear a recoverable error.

Analyzing Data

After a run has been completed, the data is saved to your designated Runs Folder. For detailed analysis of NULISAsq data, data can be exported from NULISA Results Viewer and then imported into NULISA Analysis Software for more detailed analysis. See Chapter 6, Analyzing Run Data NULISA Analysis Software for detailed information on NULISA Analysis Software.



Figure 4-27. Bulk Consumables Require Service

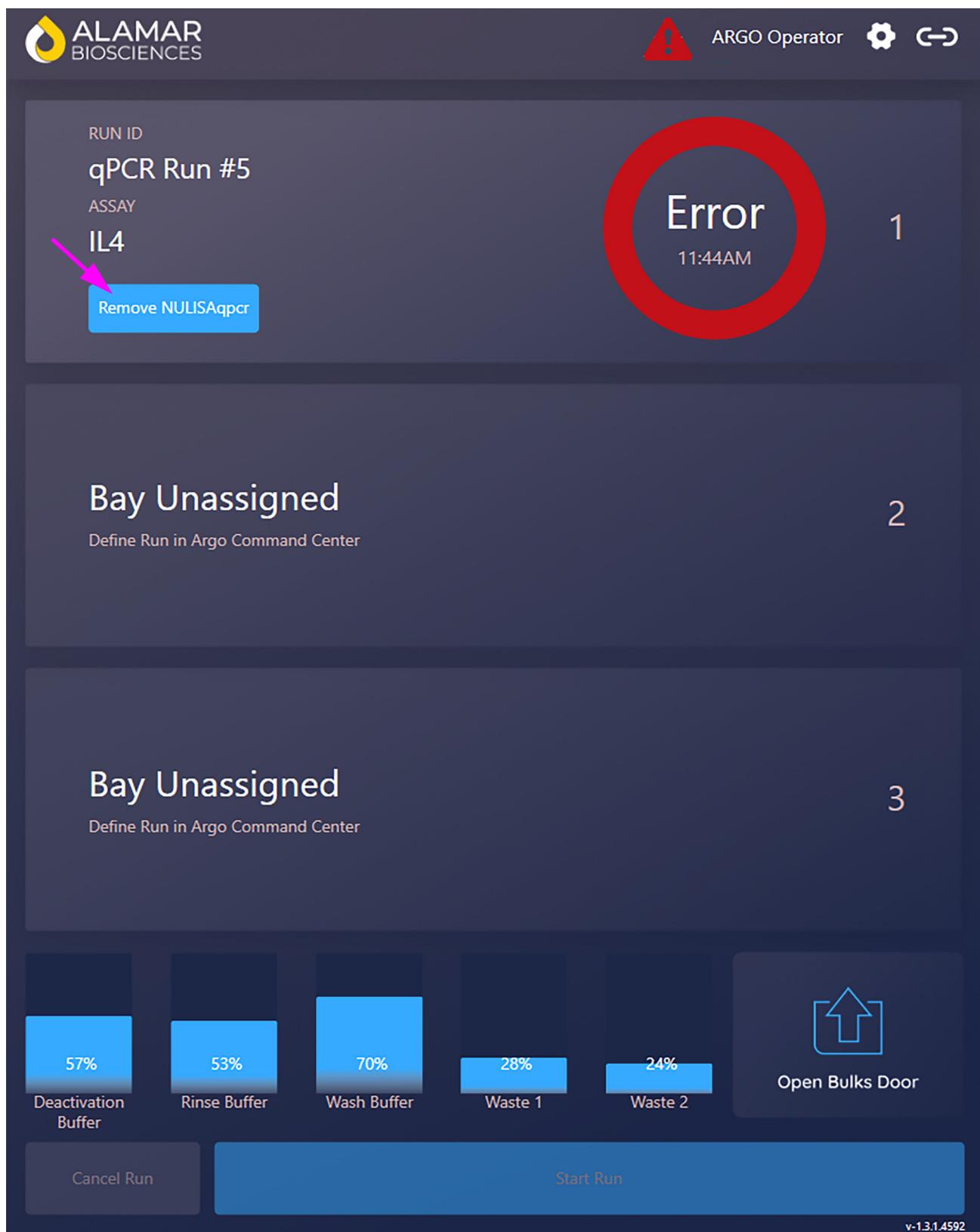


Figure 4-28. Unrecoverable Error

7 Administrative Tasks

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NULISA Analysis Software (NAS) User Settings	7-4
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Note For assistance, call Alamar Technical Support. See the Technical Assistance section in the Preface for the contact information.

User Management on Instrument

Management of users is done in the Alamar Biosciences ARGO HT On-Premises instrument software and in the NULISA Analysis Software (NAS). When the instrument is installed, at least one person is designated with the Supervisor role by the Alamar Biosciences field service engineer. The Supervisor role manages users for your organization and at least one account must be assigned this role at all times.

User Roles

There are two user roles for the on-instrument software. These roles are:

Supervisor A supervisor can invite additional users to the software. They can also deactivate or delete users. They have full administrative rights to view all projects and runs in the software. They can deactivate instruments and see all instruments regardless of their status.

Operator An operator can perform all functions within the on-instrument software. Runs and projects created by an operator are visible only to that operator (and any organizational supervisors) unless the runs belong to a project and the project has been mapped to a user group. Once mapped to a user group, operator members of that group may only perform limited duties depending on their assigned role. An operator may change their pin.

Update PIN - ARGO HT Instrument Software

Both supervisor and operator users can edit their personal identification number (PIN). The PIN is used to log into the ARGO HT instrument to process runs.

1. To change your machine PIN, enter your current PIN on the first line.
2. Enter your new PIN on the second and the third lines and select the **DONE** button.

Note Your PIN must be a 4-digit number.

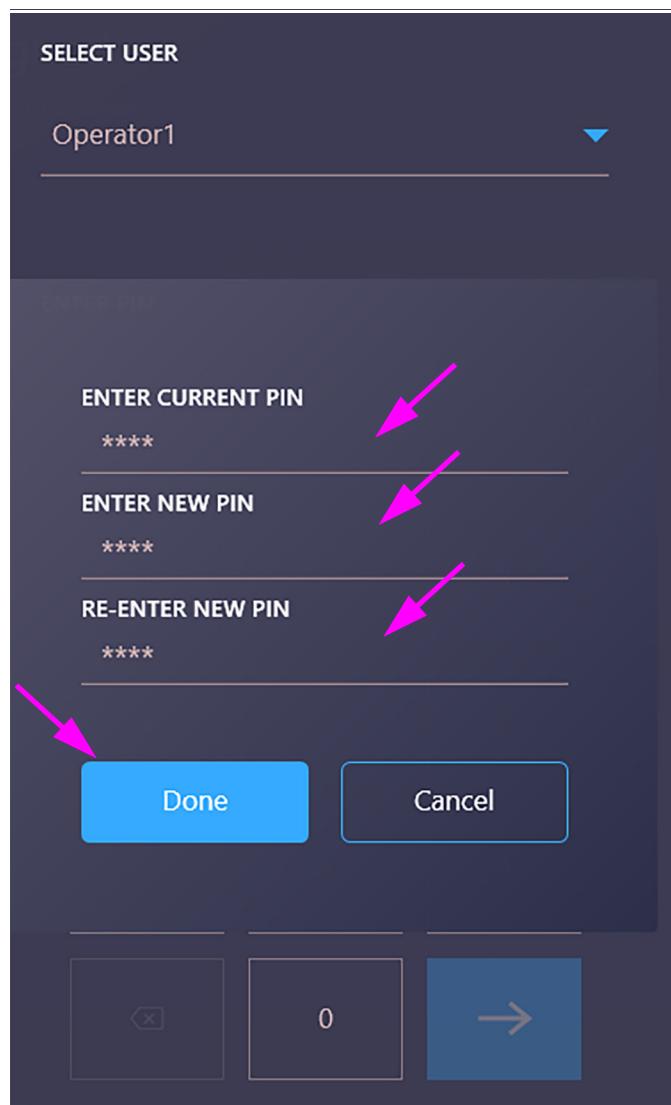


Figure 7-1. PIN Update Screen

User Management

A user with a supervisor account, can edit user names and PINs.

1. When logged in as a supervisor, click the gear button, then select User Management.

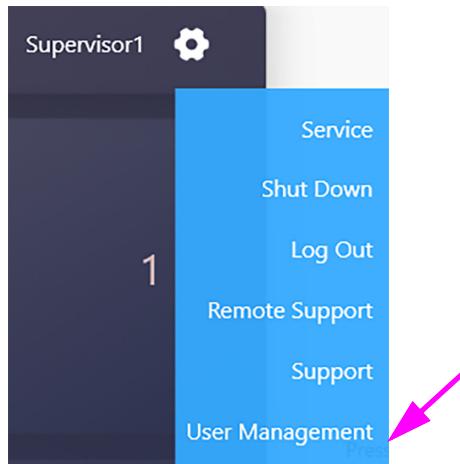


Figure 7-2. ICS User Management

2. Select the role you want to modify, then click **Edit**.
3. Change name, if necessary.
4. Change Pin, if necessary.
5. Click **Done** when finished.

Install NULISA Results Viewer (NRV)

You must be running Windows 10 version 1809 and higher or Windows 11 to run NRV.
Install NULISA Results Viewer Application

1. Retrieve Setup_NULISAResultsViewer executable file from:
<https://eng1e.seismic.com/ls/35b35f78-5e2a-4584-8b9d-2f24d659d4d6/iw2OpVBISQT2MNDj#/>
2. Copy the Setup_NULISAResultsViewer executable file to your laptop desktop.
3. Double-click on the icon to run setup.
 **Setup_NULISAResultsViewer_**
4. When prompted, select **Create a shortcut**.
5. Click **Install** and then **Finish** to exit setup.
6. Double-click on the desktop shortcut icon.

7. The NRV application opens.

Set Up Run Folder/Backup Folder in NRV Application

1. Double-click on the desktop shortcut icon. The NULISA Results Viewer application opens.



2. Click the blue RUN FOLDER button and navigate to a location where you save your runs, such as C:\Program Data\AlamarBiosciences\Runs.



Figure 7-3. NRV Run Folder Location

3. Contact your IT Department and Alamar Support to request that this folder is backed up so that data is not lost. The ARGO HT ICS software must also be mapped to this folder for easy run file retrieval from the instrument.

Update NRV Application

To update the NVR software:

1. Select **HELP > About**.
2. Click **UPGRADE**.

The software application updates to the latest version available.

NULISA Analysis Software (NAS) User Settings

Own Account

An NAS user may manage their own account. This includes updating their profile, email address, password, machine PIN and setting their notifications. If a user is not a supervisor, they will not be able to modify the settings of other users.

A supervisor account is required to manage the settings of other users. This includes creating new users, editing current users, deactivating users and setting up user notifications.

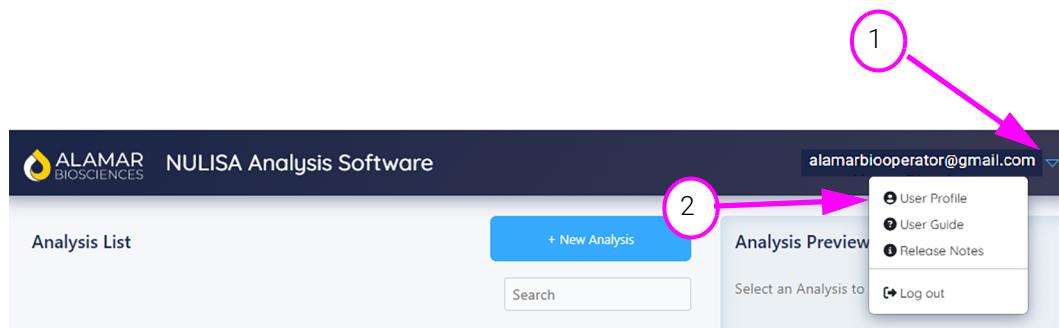


Figure 7-4. NAS User Settings Drop-Down Menu – Operator

Account Settings

To access and modify your own profile settings:

1. Select the drop-down arrow next to your user name. See Figure .
2. Select **User Profile** from the drop-down menu. Your account settings are displayed in a new window (see Figure 7-4). The left side of the window shows the various account settings that you can modify. Select each setting that you wish to change from this list.

Note

The instructions in the following sections describe how to change your account settings. You do not need to edit all of your settings. You may return to NULISA Analysis Software at any time by selecting the **Return to NAS** button at the top of the screen.

Profile

1. To change your profile (name), select **Profile** from the account settings. See Figure 7-4.
2. Edit your profile information and select the **Save** button.

8 Service and Maintenance

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Note

For assistance, call Alamar Technical Support. See the Technical Assistance section in the Preface for the contact information.

Chapter Overview

This chapter describes various maintenance tasks for the Alamar Biosciences ARGO HT On-Premises instrument and recommended maintenance intervals. Maintenance includes emptying the waste containers and bulk consumables replacement. It also includes some basic troubleshooting suggestions in case of errors, updating the instrument software and using the Support button to provide a support package to Alamar Technical Support.

Maintenance Tasks

To assist in keeping the instrument running properly, regular maintenance is required. Table 8-1 lists the basic maintenance tasks that can be performed.

Table 8-1. Maintenance Tasks and Frequency

Task	Frequency	Section
Clean the area around the instrument	Daily	Cleaning the Work Area
Power down the instrument	Weekly	Power Down the Instrument
Clean the instrument surfaces	Weekly	Cleaning the Instrument Surfaces
Perform annual instrument maintenance	Annually	Annual Instrument Maintenance
Clean up spills	As Needed	In Case of Spill
Replace bulk consumables	As Needed	Bulk Consumables Servicing

Daily Instrument Maintenance

Cleaning the Work Area

Clean the work area daily using good laboratory practices to avoid contamination of samples or reagents. Follow your institution's guidelines for cleaning the work area.

Weekly Instrument Maintenance

Power Down the Instrument

Before cleaning the instrument surfaces, power down the instrument following the procedure in Power the ARGO HT Instrument OFF (see page 2-8). This action clears out unwanted temporary files and guards against computer memory corruption to prevent a malfunction of the system and also allows the instrument to run a diagnostics check. It also allows you to safely clean the instrument surfaces.

If the instrument is being used less than weekly, power the instrument off and back on again before starting your run.

Important

Do not shut down the instrument if a run is in process. Wait until the run finishes.

Cleaning the Instrument Surfaces

Clean the instrument surfaces weekly with 70% isopropyl alcohol. All outside surfaces of the instrument should be cleaned including the top, sides, and doors.

The materials required for this procedure are:

- 70% isopropyl alcohol
- Lint-free wipes
- Disposable gloves
- Eye protection

Caution

Use of anything other than 70% isopropyl alcohol on the instrument touchscreen can cause permanent damage to the touchscreen.

Biological Risks

Wear disposable gloves, eye protection and other personal protective equipment (PPE) mandated by your institution's safety policies while performing this cleaning procedure. Wearing PPE prevents exposure to chemical and biologically hazardous materials.

Power Up the Instrument

After cleaning the instrument surfaces, power up the instrument following the procedure in Power the ARGO HT Instrument ON (see page 2-5).

Annual Instrument Maintenance

Alamar Biosciences recommends that the instrument be checked for proper operation and calibration on an annual basis from the point of initial use.

Contact Alamar Technical Support to schedule annual maintenance at least 30 days prior to the annual maintenance date. See the Technical Assistance section in the Preface for contact information.

In Case of Spill

Clean affected exterior instrument surfaces in the event of a spill.

Important

If it is suspected that a spill has affected the interior of the instrument, do not remove any of the exterior instrument covers. Instead, shut down the instrument and contact Alamar Technical Support for assistance.

To clean the affected instrument surfaces:

1. Thoroughly moisten a lint-free wipe or paper towel with the 70% isopropyl alcohol.
2. Wipe all surfaces outside the instrument. Change lint-free wipes or paper towels frequently while wiping.
3. Discard used wipes or paper towels according to your standard laboratory procedures.

Bulk Consumables Servicing

The bulk consumables will need to be serviced approximately every 6 –12 runs. The ARGO HT instrument will notify the operator when bulk consumables replacement is required. There are two components to the bulk consumables replacement:

- Emptying the two waste containers
- Filling the deactivation buffer, rinse buffer and wash buffer containers

Biological Risks



Wear disposable gloves, eye protection and other personal protective equipment (PPE) mandated by your institution's safety policies while performing this procedure. Wearing PPE prevents exposure to chemical and biologically hazardous materials. Proper PPE includes protective lab coat, disposable gloves, eye protection and any other PPE required in your facility.

To access the bulk consumables:

1. Log in to the instrument if you are not already logged in.
2. Select the **Open Bulks Door** button at the bottom of the touchscreen display. See Figure 8-1. The bulk liquid door will open.
3. Service the bulk liquids (waste containers and buffers) as required. For detailed instructions on servicing the bulk liquids, see Empty the Waste Containers on page 8-6 and Replace Bulk Consumables on page 8-8.
4. When the bulk liquids have been serviced, select the **Close Bulks Door** button to close the bulk liquids door.



Figure 8-1. Open Bulk Consumables Door Button

Empty the Waste Containers

The waste containers are the two containers that are on the right-hand side of the bulk consumables area. See Figure 8-2.

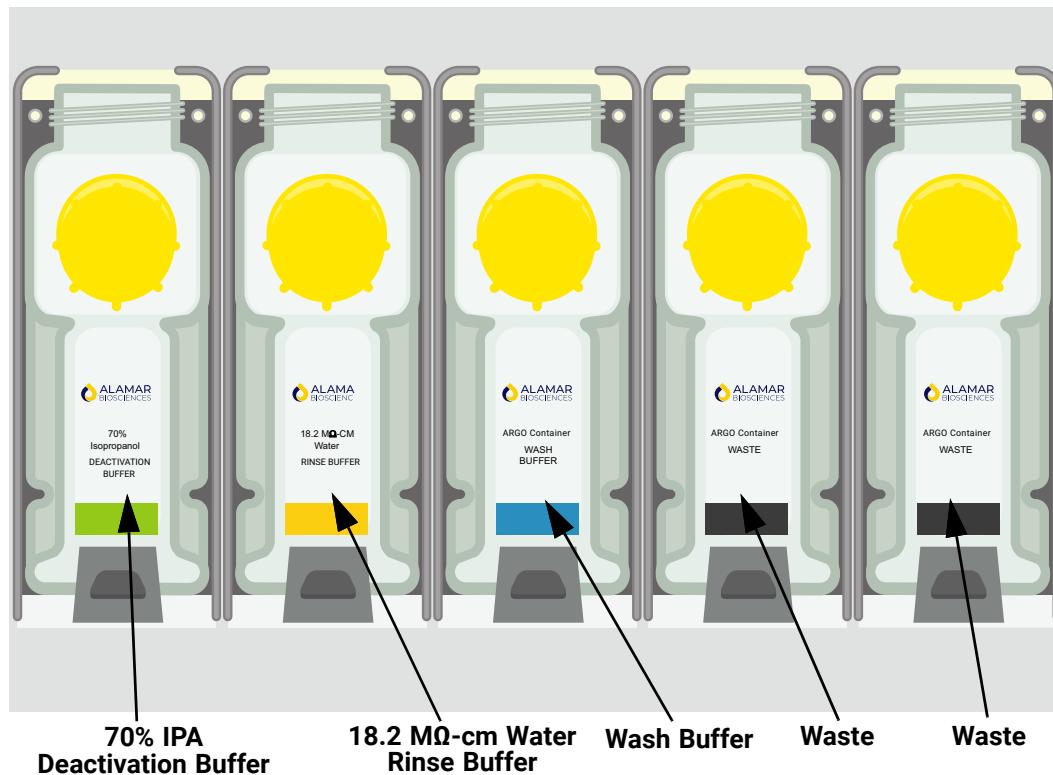


Figure 8-2. Bulk Liquid Components

To empty the two waste container bottles:

1. Open the bulk consumables door from the ARGO HT touchscreen.
2. Press the black latch in the front of the bottle. See Figure 8-3.
3. Slowly pull the bottle out approximately 15 cm (6 in.).
4. Unscrew the yellow cap from the front of the bottle and screw it tightly onto the opening on the top of the bottle. See Figure 8-3.

Caution



The waste bottles are very long. Moving a bottle too quickly will cause the liquid inside to move and possibly to splash through the top opening in the bottle. Move the bottle slowly and place the yellow cap on the bottle to prevent splashing the liquid waste.

Biological Risks



Wear disposable gloves, eye protection and other personal protective equipment (PPE) mandated by your institution's safety policies while performing this procedure. Wearing PPE prevents exposure to chemical and biologically hazardous materials.

Flammable Risks

This instrument contains flammable liquid. Take adequate precautions to prevent fire risk when using, filling and disposing of the containers and/or contents.

5. Continue pulling the bottle until it is removed from the instrument. As the bottle is pulled forward, support the back of the bottle with your other hand. See Figure 8-3.
6. Once the bottle has been removed, take it to the disposal location.
7. Remove the yellow cap from the bottle and empty the contents of the bottle into the disposal container.
8. Rinse the bottle with laboratory-grade 18 MΩ•cm water (Milli-Q® water).
9. Replace the yellow cap onto its holder on the front of the bottle and take it back to the instrument.
10. Insert the bottle back into the slot in the instrument ensuring that the latch engages.

Note

The yellow cap must be screwed tightly to the front of bottle to prevent interference when the bulk consumables door closes.

11. Insert the bottle back into the slot in the instrument ensuring that the latch engages.
12. Repeat Step 2 through Step 11 for the second waste bottle.

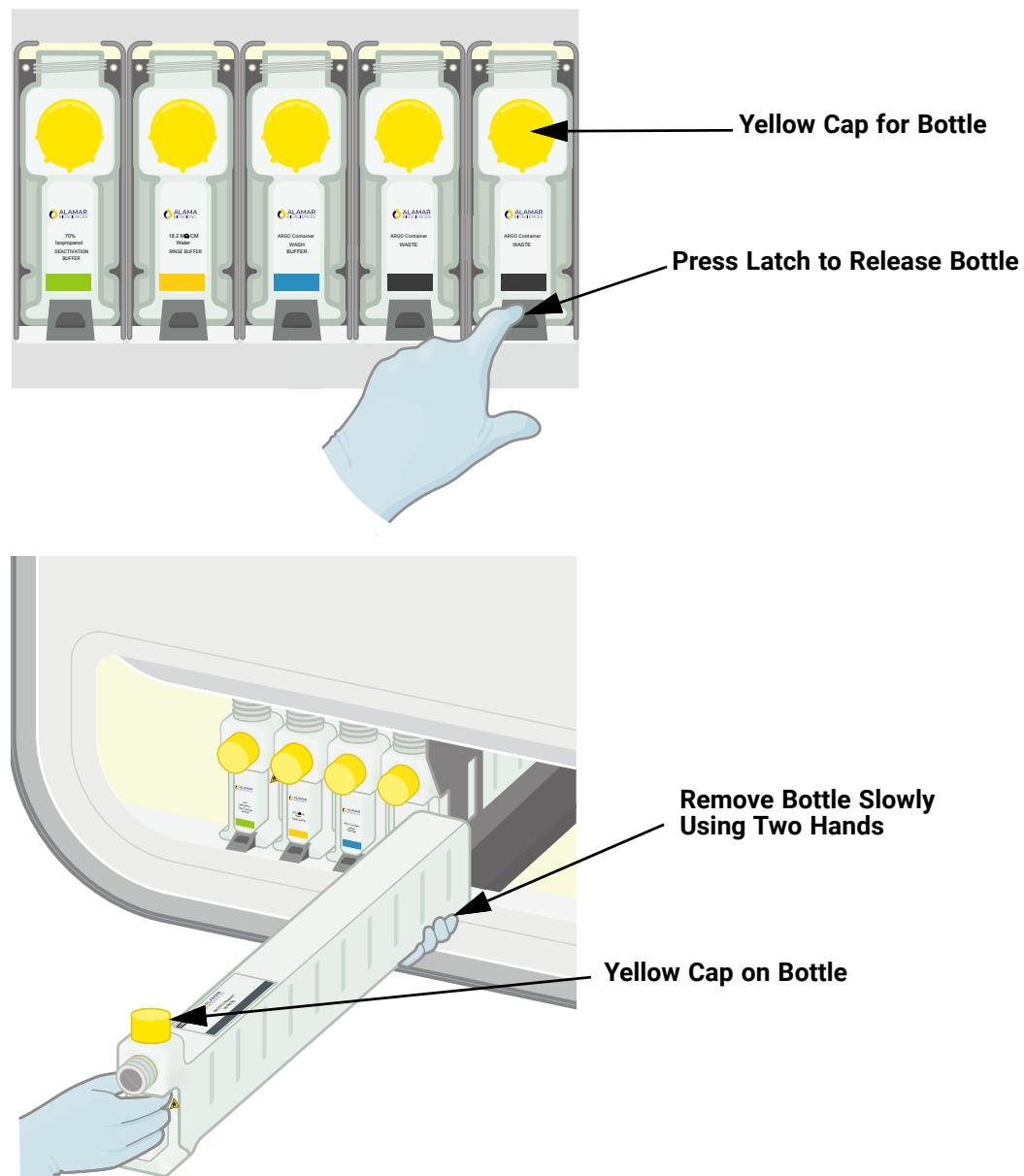


Figure 8-3. Removing Waste Water Bottles

Replace Bulk Consumables

There are three containers that contain bulk consumables on the left-hand side of the bulk consumables area. See Figure 8-2. These consumables are:

- Deactivation Buffer (customer-provided: 70% IPA)
- Rinse Buffer (customer-provided: Laboratory-grade 18 MΩ•cm water (Milli-Q[®] water))
- Wash Buffer (Alamar Biosciences P/N 801035)

Note	Typically, the consumables are filled at the same time that the waste bottles are emptied.
Note	Ensure that you have sufficient quantities of consumables in stock. In order to estimate the amount of consumables needed, if you are running only NULISAsq assays, you will be able to complete 6 runs before replacing consumables. If you are running only NULISAqpcr assays, you will be able to complete 12 runs before replacing consumables. If you are running a combination of NULISAsq and NULISAqpcr, you will be able to complete between 6 runs and 12 runs before replacing the consumables.
The procedure for filling the consumable bottles is the same for each bottle unless otherwise noted. To fill the three consumable bottles:	
<ol style="list-style-type: none"> 1. Open the bulk consumables door from the ARGO HT touchscreen. Skip this step if the door is already open for emptying the waste container bottles. 2. Press the black latch in the front of the bottle. See Figure 8-4. 3. Slowly pull the bottle forward: <ul style="list-style-type: none"> • For deactivation buffer and rinse buffer, pull the bottle out approximately 10 cm (4 in.). • For wash buffer, pull the bottle out approximately 15 cm (6 in.). 4. Unscrew the yellow cap from the front of the bottle and screw it tightly onto the opening on the top of the bottle. See Figure 8-4 for deactivation buffer and rinse buffer and Figure 8-3 for wash buffer. 	
Caution	 <p>The wash buffer bottle is very long. Moving the bottle too quickly will cause the liquid inside to move and possibly to splash through the top opening in the bottle. Move the bottle slowly and place the yellow cap on the bottle to prevent splashing the liquid. The deactivation buffer and rinse buffer bottles are much shorter but take the same precautions when handling those bottles.</p>
Biological Risks	 <p>Wear disposable gloves, eye protection and other personal protective equipment (PPE) mandated by your institution's safety policies while performing this procedure. Wearing PPE prevents exposure to chemical and biologically hazardous materials.</p>
Note	<ol style="list-style-type: none"> 5. Continue pulling the bottle until it is removed from the instrument. As the bottle is pulled forward, support the back of the bottle with your other hand. See Figure 8-4 for deactivation buffer and rinse buffer and Figure 8-3 for wash buffer. 6. Once the bottle has been removed, take it to the location of the consumables. 7. Remove the yellow cap from the bottle. 8. Fill the bottles: <ol style="list-style-type: none"> A. For deactivation buffer, fill to just below the neck of the bottle with 70% IPA. B. For wash buffer, fill to just below the neck of the bottle with wash buffer. C. For the rinse buffer, fill to just below the neck of the bottle with laboratory-grade 18 MΩ•cm water (Milli-Q® water). <p>It is not necessary to empty the contents of the bottles before refilling them during normal use.</p>

Important	<p>If the instrument has been idle or powered off for more than 30 days, all bulk liquids should be emptied and replenished with fresh buffers.</p>
Important	<p>When refilling the bottles, only fill them to the fill line indicated on the label near the neck of the bottle. See Figure 8-4.</p>
Flammable Risks 	<p>The deactivation buffer is 70% IPA and is flammable. Take adequate precautions to prevent fire risk when using, filling and disposing of the deactivation buffer bottle and/or contents.</p>

9. Replace the yellow cap onto the bottle and take it back to the instrument.

10. Insert the bottle back into the slot in the instrument until it sticks out approximately 15 cm (6 in.) for wash buffer and 10 cm (4 in.) for deactivation buffer and rinse buffer.

11. Remove the cap from the top of the bottle and place it back onto its holder on the front of the bottle.

Note The yellow cap must be screwed tightly to the front of bottle to prevent interference when the bulk consumables door closes.

12. Continue sliding the bottle back into the system until the latch snaps back into place.

13. Repeat Step 2 through Step 12 for the remaining consumable bottles.

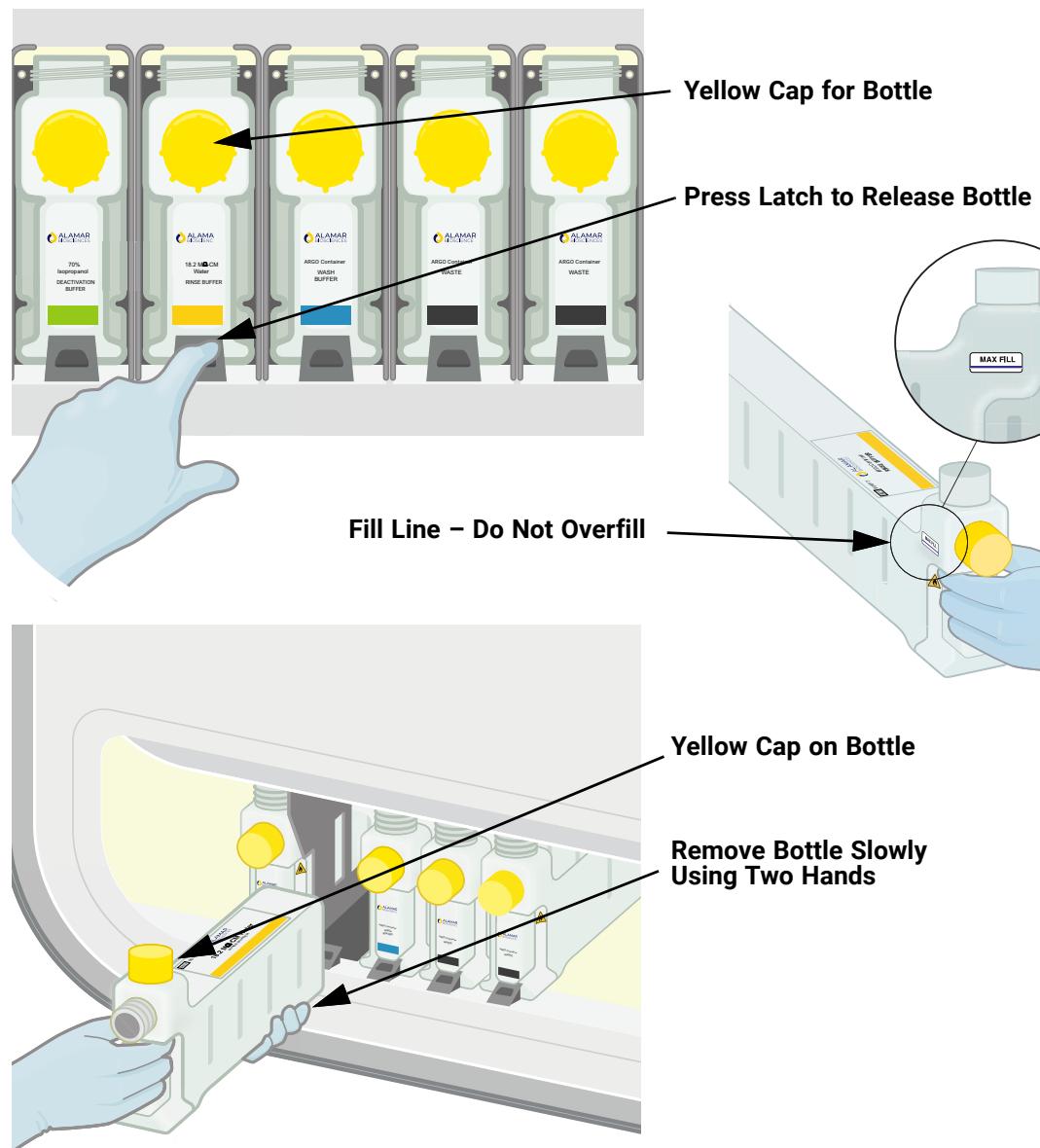


Figure 8-4. Removing Consumable Bottles

Troubleshooting

This section lists possible problems you may encounter and also discusses error messages.

TeamViewer Connection

In some cases, you may be requested to start TeamViewer while you are on the phone with Alamar Technical Support so they can connect remotely to the instrument to troubleshoot an issue. To connect to TeamViewer:

1. On the Home screen, select the **Gear** icon in the upper right corner of the touchscreen display to show the Menu Items drop-down. See Figure 8-5.
2. On the Menu Items Drop-down, select **Remote Support**. A dialog box will be displayed to confirm that you want to allow support remote control.

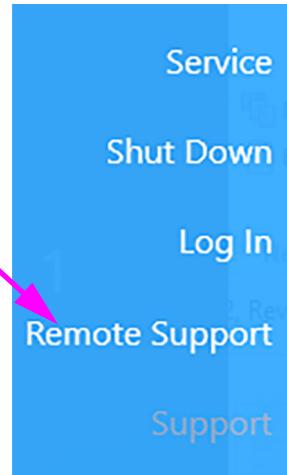


Figure 8-5. Menu Items Drop-down

3. Select **Yes** to indicate that you want to allow Alamar Technical Support to connect to the instrument. The TeamViewer window will be displayed.
4. Select the check box to accept the End User License Agreement and Data Processing Agreement for TeamViewer. See Figure 8-6.

Note

The End User License Agreement window (Step 4) will only be displayed the first time that TeamViewer is opened on your instrument. After that, you will go directly to the Receive Support window.

5. Select **Continue**. TeamViewer will show the Receive Support window which contains your ID and a Password for Alamar Technical Support to connect to your instrument.

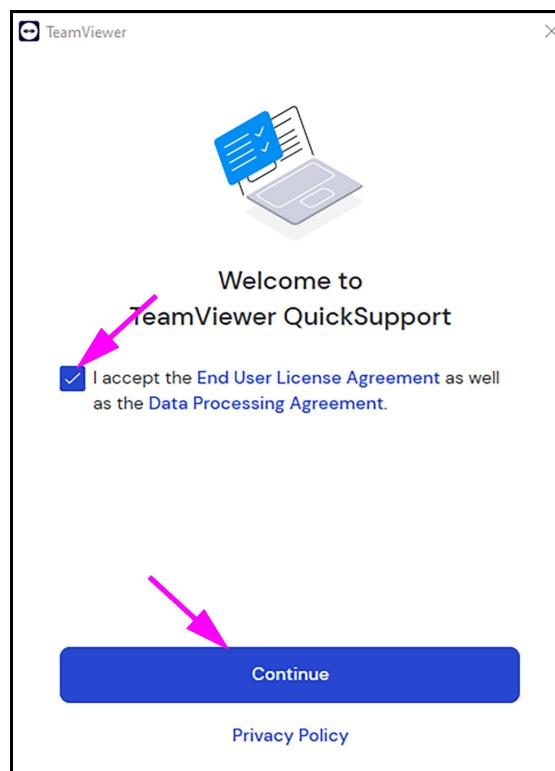


Figure 8-6. TeamViewer Connection Window

6. Provide Your ID and Password to Alamar Technical Support (see Figure 8-7). This will allow them to connect to your instrument.
7. When Alamar Technical Support has connected to your instrument, the window shown in Figure 8-8 will be displayed in the bottom right corner of the instrument touchscreen.

Important

At any time during the troubleshooting session, you may disconnect Alamar Technical Support from your instrument by closing the open TeamViewer window.

8. Stay in contact with Alamar Technical Support while they troubleshoot your instrument. They may request you to perform certain actions while they are remotely troubleshooting your instrument.

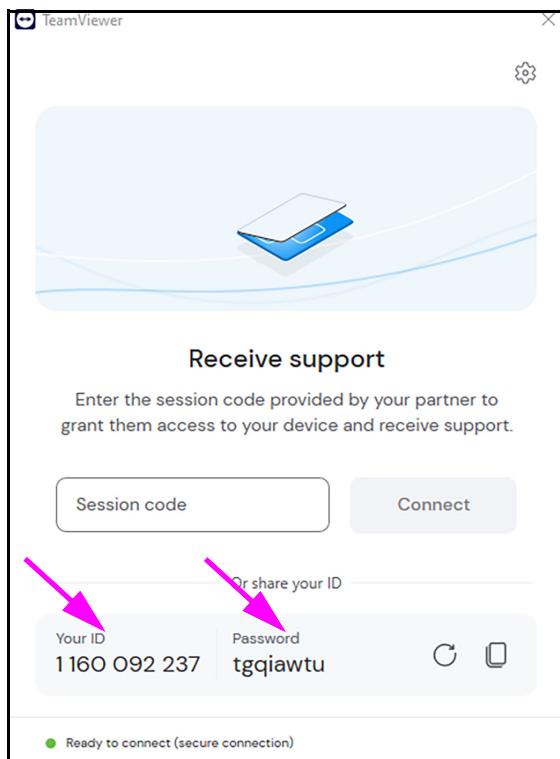


Figure 8-7. TeamViewer Receive Support Window

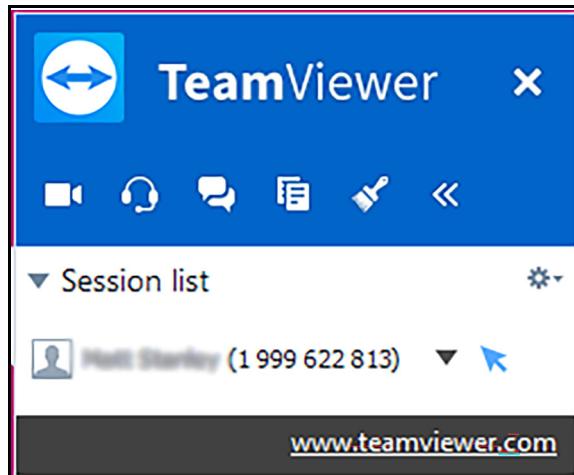


Figure 8-8. TeamViewer Connected to Instrument

Service Mode



During troubleshooting with Alamar Technical Support, they may put your instrument into Service Mode. This symbol will be displayed while the instrument is in Service Mode. Alamar Technical Support should place the instrument back into normal mode (symbol not displayed) at the end of the session.

Caution



Do not operate the instrument, except as instructed by Alamar Technical Support, while the instrument is in Service Mode. While in Service Mode, certain interlocks may be disabled. Operating while in Service Mode can cause damage to the instrument. If the instrument is still in Service Mode after completing the call with Alamar Technical Support, call them back and inform them of this state.

Hardware Problems

Table 8-2 lists possible hardware problems you may encounter. To contact Alamar Technical Support, see the Technical Assistance section in the Preface.

Table 8-2. Hardware Problems

Problem	Possible Cause	Possible Solution
The system does not power on.	The instrument is not getting power.	<ul style="list-style-type: none"> Check that the instrument is plugged into an outlet. Check that the outlet has power.
Runs do not download to the instrument from ARGO Command Center.	The instrument is not connected to the Internet.	<ul style="list-style-type: none"> Check that the instrument is plugged into an Ethernet port. Check that the Ethernet port is active. Check that the Internet is accessible. Check with IT that all of the websites listed in IT Connection Requirements on page 1-5 can be accessed. Contact Alamar Technical Support.

Error Messages

Unrecoverable Error Messages



An unrecoverable error is indicated by a red warning symbol at the top of the screen (see Figure 8-9). If an unrecoverable error occurs during your run, you will need to contact Alamar Technical Support for assistance. Alamar Technical Support information is located in the Technical Assistance section in the Preface.

You can remove your samples and other components in the bay by pressing the **Remove NULISAseq** or **Remove NULISApqr** button. The bay door will open and you can remove your samples and other items from the bay.

Important

If this error message is displayed, call Alamar Technical Support immediately. Do not try to reset the system by turning off the power. Do not open any panels except the bay door to remove your samples and other components.

You can select the warning symbol to view the error messages. These may be useful when you call Alamar Technical Support. An example of the error messages is shown in Figure 8-10.

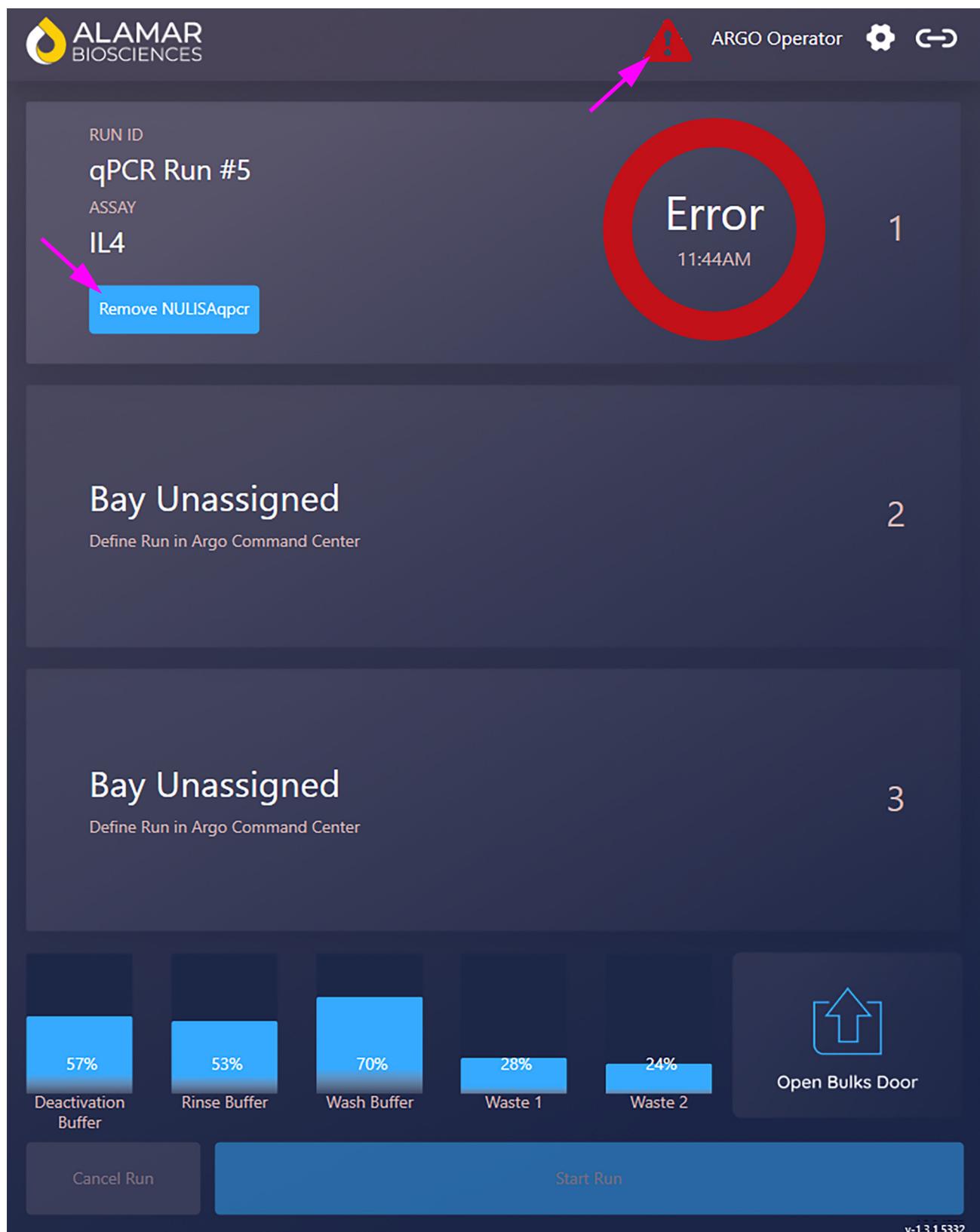


Figure 8-9. Unrecoverable Error

Level	Message
Error	SystemManager.Move Exception: Motor Move Failed AbsoluteMove(258.30) Failed. Error detected before moving. X Motor Encoder Position: 254.1, Negative Limit Triggered: False, Positive Limit Triggered: False. Estop Triggered: False.
Error	The Assay Session Has Encountered an Unrecoverable Error During Processing and Has Been Terminated. Current Stage: stage3b_prepare_incubation Current Operation Number: 1125 Current Operation: Move

Unassigned Clear All Close

Figure 8-10. Error Message Example

Warning Messages



A warning message is indicated by a yellow warning symbol at the top of the screen (see Figure 8-11). A warning message is shown at a Warning level and it will not impact your current run(s). You can let the run(s) finish.

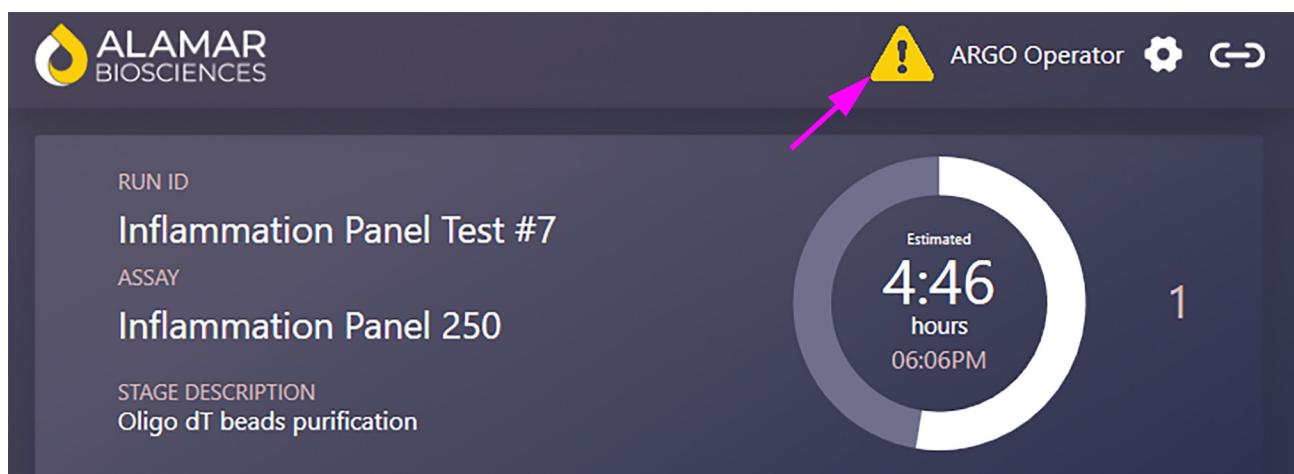
While the run(s) are processing, you can select the warning symbol to view the warning messages. See Figure 8-12. You may reset individual warning messages by selecting the **Clear** button the right of each message or reset all of the warning messages by selecting the **Clear All** button below the messages. To close the warning messages without resetting the warnings, select the **Close** button.

Note

Some warning messages may not be able to be cleared. Contact Alamar Technical Support if you cannot clear a warning message.

Important

If warning messages are displayed frequently, it may be an indicator that the instrument requires service soon. Record the messages and call Alamar Technical Support.

**Figure 8-11. Warning Indicator**

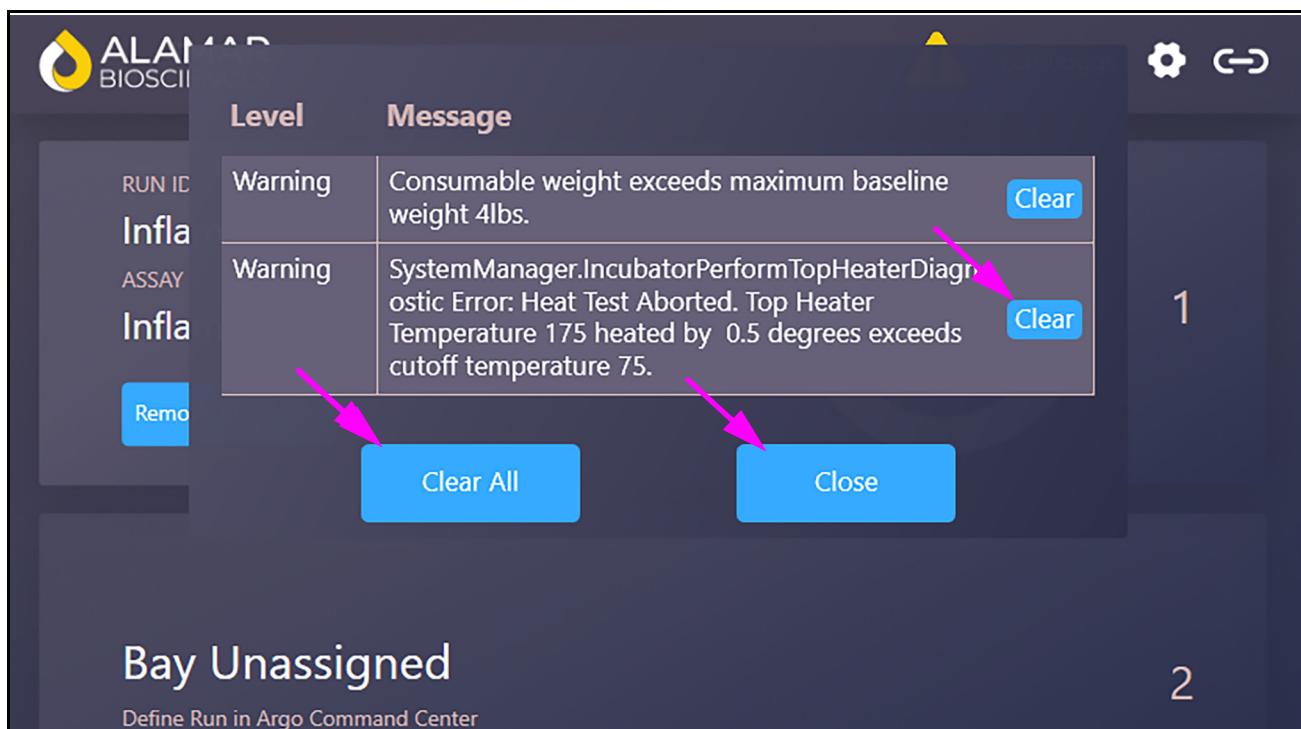


Figure 8-12. Recoverable Warning Message Example

Software Updates

ICS software version 1.3.0 and later allows users to update the software on the instrument from the cloud. To update the software, select the software version number in the lower right-hand corner of the screen. A message will be displayed indicating either that you can upgrade your software to the latest version or indicating that you have the latest version and you can reinstall the software. See Figure 8-13.

Note If you would like to know what the changes will be for the ICS software update prior to updating the software, contact Alamar Technical Support. See the Technical Assistance section in the Preface for the contact information.

Note The software update feature will only allow minor updates, such as updates from 1.3.0 to 1.3.1. Updates requiring field service intervention will not be available using this procedure.

The top message indicates that a new version of software is available for installation. Select **Cloud Install** to upgrade your software. Select **Cancel** if you do not want to upgrade your software.

The bottom message indicates that your software is current. You may reinstall the software, if desired or if instructed to do so by Alamar Technical Support. It is not recommended to reinstall the software if you have the current version installed.

Local Install is to be done only by Alamar Technical Support. Do not select this option.

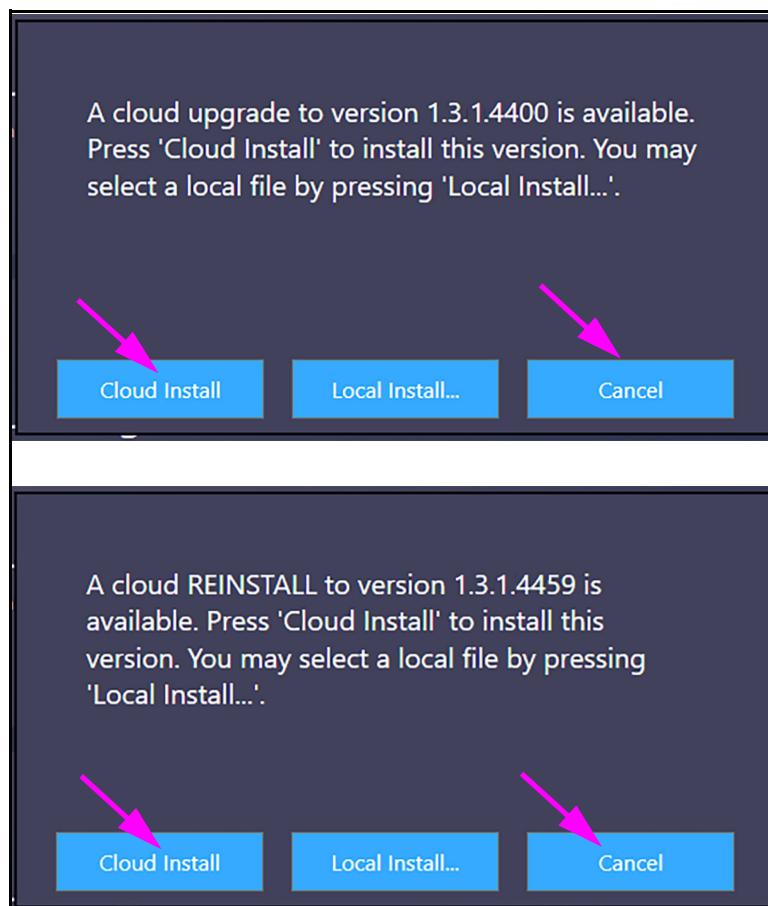


Figure 8-13. Software Update Message Examples

Support Functions

In some cases, you may be requested to provide a support package to Alamar Technical Support to aid in troubleshooting an instrument issue. To access the support functions:

1. Log in to the instrument if you are not already logged in.
2. On the Home screen, select the **Gear** icon in the upper right corner of the touchscreen display to show the Menu Items drop-down. See Figure 8-14.
3. On the Menu Items Drop-down, select **Support**. The Support Package and Run Backup windows will be displayed. See Figure 8-15.

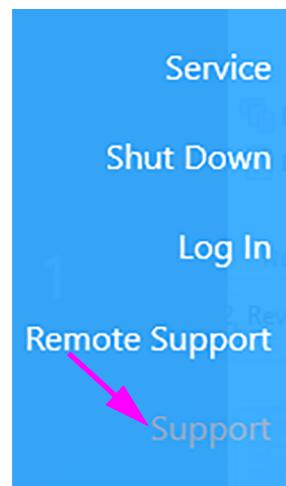


Figure 8-14. Menu Items Drop-down

The Support Package window is used to provide information to Alamar Technical Support if there are issues with the instrument. Under the Support Package window:

- The **Automatically upload and notify...** check box will automatically upload a support package and send Alamar Technical Support an e-mail when an run execution error occurs.
- The **Create** button creates a local support package between specified dates that can be saved to a flash drive or network drive.
- The **Upload and Notify Support** button creates an upload package and sends Alamar Technical Support an e-mail. The support team will review the support package and contact the primary contact with further information. You can call Alamar Technical Support at the +1 (510) 626-9888 directly and let them know that a support package has been sent. For more information on contacting Alamar Technical Support, see the Technical Assistance section in the Preface.

The Run Backup window is used to set up an external storage area for runs processed in the instrument. The backup device may be flash drive or a network drive. Under the Run Backup window:

- Select the **Backup Folder** button to change the remote (network) drive or flash drive to select the location for all of the run data backups. The current backup location is shown.

Caution



Data Loss. If no backup folder is selected, then no backup will occur. If there is an instrument failure, you may lose all of your run data. Ensure that you select a backup folder and that the folder is accessible and online.

- A list of run folder not yet backup is shown in the display window. Select one or more run folders to back up to the default location. After selecting the folders to back up, select the **Backup** button. Selected run folders will be archived. The **Queued Backups** count will be non-zero when the system has backups that it is sending to the backup folder.

Select the **Show All Folders** check box to show ALL folders in the local run folder whether they have been backed up or not.

Select **Done** when all changes have been made within the Support Package window. The window will close.

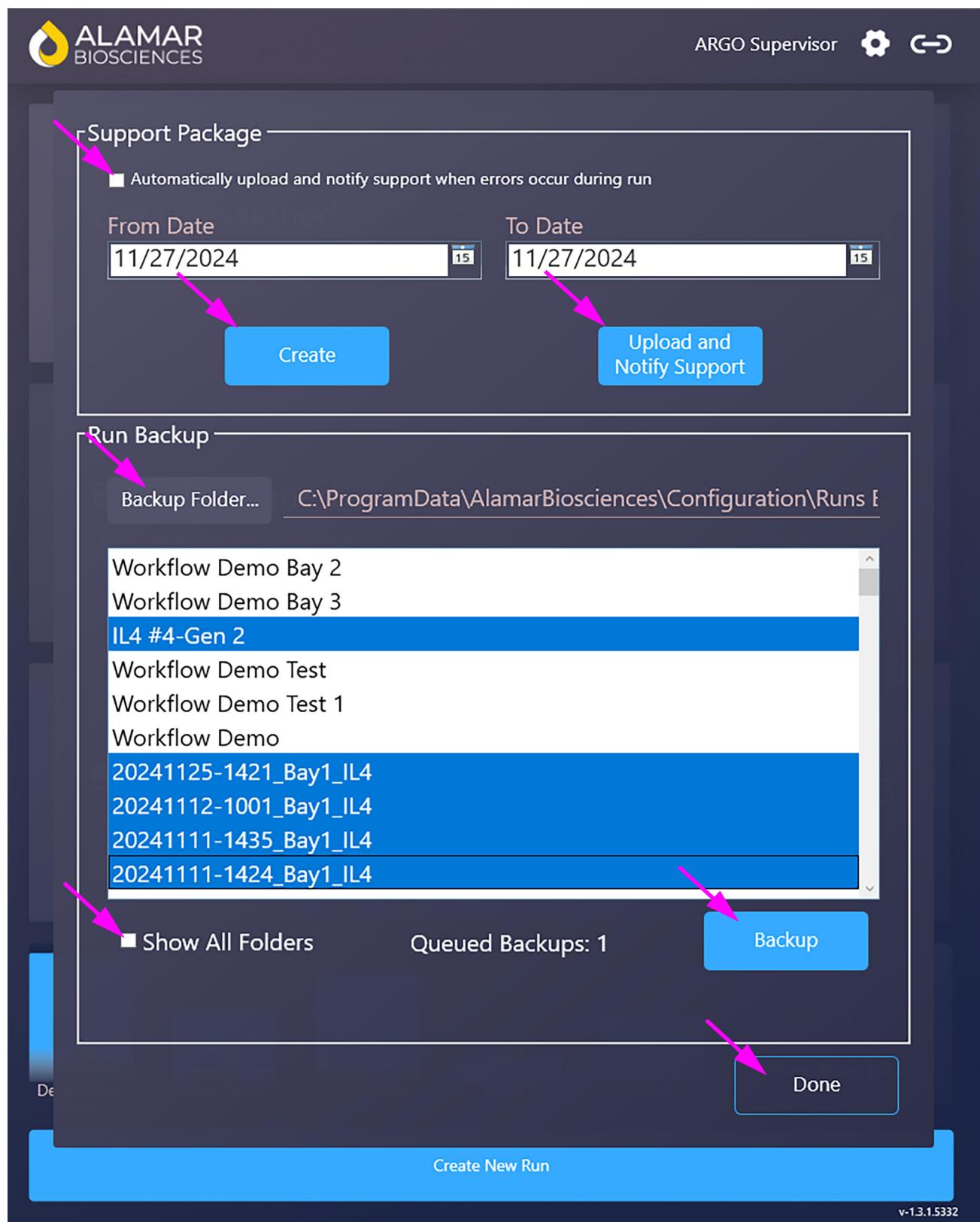


Figure 8-15. Support Package and Run Backup Windows

ARGO™ HT On-Premises Instrument

For Research Use Only

Quick Reference Guide

Run Overview	Prepare Samples Create New Run Execute the Run
Run Completion	Unload Run Components Process the library on the Illumina instrument using the Alamar-provided sequencing recipes. Analyze Data in NULISA™ Analysis Software
Perform Maintenance	Replace ARGO HT Bulk Consumables Troubleshooting Power Off ARGO HT Troubleshooting



Run Overview

Below is an overview of the steps for processing a run. More information is provided below.

1. Fill out the samples matrix spreadsheet.
2. Prepare and load samples, reagents, and consumables.
3. Check bulk reagent levels.

Prepare Samples

Prepare the sample plate(s), as needed, for your run(s).

Processing a single run:

Prepare the samples following one of the sample plate preparation procedures below (**Tube-based sample plate preparation** or **Plate-based filtered sample preparation**). Load the samples into the instrument and process your run (see **Executing the Run**).

Processing a run group:

Follow the workflow below to ensure the integrity of the samples:

1. Thaw all samples and store on ice.
2. Process and plate the samples for bay 1 following one of the sample plate preparation procedures below (**Tube-based sample plate preparation** or **Plate-based filtered sample preparation**).
3. Seal the plate with adhesive film.
4. Label the side of the plate indicating which bay the sample will be processed in (Bay 1, Bay 2 or Bay 3)
5. Store the plate on ice.
6. Repeat Step 2 through Step 5 for all sample plates.
7. Obtain all assay kits required to process the run group and label each kit with the bay that it will be used in.
8. Take all sample plates and assay kits to the instrument for processing (see **Execute the Run**).

Important: Remove adhesive film from the sample plates before loading them into the instrument. If there are bubbles or condensation inside the film, spin the sample plates before removing the film.

Tube-based sample plate preparation (one, two, or three replicates):

1. Thaw all frozen samples.

2. Spin down the samples using a refrigerated centrifuge at 10,000 x g for 10 minutes.
3. Transfer the supernatant into the sample plate (provided in the kit). The NRV software automatically generates the minimum required volume for the selected number of replicates. Ensure no bubbles are introduced.

Plate-based filtered sample preparation (one or two replicates):

1. Thaw all frozen samples.
2. Fix a new filter plate on top of the sample plate.
3. Transfer samples onto a 96-well filter plate (max. volume = 85 µL). The NRV software automatically generates the minimum required volume for the selected number of replicates. Ensure no bubbles are introduced.
4. Use a centrifuge at 2,200 x g for 5 minutes at 4 °C.
5. Carefully remove the filter plate from the sample plate. Discard the used filter plate and save the sample plate with the filtered samples

Create New Run

1. To create a new run on the ARGO HT On-Premises instrument, **Touch Anywhere to Begin**.
2. Touch **SELECT USER** and choose your user role.
 - Supervisor - A supervisor can invite additional users to the software and also deactivate or delete users.
 - Operator - An operator can create runs, start runs and export run results.
3. Touch **ENTER PIN** and enter your Pin number.
4. Touch the --> to log in.
5. Touch **Create New Run** button at bottom of the instrument software screen.
6. Fill out the following information in the CREATE NEW RUN screen:
 - PROJECT TYPE: Select **NULISAqpcr** or **NULISA-seq**.
 - ASSAY: Select the assay type for the run.
 - SAMPLE COUNT: Select number of samples.
 - NUMBER OF REPLICATES: Select number of replicates. Typical sample counts and number of replicates for the selected assay are displayed after

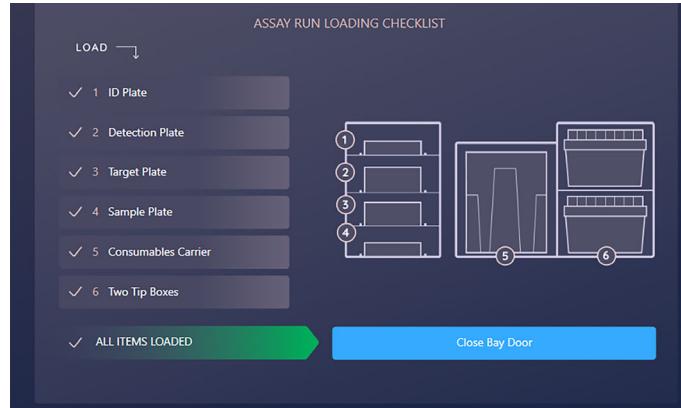
- the assay is selected. Make any changes required.
- Run Name field: Enter a unique run name.
- Select **Change Sample Names** in the SAMPLE PLATE LAYOUT area.
 - Edit the sample names, as required.
 - Touch **Done** when finished.
 - If you are running a Run Group, select **Create Another Run for Bay 2** and repeat steps above. If not, touch **Finish**.

Execute the Run

- Touch **Load** then load the samples and reagents.
- Invert the target and detection plates 15 times quickly and centrifuge both plates (at the same time) at 500 g for 20 seconds at 4 °C.

Caution: Plate Damage. Centrifuging the target and detection plates at >500 g may cause damage to the plates. Do not exceed 500 g.

- For a **NULISAsq run only**, centrifuge the ID plate at 2,200 g for 1 minute at 4 °C.
 - Follow the touchscreen ASSAY RUN LOADING CHECKLIST to load all required materials. Press each item firmly into the channel until it stops.
- For all items, load them with the label facing the front of the instrument and the barcode facing the back of the instrument.**
- Select each check box on the touchscreen as each item is loaded:
 - ID Plate (**NULISAsq Only**)
 - Detection Plate
 - Target Plate
 - Sample Plate
 - Consumables Carrier
 - Two Tip Boxes.



- After all items are loaded, select **Close Bay Door**.
- Repeat step 3 through step 8 for each bay that is being used for processing.
- Select **Start Run** or **Start Run Group** to begin processing. Bulk reagents must show blue to proceed. If not, see **Replace ARGO HT Bulk Consumables**.
- The instrument scans the items loaded. If no errors, the run is processed. If there are scan errors, correct the errors before proceeding.



- While the run is being processed, the touchscreen displays a progress bar and the estimated time to completion.



- Upon completion of the run, the display changes to **Done**.



Run Completion

Unload Run Components

Unload the bays. You can unload each bay as the run is completed or remove all of the components when all bays have finished processing.

1. Select **Remove NULISAsq** or **Remove NULISAqpcr** to begin unloading. The bay door opens.
2. Unload the components by pulling them forward from the instrument and dispose of them according to your lab biohazard procedures:
 - Two Tip Boxes
 - Consumables Carrier
 - Sample Plate and Frame Sealing Film
 - Target Plate
 - ID Plate (**NULISAsq Only**)
 - Detection plate (**Save if NULISAsq run**).
3. When all consumables have been removed, select **Close Bay Door**.
4. For a **NULISAsq run only**:
 - Using a filtered pipette tip, transfer the volume from well labeled **NGS LIBRARY** of the detection plate to a DNA LoBind 1.5 mL Eppendorf tube.
 - Quantify the library using Qubit and dilute the library with molecular biology grade water for sequencing.
 - Process the library on the Illumina instrument using the Alamar-provided sequencing recipes.

View Results in NULISA Results Viewer (NRV)

1. Open NRV.
2. Log in using your email address and password.
3. Select the completed run on the RUNS FOLDER screen.
4. Select **RESULTS**.
5. Select data to be viewed:
 - Single-plex run: View **TABLE**, **Std Curve** or **Annotations**
or
 - Multiplex run: Select **NULISAsq data** to import the FASTQ data from BaseSpace or a local drive.

Important: It will take a while to complete the upload of the FASTQ file and for the processing of the results. Do not close your browser while the FASTQ file is in progress if you are uploading a local file.

6. View analysis in NRV (see examples of qPCR and seq analyses on the next page).
7. Export data for further analysis or you can import the NULISAsq data into NULISA Analysis Software.

For details on how to use NRV, see Chapter 5 in the *ARGO HT On-Premises User's Guide*.

Perform Maintenance

Daily maintenance consists of cleaning the work area.

Weekly maintenance consists of using the power switch to power down the instrument, wiping down the instrument surfaces using 70% isopropyl alcohol and then powering it back on. If the instrument is being used less than weekly, power the instrument off and then back on again before starting your run.

Annual maintenance is performed by Alamar Biosciences Field Service.

Replace ARGO HT Bulk Consumables

Replace bulk consumables and empty waste containers, as needed:

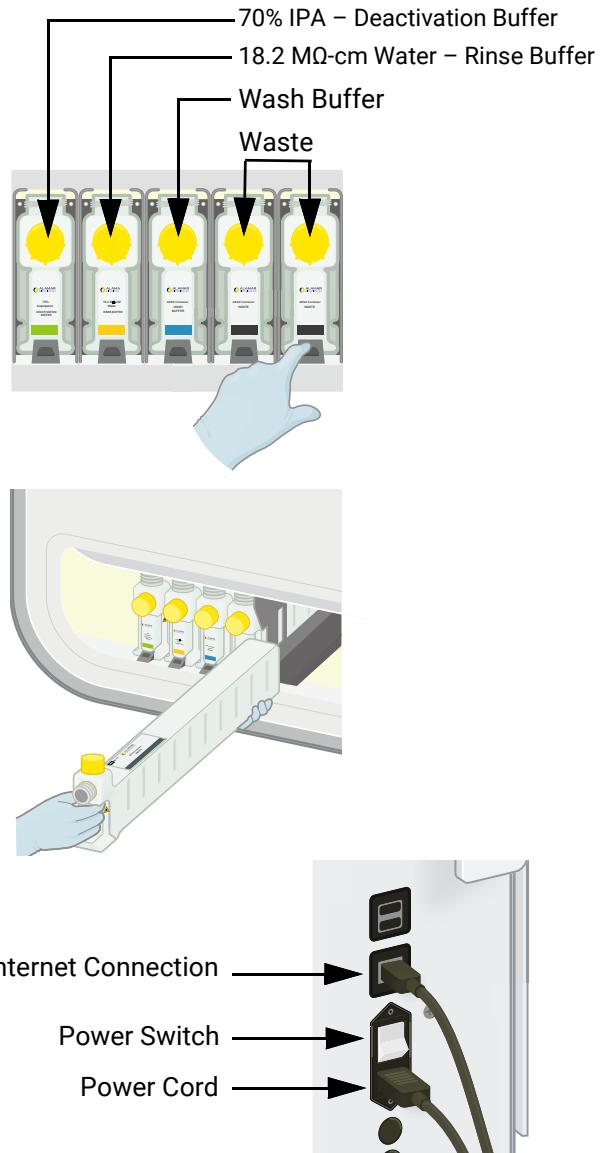
1. Open bulk consumables door from touchscreen.
2. Press latch in front of bottle.
3. Slowly pull bottle out 15 cm (6 in) for waste bottles and wash buffer. Other bottles, slowly pull the bottle out 10 cm (4 in).
4. Unscrew yellow cap from front of bottle and screw onto top of bottle.
5. Pull bottle out.
6. Empty waste or refill bottle, as needed.

Important: Do not overfill bottles. Fill only to the fill line indicated on each bottle (near the neck of the bottle).

7. Insert bottle into instrument until 15 cm (6 in) sticks out for waste bottles and wash buffer; other bottles 10 cm (4 in).
8. Move yellow cap to the front of the bottle.
9. Continue sliding bottle fully into instrument ensuring the latch engages.

Power On ARGO HT

1. On rear of instrument, ensure:
 - AC power cord is plugged into instrument and into the wall connection.
 - Internet cable is plugged into instrument and into the wall connection.
2. Turn the power switch to the **ON (I)** position. The ARGO HT powers on. Wait until the instrument starts up. Check that the touchscreen shows the Home screen.
3. Log into the instrument.



Power Off ARGO HT

1. On the instrument touchscreen **Gear** icon, select **Shut Down** and confirm that you want to shut down the instrument.
2. Wait for software and computer to shut down.
3. On the rear of the instrument, turn the power switch to the **OFF (O)** position. The ARGO HT powers off.

Note: Wait at least two minutes before powering the instrument ON again.

Troubleshooting

In some cases, you may have a problem and need to contact Alamar Technical Support. Also, see Chapter 8 in the *ARGO HT On-Premises User's Guide*.