

# Routine Use Training Workbook XN-Series



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#### Contents

Contents	2
Disclaimer	4
Revision History	4
Reference Documents	4
Overview of XN-Series	5
Analyser Components	6
XN-Series Overview	6
Inside the XN-Series	7
Under the front top cover	7
Under the front bottom cover	8
IPU Software Layout	11
Menu Layout	11
Analyser Control Menu	12
Printer and Host Menu	13
Quick Guides to Using XN-Series	14
Daily Maintenance	14
Daily Shutdown Procedure	14
As Required Maintenance	16
Auto rinse	16
Cleaning procedure	17
IPU Shutdown	18
IPU Start-Up	19
QC Material	20
Overview of XN CHECK	20
Registering New Lots of XN CHECK	21
Setting up a NEQAS/EQA file	23
Processing QC Material	25
Processing XN CHECK in Sampler Mode	25
Processing XN CHECK in Manual Mode	25
Processing XN CHECK in QC analysis (EQA/NEQAS)	27
Checking QC Results	29
QC File	29
Levy-Jennings Plots	30
Managing QC points	30
Adding a Vial Marker to the Levy-Jennings Chart	32
Selecting a Range of QC Data Points	32



Comparing QC Files on XN-Series Analysers	33
Connecting/Disconnecting Host	34
Running Patient Samples	35
Insufficient Samples	35
Sample requirements	36
Processing samples in Sampler Mode	37
Changing the Measurement Mode	37
Processing Samples in Manual Analysis (Open/Closed/Micro/Raised Bottom Tube)	39
Checking Patient Sample Results	42
Sample Explorer Screen	42
Finding a Sample	44
Applying a Filter to Sample Explorer	45
Outputting Sample Results	46
Data Browser Screen	47
Main Tab	49
Graph Tab	50
Service Tab - For use by Sysmex staff	50
Lab Only Tab - User customisable	50
Responding to Alarms	51
History	52
Reagents	53
Reagent Menu	54
Replacing Dilution/Haemolytic Reagents	54
Replacing Fluorocell Reagents	57
Reagent Replenishment	58
Tasks	59
Task 1: XN-Series Analyser Components	59
Task 2: XN-Series Routine Use	61
Contact Us	65



#### Disclaimer

Please note, the information contained in training resources provided by Sysmex should not be used as an alternative to your sites Standard Operating Procedure (SOP)/Contract. If you have any particular questions regarding any site specific use of reagents, consumables and/or equipment please contact your Management Team.

#### **Revision History**

Revised Section	Alteration	Name	Date
All sections	New document	J Hammersley	May 2020
Components	Internal components included	N.Bowen	August 2020
IPU Software Layout	Image of analyser control menu included	N.Bowen	September 2020
Data Browser	Layout of information altered	N.Bowen	September 2020
Quality Control	Addition of loading new lots of XN CHECK and the processing of EQA material	N Bowen	November 2021

#### **Reference Documents**

Document title	Version	Date
XN-1000 IFU	1908	August 2019
XN-2000 IFU	1908	August 2019
XN-3000 XN-3100 IFU	1908	August 2019
XN-9000 XN-9100 IFU	1908	August 2019



## **Overview of XN-Series**

	Facts and figures
Analysers	XN-10 and XN-20
Configurations	XN-1000, XN-2000, XN-3x00, XN-9x00
Analytical components	Standard: 28 diagnostic parameters as standard
	Optional: 16 optional diagnostic parameters           added value         added value           RET         added value           PLT-F         WPC
Technologies	Spectrophotometry, Sheath flow (DC) detection and Fluorescence flow cytometry
Modes of analysis * If available	Whole blood (WB) mode Low WBC (LW) mode Pre-dilution (PD) mode Body fluid (BF) mode* HPC mode*
Aspiration methods	Sampler analysis Manual analysis (Closed/open/micro/raised bottom tube)
Throughput	100 samples per hour (CBC+DIFF)
Quality control	XN CHECK XN CHECK BF
Aspiration volumes * If available	88μI (WB, LW, BF* modes) 70 μI (PD mode)
Analysis range (whole blood mode)	WBC 0.00 to 440 x10 <sup>3</sup> /µL RBC 0.00 to 8.60 x10 <sup>6</sup> /µL Hb 0.0 to 260g/L HCT 0.0 to 75.0% PLT 0 to 5000 x10 <sup>3</sup> /µL NRBC# 0.00 to 20.00 x10 <sup>3</sup> /µl NRBC% 0.0 to 600.0/100WBC RET% 0.00 to 30.00% RET# 0.0000 to 0.7200 x10 <sup>6</sup> µL



## **Analyser Components**

#### **XN-Series** Overview



- 1. Main Unit The main unit or analyser is where samples and XN CHECK is processed.
- 2. Status Indicator LED Shows the current status of the XN-Series analyser.

LED Indicator Light	Description
Green	Ready (Analysis or maintenance is possible)
Flashing Green	Starting up / Analysis in progress / Maintenance in progress
Orange	Sample analysis stopped / not possible
Flashing Red	Error (with alarm)
Red	Error (without alarm) / initialising system / Analyser ready to be turned off at the end of shutdown
Not Lit	Analyser powered Off

- 3. Start Switch Press to start analysis for manual mode analysis.
- 4. Mode Switch Press to switch between manual and sampler analysis. Also used to open and close the tube holder.
- 5. Reflex Bay the reflex bay will hold sample racks until all results are processed and if any reflex/repeat tests are required the rack will automatically be reintroduced to the appropriate analyser. Only on XN-2000, XN-3000 and XN3100 configurations.



- 6. Sampler Unit Where sample racks are placed for processing in closed mode. Load racks on the right pool and remove completed racks from the left.
- 7. Information Processing Unit (IPU) Runs the operating software for the XN-Series analyser and is the user interface for the analyser. The IPU holds up to 100,000 complete sample records in its database. All settings, calibration files and flagging limits are also stored on the IPU.
- 8. Tube Holder The tube holder is used for samples processed in open/closed manual mode as well as samples requiring low WBC (LW) mode, Pre-dilution (PD) mode or body fluid (BF) Mode.
- **9.** Analysis Line When samples are introduced to the XN-Series in racks (closed mode), the barcodes are read, and the samples are resuspended and aspirated.

#### Inside the XN-Series



Under the front top cover

- 1. **Pneumatic Trap Chamber –** Prevents the reagent from flowing back into the pneumatic unit when the instrument malfunctions.
- 2. 0.16 MPa Regulator Regulates the pressure at 0.16 MPa.
- 3. Main Power Switch Turns the main power of the device ON/OFF.
- 4. 0.07 MPa Regulator Regulates the pressure at 0.07 MPa.
- 5. **RBC/PLT Detector Section –** For analysis of red blood cells and platelets using aperture impedance counting.
- 6. Dye Cartridge Holder Holds the dye reagents. WPC position is unavailable on XN-10 analysers.



#### Under the front bottom cover



- 1. Tube Grabber, Tube Rotation Mechanism, Barcode Reader & Tube clamp
  - a. *Tube Grabber* Removes the sample tube from the rack and resuspends it, before placing it in the normal sample tube holder position. After the analysis is complete it places the sample tube back in the rack. **NOTE:** Any errors relating to the tube grabber will refer to a 'hand error'.





- b. *Tube Rotation Mechanism* Rotates the sample tube within the normal sample tube holder to read its barcode.
- c. *Barcode Reader* Reads the barcode of the sample and queries to the host computer for relevant sample information.
- d. *Tube Clamp* Holds the sample securely in place for aspiration by the sample piercer.



- 2. Piercer Cover & RBC/HB Chamber
  - a. *Piercer Cover* Protector No.39 is an 'L' shaped cover that is located below the piercer. The piercer travels through the small hole present in the piercer cover before piercing the sample tube for aspiration.
  - b. *RBC/HB Chamber* Red cell and haemoglobin aspiration sensor chamber cover. Sample and reagents are aliquoted here for RBC/PLT & Hb analysis.





- 3. Reaction Chambers & Rinse Cup
  - a. Reaction Chambers

[WPC Chamber] – Sample and reagents are aliquoted here for WPC channel analysis. **NOTE:** An XN-10 will not contain the WPC chamber, therefore, this area will be empty.

[WNR Chamber] - Sample and reagents are aliquoted here for WNR channel analysis.

[WDF/BF Chamber] – Sample and reagents are aliquoted here for WDF channel/body fluid mode analysis.

[RET/PLT-F Chamber] - Sample and reagents are aliquoted here for RET channel and PLT-F channel analysis.



b. *Rinse Cup* – The rinse cup supplies rinse to the aspiration probe.





## **IPU Software Layout**

#### Menu Layout

Fixed toolbar, where the above icons will always be present. Menu acts as a 'home' button, returning users to the below main screen. This is the changeable toolbar, where the icons alter depending on what screen is displayed. In the Menu screen, only the ability to alter the menu settings is displayed.



Printer and Host Menu



### Analyser Control Menu



**1.** Analyser information – Displays the analyser's name and it's settings.



Displayed when the X-barM function is ON Displayed when the blood aspiration sensor is ON Displayed when 'Cap Open' is ON.

**2. Help button** (not displayed above) – Displayed when there is an error. Click to display the Help dialogue box.



- **3.** Change Analysis Mode button (not displayed above) Displayed when performing manual analysis. Click to select analysis mode: Whole blood (WB), Low WBC (LW), Pre-Dilution (PD) and Body Fluid (BF).
- 4. Analysis button
  - a. **Sampler Analysis button** (displayed above) displayed when running samples in a rack. Click to define sample settings. Replaces change analysis mode button and manual analysis button.
  - b. **Manual Analysis button** (not displayed above) Displayed when performing manual analysis. Click to define sample setting.



- 5. Analyser Menu button Click to open and close the analyser menu. Displays a submenu for performing QC, maintenance etc.
- 6. Sample Information Displays information about the sample to be anlaysed.
  - a. Sample number Displays the number or prompts for a number to be entered.
  - b. *Discrete* Displays the selected discrete test (CBC, DIFF, RET, PLT-F, WPC).
  - c. Analysis mode The selected analysis mode is displayed (WB).



- 7. Device status Indicates the status of the analyser and is linked to the status indicator LED on the analyser.
- 8. Sampler status Indicates the status of the sampler unit attached to the relevant analysers.
- Remaining reagent volume indicator Visually displays how much reagent is remaining. The colours indicate the colour of each reagent pack, with the thin bars representing the dye cartridges. N.B. If the reagent is not displayed, it has either not been registered or has expired.
- **10. Analyser Error message** Displays the highest priority error among all current errors.

 Aspiration Sensor is OFF

 Caution
 Orange Background/Black text

 Warning
 Red Background/white text

**11. Sampler Error message** – Displays errors relating to the sampler. The display is the same as the [analyser error message].

#### Printer and Host Menu





## **Quick Guides to Using XN-Series**

#### **Daily Maintenance**

Daily maintenance consists of:

Daily shutdown

Daily Shutdown Procedure

The shutdown procedure is recommended as daily maintenance and the analyser should be in a ready state with a green LED indicator light.

To perform a daily shutdown:

- 1. Locate the [Analyser Control] for the appropriate XN-Series analyser.
- 2. Select [Analyser menu].
- 3. Select [Shutdown].





**4.** Follow the instructions on the IPU - Place 4mL CELLCLEAN into a clean tube and place in the tube holder (cap removed).

Image: Menu	00-168 (Build 1) LogonNam	e:admin 26/01/2016(Tue) 10:41
C File Work List Patient Work List Patient	Shutdown will take about 15 minutes.Place CELLCLEAN AUTO in the tube holder and press the manual analysis start switch. Caution! Do not use any other detergent except CELLCLEAN AUTO. Shutdown is in progress. 0% Cancel	Instructions for Use
WICH STREET STRE		Printer CPLP 7 EPU

5. Press the manual analysis start switch. The sample tube holder retracts into the analyser and aspiration begins. When aspiration is complete, the cleaning begins and the tube holder ejects. The tube used can be removed at this stage or it can remain in the tube holder until the start-up process is complete.



- **6.** The shutdown procedure will take 15 minutes and on its completion the analyser should be switched off at the main power switch.
- 7. Allow the analyser to shut down completely before switching it back on at the main power switch.
- 8. The start-up procedure will take approximately 3-4 minutes. On start up the analyser will perform a series of self-checks including an auto rinse and background check. In event the event of the background check failing it will be repeated a maximum 3 times. If the results are still not within acceptable range, please perform an auto rinse as directed in the error message.



#### As Required Maintenance

As required maintenance consists of:

Auto rinse

**Cleaning Procedure** 

**IPU Shutdown** 

Auto rinse

The auto rinse can be requested following operational errors such as background check failure or on request of the operator. If an error message requests an auto rinse, follow the instructions on the IPU. If a manual request of an auto rinse is required ensure the analyser is in the ready state with a solid green LED indicator light. To manually request an Auto rinse:

1. Select [Analyser menu] of the appropriate XN-Series



2. Select [Auto Rinse]



#### Cleaning procedure

The cleaning procedure is a longer clean than the daily shutdown procedure and can be performed if requested by the analyser or if following a daily shutdown the background check fails. If required, the analyser should be in the ready state with a solid green LED indicator light. To perform the cleaning procedure:

- 1. Locate the [Analyser Control] for the appropriate XN-Series analyser.
- 2. Select [Analyser menu].
- 3. Select [Maintenance].
- 4. Select [Cleaning]



5. Follow the instructions on the IPU - Place 4mL CELLCLEAN into a clean tube and place in the tube holder (cap removed).

Image: Control of the second contro	Cleaning Cleaning Cleaning will take about 20 minutes.Place CELLCLEAN AUTO in the tube holder and press the manual analysis start switch. Caution! Do not use any other detergent except CELLCLEAN AUTO. Cleaning Progress 0% Auto rinse will be executed after cleaning.	Logon Name: ad	Instructions for Use
Do not use any other detergent except CELLCLEN AUTO. Cleaning Progress 0% Auto rinse will be executed after cleaning. Cancel	Auto rinse will be executed after cleaning.		Reser Decer 7 EPU



6. Press the manual analysis start switch. The sample tube holder retracts into the analyser and aspiration begins. When aspiration is complete, the cleaning begins, and the tube holder ejects. The tube used can be removed at this stage or it can remain in the tube holder until the start-up process is complete.



- **7.** The shutdown procedure will take 20 minutes and on its completion the analyser will automatically commence an auto rinse and background check which will take approximately 3-4 minutes.
  - IPU Shutdown

To perform an IPU shut down:

- 1. Perform a shut down on all analysers attached to the IPU.
- 2. Once the analysers have been turned off at the main power switch select [Exit IPU] on IPU.

Menu QC File Work List	Rule Explorer Bro	wser Setting		90-16	(Build 7) Logon Name: ad	mn 2014/09/28(Sun) 14:03
		4	1	2/	==	?
Sample Explorer	QC File	Data Browser	Work List	Patient List	Rule	Instructions for Use
LOGOFF	GP Customize	History	Exit IPU	+ Program Version	Precision Check	Calibration
		Analyzer Setting	IPU Setting			
						Printer HOST

- 3. Using the windows key select [Shutdown].
- 4. Allow the IPU to shut down completely.



IPU Start-Up

To start the IPU back up it is important that the IPU is turned on first followed by the analysers.

To start up the IPU:

- 1. Turn on IPU at the desktop (computer).
- 2. IPU will go through the start-up process and preload the XN-Series software.
- 3. When the software loads up log in with the username 'admin', password 'admin'.
- 4. Once IPU has restarted turn the analysers associated with that IPU on at the main power switch.
- **5.** The analyser/s will commence the start-up procedure and will be ready for use when the LED indicator is solid green.



#### **QC** Material

The XN-Series uses QC material called XN CHECK, which comes in 3 levels:

- Level 1 Low Control
- Level 2 Normal Control
- Level 3 High Control



#### Overview of XN CHECK

Information	Description
New Lot Numbers	New lots arrive in packs of 8 vials per level per analyser.
	Each lot lasts 8 weeks.
Stability	Once open XN CHECK is stable for 7 days.
Storage	XN CHECK should be stored at 2-8°C
Running XN CHECK	XN CHECK should be allowed to warm up to room temperature for a minimum of 15 minutes before use.
	XN CHECK should be manually mixed prior to analysis following the Sysmex guidance on mixing QC material.
	XN CHECK is only required to be run through a single mode of analysis.
Modes of Analysis	Sampler Mode Manual Mode



### Registering New Lots of XN CHECK

New lots of XN CHECK will arrive approximately 2 weeks before the current lot of XN CHECK expires. Each lot and level received has a CD/USB attached, which contains all the lot and level information required to upload new lots on to the XN-Series analysers.

To register a new lot of XN CHECK:

- 1. Place the CD/USB received with the new lot/level into the CD drive/USB port of the IPU desktop.
- 2. Select [QC File].
- 3. Select an empty QC file.
- 4. Select [Regist.] which will open the 'Input Lot Information' Screen.

				"	4. ↓						
.—	Menu	QC File		Browser	File	QC File	1 Upp	er Lower	i8 (Build 1) Logon Name: adm	nin 26/01/2016(* File Delete	Tue) 10:04
	Filter: All Sort: File	Files e No.(Asc.)				U	A A 🗛	ΑA	RDN-CV RBC H68	PLT	
	Nicknam TWO-A TWO-A	QC01 QC02 QC03	QC File	Lot No. QC-52921102 QC-53481102	Regist. 18/11/201 13/01/201 25/01/201	Regist.	Exp. Date 10/01/2016 06/03/2016 06/03/2016	2	RDM-50	P-LOR	POM
	TWO-A	0004	Control Level1	QC-53481101	25/01/2016	26/01/2016 09:28:37	06/03/2016		NCHC HCH HCV	HPV	PCT
S	THO	OCOF							HBC HBC	NEUTS	
	TWO-A	9005								NRBCN	LYMPHIS
	TWO-A	0007						-			1
	TWO-A	0008							and the second s		
	TWO-A	0009								108	NONOR I
	TWO-A	0018							RASOR		1000
	TWO-A	0011									-
	TWO-A	0C12							EDW PONDW	DADON DO	
	TWO-A	0013									
	TWO-A	0C14									
	TWO-A	0C15									
	TWO-A	0C16									
	TWO-A	0C17									
	TWO-A	0C18									
	TWO-A	QC19									
	TWO-A	QC20									
	TWO-A	QC21									
	TWO-A	QC22									
	TWO-A	QC23						2			
	THO A	00004									
	TWO-A	ONE-A					,				
	TWO-A	BC DIFF		ONE-A Xm Y P	DIFF					Printer GPLP 4	HOST
	-										

- 5. Select [Read Assay File]
- 6. The 'Read Assay file' screen displays all the levels and lots of QC present on the CD. Select the lot and level of QC to be registered and ensure the 'Read Target/Limit' box is checked.



7. Select [OK] to return to the 'Input Lot Information' screen.



- 8. The material level, lot number and expiry date will be present along with the 'Lower Limit', 'Target' and 'Upper Limit' for each parameter.
- 9. Select [OK]. Repeat process for each additional Lot/Level required and on each analyser.

Files gut Lat Information	1			A A	ΑΑ	Δ		
Nickname TWO-A Lot Information	File Target/Limit Se	No. QC05 ettings					Manual Sattings	
Control Level3 -	Item	Lower Limit	Target	Upper Limit	Unit		Item	RBC
	RBC	5.05	5.32		10^12/L		Target	5.32
Lot No.	HGB	162	167	172	g/L		Limit Panga (#)	0.27 #
QC- 53481103	нст	0.433	0.481	0.529	Ratio		Linit Range (#)	0.2/ #
Exp. Date	MCV	85.9	90.4	94.9	fL		Variabl	e Target
06/03/2016 🏻	мсн	28.9	31.4	33.9	pg		Auto \$	ettings
	мснс	298	347	396	g/L	-	Read As	say Items
Read Assay File				Backup	Rest	tore		

Setting up a NEQAS/EQA file – Quick Guides to Using XN-Series



#### Setting up a NEQAS/EQA file

NEQAS samples should be processed as follows:

- Full blood count samples must be processed as patient samples.
- Automated Differential Leucocyte Count must be processed in QC Analysis mode.
- Reticulocyte samples must be processed as directed by NEQAS instructions.

To set up a NEQAS/EQA file:

- 1. Select [QC File].
- 2. Select an empty QC file. It is recommended selecting a file towards the bottom of the screen to prevent accidental deletion of the file
- 3. Select [Regist.]

			File	QC File	Regis	st.		00-16	5 (Bulld 7) Logon Name ad	min 2014/09/28	3(Sun) 14:43
Menu	QC File Wo	rk List Rul	le Explorer Brows	er Regist. I	Iddity QC Chart	Filter Sort	Upper	Lower		File Delete	Close
Filter: Sort:	All Files File No.(Asc.)					۵ ۵		AA		→ Backup	
	Nickname XN-1000-1-A	File No. QC01	. Material Control Level2	Lot No. QC-42091102	Regist. 2014/07/08	Analysis Date 2014/07/13 15:35:12	Exp. Da 2014/10/	*		Restore	
	XN-1000-1-A	QC03	Control Level1	QC-42091101	2014/08/18	2014/08/19 12:35:03	2014/10/				
	XN-1000-1-A	QC04	Control Level2	00-42651182	2014/00/08	2014/00/00 13:56:55	2014/12				
-	XN-1000-1-A	QC86	CONTROL LEVEL2	QC-42051102	2014/05/08	2014/03/03 13.30.33	2014/12/				
	XN-1000-1-A	QC07									
	XN-1000-1-A	QC08									
	XN-1000-1-A	QC09									
	XN-1000-1-A	QC10									
-	XN-1000-1-A	QC11									
	XN-1000-1-A	QC12									
	XN-1000-1-A	0014									
-	XN-1000-1-A	0C15									
	XN-1000-1-A	0C16									
	XN-1000-1-A	QC17									
	XN-1000-1-A	QC18									
	XN-1000-1-A	QC19									
	XN-1000-1-A	QC20									
	XN-1000-1-A	QC21									
	XN-1000-1-A	QC22									
	XN-1000-1-A	QC23						2			
	VN 1000 1 A	00014									
XN-10	00-1-A		*		-		,				
Xm-1000- Xm UP		(PITF)[WPC]	·INA. <mark>.</mark>							Printer	HOST

Setting up a NEQAS/EQA file – Quick Guides to Using XN-Series



4. Ensure Material [Control Level 1/Control Level 2/Control Level 3] is selected.

**IMPORTANT:** Material [Other] changes the settings from QC settings to whole blood settings and this will result in incorrect NEQAS results, therefore, please ensure one of the [Control Levels] are selected.

x	Nickname XN-1000-1 Lot Information	-A File Target/Limit Se	e No. QC07 ettings					Manual Settings		
x	Control Level1 -	Item	Lower Limit	Target	Upper Limit	Unit	(a.)	Item	MCV	
X		MCV	0.0		999.9			Target		
X	Lot No.	HGB	0.0		999.9	g/dL		iniger .		
X X X	QC-	WBC	0.00		999.99	10^3/uL		Limit Range (#)	999.9	#
X X	Exp. Date	нст	0.0		999.9	%		Variabl	e Target	
×	2014/09/28 🕞 🕥	RBC	0.00		99.99	10^6/uL		Auto S	Settings	
X		мсн	0.0		999.9	pg		Read As	say Items	
X	Read Assay File				Backup	Res	tore			
XN-1000									K Can	el

- 5. Enter a file name under Lot No. QC For instance NEQAS.
- 6. Select the Expiry Date for the file. It is recommended the expiry date is set for the end of the financial year
- 7. [Target/Limit Settings] should remain unaltered as NEQAS targets/limits are unknown.
- 8. Select [OK].
- 9. Repeat the process on each analyser.



#### Processing QC Material

Processing XN CHECK in Sampler Mode

QC material can be processed through all XN-Series analysers by running the QC material in sampler mode.

Processing QC material in Sampler Mode:

1. Place XN CHECK into a rack and load the rack onto the right hand side of the sampler unit in front of the XN-Series analyser.



2. XN CHECK will be processed on all XN-Series analysers.

Processing XN CHECK in Manual Mode

QC material can be processed through individual XN-Series analysers by running the QC material in manual mode.

Processing QC material in Manual Mode:

1. Select the [Mode Switch] on the front of the XN-Series analyser to eject the manual tube holder.





2. Once the manual tube holder has been ejected the [Manual Analysis button] will appear on the IPU in the corresponding analyser menu.



- **3.** Select the [Manual Analysis button] and ensure that 'Read ID' and 'Aspiration Sensor' are both selected and 'Cap Open' is deselected.
- 4. Select [OK]



5. Manually mix the vial of XN CHECK and place it into the tube holder in the normal sample tube position and select [Start Switch]





- 6. Once the analysis is complete the manual tube holder will open allowing the XN CHECK to be removed.
- 7. Select the [Mode Switch] to close the manual tube holder.



Processing XN CHECK in QC analysis (EQA/NEQAS)

Running QC material in QC analysis mode requires the user to select the appropriate QC file and to accept QC before QC results are sent to the appropriate QC file.

**NOTE:** QC material run by this method does not have the QC material barcode read. This method of QC analysis is ideal for running External QC material such as NEQAS Automated Differentials, which require QC gating.

Processing QC material using QC analysis:

1. Select the [Mode Switch] on the front of the XN-Series analyser to eject the manual tube holder.



2. Select [Analyser Menu] on the appropriate XN-Series analyser.

	Menu QC File Work List Rule Explorer	Browser Setting		00-168	(Build 1) Logon Name: ad	min 26/01/2016(Tue) 10:23
-		Patient List	Rule	Sample Explorer	Data Browser	? Instructions for Use
3.→	E QC Analysis X X-barM Setting Calibration ▹	Handreich (1997) Handreich (1997) Handre		↓†÷		
	Դ Maintenance ►	History	Precision Check	Calibration	Analyzer Setting	IPU Setting
	<ul> <li>↔ Auto Rinse</li> <li>O Shutdown</li> </ul>					
	Reagent Replacement					
2. –						Printer GPILP 7 EPU

3. Select [QC Analysis] to display the [Select QC File] screen.

**NOTE:** QC analysis can **NOT** be selected if tube holder is **NOT** ejected.

4. Select the appropriate QC file, for instance NEQAS.



5. Select [OK]. When the QC File has been selected the Execute L-J tab will open.

	Menu	QC File	Work List	Rule	Explorer	Browser	Menu Setting					00-168 (Bui	ld 1) Logon Nam	ie: admin	26/01/2016(	Tue) 10:47
	QC01 Expired QC02 QC03	Sol Control Regist. Date Analysis Date Analysis Date Analysis Date Analysis Date Analysis Date Analysis Date Control	ect QC File Level2 QC : 18/11/2019 : 08/01/2019 Level2 QC : 13/01/2019 : 26/01/2019 Level1 QC : 25/01/2019 Level3 QC	-52921102 5 14:17:07 -53481102 5 09:29:13 -53481101 5 09:28:37 -53481103	*		Patient List		Rule		Sample Explore	er	Data Browser	Ins	<b>P</b> structions for	r Use
4.→	QC94	Control Regist. Date Analysis Date	Level1 QC :08/01/2016	- NEQAS	$\left  \right $		Q	C94	- Re An Precision C	gist. D alysis ( heck	DI LEVE	1/201	6 Analyzer Setting	> 	IPU Setting	
5			OK	Car	Icel											
5.—	TWO-A X= YP Read St WB	ICI Imple Number U CBC DIFF	sing Bar-Code	Reader		ONE-A X= Y> >2 WB			∰¢ 8						Printer GPLP 7	HOST

- 6. Run the NEQAS sample using the manual mode, ensuring the sample is manually mixed prior to analysis.
- 7. When analysis is complete the results will populate in the Execute L-J tab.

**IMPORTANT**: The 'Execute L-J screen will display the QC results. Any failed QC will be indicated by a red warning triangle. Different windows can be viewed by using the left and right arrows.

8. Check the results and select [Accept]. **NOTE:** If cancel is selected the QC results will be deleted *(Not recommended).* 

File No. Exp. Date Material Lot No.	QC94 30/6 Cont QC-M	ecute L-J 94/2016 rrol Level IEQAS	11	1/4	Patient List	Rule	Sample Explorer	Data Browser	Instructions for Us
Rec HGB HGT MCV MCH KCH RCH RCH CNC RDM-SD RDM-CV	Data	Unit 10^12/L g/L Ratio fL P8 g/L fL %			History	Precision Check	Calibration	Analyzer Setting	IPU Setting
TWO-A Xm WD >QC-N	EQAS BC DIFF	Accept	Cancel	ONE-A RC III QC	-53481102 3 CCC DIF	曲。 []]]]			Ennior GPUP 7

9. Once [Accept] has been selected the results will be filed in the Levy-Jennings Plot under [QC File].



## Checking QC Results

To check QC results, select [QC File] from the main menu on the IPU.



- 1. QC File information: includes file name, number, material, Lot No. register date, last analysis date/time and expiry date.
- 2. Radar Plots Select the desired QC file and on the right hand side the last result will be displayed in radar plot format. Radar plots show the parameter names around the edge, the light grey area illustrates the target range for the QC (lower to upper limit) and the grey central line is the target value. IMPORTANT: Radar plots should not be used in isolation. L-J chart should always be checked in addition to check QC trends



**3.** Analyser Tab – When multiple XN-Series analysers are attached to a single IPU the QC data for each analyser is available in the relevant tab.



#### Levy-Jennings Plots



- 1. Summary of QC File The summary section contains information such as material, lot number, expiry date and date registered.
- 2. QC Parameters Parameters tested with target, upper limit and lower limit.
- 3. Analysis Date Date and time of selected data point.
- 4. Data Parameters Parameters for the QC point selected as well as the SD, mean and CV for all QC data points in this QC file.
- 5. QC Plot Data points (within range  $\bigcirc$ , outside range  $\times$  or not managed  $\bigcirc$ ).

Managing QC points

'Manage' can be used to add QC comments and/or exclude a data point from QC file statistics. To add a comment to a data point;

- 1. Select the QC data point you wish to comment against.
- 2. Select [Manage].
- 3. Select the drop down menu and select [Input Any Comment].



- 4. Enter your comment into the 'Any Comments' box.
- 5. Select [OK]. The comment will be added against that QC point. The comment will appear in the comments section of the Levy-Jennings chart. If there is a comment present on a QC point a speech bubble will appear above the data point and the comment can be seen in the comment section on the top left of the Levy-Jennings chart.

	Mary OCE Da Work Ltd Bri	Z.	Logon Harnel admin 26/83/2016(Tee) 10:097
	Shift All Regist 13/01/2014	Image: File No.         QC02           ave12         Image: Lot No.         QC-53481102           amage: State Sta	
	Item Target	K (Sysaex PV/20)	SD Data Mean CV
2	RBC Specify Excluded	Comments Settings	36
5	HGB Not Managed	Input Any Comment	- 18 23 .4
Λ_	HCT	Any Comments QC GK (Sysmex MM/SO)	16 61 .2
	MCV		.8
5	нен		OK Cancel 27 .3
	•		01/25/2016 n=37 09/25
			Product CPU 4 EPU

To exclude or include a QC Point from statistical analysis:

- 1. Select the QC data point that requires management.
- 2. Select [Manage]
- **3.** Select either include in statistics [Manage] or exclude from statistics [Not Manage] at the left hand side of the pop up box.
- 4. Select [OK].

QC points may be 'managed' or 'not managed' as required. A QC point that is 'managed' is included in the statistical analysis on the right whereas a QC point that is 'not managed' will be excluded from the statistical analysis. All QC points will remain visible on the chart no matter the managed status



Adding a Vial Marker to the Levy-Jennings Chart

When a new vial of XN CHECK is opened a vial marker can be added to the Levy-Jennings chart to indicate this.

To add a vial marker:

- 1. Run the new vial of XN CHECK through the XN-Series Analyser.
- 2. Select the QC data point of the new XN CHECK vial.
- **3.** Select [Vial]. A vial indicator will appear on the Levy-Jennings plot to the left of the QC data point.

Nenu (	GC File Work List	RAR EX	olorer Browser	QC Chart	aty Nanage Shift	son Ov	tan an a	Lower Val	(1) Logon Name: a Range Ref.	dmin 24 File D	/#1/2#16(Twe) 18: tete Close	12
Shift All	Nickname THO     Material Cont     Regist 13/0	A rol Level2 1/2016	E File No. QCC Lot No. QC- Exp. Date 66/	2 53481102 83/2016								
Item	UL Target LL	🤗 QC OK (Sysmex	M(/50)			^	<b>~</b>	•	0	Data	SD Mean CV	
RBC	4.59 4.37 4.15		~			V	- ial			4.39	0.068 4.36 1.5	
HGB	128 124 120									124	1.8 123 1.4	
нст	0.399 0.363 0.327		~~~~	· · · · ·			~~~			0.376	0.0116 0.361 3.2	
MCV	87.3 83.1 78.9		~~~	• • • • •		• •	_			85.6	1.69 82.8 2.0	
MCH	30.7 28.4 26.1			· · · · ·	····		$\heartsuit$	/ • •		28.2	0.27 28.3 1.0	
									26/03/2016 69/29	n=3	7	
											President President	

Selecting a Range of QC Data Points

A range of QC data can be selected by:

- 1. Select [Range].
- 2. Select and drag the cursor to select the range of QC points required.
- 3. To remove select [Range] again.





Comparing QC Files on XN-Series Analysers

It is possible to compare QC files between all XN-Series analysers connected to the same IPU or compare QC files on the same analyser.

To compare QC Files or analysers:

- 1. Select [Ref].
- 2. Select either [Compare QC files] or [Compare Analysers]:

[Compare QC Files]Used to compare QC files on the SAME analyser[Compare Analysers]Used to compare QC files on DIFFERENT analysers connected to<br/>the same IPU

- 3. Select the Analyser or Lot No. for comparison.
- 4. To remove the comparison, select [Ref] then [None]



Connecting/Disconnecting Host – Quick Guides to Using XN-Series



## Connecting/Disconnecting Host

The analyser should always have host communication switched on. This enables the analyser to host query for required tests when presented with a sample barcode.

To Turn on Host Communication:

- 1. Select [HOST]
- 2. Select [Host Computer Connection]
- 3. Select the appropriate host connection and press [OK]

Menu QC File Work L	t Rue Explorer Broyser	00-168 (Build 1)	Logon Name; admin 26/01/2016(Tue): 10:46
	Host		
	✓ Host Computer Connection		2
QC File		Sample Explorer Data Br	owser Instructions for Use
	EPU     HOST2		
<b>•</b>		±ø	
LOGOFF	OK Cancel	Calibration Analyzer	Setting IPU Setting Host
>Program Version			Host Computer Connection
Version Information	Printer HOST		
TWO-A	GP/LP 7 EPU		
Read Sample Number Using Bar- WB CBC DIFF			Printer HOST GPUP 7 EPU
-		-	

To Turn off Host Communication:

- 1. Select [HOST]
- 2. Deselect [Host Computer Connection]
- 3. Press [OK].



## Running Patient Samples

Patient samples can be analysed using the following modes:

Mode	Description
Manual Closed Mode:	In this analysis mode, the operator loads the sample tubes individually by hand with lid <b>ON</b> (closed mode) The operator MUST mix the samples by hand.
	Use this analysis for STAT samples.
Manual Open Mode:	In this analysis mode the operator loads the sample tubes individually by hand with lid <b>OFF</b> (open mode). The operator MUST mix the samples by hand. Open mode should be used on any small volume samples in a normal tube type, pre-dilution mode or body fluid samples (if available).
Raised Bottom Tube (RBT):	In this analysis mode, the operator loads the sample tubes individually by hand with lid <b>ON</b> (closed mode) The operator MUST mix the samples by hand. The analysis is performed using raised bottom tubes to reduce dead volume.
Micro (Open) mode:	This is a type of manual analysis. In this analysis mode the operator loads the sample tubes individually by hand with lid <b>OFF</b> . The operator MUST mix the samples by hand. The analysis is performed using a micro tube, to further reduce dead volume.
Sampler/System mode	This type of analysis allows samples to be run in racks with lid on (closed mode). Racks can be placed on to the sampler unit (Sampler mode) or in the Start yard (XN-9x000 analysers only). Samples should be well mixed before placing in racks. Samples will be turned to locate sample barcode. The barcode will be used to query the host for patient ID and tests required. The sample is then re-suspended by the analyser before a second barcode and aspiration of the sample.

Insufficient Samples

**IMPORTANT**: The detection of insufficient samples is via the blood detector and the aspiration sensor.

**The Blood Detector** assesses the samples prior to aspiration by 'looking' through the bottom of the tube when in the rack. If no blood is detected in the tube the sample is not aspirated. This however will not work as designed if the samples have labels placed on the tube below the level of the manufacturer's label.

**The Aspiration Sensor** monitors the aspiration status of whole blood in sampler and closed mode of analysis. There are two errors relating to sample aspiration; 'Blood cannot be aspirated' error and 'Insufficient Blood Volume' error. Samples with either of these errors should be checked for low blood volume and/or low Hb.



#### Sample requirements

Mode(s)	Analysis method	Support	Asp Volume	Minimum sample volume
I	Sampler	$\checkmark$	88µl	1ml
Whole blood mode	Manual closed	$\checkmark$	88µI	1ml
Used for the analysis of whole blood	Manual Open	$\checkmark$	88µl	300µI
	Raise Bottom Tube	$\checkmark$	88µl	250µl
	Manual Open micro	$\checkmark$	88µI	160µl
I	Sampler	$\checkmark$	88µl	1ml
Low WBC Mode	Manual closed	$\checkmark$	88µl	1ml
Used for the analysing low WBC using whole blood. The count time of the WDF	Manual Open	$\checkmark$	88µl	300µl
channel is set to 3 times that of whole blood mode to increase the WBC	Raise Bottom Tube	$\checkmark$	88µI	
measurement accuracy.	Manual Open micro	$\checkmark$	88µl	160µl
<b>I</b>	Sampler	-		-
Pre-Dilution Mode	Manual closed	-	-	-
1:7 dilution (i.e. 50µl WB/300µl Cell pack DCL). Used for analysing small volumes of	Manual Open	$\checkmark$	70µl	300µl
blood.	Raise Bottom Tube	-	-	-
	Manual Open micro	$\checkmark$	70µl	140µl (after dilution)
I	Sampler	-	-	-
Body Fluid Mode	Manual closed	$\checkmark$	88µl	1ml
Used for analysing body fluids.	Manual Open	$\checkmark$	88µI	300µI
	Raise Bottom Tube	$\checkmark$	88µI	250µl
	Manual Open micro	$\checkmark$	88µI	160µl



Processing samples in Sampler Mode

**IMPORTANT:** Please ensure that samples are mixed sufficiently before being placed on the analyser. Any delay in processing after mixing may lead to the production of incorrect results. This is especially important for samples from patients prone to high degrees of sedimentation or for samples that have been refrigerated/transported in a cool environment.

1. Place samples into a rack and load the rack onto the right hand side of the sampler unit in front of the XN-Series analyser. The rack will be automatically fed into the analyser(s) for processing.



2. When processing is complete the rack will become available on the left hand side of the sampler unit.

**Note:** On an XN-2000 and XN-3x00 racks may be held in the reflex bay for a short period until sample analysis has been completed. If any reflex/repeat tests are required the rack will automatically be reintroduced to the appropriate analyser.

Changing the Measurement Mode

Depending on the configuration of the XN-Series analyser there are up to four modes of analysis on board:

- **1.** Whole Blood (WB)
- 2. Low WBC (LW)
- 3. Pre-Dilution (PD)
- **4.** Body Fluid (BF) mode (if available)
- 5. HPC mode (if available)



#### To Change the Measurement Mode:

1. Select the [Mode Switch] on the front of the XN-Series analyser to eject the manual tube holder.



- 2. Once the manual tube holder has been ejected the [Change Analysis mode button] will appear on the IPU in the corresponding analyser menu.
- 3. Select [Change Analysis mode button].

Menu QC File Work List	Rue Explorer Br	Menu CI Setting		<del>00</del> -168	(Beild 1) Logon Name: a	dmin 26/01/2016(Tue) 10:45
QC File	Work List	Patient List	Rule	Sample Explorer	Data Browser	Instructions for Use
LOGOFF LOGOFF Version Information	TWO-A Tm IP Read WB GP Curromize	Sample Number CBC DIFF	Using Bar-Code	Reader	eting	IPU Setting
Read Sample Number Using Bar-Cod WB CBC DIFF	e Reader	EA Marine WB (cec) (cef)				Printer OPLP 7 EPU

4. Select the Measurement Mode required. If Pre-dilution mode is selected a 1:7 dilution must be performed manually prior to analysis. When Body Fluid and Pre-dilution mode are selected the analyser will perform a background check automatically.



5. Select [OK]



Processing Samples in Manual Analysis (Open/Closed/Micro/Raised Bottom Tube)



1. Select the [Mode Switch] on the front of the XN-Series analyser to eject the manual tube holder.

- 2. Once the manual tube holder has been ejected the Manual Input icon will appear on IPU in the corresponding analyser menu.
- 3. Select the [Manual Analysis button]





4. Ensure the manual mode is set up appropriately.

Manua	al Analysis			
Sample No.				
Read Sample Number Using Bar-	-Code Reader	🗸 Re	ad ID	ſ
Patient ID				
Discrete				
CBC	IFF	RE	т	Ł
	WPC			
Cap Open	Q.	iery to H	ost	┢
Aspiration Sensor	Rai	ised Bott	om Tube	
			$\overline{}$	
				┝
	OK	Ca	ancel	
				J
KN-2000-1-L	Ūv	4		

Read ID: When [Read ID] is selected the analyser will read the sample barcode. For samples loaded into the manual (micro) open position this option must be deselected and the barcode number MUST be manually entered.

**Cap Open:** Select [Cap Open] when running samples with caps removed. **NOTE:** All samples run in the manual (micro) open position MUST have the caps removed.

Aspiration Sensor: The aspiration sensor should always be selected, except in cases of severely low haemoglobins (Hb <50 g/L). Aspiration sensor is automatically turned off in Pre-Dilution (PD) and Body Fluid (BF) modes.</li>

**Raised Bottom Tube:** Select [Raised Bottom Tube] when running samples with raised/elevated bottom tubes, to minimise dead volume. **NOTE:** Pre-dilution and body fluid mode cannot be utilised when using RBT samples.

6. Manually mix the sample and place it into the manual tube holder in the appropriate position.

**IMPORTANT:** Please ensure that samples are mixed sufficiently before being placed on the analyser. Any Delay in processing after mixing may lead to the production of incorrect results. This is especially important for samples from patients prone to high degrees of sedimentation or for samples that have been refrigerated/transported in a cool environment.

Analysis method	Tube holder position
Manual closed	Normal Sample tube holder (1)
Manual Open	Normal Sample tube holder (1)
Raise Bottom Tube	Normal Sample tube holder (1)
Manual Open micro	Micro collection tube holder (2)



When inserting a micro collection tube, insert the tube all the way in so that the bottom of the tube contacts the base of the holder (always remove cap when using manual (open) micro mode).



- 7. Press [Start Button]
- 8. Once the analysis is complete the manual tube holder will open allowing the sample to be removed.
- 9. Select the [Mode Switch] to close the manual tube holder.



## **Checking Patient Sample Results**



Sample Explorer Screen

The Sample Explorer allows the user to display, validate and output patient results. The database can hold up to 100,000 sample results and also holds QC and background counts performed on the analyser.

12	3	4	5			6					7		
ļ ļ	Ļ	Ļ	Ļ					<b></b>					
V	Sample No.	(	Dutput	P/N	Action	Order Type	Error	Date	Time	Seq.	Reception Date	Rac	
WB	BACKGROUNDCHECK	A DG	iH			Manual		2014/09/28	14:33:14	7	2014/09/28 14:31:28		-
WB	QC-NEQAS1	A DG	н			Manual		2014/09/28	14:23:50	6	2014/09/28 14:22:04		
BF	BACKGROUNDCHECK	A DG	iH			Manual		2014/09/28	14:10:53	5	2014/09/28 14:09:01		
WB	BACKGROUNDCHECK	A DG	iH			Manual		2014/09/28	14:03:08	4	2014/09/28 14:01:22		
WB	QC-NEQAS1	A DG	н			Manual		2014/09/28	13:54:37	3	2014/09/28 13:52:51		
BF	BACKGROUNDCHECK	A DG	iH			Manual		2014/09/28	13:46:32	2	2014/09/28 13:44:41		
WB	BACKGROUNDCHECK	A DG	iH			Manual		2014/09/28	13:33:14	1	2014/09/28 13:31:28		
BF	BACKGROUNDCHECK	A DG	H			Manual		2014/09/15	17:11:43	9	2014/09/15 17:09:49		
WB	1350155501	B DG	iH	MC		Manual		2014/09/15	13:46:10	8	2014/09/15 13:44:48		
WB	1350155501	B DG	н	MC		Manual		2014/09/15	13:36:05	7	2014/09/15 13:34:43		
WB	1350155501	B DG	iH	MC		Manual		2014/09/15	13:33:31	6	2014/09/15 13:32:09		

- 1. V (Validate) A 'V' will appear for validated samples. If a sample has not been validated, nothing is displayed (as above).
- 2. Analysis Mode This column shows the analysis mode for each sample.

[WB]:	Whole	blood
		-

- [LW]: Low WBC
- [PD]: Pre-diluted
- [BF]: Body fluid (if available)
- 3. Sample No. Displays the sample/QC/background number.
- 4. Sample Information Shows the source of the Sample No.
  - [A]: Automatically incremented
  - [B]: ID barcode scanned
  - [M]: Manually entered
  - [C]: Host computer queried
- 5. Output Displays the output destination that has not been used to output the analysis result too. for example if results have been sent to host the H will be removed.
  - [D]: Ticket printer (DP)
  - [G]: Graphic printer (GP) [H]: Host computer (HC)



- 6. Flagging: Includes Positive/Negative flags, Action flags, Order type and errors.
  - a. **P/N (Positive/Negative) -** Displays whether an analysis result is Positive or Negative (Positive indicates a flag has been generated).
    - [D]:Diff. Positive[M]:Morph. Positive[C]:Count Positive
  - b. **Action** Displays a combination of the action message categories; Check, Review, Retest, for any relevant action messages that have been generated.
  - c. Order Type Displays the type of order of the analysed sample.
  - d. Error Displays the error type; Result or Func, relating to any errors that have occurred.
- 7. Changeable display The display on the right hand side is changeable depending on the tab selected (lower left of the Sample Explorer Screen).

[Sample Info]:	Date and Time of analysis.
CBC]:	Displays full blood count results for each sample.
DIFF]:	Displays differential results for each sample.
[RET]:	Displays reticulocyte results for each sample
Body Fluid]:	Displays body fluid results for each sample.
Reagent]:	The lot number of each reagent used for the analysis of this sample.



-

Finding a Sample

To search for a patient sample in the sample explorer screen:

- **1.** Open the [Explorer] screen
- 2. Select the most recent sample which will appear at the top of the screen. **NOTE:** If the most recent sample is not selected at the start of the search you will have to select [NEXT] to search below the sample highlighted in blue and [PREVIOUS] to search above the sample highlighted in blue.

Farth	testude persiteres 1								Δ	ITEM	DAT
SOPE	Analysis Date(Desc.)			Find			A A	AA	A	RBC	4.
v	Sample No.	Output	t P/N Action Order T	rpe Find Conditions		ittinteller!	P (WBC)	IP (RI	-	HGB	8.4
V WB	33689902R B			Sample No.				1941	1	MCV	107
WB	BACKGROUNDCHECK A	DGH	Manual	138183147	1					MCH	32
V WB	329944738 8	DG	C Initial	1101001001	10 11				(e) -	PLT	-
WB	QC-53481103 B	DGH	Initial	Patient ID						RDW-SD	54
WB	QC-53481102 B	DGH	Initial	100120132						RDW-CV	1
WB	QC-53481101 B	DGH	Initial	28.72.34						PDW	14
WB	BACKGROUNDCHECK A	DGH	Manual	Louis Marine						P-LCR	43
V WB	33997839F B	DG	Initial	Last Name						PCT	Θ.
WB	QC-53481103 B	DGH	Initial	12123-114						NRBC#	Θ.
WB	QC-53481101 B	DGH	Initial	1111104-00						NEUTH	
WB	QC-53481103 B	DGH	Initial	First Name						LYNPH#	2
MB	QC-53481101 B	DGH	Initial	100200000000			- 4.			MONO#	0.
VWB	33997840L B	DG	Initial	18.22.18						EOW	0.
WB	QC-53481102 B	DGH	Initial	and the second second						NEUTS	5
WB.	QC-53481102 B	DGH	Manual	Ward Name						LYHPH%	36
WB	QC-53481102 B	DGH	Manual	(14126-132		>>				MONO%	
WB	QC-53481102 B	DGH	Initial	14:19/03						BASON	1
WB	QC-53481102 B	DGH	Initial	Doctor Name						IG#	8
WB	BACKGROUNDCHECK A	DGH	Manual	101214586578255						IG%	
WB	BACKGROUNDCHECK A	DGH	Manual	(14) 23,000		>>			-		
WB	BACKGROUNDCHECK A	DGH	Manual	12-28-25							
MB	BACKGROUNDCHECK A	DGH	Manual	13127-12							
WB	QC-53481102 B	DGH	Manual	Find exact m	atches				-		
1.08	** ********	m.m.)		The state of the second second						1	
Samp	le Info CBC DI	IFF F	Patient Information	8				1.0	1005		
N				DDEV	NEXT	Class	5				

- 3. Select [Find]
- 4. Enter in the search criteria i.e. sample number, first or last name of the patient.
- 5. Select [NEXT]



#### Applying a Filter to Sample Explorer

A filter can be applied to sample explorer such as date, analyser, order type etc. to display only specific samples. To Apply a Filter:

1. Select [Filter]

Menu QC FI	e Work List Ru	ule E	xplorer B	rowser	Modify Validate	Filter	≣‡ + Sort	tarian de la constante de la	per Low	er :	Q, FIND	Last 20 F	ile Delet		Close
rt: Analysis	Date(Desc.)												A A	A A	
Sa	ample No.	Out	put P/N	Action	Order		No filter		Date	Time	Seq.	Recepti	on Date	Rac	
B F	ACKGROUNDCHECK	A DGH			Manual				/09/28	14:33:14	7	2014/09/28	14:31:28	5	*
1	QC-NEQAS1	A DGH			Manual		_		6/09/28	14:23:50	6	2014/09/28	14:22:04	í.	
- 1	ACKGROUNDCHECK	A DGH			Manual	=+	Filtor02	Martin Californi	/09/28	14:10:53	5	2014/09/28	14:09:01		4
3 /	ACKGROUNDCHECK	A DGH			Manual	≣1	Filleroz	Modily Settings	/09/28	14:03:08	4	2014/09/28	14:01:22	1	
В	QC-NEQAS1	A DGH			Manual				0/09/28	13:54:37	3	2014/09/28	13:52:51	1	
F F	ACKGROUNDCHECK	A DGH			Manual				/09/28	13:46:32	2	2014/09/28	13:44:41	1	
B	ACKGROUNDCHECK	A DGH			Manual	=+	Eilter03	Modify Settings	/09/28	13:33:14	1	2014/09/28	13:31:28	\$	
	ACKGROUNDCHECK	A DGH			Manual	≣ 2	T meeree	in our journal of the	/09/15	17:11:43	9	2014/09/15	17:09:49		
3	1350155501	B DGH	MC		Manual				/09/15	13:46:10	8	2014/09/15	13:44:48	\$	
В	1350155501	B DGH	MC		Manual	1000			8/09/15	13:36:05	7	2014/09/15	13:34:43	\$	
в	1350155501	B DGH	MC		Manual	= 7	Filter03	Modify Settings	/09/15	13:33:31	6	2014/09/15	13:32:09		
В	1350155501	B DGH	MC		Manual	= 3			6/09/15	13:28:31	5	2014/09/15	13:27:09		
в	1350155501	B DGH	MC		Manual				/09/15	12:37:55	4	2014/09/15	12:36:34	6	
в	1350155501	B DGH	MC		Manual	=-	-		/09/15	12:28:04	3	2014/09/15	12:26:17	i i i	
в	1350155501	B DGH	MC		Manual	$\equiv 4$	Filter04	Modify Settings	0/09/15	12:25:14	2	2014/09/15	12:23:27	1	
BI	ACKGROUNDCHECK	A DGH			Manual				\$/09/14	15:58:03	1	2014/09/14	15:56:16	\$	
В	QC-ext	A DGH			Manual				/09/09	14:03:18	11	2014/09/09	14:01:31		
В	QC-42651102	B DGH			Initial	=+	Filter05	Modify Sattings	/09/09	13:56:54	10	2014/09/09	13:54:46	000	
в	QC-42651102	B DGH			Initial	$\equiv 5$	Filteros	Modily Settings	/09/09	13:55:38	9	2014/09/09	13:53:24	666	-
В	QC-42651102	B DGH			Manual				1/09/09	13:53:33	8	2014/09/09	13:51:46	5	
В	111006	B DGH			Initial			201	4/09/09	13:41:58	7	2014/09/09	13:39:54	000	ć.
В	111005	B DGH			Initial			201	14/09/09	13:40:35	6	2014/09/09	13:38:08	000	
В	111004	B DGH			Initial			201	14/09/09	13:39:19	5	2014/09/09	13:37:04	000	=
-	******							laar	* / *** / ***	** ** **				1	
ample Info	CBC DIFF	RET	PLT-F	Body Fluid	Patient Info	ormatic	on 4								E.

2. Select the Filter criteria.

✓ Date	Starting Day:2014/09/01 Ending Day:Today	Modify	Output	Host Computer:Not Output	Modify	Discrete	CBC+DIFF+RET+WPC	Modif
Validate	Not Validated	Modify	Reference Interval	Outside Reference Interval	Modify	Measurement Mode	WB	Modif
Error	ID Read Error:Occurred Analysis Error:No Occurrence	Modify	QC Sample	QC Not Displayed	Modify	Order Type	Initial Initial/Repeat Rerun Rerun/Repeat Reflex Reflex/Repeat Manual	Modif
Judgment		Modify	Patient ID		Modify	Background check	Background check not displayed	Modif

- 3. Select [OK]
- 4. The results that match the filtered criteria will appear in Sample Explorer.



5. Once a filter is applied if a sample is searched for that does not meet the filtered criteria it will not be found. The filter being applied can be identified in the top left corner of the Explorer screen

			=,		1 day
Menu		QC File Work List R	ule	Explorer	Browser
Fi So	lter: rt:	Filter02[Date[2014/09/01 Analysis Date(Desc.)	L-T	oday]]	
٧		Sample No.		Output	P/N
	WB	BACKGROUNDCHECK	A	DGH	
	WB	QC-NEQAS1	А	DGH	
	DE	BACKOBOLINDOLLEOK	۸	DOLL	

**Outputting Sample Results** 

Sample results can be outputted to several destinations such as host and printed out. To output sample results from sample explorer:

- **1.** Open the [Explorer] screen.
- Select the result to be outputted (Sample will be highlighted blue). TIP: To select a block of results, select the first result, hold down [Shift] key and select the last result. To select random results hold done [Ctrl] key and select all results required individually

Sort:	Analysis Date(Desc.)	6								11	A	AA	WBC	DAT 8.9
V	Sample No.	Output	P/N Action	Order Tv	ne Error	Time	Sec.	Rack of	토	Host Computer (HC)	TP	RI	HGB	13
VWB	1160002R B	DG	TTT ACTION	Initial		10.04.14	16	1				2	HCT	0.4
WB	BACKGROUNDCHECK A	DGH		Manual		10.03.47	1		目			-	MCH	32
V WB	119944738 B	DG	c	Initial		10:01:06	5	1	8				MCHC	36
WB	0C-53481103 B	DGH	· ·	Initial		09:29:48	4	SROARA					PLT	36
WB	QC-53481102 B	DGH		Initial		09:29:12	3	SROARD	E	Report (GP)		- 4	RDW-SD	13
WB	QC-53481101 B	DGH		Initial		09.28.36	2	SROARD	===				PDW	14.
WB	BACKGROUNDCHECK A	DGH		Manual		09:19:31	1	Sugues	10. 12.				MPV	12
V WR	11997839F R	DG		Tnitial	Func	15.41.20	6	3		Ledger (LP)			P-LCR	41
WB	0C-53481103 B	DGH		Initial	i une i	15:35:16	7	4	_				NRBC#	0.0
WB	0C-53481101 B	DGH		Initial		15:34:40	6	4					NRBC%	0
WB	0C-53481103 B	DGH		Initial		15:32:31	5	2	E	Report for Lab Use On	lv		NEUT#	4.9
WB	0C-53481101 B	DGH		Initial		15:31:55	4	2	Lab.				MONO#	2.
V WR	119978401 8	DG		Initial		15.22.18	5	000031					EO#	0.
WB	0C-53481102 B	DGH		Initial		14:29:20	4	2	1				BASO#	0.6
WR	QC-53481102 B	DGH		Manual		14:27:23	3	-	-				NEUT%	57.
WB	QC-53481102 B	DGH		Manual		14:26:17	3						MONO%	8
WR	QC-53481102 B	DGH		Toitial		14:19:01	2	SPOARA	1				EO%	2
WB	QC-53481102 B	DGH		Initial		14:17:08	2	SPOARA	1				BASO%	0
WB	BACKGROUNDCHECK A	DGH		Manual		14.95.92	1	Sugues	-				16#	0.
WB	BACKGROUNDCHECK A	DGH		Manual		14:05:00	1						100	
WB	BACKGROUNDCHECK A	DGH		Manual		13.28.11	1							
WB	BACKGROUNDCHECK A	DGH		Manual		13:27:50	1						1	
WB	0C-53481102 B	DGH		Manual		02.43.53	2					2		
	QC 55401102 0				_		-							
Sampl	e Info CBC DI	FF P	atient Inf	ormation	Reager	ht								
Sampi				ormorezon									1	

- 3. Select [Output]
- 4. Select the relevant output option

[Host Computer (HC)]:	Used to retransmit the result to HOST							
[Ticket (DP)]:	Ticket printer (not in use)							
[Report (GP)]:	Customisable printout							
[Ledger (LP)]:	Ledger print out							
[Report for Lab Use Only]:	Print out contains a whitewash in the background stating for Laboratory Use Only.							





Data Browser Screen

The Data Browser Screen is a detailed display of the patient information including results, scatterplots, histograms, action and error messages and interpretative flags.

To view the Data Brower Screen:

- 1. Select the patient sample in Sample Explorer.
- 2. Select [Browser] or double click the sample in Sample Explorer.



**Patient Information –** Displays the patient information

Sample Information – Displays the sample information

Browser Flagging – Shows whether an analysis result is Positive or Negative.



*Positive/Negative Flags* – Negative indicates no flags were generated, whereas, Positive indicates that one or more interpretive messages have been generated. Further information on the 'Positive' flag can be seen highlighted.



The positive flags are categorised as either:

[Diff]:	Abnormal blood cell differential value
[Morph]:	Abnormal cell morphology
[Count]:	Abnormal blood cell count

With further information on which 'Diff', 'Morph' or 'Count' flag has been generated being found in the 'IP Messages' section of the 'Main' tab of the browser screen.

*Action Flag* – The 'browser flagging' area also shows whether any 'Action', 'Error' or 'Rule' flags have been generated (not show in image above).



**Check** – Check the sample **Review** – A channel difference has occurred **Retest** – Displays mode and order (to prompt analysis)

Further information on these flags can be seen in the 'Action messages' section on the 'Main' tab of the browser screen.

*Error Flag* – The 'browser flagging' area also shows whether any errors have occurred during the analysis and are categorised as either:



**Result** – Blood can't be aspirated, insufficient volume or low count error **Func.** – Other error (NOT a result or barcode reader error)

Further information on which 'Error' flag has been generated can be found in the 'Error/Rule message' section of the 'Main' tab of the Browser screen.

*Rule Flag* – The 'browser flagging' area also shows when a 'Rule' has been triggered. Rules are categorised as either:

- [Reflex]:Automatic reflexing of a new order to be run in another channel, the order is<br/>dependent on the first results (e.g. low platelets = reflex RET channel analysis).[Rerun]:Run the sample again and compare to the previous result (e.g. extremely low
- or high values).
- [Repeat]: Run the sample again due to an error (e.g. WNR channel error message).

Further information on which 'Rule; has been triggered can be found in the 'Error/Rule message' section of the 'Main' tab of the Browser screen.





#### Marks/Indicators

The following symbols may be seen in the 'Parameter Indicator Column' alongside the results:

- +/- Data Exceeding Reference Interval
- ! Outside 'Critical/Panic' Limits
- @ Data Outside Linearity Range
- \* Data is Unreliable
- "----" Analysis can't be done
- "++++" Data exceeds display capability
- " " No order given
- & Corrected Data

СВС			
Item	Data		Unit
WBC &	5.26		10^3/uL
RBC	3.68		10^6/uL
HGB	11.4		g/dL
HCT	39.4		<u>%</u>
MCV	107.1		fL
MCH	31.0		pg
MCHC	28.9	-	g/dL
PLT&	14	*	10^3/uL
RDW-SD	64.7	+	fL
RDW-CV	16.8	+	%
PDW	17.7	*	fL
MPV	12.7	*	fL
P-LCR	47.2	*	%
PCT	0.24	*	%
NRBC#	0.02		10^3/uL
NRBC%	0.4		%



#### **IP Messages**

Further information on which 'Diff', 'Morph' or 'Count' flag has been generated can be found in the 'IP Messages' section of the 'Main' tab of the Browser screen where they are further split into:

[WBC Flag(s)]:	Flags associated with White Blood Cells	Example: WBC abnormal scattergram, neutrophilia, Blast/Abn lymph?
[RBC Flag(s)]:	Flags associated with Red Blood Cells	Examples: Abnormal RBC distribution, Anaemia, hypochromia, microcytosis
[PLT Flag(s)]:	Flags associated with Platelets	Examples: Plt Clumps?, Abnormal PLT distribution, thrombocytopenia

#### Graph Tab

Scatterplots and histograms can be viewed in the 'Graph' tab of the data browser screen. Should there be a need to enlarge the plots, place the mouse cursor over the scatter plot of interest and double click.

_	_	-		1	Data Browse	ar				00-08	(Build 3)	Logon Name: a	dmin	2018/07/31	L(Tue) 17:42
		1	<b>.</b>	2 🚺		S 🗸		<u>t</u> -	↑	1	<b>1</b>	Ľ	-B <sup>1</sup> +	<b>m</b>	×
Menu	QC File	Work List	Rule Explo	ner Brows	er	Modify Validate		Output	Upper	Lower	ReAna.	Last 20	File	Delete	Close
Positiv	e		Т	T 🕮		F48	301	(009)Pig							
Morph.	Count	Bula Baa		0 2016	/04/27 18:00	:32 曲		@							
Not Validat	ed 📃	None						a Re		C 2017	/04/11 10	9:38:08			
Main	Graph	Q-Flag	Service	User	Cumulative									Mai XN-10	nual ^11001
CBC			DIFF		WBC Fla	ag(s)	-	WDE			NR.				
Item	Data	Unit	Item	Data	Unit			#[		3					
WBC	13.59	10^3/uL	NEUT#	4.70 10	^3/uL		<b>^</b>	11							
RBC	6.84	10^6/uL	LYMPH#	8.07 10	^3/uL					1		6.14.16			
HCT	42.9	%	EO#	0.20 10	^3/uL			1							
MCV	62.7	fL	BASO#	0.07 10	^3/uL			35							
MCH	19.3	pg	NEUT%	34.6 %								and the second			
MCHC	30.8	# 1003/ul	LYMPH%	59.4 %				1 1							
RDW-SD	38.6	fL	EO%	1.5 %			<b>*</b> -		and and			Congress of the second			
RDW-CV	18.0	%	BASO%	0.5 %				1	and the second se						
PDW		fL			RBC Fla	ag(s)									
MPV	10.8	* fL * %		Sc	atternlot	e and e				550		SFL			
PCT	0.15	* %		00	alleipiot	5 and	<b>^</b>	RBC		R	ET(EXT)		PLT-0		
NRBC#	0.01	10^3/uL		Hie	stoarame	•				54			ž.		
NRBC%	0.1	%		116	stugrams	•						10 - C			
RET							-	1							
Item	Data	Unit						L							
RET%	0.62	%			PLT FL	ag(s)			15	01.					
RET#	0.0424	10^6/uL				Distribution		PLT							
LER	88.5	%			PLT CI	imps?	*								
MFR	10.8	%			121 01	ampor			/			42.3			
HFR	0.7	%						$\sim$	1						
REI-He	18.3	Pg					× .		401.			SFL			SFL
XN-1000V-1	A													-	
XI1-1000V-1	2														
														Printer	HOST

Service Tab - For use by Sysmex staff

Lab Only Tab - User customisable

The 'Lab only' tab is user customisable. It can be used to view research parameters and compare the same parameter obtained from different channels. For example;

- Comparing the impedance platelet count (PLT-I), optical platelet count (PLT-O) obtained from the RET channel and fluorescent platelet count (PLT-F) obtained from the PLT-F channel.
- Comparing primary total WBC obtained in the XN-CBC channel (WBC-N), WBC-D obtained from the XN-DIFF channel and WBC-P obtained from the WPC channel.



#### Responding to Alarms

When there is an error, an audible alarm will sound and a help box will be displayed.

			sample Explorer [11]	Help		Logo	n rearrie, a	i dinim	20/01/2010	(100) 11:23
	Menu QC File Work List Rule Explore	r Browser	Nesty 1				Last 20	File -	Delete	Close
	1 Hole				Reset Alarm		112	TTEM	DATA	UNTT
	neip			Error Message List		A	Δ	WBC	8.52	10^9/L
4				LITOI Wessage List			~	RBC	4.20	10^12/L
1	Reset Alarm	ion Order Typ	e Error WBC					HGB	9 452	g/L Ratio
1000	Error Message List	Initial	16.26	Completed sampler analysis stop	A			MCV	107.6	fL
		Initial	6.93					MCH	32.4	PB
	Completed sampler analysis step	Initial	3.06					MCHC	301	- g/L
		Initial	8.52					RDW-SD	54.7	+ fL
		Manual	0.00					RDW-CV	13.8	*
2		Initial	20.00					PDW	14.9	fL
_		Initial	16.50					P-LCR	41.4	*
		Initial	6.94					PCT	0.44	+ %
		Initial	3.17					NRBC#	0.00	10^9/L
	. *	Manual	9.99		-			NRBC%	0.0	3 1009/1
		Initial	runc					LYMPH#	2.59	10^9/L
-	Action	Initial	16.48	-				MONO#	0.72	+ 10^9/L
	Completed complex applying step. Dross (Accord	Initial	3.06	Antion				EO#	0.24	10^9/L
	Completed sampler analysis stop. Press [Accept].	Initial	16.35	Action				NEUT%	57.8	¥ 10-9/L
2	will retuin to sampler analysis ready state.	Initial	3.06					LYMPH%	30.4	%
3.		Initial	7.89	Completed sampler analysis stop. F	Press [Accept].	1		MONO%	8.5	*
		Initial	6.91	Will return to sampler analysis read	ly state.			EO%	2.8	*
		Manual	7.11					IG#	0.02	10^9/L
		Manual	7.12				120	IG%	0.2	%
-		Initial	7.27				100			
4 -	Detailed recorders		and the second							
	Detailed Product E	nformation	Reagent							
	Interior manual Account Classe		i∰ WG42							
	Accept Close	male(98)	19 Mr SCE Jon							
		<u></u>			Databased					
		ONE-A			Detailed procedure					
		>12							Printer	HOST
	WB EC (1977)	WB CBC	DIFF	Instruction manual Accept	Close				GPILP 8	
		A second second				H				EPU
	Completed sampler analysis stop					J				
			1							
	5 6 7									

- 1. Reset Alarm Selecting reset alarm will silence the audible alarm.
- 2. Error Message List Displays the list of current errors. If there are multiple errors the error messages are displayed in order of priority.
- 3. Action This area displays the corrective action required to resolve the error.
- Detailed Procedure Selecting [Detailed Procedure] will take the user to the Instructions for Use manual to the specific troubleshooting section outlining the procedure required to resolve the error.
- 5. Instruction Manual Selecting [Instruction Manual] will take the user to the Instructions for Use manual to the specific troubleshooting section relating to the error message displayed.
- Accept Select [Accept] or [Execute] to execute any actions outlined in the error message and to clear the error message list.
- 7. Close Select [Close] to close the Help Box.





A full audit history including error logs, reagent replacement logs and maintenance logs can be found in [History]. User details and comments can be added to any of the history logs at any point.

Adding comments and user details to the History Log:

- **1.** Select the log required
- 2. Select the entry of interest
- 3. Click on [input] or double click on the corresponding entry in the 'comments' column.
- 4. Add the relevant comment.
- 5. Select [OK]

Menu QC File W	fork List Rule Explore	er Browser	Input Filter	Output Upper Lower	File
Date	Logon Name	Location	Status	Error	Error Code Para
2014/09/28 13:27:47	admin	XN-1000-1-A	Clear	Out of SULFOLYSER	134000
2014/09/28 13:23:42	(Logoff)	XN-1000-1-A	Occurred	Out of SULFOLYSER	134000
2014/09/16 10:52:12	admin	XN-1000-1-A	Clear	Press Start SW	479200
2014/09/15 22:44:39	admin	XN-1000-1-A	Occurred	Press Start SW	479200
2014/09/15 12:28:13	admin	XN-1000-1-A	Clear	< Data Errors >	417020
2014/09/15 12:28:05	admin	XN-1000-1-A	Occurred	< Data Errors >	417020
2014/09/15 12:25:28	admin	XN-1000-1-A	Clear	< Data Errors >	417020
2014/09/15 12:25:15	admin	XN-1000-1-A	Occurred	< Data Errors >	417020
2014/09/15 12:18:57	admin	XN-100 Enter Comment(s)		Press Start, Se	479200
2014/09/14 21:03:51	admin	XN-100			479200
2014/09/14 15:59:45	admin	XN-100			472042
2014/09/14 15:56:16	admin	XN-100			472042
2014/09/09 13:41:43	admin	XN-100			461160
2014/09/09 13:40:37	admin	XN-100			461160
2014/09/09 13:39:25	admin	XN-100	,	OK Cancel	461160
2014/09/09 13:39:21	admin	XN-100		OK Cancer	461160
2014/09/09 13:29:58	admin	XN-100			264004
2014/09/09 11:56:16	admin	XN-1000-1-A	Occurred	Tube remains in tube holder	264004
2014/09/08 17:30:17	admin	XN-1000-1-A	Clear	0.07 MPa pressure error	113007
2014/09/08 17:30:14	admin	XN-1000-1-A	Occurred	0.07 MPa pressure error	113007
2014/09/08 17:14:31	admin	XN-1000-1-A	Clear	< L-J Control Error >	461160
2014/09/08 17:11:28	admin	XN-1000-1-A	Occurred	< L-J Control Error >	461160
2014/09/08 17:07:39	admin	XN-1000-1-A	Clear	Sampler analysis stop error has occu	426012
Audit Log Error	Log Reagent Rep	lacement Log M	aintenan 🕢		



#### Reagents

There are a total of 12 different reagents that can be used on the XN-Series analysers (varies due to configuration), each having a different purpose. A summary can be found below describing the reagent name, pack volume, cycle counts, on board stability and the parameters produced using the reagent.

Reagent Name	Cycles Per Container (approx.)	On board Stability (Days)	Parameters Produced
CellPack DCL (10L)	200	60	Red cell and platelet
CellPack DST (10L)	5,000	60	parameters*
Sulfolyser (5L)	10,000	90	Haemoglobin
Lysercell WNR (5L)	2,000	60	Total white cell count, basophil
Fluorocell WNR (82ml)	4,000	90	count and nucleated red cell count
Lysercell WDF (5L)	3,333	90	Neutrophils, lymphocytes,
Fluorocell WDF (42ml)	2,000	60	monocytes, eosinophils and Immature granulocytes
Lysercell WPC (1.5L)	1,000	90	Blast? and Abnormal
Fluorocell WPC (12ml)	500	90	Lympho? flags
CellPack DFL (1.5L)	1,500	60	Used in conjunction with Fluorocell RET and Fluorocell PLT
Fluorocell RET	500	90	Reticulocytes and optical platelet count
Fluorocell PLT	500	90	Fluorescent platelet count and immature platelet fraction

\* CellPack DCL/CellPack DST are also used in all channels for hydrodynamic focussing of cells and for rinsing the lines between samples.



## Reagent Menu



- 1. Reagent Menu Each analyser menu has an individual reagent menu. Selecting the reagent menu will open up the reagent replacement screen which shows all current reagents on-board including number of tests/volume remaining, lot number and on-board stability.
- 2. Dilution/Haemolytic reagents Shows CellPack DCL, CellPack DFL, Sulfolyser and Lysercell reagents on-board.
- 3. Dye Shows Fluorocell reagents on-board.
- 4. On-board Stability On-board expiry date of reagents. NOTE: this is not the same as the Lot expiry on reagent box.
- 5. Lot Number Reagent lot number.
- 6. Tests/Volume Remaining Number of tests or volume remaining.
- 7. Reagent Name Name of reagent.

#### Replacing Dilution/Haemolytic Reagents

When a diluent or haemolytic reagent needs replacing an audible alarm will sound and the help box will appear detailing the reagent to be replaced. This alarm can also be caused by bubbles in the lines. If this happens perform a 'Reagent Replenishment' NOT 'Reagent Replacement'.

To replace Dilution/Haemolytic Reagents:

1. Mute the alarm by selecting [Reset Alarm]



- 2. The reagent that requires replacement will appear in the Error Message List.
- 3. Select [Execute] on the help box to open up the Reagent Replacement Menu.

				_	Sample Exp	lorer [114	1 temsj								ogon Name:	admin	26/01/2016	(Tue) 1
		1	<u> </u>	14.			~	E	≣1 -	± ·	t	Ŧ		٩	Ľ		Ó	Þ
	Menu QC File	Work List	Rule Explore	r Browser		terstin I	validate	Hiter	Soft	oupu	upper	Lower	n i i	FIND	Last 20	File	Delete	CI
		Help													Δ Δ	ITEM	DATA	U
			-	1									A A	A	AA	RBC	4.20	10
-	the second second		Reset Alarm	ton Order Ty	pe Error	WBC	RBC	HGB	НСТ	MCV	MCH	MCHC	PLT	RDW-SD		HGB	136	g/
	Error Message List		- There are a second and	Initial		16.26	5.34	164	0.479	89.7	30.7	342	556	45.8		HCT	0.452	Ra
П				Initial		6.93	4.33	120	0.358	82.7	27.7	335	241	44.4		MCH	32.4	PE
	Completed sampler and	ilysis stop	· ·	Initial		3.06	2.33	60	0.178	76.4	25.8	337	49	44.1	1.00	MCHC	301	- g/
			-	Initial		8.52	4.20	136	0.452	107.6	32.4	301 -	365	54.7 +		PLT PDW-SD	365	10
				Manual		0.00	0.00	0	0.000				0			RDW-CV	13.8	*
				Initial		20.00	+ 4.78	131	0.436	91.2	27.4	300 -	301 *	51.1		PDW	14.9	fL
				Initial		16.50	5.47	172	0.508	92.9	31.4	339	542	47.7		MPV	12.0	fL
				Initial		6.94	4.39	124	0.376	85.6	28.2	330	234	46.5		PCT	0.44	+ %
				Initial		3.17	2.37	61	0.185	78.1	25.7	330	49	45.1		NRBC#	0.00	10
			*	Manual		0.00	0.00	0	0.000				3			NRBC%	0.0	*
Ч				Initial	Func.											I VMPH#	4.93	10
	Action			Initial		16.48	5.40	168	0.506	93.7	31.1	332	536	47.8		MONO#	0.72	+ 10
				Initial		3.06	2.37	62	0.187	78.9	26.2	332	43	46.5		EO#	0.24	10
	Completed sampler	analysis stop.	Press [Accept].	Initial		16.35	5.43	168	0.492	90.6	30.9	341	558	46.2		BASO	0.04	10
	will return to sample	er analysis rea	dy state.	Initial		3.06	2.33	60	0.179	76.8	25.8	335	48	44.4		LYMPH%	30.4	x
				Initial		7.89	4.99	153	0.474	95.0	30.7	323	254	43.1		MONO%	8.5	%
				Initial		6.91	4.47	125	0.381	85.2	28.0	328	234	46.7		EO%	2.8	X
				Manual		7.11	4.48	127	0.382	85.3	28.3	332	236	45.9		TG#	0.92	10
				Manual		7.12	4.36	122	0.360	82.6	28.0	339	243	44.5	1	IG%	0.2	*
	1			Initial		7.27	4.44	126	0.376	84.7	28.4	335	225	46.0	-			
			Detailed procedure	nformation	Reage	nt					W.:					1		
			-		1										-	1		
	And a state of the state of the	A	Class		曲 WG42													
		ACCEDE	LIOSE			CC 7												

- 4. The [Reagent Replacement Menu] will open indicating which reagent requires replacement with a red warning triangle.
- 5. Using the barcode reader wand in the XN-Series Reagent Barcode.

	Menu QC File Work List Rule Explorer	Browser Setting	00-168 (00113-1) Logon Name: a	dmin 26/01/2016(Tue)10:35
	Resgent Replacement           Dye           23/02         2010           25/02         2010           4500         700           3078         1078           Total         Total           1000000         Texes	Patient List Rule	Sample Explorer Data Browser	? Instructions for Use
	Dilution / Hemolytic Agent	History Precision Cher	ck Calibration Analyzer Setting	IPU Setting
6 — 8 —	CellPAck 2036 Differences Processor CellPAck Unarces DCL Unarces Execute Cancel			
				Printer GPLP 7 EPU

6. Once successfully barcoded the reagent will be marked as received.

the easy opening of the box.

lift and angle forwards.

It is recommended to apply the following opening procedure for Sysmex reagent boxes (e.g. Lysercell WDF, Sulfolyser and CellPack DCL). Please note: Be aware of paper cuts, protect your fingers!

7. Change probe from old reagent keg to new reagent keg. DO NOT place probe on the floor. The

- a. Remove both the middle and upper cardboard sections. Fold the front support tab forwards.
- b. Fold upwards and outwards all the other support tabs.

c. Grasp the connection nozzle below the support tabs and

- d. Push the connection nozzle backwards pulling firmly upwards at the same time.
- e. Arrange all the support tabs under the collar of the connection nozzle. Now, the container can be connected to the analyser.
- 8. Select [Execute] and reagent replacement will commence. When this process is complete the analyser will continue testing patient samples. If a part box is loaded onto the analyser it will assume it is full.















## Replacing Fluorocell Reagents

When a Fluorocell dye needs replacing the help box will appear detailing the Fluorocell dye to be replaced and an audible alarm will sound.

Dye cartridges contain a Radio Frequency Chip (RF-ID) that the analyser will read as the cartridge is introduced. This chip contains all relevant information such as reagent type, lot number, expiry, on-board stability etc.

To replace Fluorocell reagents:

- 1. Mute the alarm by selecting [Reset Alarm]
- 2. The reagent that requires replacement will appear in the Error Message List.

More       OC File       Work Let       Rule       Decree       Number       End       Soft       Od-1       User       Lever       PHO       Bar 20       Bit P	[TTT]			ample Exp	orer [1141	items]								ogon Names	admin	26/01/2016	(Tui
Halp       A	Menu QC File Work List	Rule Explore	r Browser			alidate	E - Fiter	≣↓ - Sort	Cutput	t Upper	Lower		Q FIND	Last 20	File -	Delete	
Rest Alam       On Order Type Error       MBC       BC       MBC       MCT       MVV       MCH       MCH       PLT       RDM-SD       T         Initial       16.26       5.34       164.06       0.479       09.7       342       552       44.44       107.42       107.42       107.64       107.64       538       62.7       27.7       335       244       44.4       107.42       363       120       0.358       62.7       27.7       335       244       44.1       107.64       381       107.64       23.4       103.6       106.24       107.44       107.64       107.47	Help							_				A A	Α	AA	ITEM WBC RBC	DATA 8.52 4.20	1
Error Message List       Initial       16.26       5.34       16.4       0.479       99.7       30.7       342       556       45.8       1       NCH       322.4       MCH       332.4       MCH       MCH       331.4       MCH       331.4       MCH		Reset Alarm	ion Order Typ	e Error	WBC	RBC	HGB	НСТ	MCV	MCH	MCHC	PLT	RDW-SD		HGB	136	8
Completed sampler analysis stop.       Tritial       6,93       4,33       120       0,358       92.7       27.7       335       241       44.4       MCHC       931       9         Initial       3,66       2,133       60       0.178       76.4       25.8       357       49       44.1       PLT       365       54.7       9       MCHC       PLT       365       7.47       9       7       7       355       251       44.20       131       0.455       147.4       20.6       9       0.60       0.60       0.60       0.60       0.60       0.60       30.1       51.1       PDV       138.6       7.4       7       7       355       54.7       9       7       7       7       355       54.7       9       7	Error Message List		Initial		16.26	5.34	164	0.479	89.7	30.7	342	556	45.8	2	MCV	107.6	1
Initial       3.06       2.33       60       0.128       76.4       25.8       337       49       44.1       PLT       369	The second s		Initial		6.93	4.33	120	0.358	82.7	27.7	335	241	44.4		MCH	32.4	P
Action       Initial       10.00       0.000	Completed sampler analysis stop		Initial		3.06	2.33	60	0.178	76.4	25.8	337	49	44.1		MCHC	301	- 8
Manual       0.00       0.00       0.000       0.000         0        0       13.8       1       13.4       30       51.1       NPV       12.2       7.4       300       301       51.1       NPV       12.2       7.4       300       301       51.1       NPV       12.0       7.4       300       301       51.1       NPV       12.0       7.4       300       301       51.1       NPV       12.0       12.0       7.3       12.0       7.3       12.0       7.3       12.0       7.3       12.0       13.			Initial		8.52	4.20	136	0.452	107.6	32.4	301 -	365	54.7 +		RDW-SD	54.7	+ 1
Action       Initial       20.00 + 4.78       131       0.436       91.2       27.4       300 - 301 * 51.1       PDW       14.9       PUV         Manual       10.50       5.47       172       0.508       92.9       31.4       339       542       47.7         Manual       0.80       0.60       0       0.806       0.24       336       49       45.1         Manual       0.80       0.60       0       0.806       93.7       31.1       332       536       47.8         Initial       56.2       23.2       49       45.5       NRBCK       0.80       0.80       0.80       0.80       0.80       0.80       93.7       31.1       332       536       47.8       10.80       10.85       10.85       10.85       10.85       10.85       10.85       10.85       11.1       10.85       10.8			Manual		0.00	0.00	0	0.000				0			RDW-CV	13.8	9
Action       Initial       16.59       4.37       172       0.588       92.9       31.4       339       542       47.7         Initial       6.94       4.39       124       0.376       85.6       28.2       330       234       46.5         Initial       3.17       2.37       16       0.85       78.1       25.7       330       49       45.1         Manual       0.00       0.00       0.000			Initial		20.00 +	4.78	131	0.436	91.2	27.4	300 -	301 *	51.1		PDW	14.9	1
Action       Initial       6.94       4.99       124       0.376       85.6       28.2       338       234       46.5       NBCC       0.00         Manual       3.17       2.37       61       0.185       78.1       25.7       336       49       45.1       NBCC       0.00         Manual       0.00       0.00       0.000       0.000           3        NBCC       0.00         Initial       1.00       0.00       0.000       0.185       78.1       25.7       336       49       45.1       NBCC       0.00         Initial       1.00       0.00       0.00       0.000			Initial		16.50	5.47	172	0.508	92.9	31.4	339	542	47.7		P-LCR	41.4	9
Action       Initial       3.17       2.137       61       0.185       78.1       25.7       330       49       45.1       NR8Ck       0.0       0.00       0.000			Initial		6.94	4.39	124	0.376	85.6	28.2	330	234	46.5		PCT	0.44	+ 3
Action       Initial       0.00       0.00       0.000 <t< td=""><td></td><td></td><td>Initial</td><td></td><td>3.17</td><td>2.37</td><td>61</td><td>0.185</td><td>78.1</td><td>25.7</td><td>330</td><td>49</td><td>45.1</td><td></td><td>NRBC#</td><td>0.00</td><td>1</td></t<>			Initial		3.17	2.37	61	0.185	78.1	25.7	330	49	45.1		NRBC#	0.00	1
Action       Initial       16.48       5.40       168       0.50       93.7       31.1       332       536       47.8       MONOW       0.724         Initial       16.48       5.40       168       0.506       93.7       31.1       332       536       47.8       MONOW       0.724         Initial       16.48       5.40       168       0.492       90.6       30.9       341       558       46.5         Initial       16.35       5.43       168       0.492       90.6       30.9       341       558       46.5         Initial       16.35       5.43       168       0.492       90.6       30.9       341       558       46.5         Initial       3.06       2.33       60       0.179       76.8       25.8       332       254       43.1         Initial       7.11       4.48       127       0.381       85.2       28.0       332       236       45.9       10000%       85.5       108       86.0       108       86.0       108       86.0       108       86.0       108       86.0       108       86.0       108       10000%       86.5       108       86.0       108			Manual		0.00	0.00	0	0.000				3			NRBC%	0.0	2
Action       Initial       16.48       5.40       168       0.566       93.7       31.1       332       536       47.8       500       0.72       4.8       500       0.72       4.8       500       0.72       4.8       500       0.72       4.8       0.72       4.8       0.72       4.3       46.5       500       0.72       4.8       0.72       4.7       92       0.72       4.9       0.72       4.7       92       0.72       4.9       0.72       4.7       95       0.77       76.8       25.8       335       4.8       4.4       107       0.72       7.8       117       117       4.48       127       0.82       92.8       0.8       332       234       45.7       108       0.92       106 </td <td>-</td> <td></td> <td>Initial</td> <td>Func.</td> <td></td> <td>L YMPH#</td> <td>4.93</td> <td>-</td>	-		Initial	Func.											L YMPH#	4.93	-
Completed sampler analysis stop. Press [Accept]       Initial       3.66       2.37       6.2       0.187       78.9       26.2       332       43       46.5       BASOR       0.24         Will return to sampler analysis ready state.       Initial       16.35       5.43       168       0.492       90.6       30.9       341       558       46.2       NEUTX       57.8       35       44.4       155       84.4       16.35       5.43       168       0.474       95.6       30.7       323       254       43.1       NEUTX       57.8       35       16.4       16.35       5.43       60       0.179       76.8       25.8       353       44.4       16.35       5.43       60       0.474       95.6       50.7       323       254       43.1       NUNTX       57.8       30.4       18.52       28.0       328       234       44.5       10.000       10.000       80.4       10.000       10.4       10.1       11.1       12.2       0.381       85.2       28.0       328       234       44.5       10.000       10.000       10.000       10.000       10.000       10.000       10.000       10.000       10.000       10.000       10.000       10.000       10.000 </td <td>Action</td> <td></td> <td>Initial</td> <td></td> <td>16.48</td> <td>5.40</td> <td>168</td> <td>0.506</td> <td>93.7</td> <td>31.1</td> <td>332</td> <td>536</td> <td>47.8</td> <td></td> <td>MONO#</td> <td>0.72</td> <td>+ 1</td>	Action		Initial		16.48	5.40	168	0.506	93.7	31.1	332	536	47.8		MONO#	0.72	+ 1
Completed sampler analysis stop. Press [Accept].         Will return to sampler analysis ready state.         Initial       16.35       5.43       168       0.492       90.6       30.9       341       558       46.2         Initial       3.06       2.33       60       0.179       76.8       25.8       355       48       44.4         Initial       6.91       4.47       125       0.811       85.2       28.0       328       234       46.7       -         Manual       7.11       4.48       127       0.926       82.6       28.0       332       236       45.9       -       6.04.5       168.00       6.5       168.00       6.05       168.00       6.05       168.00       6.05       168.00       6.05       168.00       6.02       168.00       6.02       168.00       6.02       168.00       6.02       168.00       6.02       168.00       6.02       168.00			Initial		3.06	2.37	62	0.187	78.9	26.2	332	43	46.5		EO#	0.24	1
Win return to sampler analysis ready state.       Initial       3.66       2.33       60       0.179       76.8       25.8       335       48       44.4       Initial         Initial       7.89       4.99       153       0.474       95.0       30.7       323       254       43.1       Initial       6.91       4.47       125       0.381       85.2       28.0       322       234       46.7       -       MONON       2.50       30.7       323       224       43.1       Initial       6.91       4.47       125       0.381       85.2       28.0       328       234       46.7       -       MONON       2.9       MONON       2.9       133       48       44.7       -       MONON       2.9       136       0.9       233       45.9       -       0.0       2.0       3.0       32       225       45.9       -       0.0	Completed sampler analysis s	op. Press [Accept].	Initial		16.35	5.43	168	0.492	90.6	30.9	341	558	46.2		BASO	0.04	
Initial       7.89       4.99       153       0.474       95.0       30.7       323       254       43.1       MONOX       8.5       2.8       1         Initial       6.91       4.47       125       0.881       85.2       28.0       328       234       46.7       -       EoK       EoK       0.50       0.5	will return to sampler analysis	ready state.	Initial		3.06	2.33	60	0.179	76.8	25.8	335	48	44.4		LYMPH%	30.4	3
Initial       6.91       4.47       125       0.381       85.2       28.0       328       234       46.7       -         Manual       7.11       4.48       127       0.982       85.3       28.0       332       236       45.9         Manual       7.12       4.48       127       0.982       82.6       28.0       332       236       45.9         Initial       7.27       4.44       126       0.376       84.7       28.4       335       225       46.0       -			Initial		7.89	4.99	153	0.474	95.0	30.7	323	254	43.1		MONO%	8.5	. 9
Manual       7.11       4.48       127       0.382       85.3       28.3       332       236       45.9       105       0.50			Initial		6.91	4.47	125	0.381	85.2	28.0	328	234	46.7	*	EO%	2.8	- 2
Manual       7.12       4.36       122       0.366       82.6       28.0       339       243       44.5       103         Initial       7.27       4.44       126       0.376       84.7       28.4       335       225       46.0       103         Initial       7.27       4.44       126       0.376       84.7       28.4       335       225       46.0       104         Initial       7.27       4.44       126       0.376       84.7       28.4       335       225       46.0       104         Information       Reagent       -			Manual		7.11	4.48	127	0.382	85.3	28.3	332	236	45.9		IG#	0.92	1
Initial         7.27         4.44         126         0.376         84.7         28.4         335         225         46.0         Initial           Initial         7.27         4.44         126         0.376         84.7         28.4         335         225         46.0         Initial         Initial         NG42         Initial         Initial         NG42         Initial			Manual		7.12	4.36	122	0.360	82.6	28.0	339	243	44.5		IG%	0.2	. 9
Detailed procedure     n formation     Reagent     .       Instruction namal     Accept     Close     Image: Close       Image: Close     Image: Close			Initial		7.27	4.44	126	0.376	84.7	28.4	335	225	46.0				
Instruction manual Accept Close amale (98) UP Mr SCE Jones		Detailed procedure	nformation	Reage	nt					6			- 24				
	Instruction manual Accept	Close	emale(98)	ඬ WG42 ඔ Mr S	CE Jone	s										-	1
	Xn XP	E C	Xn XP			mo	8										
			>12													Printer	П
	WB [CBC][DHF]		WB CBC	DIFF												CERTS 8	L
																	Т

- 3. Open the front cover and push up the dye cartridge cover allowing access to the dye cartridge area.
- 4. Remove the old dye cartridge and replace it with the new. When placing the new cartridge in it is essential it's placed in with the pierceable cap to the back and the name of the cartridge facing the user.
- 5. When the cartridge is replaced the analyser will beep as it registers the RF-ID chip.



6. Close the dye cartridge cover and front lid.



#### **Reagent Replenishment**

If you encounter any errors such as bubbles in the system performing a reagent replenishment will prime the reagent through the system removing the bubbles. To perform a Reagent Replenishment:

- 1. Select [Analyser Menu]
- 2. Select [Maintenance]
- 3. Select [Reagent Replenishment]



4. Select the reagent for replenishment

	🖽 📷 🖅 🎫 🔯 💹 🖡	enu 88-168 (b.	-11d 1) Logon Name admin 26/01/2016(Tue) 10:46
	Menu QC File Work List Rule Explorer Browser	Reagent Replenishment	
		CELLPACK DCL	
	CELLPACK DCL		ata Browser Instructions for Use
4.→	SULFOLYSER	Lysercell WNR	
	Fluorocell WNR	Fluorocell WNR	s 📑
	Lysercell WDF	Lysercell WDF	ilyzer Setting IPU Setting
	Reagent replenishment in progress.	Fluorocell WDF	
5.—	Execute Cancel	Reagent replenishment in progress.	
		Execute Cancel	Binker GRIP 7 EPU

- 5. Select [Execute]
- 6. Reagent Replenishment will take a few minutes to complete. The progress is shown with a progress bar and when complete the dialog box will automatically close.



## Tasks

## Task 1: XN-Series Analyser Components

- 1. Perform a daily shutdown of an XN-Series analyser.
- 2. From the list below, label the external parts of the XN-2000 with it's corresponding number



Change analysis mode button	Information Processing Unit (IPU)	Manual sample holder location
Status indicator LED	Sampler Barcode reader	Start button
Reflex Bay	Upper Front cover	Sampler Unit



3. From the list below, label the internal components of the XN-Series



	Dye Cartridge Holders	Main power swtich	0.16 MPa Regulator
	Pneumatic Trap Chamber	0.07 MPa regulator	RBC/PLT Detector
Trainee		Date	

Trainer \_\_\_\_\_

Date \_\_\_\_\_



#### Task 2: XN-Series Routine Use

- 1. How long does the shutdown procedure take?
- 2. What other procedures aside from an auto rinse are included in the 'as required' maintenance?
  - •
  - \_\_\_\_\_
- 3. When may an auto rinse be required?
- 4. Give 2 examples of when the 'Cleaning' procedure may need to be performed?
  - •
- 5. Show your trainer where you go to perform the cleaning procedure.
- 6. What are the two main differences between the cleaning procedure and the shutdown procedure?
  - \_\_\_\_\_
  - \_\_\_\_\_
- 7. Explain to your trainer how you would register a new lot of XN CHECK.
- 8. Please run the QC in:

.

- Manual closed mode
- Sampler mode
- 9. Once open how long is a vial of XN CHECK stable?

10. How long should the XN CHECK be at room temperature before analysis?



- **11.** Making sure you have identified the relevant analyser add the comment '**Checked**' indicating that you have run and checked the QC.
- **12.** Show your trainer how to exclude the QC result from statistical analysis.
- **13.** Select a range of QC data (the last 5 QC data points).
- **14.** Indicate a new vial of XN CHECK has been opened.
- **15.** Compare QC files for the current XN CHECK lot between all analysers connected to the IPU or compare different QC lots on the same analyser.
- **16.** When creating a QC File for EQA (NEQAS) material, what should be input for the following (use the IPU for guidance if required):
  - a. Control Material:
  - **b.** Lot Number:
  - c. Expiry Date:
  - d. Targets and Ranges:
- **17.** When processing NEQAS material on the XN-Series analyser, what analysis method should be used for the following (circle the correct answer):
  - a. Full blood count samples

Processed as a patient sample

Processed using QC Analysis mode

b. Automated Differential Leucocyte Count samples

Processed as a patient sample

Processed using QC Analysis mode

- **18.** If performing Task 2 on a system which is NOT live please identify the host communication and if it's connected please disconnect.
- **19.** How do you know the status of the HOST connection?



**20.** Using old patient samples;

- Run 3 samples in sampler mode.
- Run a sample in Manual open mode, letting the analyser read the barcode.
- Run a sample in Low WBC mode.
- Run a sample in manual mode, giving the sample ID 12345.
- Run a sample in manual (open) micro mode

**21.** What dilution is required for Predilution mode?

22. Filter the database to show the last 2 days and set to show all analysers.

23. Find and select 12345, and GP print.

24. How would you resend results to host?

25. Find the sample run in low WBC mode.

26. Select a sample and open 'Browser' screen.

**27.** Where are the following located on the main browser screen:

- Flags
- Action messages
- Error messages

**28.** Locate the WDF scattergram and enlarge.

29. Where would you locate all platelet counts performed by the analyser?

- **30.** Locate reagent replacement menu. What information is provided in the reagent replacement screen.
  - \_\_\_\_\_
  - •
  - •



**31.** Explain to your trainer how you would change a diluent reagent.

**32.** Locate the reagent replenishment menu.

Trainee	Date

Trainer \_\_\_\_\_

Date \_\_\_\_\_



## **Contact Us**

#### Mail

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### Sysmex Academy

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