TRAINING UPDATE

Lab Location:	GEC, SGMC & WAH	**Date Distributed:**	2/22/2018
Department:	Core Lab	**Due Date:**	3/15/2018
		Implementation:	**3/15/2018**

DESCRIPTION OF PROCEDURE REVISION

Name of procedure:

Data Innovations Instrument Manager   SGAH.L49 v7

Description of change(s):

Section 5.D: Replaced ELINKG with EXPG1 & EXPG2.

Section 5: Added windows color setting as item M & N. (pages 18 & 19)

Addendum 3: Added color flagging of critical/delta (page 39)

This revised SOP will be implemented on March 15, 2018

Document your compliance with this training update by taking the quiz in the MTS system.

Non-Technical SOP

Title	Data Innovations Instrument Manager	
Prepared by	Robert SanLuis	Date: 7/11/2012
Owner	Robert SanLuis	Date: 3/12/2013

Laboratory Approval		
Print Name and Title	Signature	Date
Refer to the electronic signature page for approval and approval dates.		

Local Issue Date: Local Effective Date:

Review:		
Print Name	Signature	Date

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1.   PURPOSE

To describe the processes associated with the use of Instrument Manager (IM) to manage specimens and result release to into the Sunquest (SQ) Laboratory system.

2.   SCOPE

Instrument Manager functions to provide connectivity between instrumentation and the laboratory information system (LIS). IM provides the ability to review multiple instruments and work areas at one time. IM utilizes rules-based decision processing via graphical interface to release results without technical intervention which provides technical staff additional time to attend to the true exceptions.

3.   RESPONSIBILITY

Knowledge of IM is the responsibility of all laboratory technical staff.

4.   DEFINITIONS

Instrument Manager (IM) – computer application to manage laboratory processes, instrument interfaces, and deploy rules-based decision processing via graphical interface.
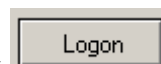
5.   PROCEDURE

A. Log on to Instrument Manager

If the program is not open double click on the icon on the desktop.
(Note: A popup window may state unknown publisher. Click Run.)
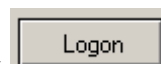
First time users will enter their Quest employee ID number then click [Logon].
You will then be asked to establish a password. It is recommended to keep SunQuest
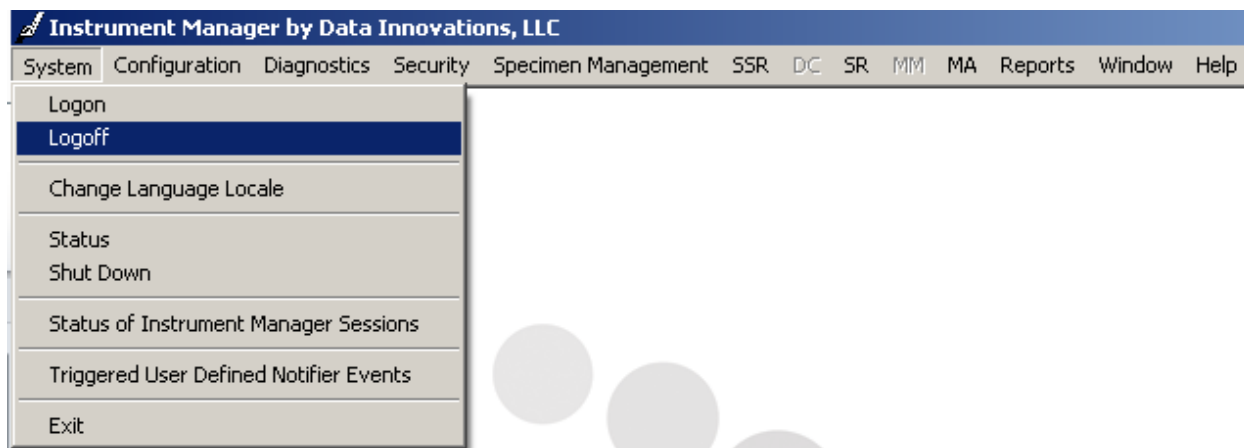and Instrument Manager passwords in sync.

Once your password is established you will Logon with the above established user
name and password to gain access to the system.

B. Security

You are responsible for results release under your code. See below to change your
password on demand.
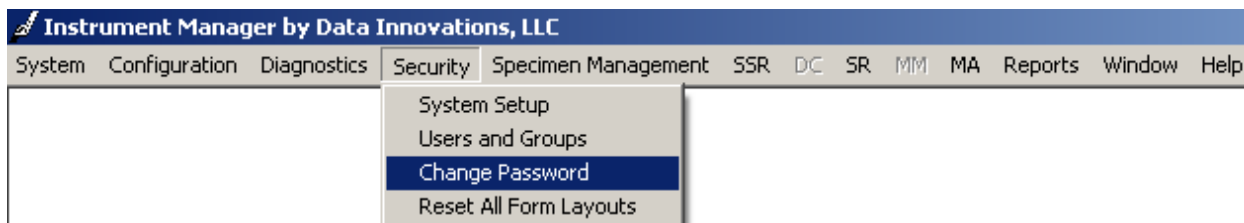
To maintain system security logoff under system as demonstrated.

Note: Auto-logoff: will automatically logoff users from Instrument Manager after a
defined period of inactivity. The timer is currently set to 60 minutes

C. Help

The About Instrument Manager under the help menu will provide required information when calling customer support.
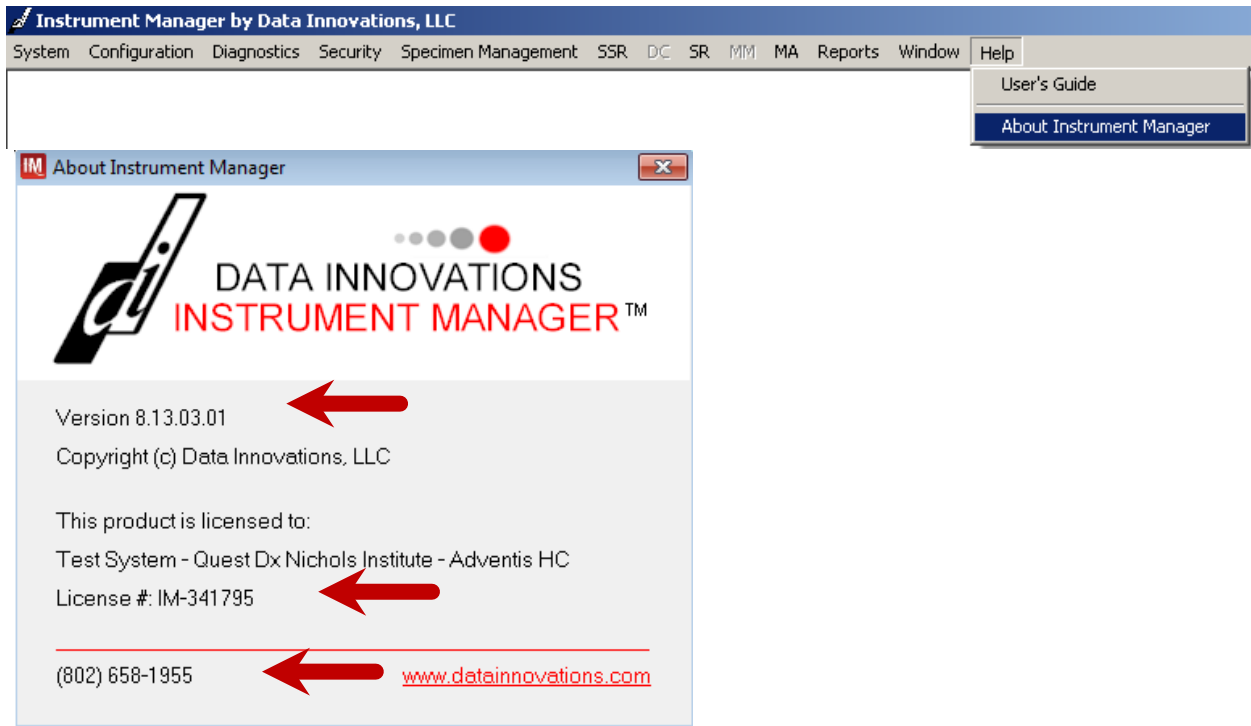
D. System menu
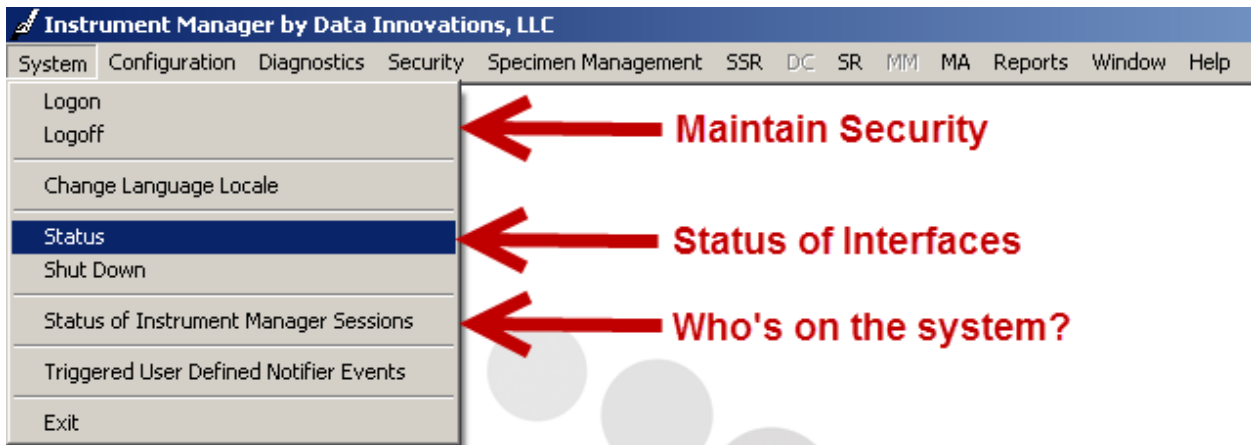
System Status
The status of interfaces should be on all the time for the following:
    Qmgr
    PurgeSpecimen Routing
    ArchiveCENTAURS
    CENTAURW
    EZLINKS

EZLINKW
EXPAND-EXPG1
EXPAND-EXPG2
STAGO-GS1
STAGO-SS1
STAGO-SS2
STAGO-WS1
STAGO-WS2
IRIS1S
IRIS1W
SUNQUEST ORDERS
SUNQUEST RESULTS
GEC HEME Counter
SGAH HEME Counter 1
SGAH HEME Counter 2
WAH HEME Counter 1
WAH HEME Counter 2
SYSMEX-GEC
SYSMEX-SG
SYSMEX-WAH

Note the below screen shot demonstrates EZLINKG at Germantown is not working.
It is trying to connect unsuccessfully. You can attemp to repair the connection - click
on the connection then select **STOP**/once stopped then **START** selected connection.

E. **Diagnostics menu**

Troubleshooting – staff will use this infrequently with IT support direction. Arrows
below denote key logs utilized to capture all actions within the system.
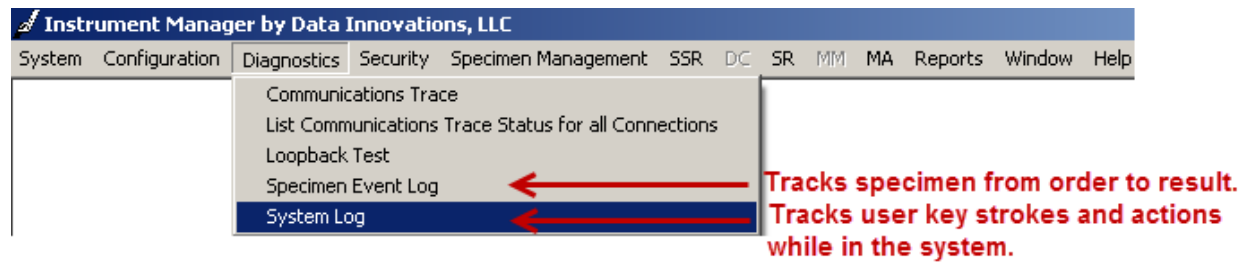
F. Specimen Management Menu
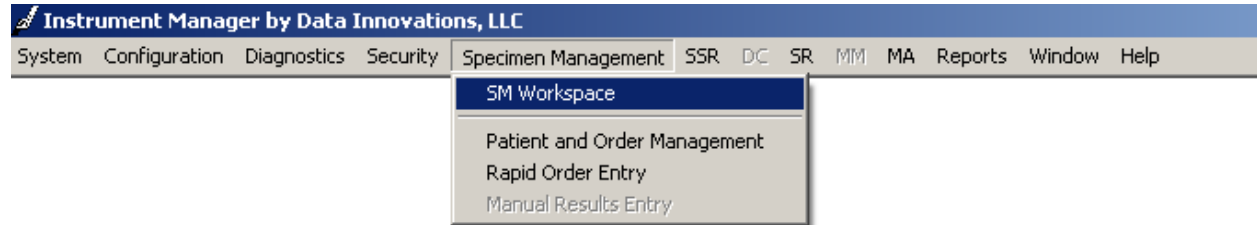
SM Workspace is the default window for technical staff. This is where specimen results are reviewed, rejected, and/or released.

- Click on SM Workspace – Your default screen will appear. The first time you log in it is blank because you have not selected a default worklist.
- Select your default site specific (SGAH, WAH or GEC) worklist (CHEM HOLD , COAG HOLD, or CHEM & COAG HOLD)
- Set a 60 second screen refresh rate.

See Example Below:

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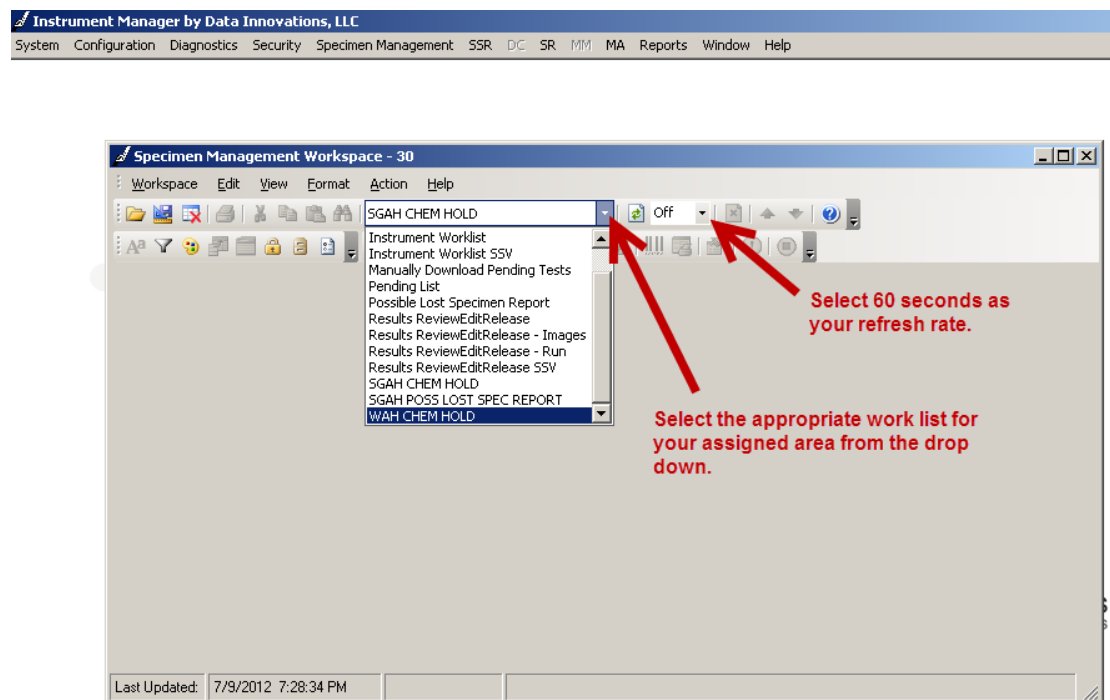
Below you will find key areas of interest denoted with description.

ITEM	DESCRIPTION	FUNCTION
#1	Work List	

Site	Chemistry	Coagulation	Combined	Quality Control
GEC	GEC CHEM HOLD	GEC COAG HOLD	GEC CHEM & COAG HOLD	GEC QC LIST
SGMC	SGAH CHEM HOLD	SGAH COAG HOLD	SGAH CHEM & COAG HOLD	SGAH QC LIST
WAH	WAH CHEM HOLD	WAH COAG HOLD	WAH CHEM & COAG HOLD	WAH QC LIST

Site	Urinalysis	Combined	Quality Control
SGMC	SGAH URINALYSIS HOLD	N/A	SGAH QC LIST
WAH	WAH URINALYSIS HOLD	N/A	WAH QC LIST

Site	Hematology	Combined	Quality Control
GEC	GEC HEME HOLD	N/A	N/A
SGMC	SG HEME HOLD	N/A	N/A
WAH	WAH HEME HOLD	N/A	N/A

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ITEM	DESCRIPTION	FUNCTION
#2	Screen Refresh Rate	The Refresh Rate is how frequently the computer looks for new data. Selections are OFF, 30s, 60s, 120s, and 300s. The Refresh Rate should generally be set to 60s. If you have a particularly complex result to review you can toggle the setting to OFF. If the setting is OFF the screen will not refresh automatically which could affect turnaround time negatively.
#3	Specimen Worksheet	List of specimens to review before result release.
#4	Patient Information	This panel displays patient demographic information on the selected patient.
#5	Test Worksheet	Displays the results of the selected patient.
#6	Selected Patient	The arrow designates the patient being evaluated and acted on.
#7	Selected Test Result	The arrow indicates the current test being evaluated. The test is CL run on VS2 with result of 105.0 and held of the critical high Potassium.
#8	Critical	The critical result is flagged with cH and CBACK-; appends for documentation of the call.
#9	Save Changes	Save changes after entering test comments so they will not be lost. If the screen refreshes you will be asked 'do you want to save changes'. Responding *yes* to the save request will save your work but not release it.
#10	Error Code	The Error Code or flag is what holds a sample for review. The name of the error is listed in the adjacent cell. Additional information may also be provided to assist in evaluating the specimen results.
#11	Previous Results	If available, previous results will be listed. Please note that delta flags are triggered at certain intervals thus the difference may exceed the delta range but the time for the flag to trigger has elapsed.
#12	Reject Result	The Red ✖ rejects results you do not want to release. You can select individual results to reject or groups of results by depressing the Shift or Ctrl key in combination with the mouse. Always evaluate and reject before you release.
#13	Release Results	The clipboard with the check mark 📋 allows you to release results to Sunquest. SQ requires results to be delivered in neat packets. Therefore, you must evaluate results and reject everything except that which you want sent to the patients chart. Do not send duplicate results - SQ gets confused.
#14	Filter	The filter will allow you to add or remove a filter from the current Work List (#1 Above) you are viewing. For example, the default Work List only shows "Tests Held" for review. If you click on the filter you can remove a filter and see both held for review and complete.
#15	Send to Host	Selected results may be resent to the host Sunquest. This is most effective if you have a single result that did not cross for some reason; such as, using a comment without appropriate format or mistype of a canned comment.

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G. Result Evaluation Process

Example 1
1. Review results for errors, deltas, criticals, and HIL flags.
2. Only issues noted is a critical K of 6.5. Result called and read back (CBACK-;)
   by Rob at 16:40.

Example 2
1. Review results for errors, deltas, criticals, and HIL flags.
2. Error noted (E172) no sample detected.
3. Since only LA is ordered check the sample and order rerun.
4. Reject ✖ the bad results.

Example 3

On evaluation of the below results the entire result set was rejected.

Note: Rejecting a result in IM does **NOT** cancel the test in SQ. Test cancellation is a separate process in SQ requiring specific documentation per applicable procedure.

Note: For a calculation to work all components of the calculation must be present. Review results for 'Unable to Calculate' errors. To get the calculation to fire rerun all components required for the calculation.

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Example 4
Comment format is critical to properly file the result in SQ.
English Text Codes are acceptable and the prefered method for result comments.
Note-1: The format is slightly different in that the (-) is appended by SQ. Review the format utilized in the screen captures below.

Note-2: Free text comment must be proceeded by (;). Remember the (-) is already appended.

English Text: HIR and REP

English Text-English Text: CBACK-; SUZIE RN AT 2020-REP

The below typo will cause the result to **NOT** file in SQ. You would need to correct the comment in OEM.

The below comments are entered correctly.

Example 5
Review results for QC failures
1. Error noted (AC) means "**QC Out of Range or Not Done - Check Instrument Status**"
2. Reject ✖ the bad results (FIBR and PTT). Release the DDIMER, INR, AND PTA only
3. Check the instrument for QC issues and troubleshoot. Rerun samples with bad results once QC for FIBR and PTT are in range.

Example 6
Review of results with "Previously Resulted from a Different Instrument" error
1. DI will display an error and HOLD the results whenever a specimen or two specimens with the same accession numbers are run on two different instruments from the same class (for example, Vista 1 and Vista 2, Xpand 1 and Xpand 2, Stago 1 and Stago 2, Sysmex 1 and Sysmex 2)
2. Check SQ to see if the test has already been resulted. If resulted, then reject the rerun. If the first result has not been resulted, then select which run to release and reject the other run. Do not release both results from Instrument 1 and Instrument 2 to SQ as the first result will be overwritten by the second result

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H. Patient and Order Management

Select Patient and Order Management to look up previous results, order tests, and print results (downtime use only).

Note: Patient reports should only be printed from SQ for distribution to providers. The print feature is utilized to create preliminary reports for downtime purposes only or for internal use only.

You can perform exact match searches or wild card searches.
    Wild Card Searches
    Patient name field type the search criteria, part of last name, followed by a wild card (*).
    Specimen ID field type the wild card (*) followed by part of the specimen ID number.

Example Wild Card Searches
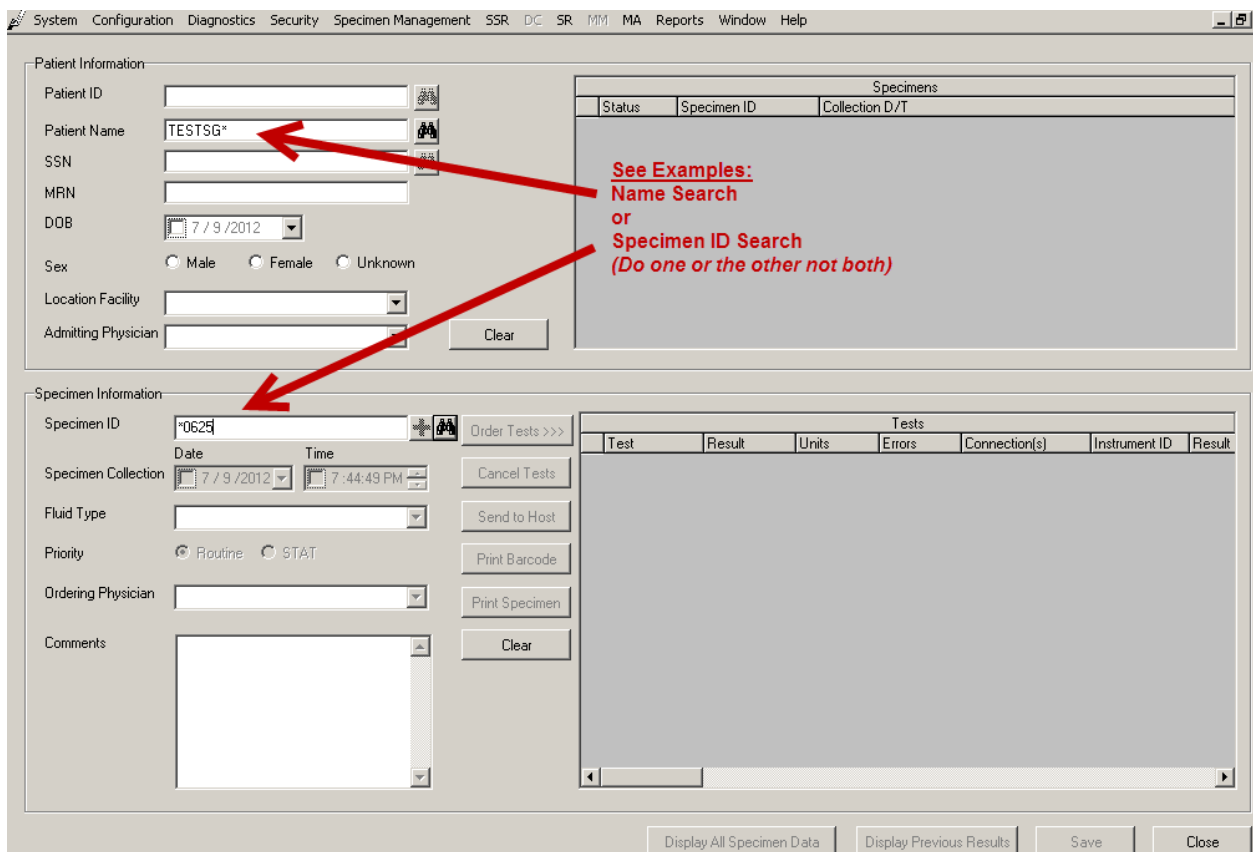
Result of Patient Name search
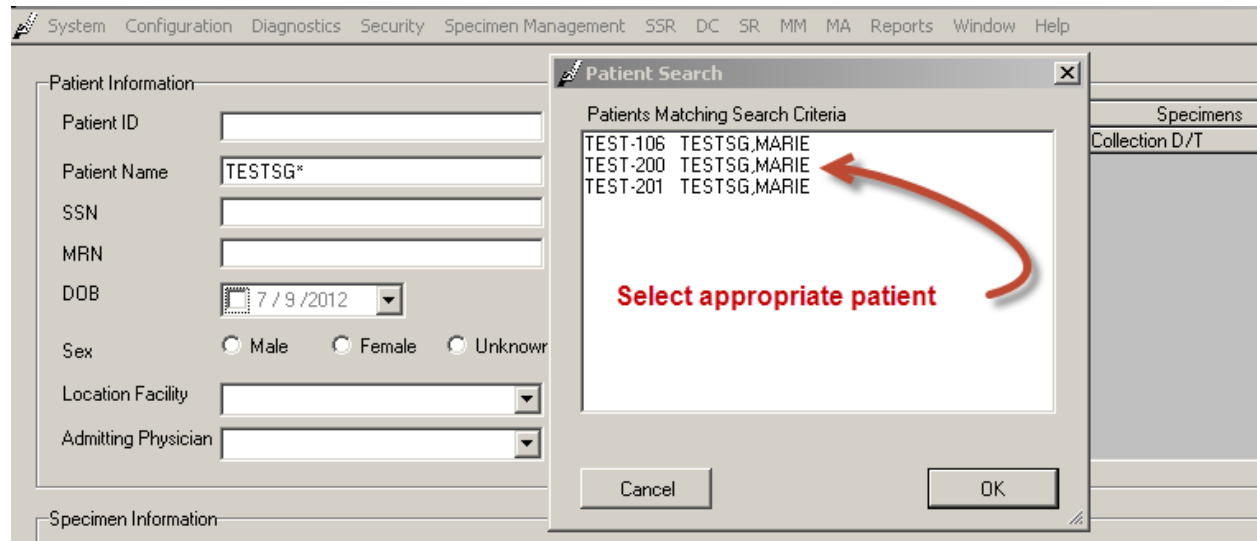
I. Out Patient Call Back List

Flag an Out-Patient for "Call Back" by removing the "CBACK-;" for the test comment field in IM.

When the result is released the Call Back List is automatically updated.

Example: Call Back

J. Tests Requiring Special Handling/Programming

Due to multiple fluid types on the same accession number special consideration must be given to CRCL and GTT testing. These tests should be manually programmed on the instrument utilizing the following format:

Program the accession number + TEST
CRCL - Example
        F3200 UCRR
        F3200 CREA
GTT
        F3201 GT0
        F3201 GT1
        F3201 GT2
        F3201 GT3

Results will need to be entered manually in MEM.

K. Start Holding All Results
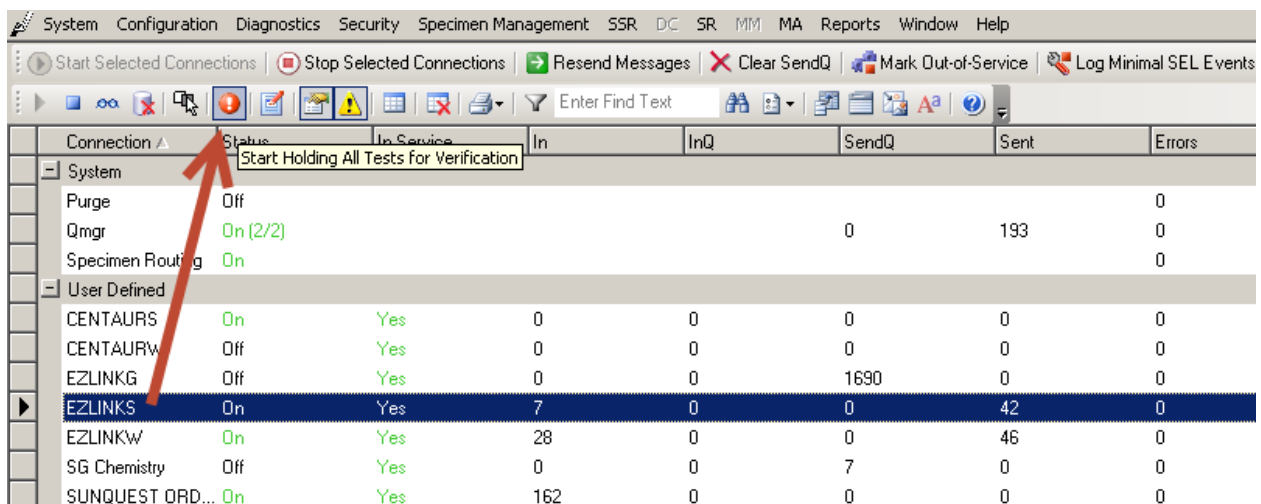
If there is a suspected problem with Auto-verification there is a command to Immediately Stop Auto-Verifying Results. If the need arises to STOP Auto-Verification do so, then immediately:
- Notify Lab Management (Supervisor/Director/Admin On-Call).
- Notify other system laboratories.
- Complete a QV Form.
- Begin releasing results manually.

Go to the System-Status screen.
Select the appropriate interface (example. ELINKS or EZLINKW)

Select [icon] Start Holding All Test For Verification

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To turn the Auto – Verification back on, from the SM Workspace page

- Select ⬛ **Stop Holding Selected Tests for Verification**
- Select the appropriate connection name
- Then select ⬛ **Stop Holding Selected Tests for Verification**
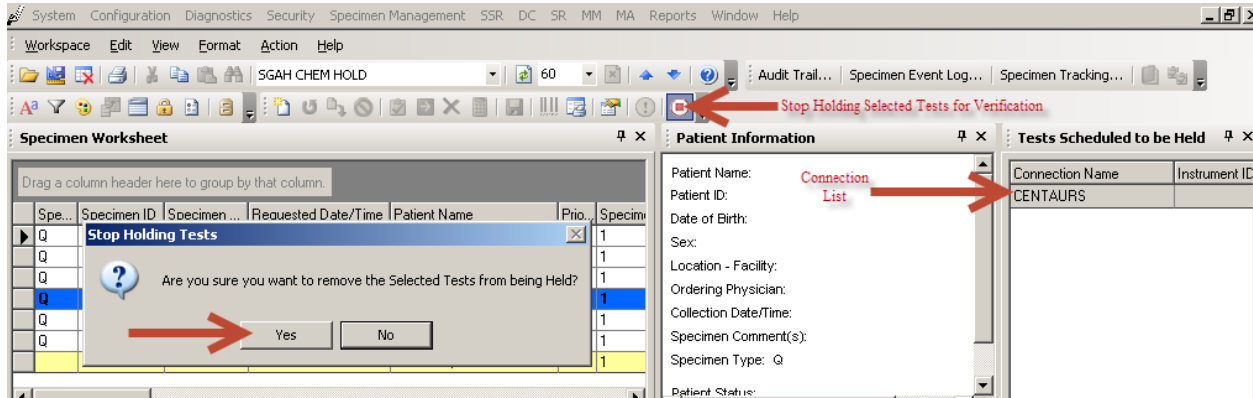
L. Quality Control:

The Data Innovation software evaluates each QC result against acceptable ranges and high lights the ones that violate the QC rules, in blue color. The DI software will use the 1 – 2s, 2 – 2s and 1 – 3s Statistical Process Control (SPC) rules to describe the extent of the failure. Before releasing the QC result which has violated the QC rule, a corrective action must be added to the failed QC. To add a corrective action to QC results,

- under **Specimen Worksheet** click on blue highlighted QC
- under **Test Worksheet** select the blue highlighted assay which has violated the QC rule
- **QC Action Log** ① icon gets activated
- select the appropriate action that has been *(Not Will Be)* taken to trouble shoot the failed QC
- click on **Add Selected Action to Data Point**

Release the QC result, the selected action will now migrate to Bio-Rad Unity Real Time.
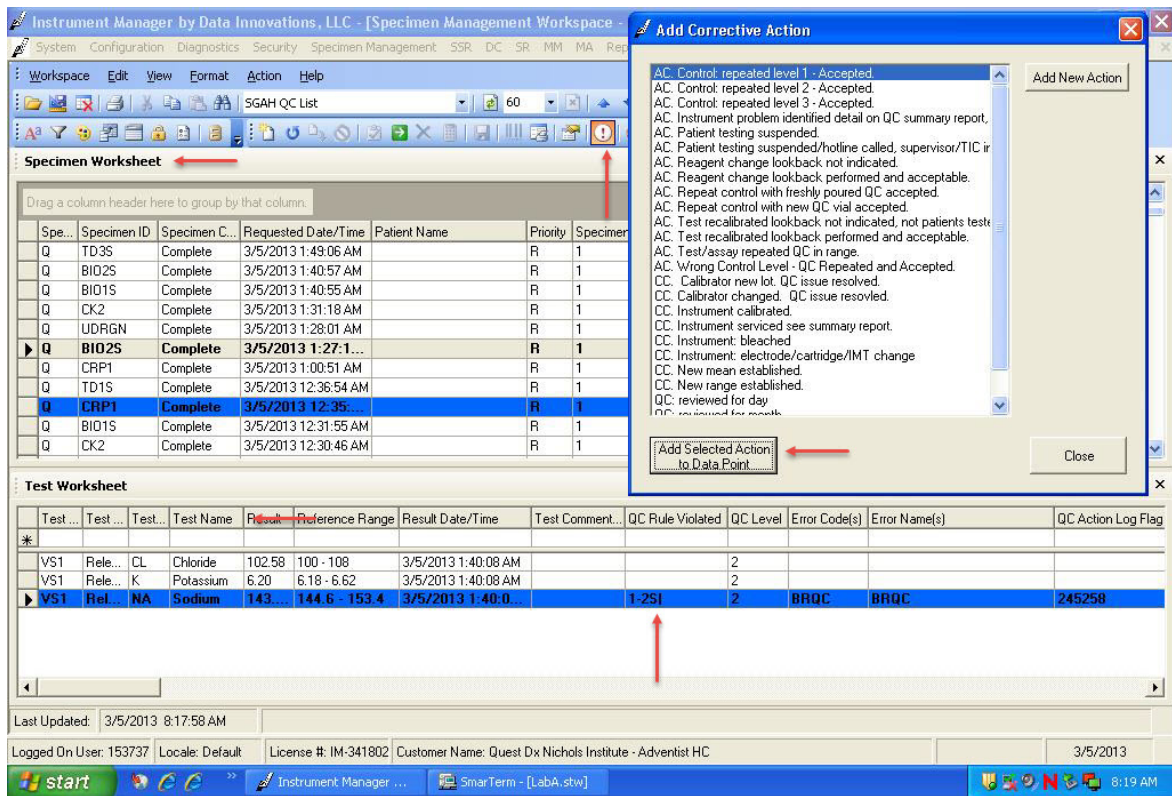
When QC results fail, **stop the Auto-Verification immediately**. Once the QC is repeated and falls within acceptable ranges turn the Auto-Verification back on. Utilizing the process below, click on the designated icon, then select the connection name and designated test to stop holding:

To turn the Auto – Verification back on, from the SM Workspace page

- Select [icon] **Stop Holding Selected Tests for Verification**
- Select the appropriate connection name
- Then select [icon] **Stop Holding Selected Tests for Verification**

M. Color Coding Standard
   (Standard coding across all instruments connected via DI)

N. <mark>**Computer display settings for using Data Innovation:**</mark>

It is important that the desktop windows colors are set correctly. If not, your color flagging in the DI application will not be correct.

To check or change the display setting:

1. With your cursor on the desktop, right click THEN click on **Personalize**
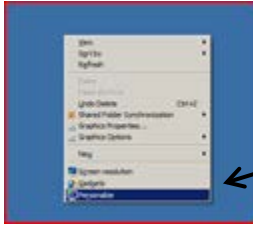
2. **In the "Basic and High Contrast Themes" section - Look at the "Windows Classic" icon.** The Current theme being used will be backlit (see example below). "Windows Classic" is backlit. If it is not backlit on your computer, then click on the **theme**. "Please wait" will display on the screen while it is resetting. Once done, X out of the screen (the setting will be saved).
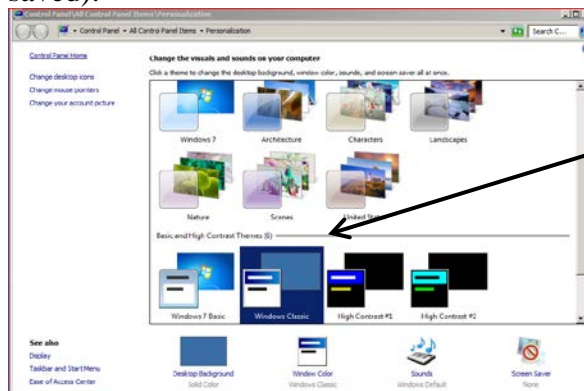
Windows Classic is backlit and
Windows 7 Basic is not backlit

6.   RELATED DOCUMENTS
OEM - On Line Entry Method, LIS procedure
MEM - Manual Result Entry, LIS procedure
Critical Values - Accepting Results in LIS, LIS procedure
Correcting Results, LIS procedure
Delta Check, QA procedure

7.   REFERENCES
User Documentation, *Instrument Manager v8.12*, Data Innovations, INC.

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8.   REVISION HISTORY

Version	Date	Reason for Revision	Revised By	Approved By
000	3/12/2013	Update owner Section 5: Added process to reinstate Auto-verification to item K. Added QC section (item L)	A. Chini	R. SanLuis
001	3/18/2015	Section 5: Add auto-log off, update screen shots, add Coag and GEC instruments, update work lists, remove outdated calculation example, add Coag example Section 6: add Delta Check Footer: version # leading zero's dropped due to new EDCS in use as of 10/7/13	D. Concepcion L. Barrett	R. SanLuis
2	6/8/2016	Section 5: Add Iris (Urinalysis) processing through DI	D. Concepcion M. Sabonis	R. SanLuis
3	8/1/2016	Header: Add other sites Section 5: Add second level review for crystals	D. Concepcion	R. SanLuis
4	5/18/2017	Section 5: Add Hematology Interfaces & work lists, Update Iris QC, add example 6 (previously resulted from different instrument error) Section 6: Remove SOP numbers Section 9: Add addenda; Move Iris actions from section 5, add Coag and Sysmex (Hematology) processing through DI	D. Concepcion M. Sabonis L. Barrett	R. SanLuis
5	9/17/2017	Addendum 3: add steps 11-19	D. Concepcion	R. SanLuis
6	2/13/2018	Section 5.D: Replaced ELINKG with EXPG1 & EXPG2. Section 5: Added windows color setting as item N. Addendum 3: Added color flagging of critical/delta	M. Sabonis	R. SanLuis

9.   ADDENDA AND APPENDICES
   1. Stago (Coagulation) Instrument Specific Actions
   2. Iris (Urinalysis) Instrument Specific Actions
   3. Sysmex (Hematology) Instrument Specific Actions

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Addendum 1

Stago (Coagulation) Instrument Specific Actions

The DI Stago driver is set to collate all the coagulation tests on the same accession number until all the results have been completed within a set amount of time. For example, if the first test has been completed and the second test is still pending and the collation time has been exceeded, DI will release the first test as long as it does not have an error. This setting is at the Driver level.

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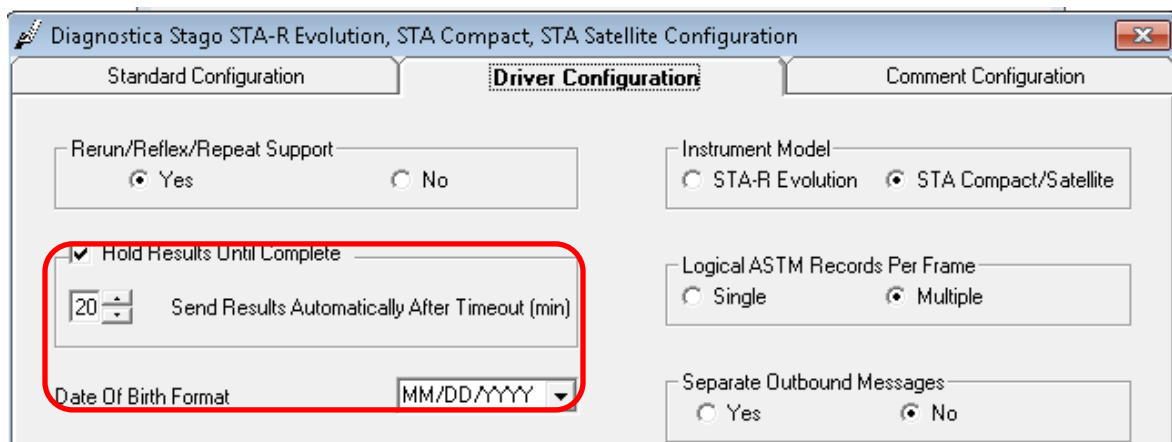
Addendum 2
Iris (Urinalysis) Instrument Specific Actions
A. General Information

1. **Color**
   With the cursor in the result cell, right click → Insert Coded Entry→ Click on
   desired result→ Ok. Result in Cell will update.
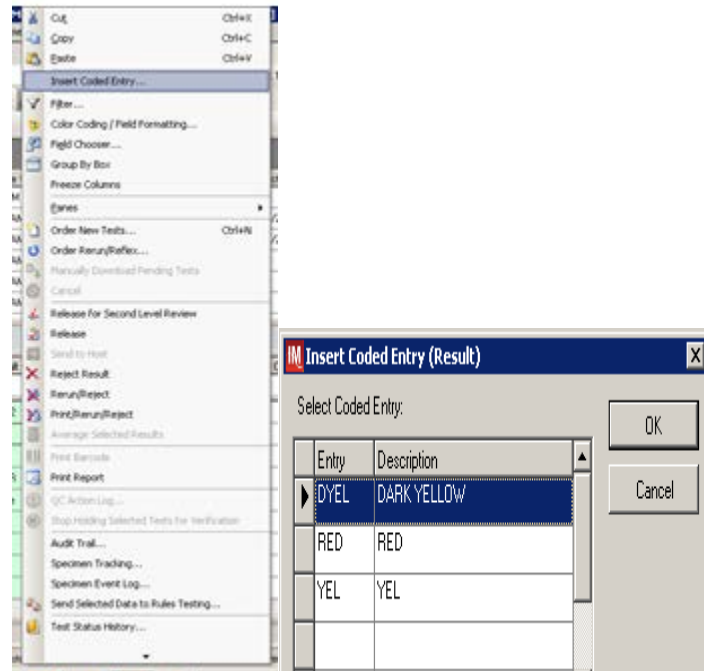
2. **View Sample Reruns and Release Results**
   With the Iris you may have to rerun a sample. Reruns will be indicated in the
   Error Codes column. The "Urinalysis Hold" SM workspace is designed to display
   a tab on the right side of the workspace called "Run Worksheet". This is where
   the original and the rerun results will display.

   a. To display both results, click on specimen ID and then use mouse to hover
      over or click on the green "Run Worksheet" tab

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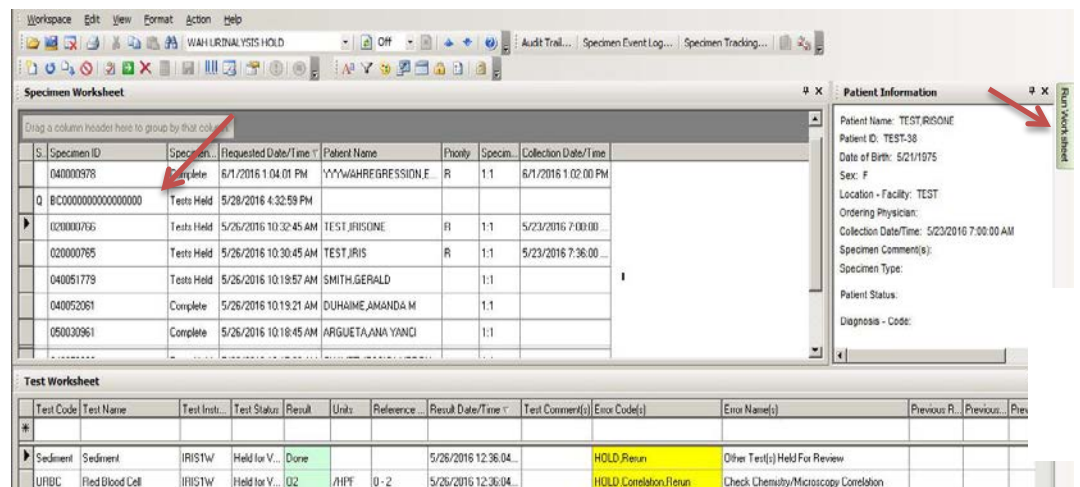
Addendum 2 (continued)

b. Both runs display.

c. To release a run, place your cursor in one of the result cells for the run you want to release and right click. Select appropriate option.
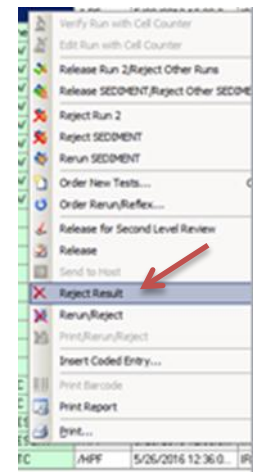
d. To close the Run Worksheet for the specimen that you are viewing, click on a cell in either the specimen or test worksheet.

   ** DO NOT CLICK ON THE X in the Run Worksheet** as this will cause the Run Worksheet tab to be removed from viewing.

   Note: To re-display the RUN WORKSHEET (green tab) -
             From the main banner select **View→Panes→ Run Worksheet.**

Addendum 2 (continued)

When the run Worksheet displays, click on   📌   the **push pin** icon to minimize it.
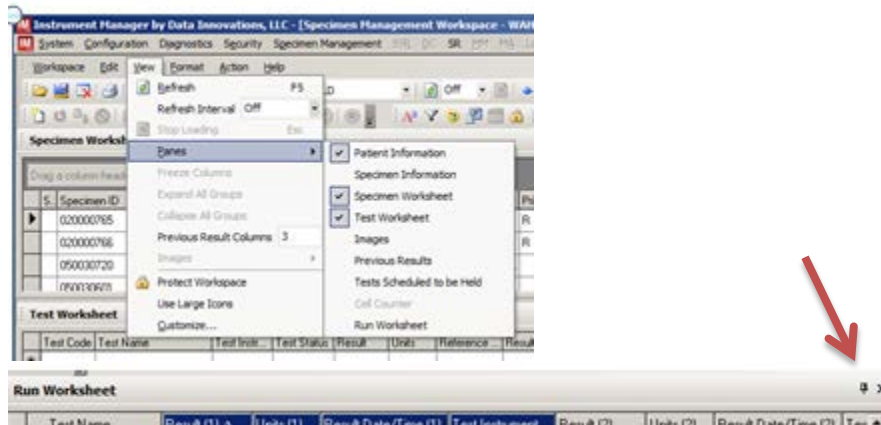
B. Iris (Urinalysis) Manual Refractometer testing

1. If the specific gravity is >1.035, then the result is suppressed and an error message will alert tech to perform a manual refractometer to determine specific gravity.

2. If manual refractometer result is >1.035, then enter result into DI as >1.035

C. Iris (Urinalysis) Pyridium (Orange colored urines)

1. If urine is orange, you will see error code "HOLD, Color"
2. Verify that urine is truly orange, if urine is orange then
   a. Report out Color, Appearance and Microscopic (if applicable).
   b. Remove and replace the rest of the Chemistry results with COLINT. With cursor in result cell, right click → Insert Coded Entry→click on COLINT→ OK. Result in result cell updates.

Addendum 2 (continued)

D. Abnormal Crystals for Second Level Review

1. If an abnormal crystal is present in the urine, you will see error code of "Abnormal Crystal"

2. Verify the abnormal crystal with a second technologist
3. If both are in agreement, then follow the steps below to release the result for Second Level Review, then to LIS
   a. First Tech – Within the DI Urinalysis workspace, select the abnormal crystal and release it for Second Level Review. Click YES on the Release for Second Level Review window. The result will go to the Second Tech for review

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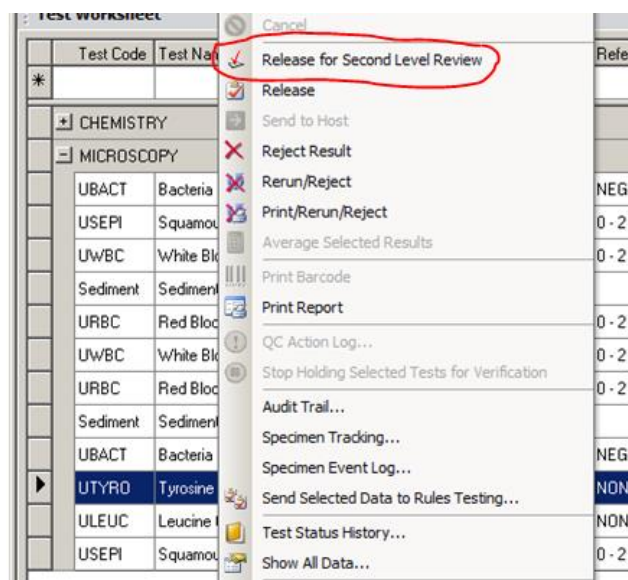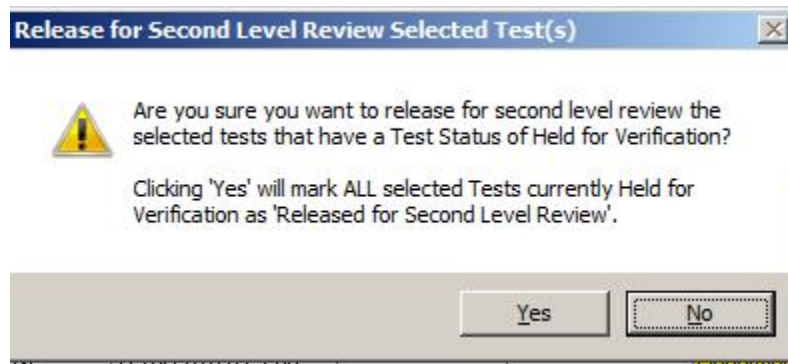
b. Second Tech – Go to the Second Level Review HOLD, then release the
    abnormal crystal. The result will then go to LIS

Addendum 3

Sysmex (Hematology) Instrument Specific Actions

1. Hematology SM Workspace Overview

Cell Counter and Images Tabs

RUN# 1

RUN# 2

Hematology SM Workspace with expanded Cell Counter Tab

Hematology SM Workspace with expanded Images Tab

2. Hematology RunWorksheets Test Grouping

The Hematology RunWorksheet is divided into six test groups. The groups are IP Messages, CBC, Platelet, ADIFF, MDIFF and Images. See the description of each group below.

Run Worksheet

Test Name △	Result (1)	Units (1)	Error Code(s) (1)	Error Name(s) (1)
— IP Messages				
Left_Shift?	130		A,HOLD	Abnormal,DIFF
PLT_Abn_Distrib...	1		A,HOLD	Abnormal,Vorte...
Thrombocytopenia	1		A	Abnormal
— CBC				
WBC	4.5	10*3/uL	HOLD	Other Tests Held
RBC	2.47	10*6/uL	Check for clot,...	L,Other Tests ...
HGB	8.6	g/dL	HOLD,	L,Other Tests ...
HCT	25.9	%	HOLD,	L,Other Tests ...
MCV	104.9	fL	HOLD,	H,Other Tests ...
MCH	34.8	pg	HOLD,	H,Other Tests ...
MCHC	33.2	g/dL	HOLD	Other Tests Held
RDW-CV	25.7	%	SCAN,HOLD	Other Tests Held,
— Platelet				
MPV	UTC	fL	A,HOLD,HOLD	Abnormal,Invali...
PLT	28	10*3/uL	W,HOLD,HOL...	Low Reliability,...
IPF	HIDE		HOLD	Other Tests Held
— ADIFF				
DTYPE	ADIFF		HOLD,HOLD	Other Tests Hel...
NEUT%	74.0	%	W,HOLD	Low Reliability,...
LYMPH%	11.8	%	HOLD	L,Other Tests ...
MONO%	8.5	%	HOLD	Other Tests Held
EO%	5.1	%	W,HOLD	Low Reliability,...
BASO%	0.2	%	HOLD	Other Tests Held
IG%	0.4	%	W,HOLD,HOLD	Low Reliability,...
NRBC%	0.0	/100...	HOLD	Other Tests Held
NEUT#	3.31	10*3/uL	W,HOLD	Low Reliability,...
LYMPH#	0.53	10*3/uL	HOLD	L,Other Tests ...
MONO#	0.38	10*3/uL	HOLD	Other Tests Held
EO#	0.23	10*3/uL	W,HOLD	Low Reliability,...
BASO#	0.01	10*3/uL	HOLD	Other Tests Held
NRBC#	0.00	10*3/uL	HOLD	Other Tests Held
— MDIFF				
DTYPE1				
— Images				
DIST_PLT	PNG&R...			
DIST_RBC	PNG&R...			

IP Messages Grouping displays the Instrument's abnormal and suspect flags

CBC grouping displays the Hemogram without the platelet

Platelet grouping displays the platelet. Note: MPV has been moved to this group

ADIFF grouping displays the automated Diff count

MDIFF grouping displays the manual diff count

Images grouping displays the images generated by the instrument

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3. Release or reject by Group
   a. Right click on the test to be released/rejected
   b. If "Release CBC/Reject Other Runs" is selected, DI will release the CBC and reject other CBC from a different run
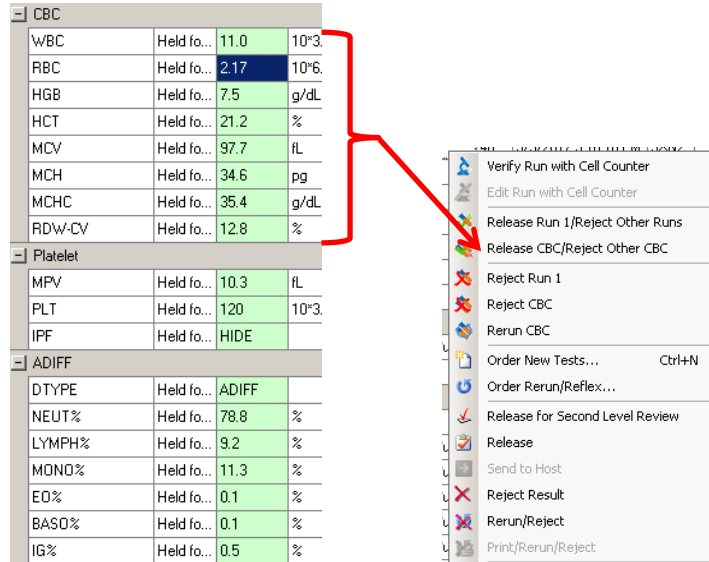
4. Release or reject by Run #
   a. Right click on the specific Result # column to be released/rejected
   b. If "Release Run 1/Reject Other Runs" is selected, DI will release that specific run# and reject other runs

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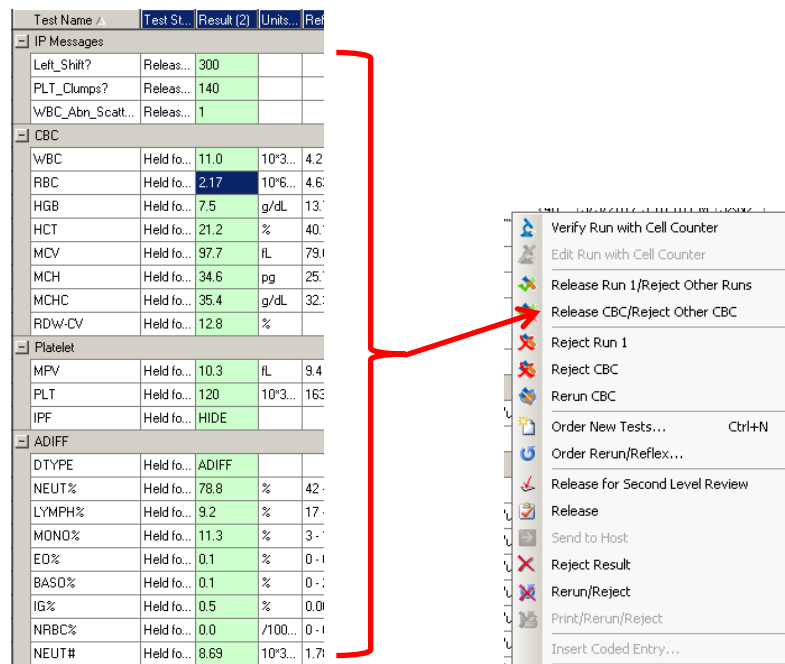
5. To Insert Coded Entry within the Hematology Run Worksheet
   a. Right click on the result field to be edited
   b. Select "Insert Coded Entry"
   c. Select the appropriate code and click OK to close the window
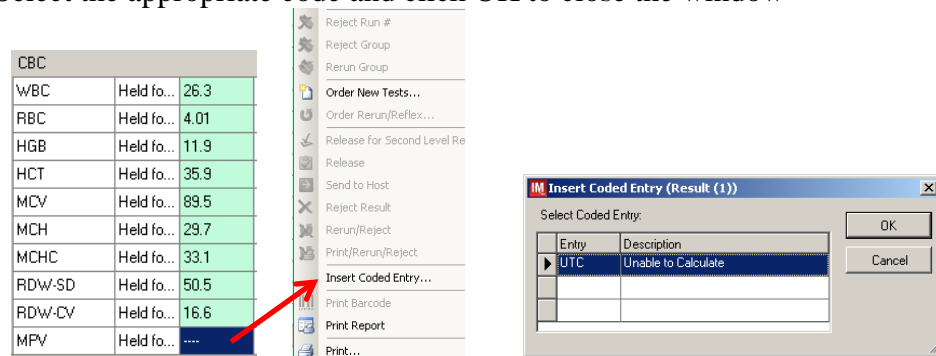
6. To see the previous MDIFF performed
   Go to the DTYPE1 result field and scroll to the right until the most recent previously result of MDIFF is displayed. If there is one, check the date and time of resulting
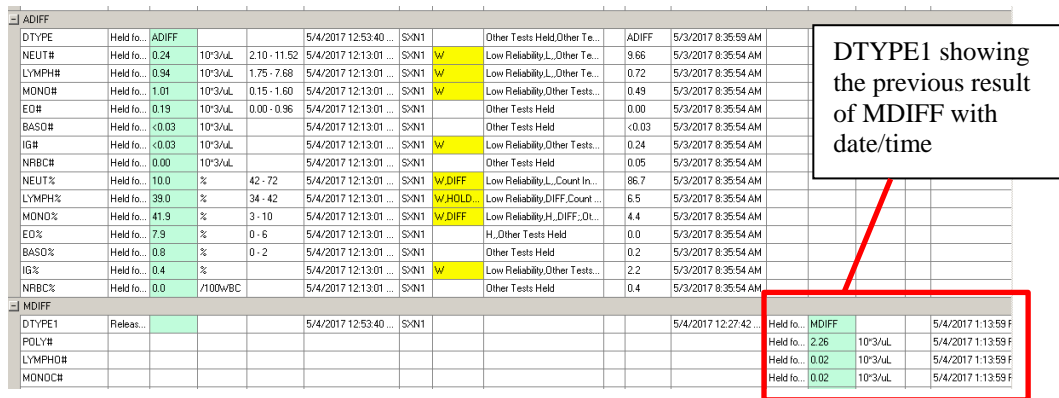
7. Overview of the the Cell Counter

   a. Cell Counter Functions and Fields

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b. Cell Counter Grouping

Displays the default MDIFF result for DTYPE1

The section used to enter the results for RCOM, PCOM and WCOM. To result any of these fields, select "BELOW" from the drop down menu and enter the comment under the Test Comment(s) field preceded with ";"

When this PLT Estimate field is not empty, DI will add "RCM" as a comment on the RunWorksheet.

This is where the WBC Differential cells are counted. The manual cell count can be entered by first activating the cell counter and entering the count by using the assigned shortcut keys. Another way of entering the manual count is by deactivating the cell counter and using the number keypad to enter the count.

This is where the RBC morphology cells are entered. To enter morphology, deactivate the cell counter and select the result field of the cell type observed. A drop down list will display the different results for the selected morphology.

This is where the WBC morphology cells are entered. To enter morphology, deactivate the cell counter and select the result field of the cell type observed. A drop down list will display the different results for the selected

This is where the PLT observations are entered

c. Each site, with the exception of GEC, has two cell counters. Each cell counter can only handle one active user. If another user tries to access the same cell counter that is already in use, DI will display an error that says "configuration is being edited by user: 123456"
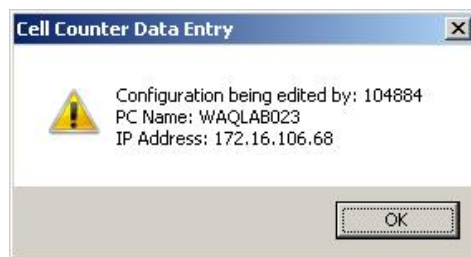
Location	Cell Counter Assignment
GEC	GEC Heme Counter
SGMC Microscope #1	SGMH Heme 1 Counter
SGMC Microscope #2	SGMH Heme 2 Counter
WAH Microscope #1	WAH Heme 1 Counter
WAH Microscope #2	WAH Heme 2 Counter

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8. Using the Cell Counter

    a. To Enter the Accession number for the Cell Counter

        There are two ways of entering the accession number for use by the Cell
        Counter. Once the accession number has been entered, the WBC
        Count_from_the_Analyzer field will be populated with the WBC count from
        the selected run

        i.   By using the "Verify Run with Cell Counter"
             • Right click on the specific result column that you would like to be
               verified by the cell counter
             • Select the "Verify Run with Cell Counter"

             Note: When the verify Run with Cell Counter is grayed out, do
                        the following:

                        o go to the cell counter tab and select a cell counter that is
                           not in use (see section 7c)
                        o go back to the run worksheet

        ii. By manually typing the specimen ID within the Cell Counter
             • Select the appropriate cell counter for your location
             • Enter the accession number within the Specimen ID field and press
               the TAB key

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b. Setting the Total Number of Cells to be Counted field

To change the Total Number of Cells to be Counted:
- Disable the Enable Cell Counter Keys button.
- Enter the desired total count on the "Total Number of Cells to be Counted" field. The default count is 100

Enter total count
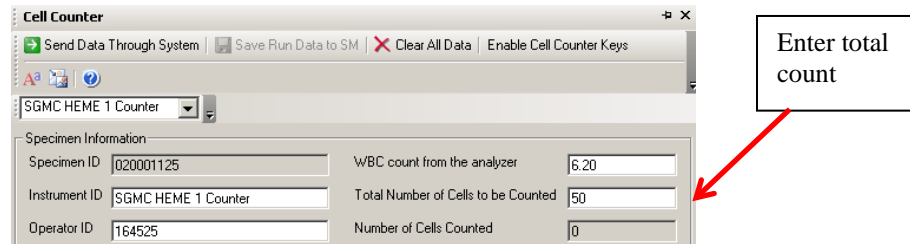
c. To Insert Coded Entry within the Cell Counter
   a. Toggle the "Enable Cell Counter" button to disable it
   b. Click on the result field to show the drop-down menu arrow
   c. Click on the drop-down menu arrow
   d. Select the appropriate code

   Note: The coded entry only works for Morph Comment, Platelet, RBC Morphology, WBC Morphology and PLT Morphology groups
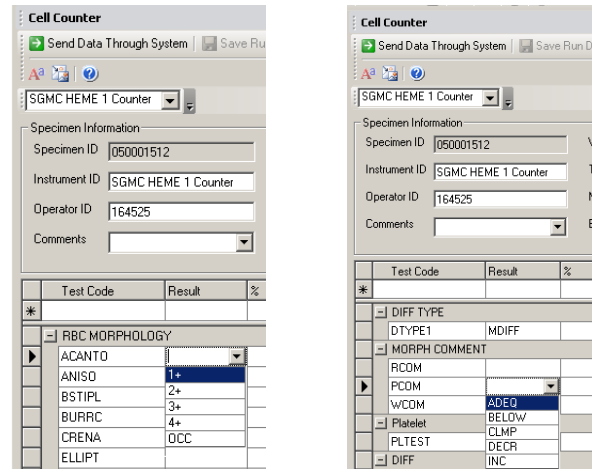
    d. Resulting WCOM (Path Review)
- To enter the narrative from the Path Review, click on the WCOM result field and select "BELOW" from the drop down list. Under the WCOM Test Comment field, enter the path review narrative.
- There is a limit of 450 characters for WCOM. This limit also applies to RCOM and PCOM fields. DI will display an error message of "Over 450 characters" when the comment entered on this field is over the limit
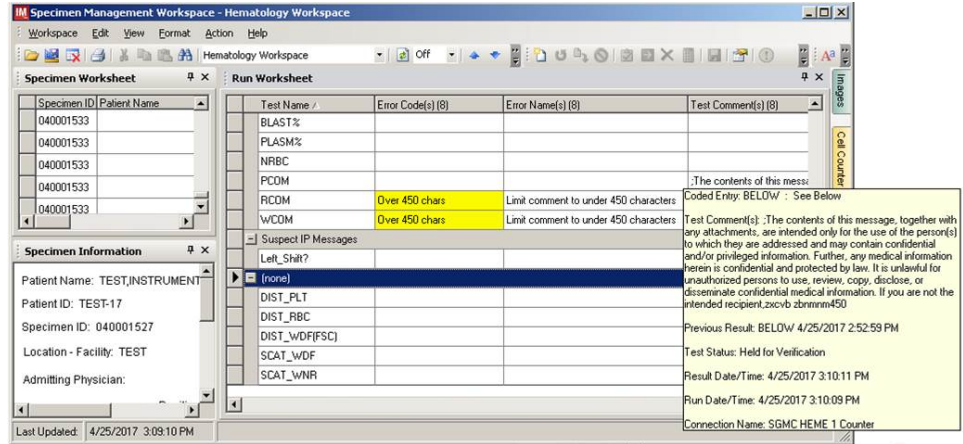
9. Error and IP (Interpretive Program) Messages

Error Code	Error Name	Description
A	Abnormal	Abnormal result due to analysis or hardware error
W	Low Reliability	This error code is equivalent to asterisk (*) on Sysmex printout

IP Message	Work Instruction
Atypical_Lympho?	DIFF- Perform diff
Blasts/Abn_Lympho?	DIFF- Perform diff
Dimorphic_Population	Scan smear for abnormal RBC morph
Fragments?	Scan smear for abnormal RBC morph
IG_Present	DIFF- Perform diff
Left_Shift?	DIFF- Perform diff
NRBC_Present	SCAN. Remove if not seen on smear
PLT_Abn_Distribution	Vortex and Rerun
PLT_Abn_Scattergram	Vortex and Rerun
PLT_Clumps(S)	If not clotted, Vortex. Rerun in PLT-F mode. If unresolved, SCAN
PLT_Clumps?	If not clotted, Vortex. Rerun in PLT-F mode. If unresolved, SCAN
RBC_Abn_Distribution	Scan smear for abnormal RBC morph
RBC_Agglutination?	Warm at 37, rerun. If unresolved, perform plasma replacement
RET_Abn_Scattergram	Perform 1:5 dilution
Sample_Mixing_Failure?	Vortex and Rerun
Turbidity/HGB_Interference?	If gross hemolysis, cancel with HMT. If lipemic, do saline replacement
WBC_Abn_Scattergram	SCAN for abnormal cells and NRBC

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Examples of IP Messages and Abnormal error codes

Examples of "W" (Low reliability) error codes. "W" is equivalent to asterisk (*) on Sysmex

10. Release/Hold Conditions

Condition	CBC	PLT	DIFF	RET	Release/Hold
1	Normal	Normal	Normal	Normal	Release CBC, PLT, DIFF & RET
2	Normal	Normal	Normal	Abnormal	Release CBC, PLT, DIFF. Hold RET
3	Normal	Normal	Abnormal	Normal	Release CBC, PLT & RET. Hold DIFF
4	Normal	Normal	Abnormal	Abnormal	Release CBC & PLT. Hold DIFF & RET
5	Normal	Abnormal	Normal	Normal	Release CBC & RET. Hold PLT & DIFF
6	Normal	Abnormal	Normal	Abnormal	Release CBC. Hold PLT, DIFF & RET
7	Normal	Abnormal	Abnormal	Normal	Release CBC & RET. Hold PLT & DIFF
8	Normal	Abnormal	Abnormal	Abnormal	Release CBC. Hold PLT, DIFF & RET
9	Abnormal	Normal	Normal	Normal	Release RET. Hold CBC, PLT, DIFF
10	Abnormal	Normal	Normal	Abnormal	Hold CBC,PLT,DIFF & RET
11	Abnormal	Normal	Abnormal	Normal	Release RET. Hold CBC, PLT, DIFF
12	Abnormal	Normal	Abnormal	Abnormal	Hold CBC,PLT,DIFF & RET
13	Abnormal	Abnormal	Normal	Normal	Release RET. Hold CBC, PLT, DIFF
14	Abnormal	Abnormal	Normal	Abnormal	Hold CBC,PLT,DIFF & RET
15	Abnormal	Abnormal	Abnormal	Normal	Release RET. Hold CBC, PLT, DIFF
16	Abnormal	Abnormal	Abnormal	Abnormal	Hold CBC,PLT,DIFF & RET

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11. Coded Entry

The following are added to all the components of the CBC and Platelets:

HIS: Result consistent with patient history
PTR: Patient transfused
SREV: Smear reviewed
UTC: Unable to calculate
CLMP: Clumped   **Added to platelet group only
OCC-CLMP: Occasional Clumping **Added to Platelet group only
1+, 2+, 3+, 4+, OCC: Possible results for GPLT (Giant Platelets)
INC, DEC,ADEQ, BELOW: Possible results for PCOM

12. Clumped platelets

Action: Depending upon quantity of clumping noted
a. If platelets clumping is more than occasional, then report PLT as CLMP and
    result MPV as UTC.
b. If platelets clumping is occasional, then add comment of OCC-CLMP in the
    Test comment field associated with PLT.

13. MPV

If on the first run MPV is resulted as "---" DI will display an error code to rerun.
If the rerun is still "---" DI will automatically replace "---" with code UTC

14. SCAN indicated in DI

Action:
Review slide for abnormal cells. If no abnormal cells are seen, then enter SREV
[Smear Reviewed] under the Test Comment field for the test that is associated
with the SCAN comment.

15. Resulting CBC with automated diff with Morphology

   a. Change DTYP1 result to ADIFF
   b. Enter morphology results via the Cell Counter
   c. Click on "Send data through system"
   d. Release the MDIFF group on the run that you want to release
   e. Release the ADIFF group on the run that you want to release

16. Platelet Estimates

   a. Use Cell Counter to result platelet estimate.
   b. Click on "Send data through system"
   c. Platelet estimate results will display in a new run along with the MPV results.
   d. Release the platelet group with the platelet estimate (it will automatically reject the other platelet groups)

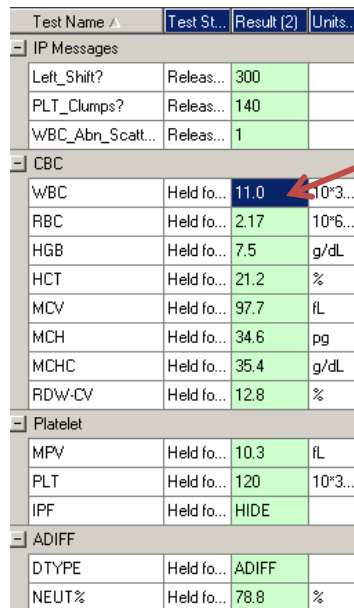   Note: if MPV result is "---" then result MPV in Cell Counter as UTC

Run Worksheet

	Test Name △	Result (9)	Units (9)	Reference ...	Test I...	Error Code(s) (9)	Test Comment...
	⊟ IP Messages						
	WBC_Abn_Scattergram						
	⊟ CBC						
	WBC						
	RBC						
	HGB						
	HCT						
	MCV						
	MCH						
	MCHC						
	RDW-CV						
	MPV						
	PLT						
	⊟ Platelet						
	MPV	8.7			SXN1		
	PLT						
	IPF	HIDE			SXN1		
	PLT Estimate	400	10*3/uL	140 - 400	SXN1		RCM

17. How to select results to release

    a. If you want to release by Group
       Left click on one of the results in the group. Then right click and select
       release by group. *Example*:
           We want to release the "CBC" group. We select the WBC result field and
           then right click to select "release by group"

Test Name △	Test St...	Result (2)	Units...
IP Messages			
Left_Shift?	Releas...	300	
PLT_Clumps?	Releas...	140	
WBC_Abn_Scatt...	Releas...	1	
CBC			
WBC	Held fo...	11.0	10*3...
RBC	Held fo...	2.17	10*6...
HGB	Held fo...	7.5	g/dL
HCT	Held fo...	21.2	%
MCV	Held fo...	97.7	fL
MCH	Held fo...	34.6	pg
MCHC	Held fo...	35.4	g/dL
RDW-CV	Held fo...	12.8	%
Platelet			
MPV	Held fo...	10.3	fL
PLT	Held fo...	120	10*3...
IPF	Held fo...	HIDE	
ADIFF			
DTYPE	Held fo...	ADIFF	
NEUT%	Held fo...	78.8	%

    b. If you want to release an individual test result
       Left click on the result **on the RUN** that you want to release. Then right click
       and select **Release.**

18. Order of result release is **VERY IMPORTANT**

Never release the ADIFF or MDIFF first
Depending on the actual test results for a particular specimen, release in this
order:

    CBC group, followed by Platelet group, then ADIFF or MDIFF

    CBC group, followed by Platelet group, then Morphology, and ADIFF last

    CBC group, followed by Platelet Estimate, then MDIFF

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19. Review of results with critical and/or delta error flags.
Color flagging of results with critical and/or delta error flags(s) will display on both the Specimen and Run Worksheets.

- For results with ONLY a delta error flag

The row is yellow because of the Delta error flag

- For results with ONLY a critical error flag

The row is red because of the Critical error flag

- For results with critical and delta error flags

The row is red because of the Critical error flag. **A Critical flag has higher catergory than a Delta flag**

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