

Mammography QA/QC Reporting and Tracking Module

PenRad offers a comprehensive QA/QC module for breast imaging facilities. The data is captured with simply the touch or tap of the finger and produces instant MQSA reports for audit and inspections. The QA/QC data is centrally located to eliminate the need to correlate and transfer data. This data may be captured or reviewed at any workstation and is capable of displaying a history log and producing a detailed printed hard copy MQSA report.

The PenRad QA/QC module incorporates **one-glance** technology and displays the QA/QC and operational status for each imaging station, reading station and processor on a single screen. The QA/QC module also provides repeat analysis, cassette and CEU status. Data is collected on electronic worksheet screens.

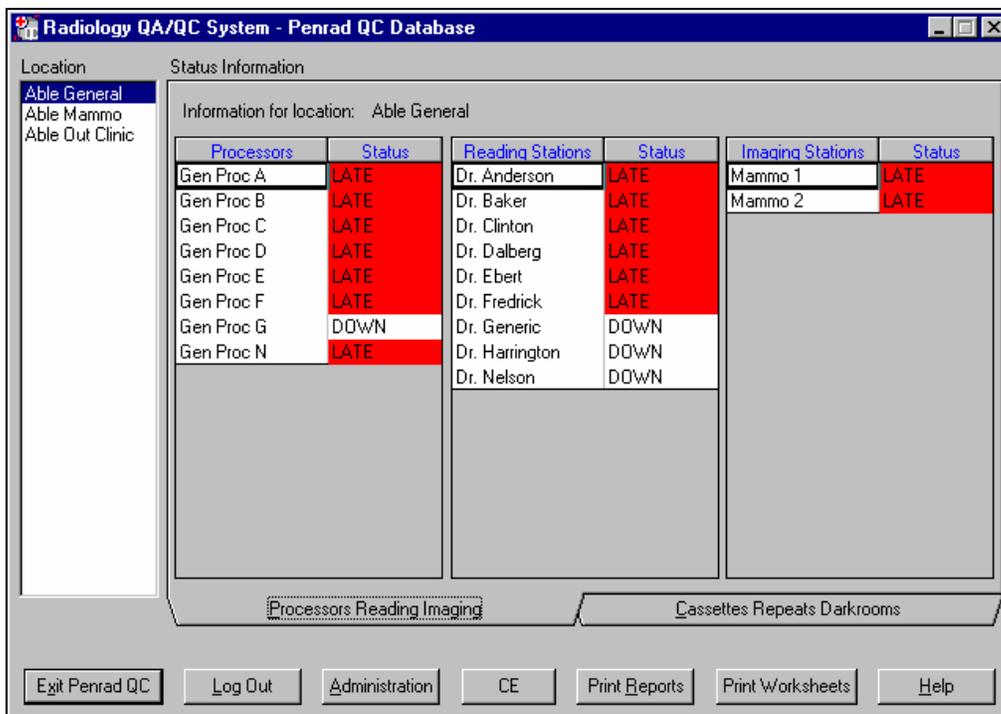
The QA/QC module has a unique **auto-remind** function that allows instant visualization of the current status of your facility. Independent reminder schedules display the current status for each reading and imaging station, processor, repeat analysis, cassette and darkroom. Separate reminder schedules are available for a specific day or days of the week and month, or by month, week and day for each item.

Variance-alert technology, combined with the automatic calculation of crossover, density, processor and phantom values, instantly alerts facilities when variances are exceeded.

Ease of use and simplicity allow the facility to automatically collect, retrieve and produce MQSA audit information effortlessly and instantly to increase staff utilization.

The QA/QC module tracks, reminds, and computes statistics for up to 16 individual imaging, reading and processing areas. Separate repeat statistics can be monitored for up to 16 different sites or locations. Unlimited numbers of cassettes at multiple locations may also be tracked and monitored. CEU credits can be tracked for your entire staff and may be identified by staff type and location.

The staff, with a single tap, can easily access or send any messages for any equipment that is off-line or down and instantly review corrective action and target return to service time. With a second tap, you can review or add data to record the QC session and immediately generate a QA/QC worksheet or electronically record the QA/QC data.



The main QA/QC screen displays the QA/QC and operational status in a summary format for each imaging and reading station, processor, repeat analysis, cassette and CEU. To view or add detailed information for a particular item, tap the item or the appropriate button.

To view a correction schedule, service order status or send a message, simply tap the down button for instant viewing.

Tap the worksheet button to instantly produce a printed worksheet or detailed history worksheets for MQSA.

To return to main PenRad application, tap the exit button.

Featured below are a few sample screens to illustrate the scope of the QA/QC module. **One-glance** reminder schedules are used for each imaging and reading station, processor, cassette and darkroom. Stations down and messages may also be specified. Data elements and worksheet information are recorded for each QC recording session along with their individual identification and any associated notes.

Recorder Activity - Location: Able General

Activity Selection: Processors, Reading Stations, Imaging Stations, Repeat, Cassettes, Darkroom

Department: CT, Fluoro, General Xray, General Xray2, **Mammo Screening**, MRI, Urgent Care

UPDATE QC DATA FOR: Mammo Screening Department. Recording Date: 07/08/1999

Reject Type: Film Count % of Total Total Films Used: 753

Positioning	8	40	Rejects/Repeats Totals	# of Films	%
Patient Motion	0	0	Total Rejects	60	7.97
Light Films	2	10	Total Repeats	20	2.66
Dark Films	0	0	<input checked="" type="checkbox"/> Repeat Data for a Department (un-check if data is for a Tech)		
Black Films	0	0	Select New QC only if adding a new separate record for same day. For example- Record QC for each Tech.		
Static	0	0			
Fog	4	20			
Wrong ID/ Dbl Exp	0	0			
Mechanical	0	0			
Miscellaneous	6	30			
Good Films	0	0			
Clear Film	0	0			
Wire Localization	0	0			
QC Films	40				

Technologist ID: Admin Recording Date: 11/18/1999

Recorder Activity - Location: Able General

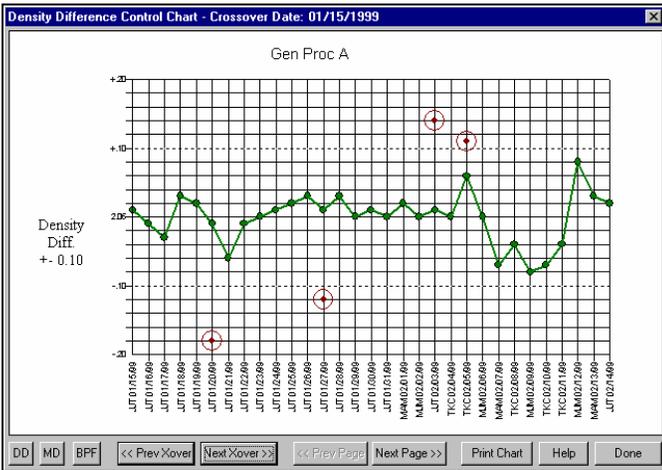
Activity Selection: Processors, Reading Stations, Imaging Stations, Repeat, Cassettes, Darkroom

Processor Summary for: Gen Proc A

Item	Status	Next QC Date	Last QC Date
Control Chart Items (d)	LATE	10/25/1999	10/22/1999
Processor Cleaning	LATE	10/28/1999	10/21/1999
Fixer Retention (q)	OK	01/10/2000	10/13/1999
Crossover (New film lot)			07/27/1999

Manufacturer: Samsung
Model Number: SS-5512
Serial Number: 9876567

Technologist ID: Admin Recording Date: 11/18/1999



Recorder Activity - Location: Able General

Activity Selection: Summary, Visual, Phantom, Compression, Note History

UPDATE QC DATA FOR: Mammo 1 Recording Date: 08/26/1999

Phantom ID: 95 Base Values Variance Alert Values Out of Range Values

KVP Setting: 26

Exposure Time (mAs): 101.00 102.00 -1.00 15 %

Background Density: 1.52 1.51 0.01 0.1

OD Outside Disk: 1.55

OD Inside Disk: 1.10

OD Difference: 0.45 0.46 -0.01 0.05

Fiber Count: 4.00 4.00 0.00 0.5

Specks Count: 3.00 3.00 0.00 0.5

Masses Count: 4.00 4.00 0.00 0.5

Phototimer Position: 3.00

mA Setting: 0.00

Manual Exposure Time: 0.00 Emulsion Number: []

Phantom Crossover Date: 02/04/1999

Technologist ID: Admin Recording Date: 11/18/1999

Mammography QC/QA Reporting and Tracking Report Module

Data collected is displayed and printed via the report screen and can also be electronically exported for further processing to Excel, PowerPoint, etc.

Reading Station Detail Report Date: 1/16/00 Page: 1

Location: Able General Beginning QC Date: 4/1/99 Ending QC Date: 12/31/99

Reading Station	QC Date	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11	Unit 12	Tech Initials
Dr. Anderson	5/24/99	Lumens Cleaned New Bulbs	Yes	Yes		JJT								
	9/7/99	Lumens Cleaned New Bulbs	Yes		Yes			Yes	Yes	Yes	Yes			JJT
Dr. Baker	6/7/99	Lumens Cleaned New Bulbs	Yes	Yes										JJT
	10/2/99	Lumens Cleaned New Bulbs	Yes	Yes		JJT								
Dr. Clinton	5/24/99	Lumens Cleaned New Bulbs	Yes	Yes		JJT								
	9/2/99	Lumens Cleaned New Bulbs			Yes	Yes	Yes	Yes	Yes					JJT
	8/23/99	Lumens Cleaned New Bulbs		Yes	Yes	Yes	Yes							JJT
	12/21/99	Lumens Cleaned New Bulbs	Yes	Yes		MMC								

Reading Station QA/QC Reports

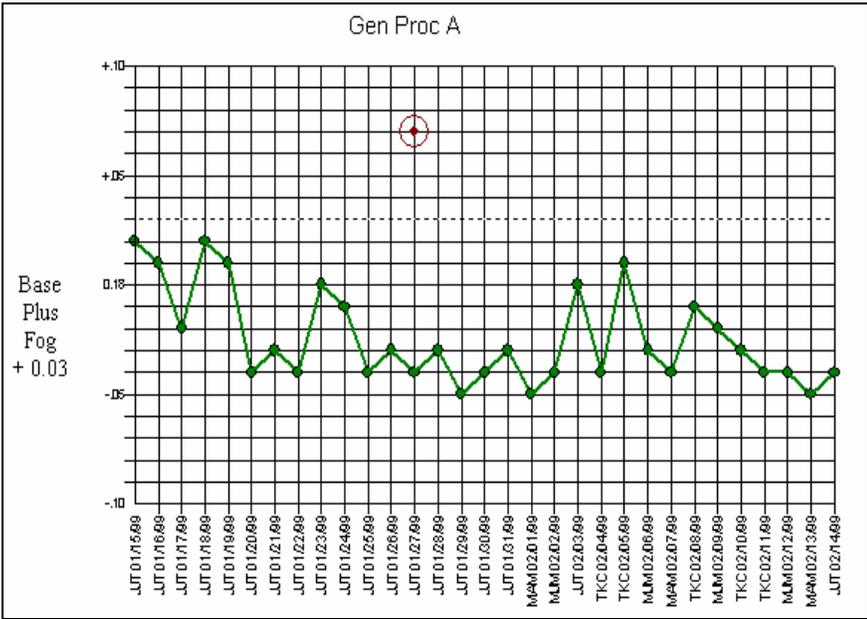
Available by department, reading station and for given date range. In addition, reading station added notes are displayed.

Darkroom QA/QC Reports

Available by darkroom for given date range for cleaning, fogged values and status.

Cassette QA/QC Reports

Available by department for given date range for cleaning, contact and density test.



Processor QA/QC Reports

Processor Control Chart Graphs
 Available for display and printing for Base Plus Fog, Mid Density and Density Difference for each new crossover. When recorded value is out of range it appears with a circle along with corrected value for that date. Charts indicate values, initials of recorder and date.

Processor Control Charts Reports
 Available reflecting the recorded number values for display and printing. Reports are sorted and grouped by processor crossover date for simplified management and audit.

Processor Control Note Reports
 Available for display and printing of notes associated to the processor. These notes are also available instantaneously on-line. Reports are sorted by date, note type (control chart, crossover or fixer) and reflect the initials of staff that added the note.

Processor Control Fixer Reports
 Available for reflecting the stain values for display and printing. Reports are sorted and grouped by processor.

Control Chart Crossover Detail Report

Location: Able General Next Control Chart QC Date: 12/28/99 Date: 1/15/00
 Processor: Gen Proc A Next Processor Cleaning Date: 1/27/00 Page: 1
 Manufacturer: Samsung Next Fixer Retention QC Date: 1/10/00
 Model: SS-5512
 Serial: 9876567 Beginning QC Date: 01/15/99 Ending QC Date: 02/09/99

Crossover Date	Low	Mid	High	Base Plus Fog	Density Difference	Film Lot/Emulsion #	Film Manufacturer
1/15/99	1.00	1.28	3.06	0.18	2.06	E9786	Kodak

Control Chart QC Date/Time	Processor Cleaned	Developer Repl. Rate	Fixer Repl. Rate	Repl. Tech Initials
1/15/99	Yes	flood	flood	JJT
1/16/99		flood	flood	JJT
1/17/99		flood	flood	JJT
1/18/99		flood	flood	JJT
1/19/99		flood	flood	JJT
1/20/99		flood	flood	JJT
1/21/99		flood	flood	JJT
1/22/99		flood	flood	JJT
1/23/99		flood	flood	JJT
1/24/99		flood	flood	JJT
1/25/99		flood	flood	JJT
1/26/99		flood	flood	JJT
1/27/99		flood	flood	JJT
1/28/99		flood	flood	JJT
1/29/99		flood	flood	JJT
1/30/99		flood	flood	JJT
1/31/99		flood	flood	JJT
2/1/99		flood	flood	MAM
2/2/99		flood	flood	MJM
2/3/99	Yes	flood	flood	JJT
2/4/99		flood	flood	TKC
2/5/99		flood	flood	TKC
2/6/99		flood	flood	MJM
2/7/99		flood	flood	MAM

Repeat QA/QC Reports
 Available by department, individual machine and technologist for given date range. This data reflects trends for management for repeat analysis by technologist, machine, etc.

Repeat Detail Report

Location: Able General Date: 1/16/00
 Beginning QC Date: 5/1/99 Ending QC Date: 12/31/99 Page: 1

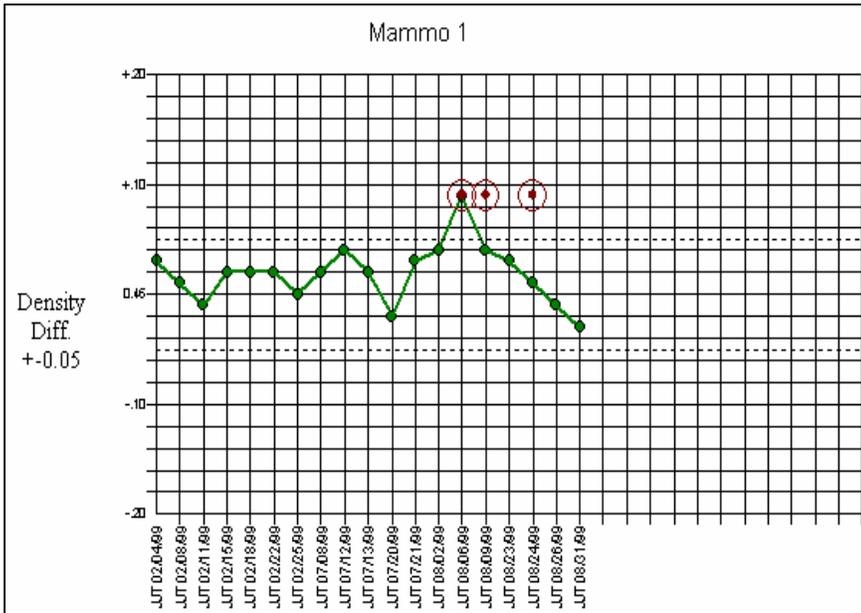
Dept.	QC Date	Pos. Motion	Patient Films	Light Films	Dark Films	Black Films	Static	Fog	Wrong Patient	Mech	Misc	Good Films	Total Repeats	Clear Film	Wire Loc.	QC Films	Total Rejects	Total Films Used
Mammo Screening	5/25/99												9	2	0	63	74	1108
		% 66.67	11.11	22.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.81	2	0	63	74	1108
	7/8/99												20	0	0	40	60	753
		% 40.00	0.00	10.00	0.00	0.00	0.00	20.00	0.00	0.00	30.00	0.00	2.66	0	0	40	60	753
	8/2/99												22	0	3	70	95	1305
		% 36.36	0.00	27.27	0.00	0.00	0.00	0.00	0.00	0.00	36.36	0.00	1.69	0	3	70	95	1305
	10/14/99												30	0	0	25	55	1126
		% 10.00	0.00	83.33	0.00	0.00	0.00	3.33	0.00	3.33	0.00	0.00	2.66	0	0	25	55	1126
	12/21/99												8	0	0	24	32	1000
		% 25.00	0.00	0.00	0.00	37.50	0.00	12.50	12.50	12.50	0.00	0.00	0.80	0	0	24	32	1000
Total for:																		
Mammo Screening		27	1	35	0	3	0	6	1	10	6	0	89	2	3	222	316	5292
		% 30.34	1.12	39.33	0.00	3.37	0.00	6.74	1.12	11.24	6.74	0.00	1.68					5.97
All department total:		27	1	35	0	3	0	6	1	10	6	0	89	2	3	222	316	5292
		% 30.34	1.12	39.33	0.00	3.37	0.00	6.74	1.12	11.24	6.74	0.00	1.68					5.97

Continuing Education Reports
 Available by the individual for given date range for course, credits, date.

Continuing Education History Report

For: Anderson, Christine A Radiologist DOB: 12/12/1944 ID#: 312312312 Date: 04/06/2000
 Beginning Date: 04/01/99 Ending Date: 09/01/00 Page: 1

Course Date	Description	CE Reference Num. or Approving Origination	Credits	Credit Type
04/14/1999	Dealing with difficult Technologists	121223	8.00	A
05/12/1999	Interpreting Mammography Skills	121223	6.00	A



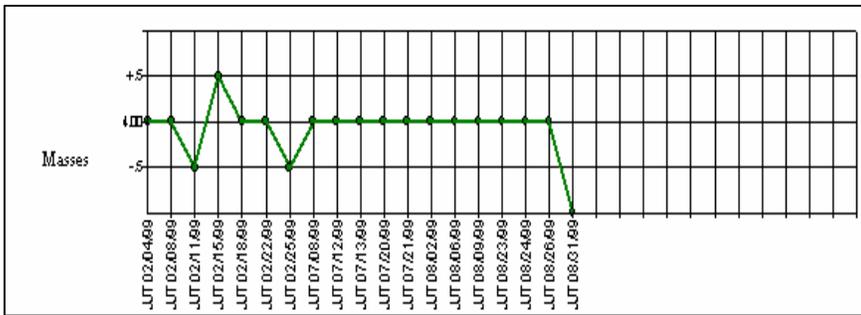
Phantom Detail QA/QC Reports

Phantom Detail Chart Graphs

Available for display and printing for Density Difference, Exposure Time, Background Density, Specks, Masses and Fibers for each new crossover. When a value is out of range, it appears with a circle along with corrected value. Charts indicate values, initials of recorder and date.

Phantom Detail Reports

Available reflecting the recorded values for display and printing. Reports are sorted and grouped by crossover date for each Imaging machine to simplify management and audit.



Phantom Detail Note Reports

Available for display and printing notes associated to the Imaging machine. Notes are on-line. Reports are sorted by date, note type (Density Difference, Exposure Time, Background Density, Specks, Masses, Fibers) and reflect the initials of staff that added the note.

Phantom Detail Report														Date:	1/16/00		
Location: Able General		Beginning QC Date: 1/1/99				Ending QC Date: 2/4/99						Page:		1			
Imaging Station	QC Date	Tech Initials	Phantom ID	KVP	mAs Exp. Time	Background Density	OD Outside Disk	OD Inside Disk	OD Diff.	Fiber Count	Spec Count	Masses	Detector Position	mAs Setting Time	Exp. Number	Emulsion Number	Phantom Crossover Date
Mammo 1	1/4/99	JJT	1234	26	101.00	1.48	1.48	1.00	.48	3.00	4.00	3.00	3.00	0	.00		1/4/99
		Base Values:			100.00	1.50			0.45	3.00	4.00	3.00					
		Alert Values:			%15.00	0.10			0.05	0.50	0.50	0.50					
		Out of Range Data:															
	1/7/99	JJT	1234	25	103.00	1.52	1.52	1.05	.47	3.50	3.50	3.50	3.00	0	.00		1/4/99
		Base Values:			100.00	1.50			0.45	3.00	4.00	3.00					
		Alert Values:			%15.00	0.10			0.05	0.50	0.50	0.50					
		Out of Range Data:															
	1/11/99	JJT	1234	27	101.00	1.55	1.55	1.07	.48	2.50	4.50	2.50	3.00	0	.00		1/4/99
		Base Values:			100.00	1.50			0.45	3.00	4.00	3.00					
		Alert Values:			%15.00	0.10			0.05	0.50	0.50	0.50					
		Out of Range Data:															
	1/14/99	JJT	1324	26	101.00	1.49	1.49	1.05	.44	3.00	4.00	3.00	3.00	0	.00		1/4/99
		Base Values:			100.00	1.50			0.45	3.00	4.00	3.00					
		Alert Values:			%15.00	0.10			0.05	0.50	0.50	0.50					
		Out of Range Data:															
	1/18/99	JJT	1324	26	105.00	1.53	1.53	1.10	.43	3.00	4.00	3.00	3.00	0	.00		1/4/99
		Base Values:			100.00	1.50			0.45	3.00	4.00	3.00					
		Alert Values:			%15.00	0.10			0.05	0.50	0.50	0.50					
		Out of Range Data:															
	1/21/99	JJT	1234	26	108.00	1.54	1.54	1.10	.44	3.50	4.50	3.50	3.00	0	.00		1/4/99
		Base Values:			100.00	1.50			0.45	3.00	4.00	3.00					
		Alert Values:			%15.00	0.10			0.05	0.50	0.50	0.50					
		Out of Range Data:															

Visual QA/QC Reports

Available by department, imaging station and for given date range. In addition, imaging station added notes are displayed.

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