Instructions in the use of NHSE equipment database
Physics Mammography Performance Testing

1. **Summary**

- This database is to be used to record performance testing of mammographic equipment.
- Ensure compliance with NHSBSP report "Breast screening: guidelines for medical physics services"
- The database contains an inventory of equipment and is currently used by screening units to record faults.
- NCCPM runs the database on the behalf of NHSBSP.
- NCCPM assigns the screening units to the medical physics departments
- Physic leads add staff to their physics department.
- Data entry is via a website either manually completing a web form or uploading a spreadsheet. A template spreadsheet can be downloaded for each screening unit.
- There is a minimum set of data required, though users are encouraged to complete the full set of data
- It is possible to adapt or import the template into Medical Physics' current worksheets.
- It is possible to produce reports on
  - Key performance indicators on performance testing
  - Summary of radiographer reported equipment faults

2. **Introduction**

A database has been developed to allow NHS England (NHSE) to review that physics services, employed by the breast screening units, are meeting the requirements of their service provision. The database will allow key performance indicators (KPI) of the equipment to be documented to assure NHSE that the equipment is fit for purpose and to enable trend analysis to be carried out where required. Some of the KPIs are set out in the NHSE report "Breast screening: quality assurance for medical physics services".

A subsidiary addition to the database to collect more detailed physics testing information is also provided.

Benefits:
- Allow NHSE and SQAS to review performance of centres
- Consistent method to notify professional clinical advisors (PCA) of testing undertaken
- Ensure consistency in approaches between PCAs
- Ability to look for trends in performance
- Provide evidence for future quality control (QC) standards and tolerances
- Provide a data resource for medical physics providers to compare results with typical national values

This database is linked to a database for recording faults on all types of equipment in the breast screening program that has been operational since 2017. This will be advantageous for ensuring the accuracy of the fault database and also provides more information to the physics service on the reliability of the equipment and may be used in conjunction with the quality assurance programme.

This database is run and hosted by NCCPM. A description of the overall database can be found in Appendix 1.

3. **Modalities**

The database is primarily set up to record QC of mammography x-ray systems, there is the facility to record ultrasound QC as well.

4. **Access to database**

The database can be accessed via https://medphys.royalsurrey.nhs.uk/faults/. The database has been tested on a number of platforms. There are some known issues with Internet Explorer and so where possible an alternative browser should be used.

Use of the database

Setting up a physics service
The initial setting up of a physics service is undertaken by the admin at NCCPM. The following roles will need to be allocated (Fig. 1):
- Allocation of screening centre(s) to medical physics centre
- Physics lead
- Physics and Radiography PCAs for each screening centre

A list of PCA and SQAS members who can view the survey data for the screening centres is shown at the bottom of the 'Update Physics Service' page. If this is incorrect inform NCCPM.

Addition of new physics staff
The physics lead has the responsibility to create new users and add them to the medical physics department. There are three roles that can be allocated
- *Lead physicist:* Normally this will be one person, for a larger service this may be more members of staff. The users listed here will be able to add users to the database and then to the medical physics department. They can edit and add equipment to the screening units.
- *Member:* They will be able add new surveys. Also view radiographic equipment.
- *Approval member:* The can add surveys and approve the survey.

Staff can appear in more than one role. It is essential that all members of the physics team who undertake QC are on the 'Members' (Fig. 1) list, otherwise they cannot add performance testing reports and their names will not appear on the dropdown box of names for inclusion in the reports.

Fig. 1: Updating physics service

Users not in the database: This can only be undertaken by the physics lead. The addition of new staff is under 'Users', 'Add new user' (Fig. 2). The username should be 'initial of first name' and 'whole surname' - a suffix of a number can be used if that username already exists. The designation of the user will be automatically assigned as 'Physics staff', most users should be given the 'User type' of 'general user'. The new user will then receive an automated email to gain access to the system and edit their details (Fig. 3) - users should check the spam folder, if the email is not received. The system will not allow a new user to be given the same email address or username as a current user on the system.

Transfer of user from another service:
- Leaving a centre: If a member of staff is leaving a medical physics department. Then the service lead must remove that person from their medical physics department. If they are also leaving the profession, request that NCCPM disables the user from the database.
- New centre: should add the user to their medical physics department. They should not create a new user.

If the user needs to change email address – then this will have to be undertaken by an admin such as NCCPM.

Changes to PCA and SQAS: NCCPM should be informed of any changes of PCAs or SQAS, and they will update the database. A list of Physics and radiographer PCAs that have access to the data of the fault and QC data associated with a screening centre are listed in the Medical Physics service (Fig. 1).

Fig. 2. Physics lead adding new user ('Physics staff')

Fig. 3: Edit profile of user

User details:
Staff can edit their detail under 'My Profile'. The password can be changed there. Please note that passwords are only valid for one year and will need to be changed.

Equipment details
The database contains a list of equipment used by the NHSBSP. This contains not only mammography systems but also items such as trailers, reporting workstations, specimen cabinets. The lead physics will be able to

QC visit data

The structure of the physics QC data is shown in the Appendices as follows
- Appendix 2: Details of the QC visit. These are compulsory fields to be entered. The 'Breast Screening Service', 'Local equipment identifier', Reporting and attending staff names must match exactly the pre-determined values in the database, e.g. if the 'Local equipment identifier' does not

match the values in the database exactly then the added data would not be linked to the correct system. Detector and tube replacements will be classified in survey type as "Fault repair".

- Appendix 3: Physics results (minimum recommended). The results of QC testing will be entered here. This is the minimum data set expected to be submitted. This is currently a restricted minimum set for the introduction of the database, but this can be expanded. The fields are marked with a star in the input form.
- Appendix 4: Physics results (complete set). The additional data must be entered at commissioning, and ideally should also be entered if the data is collected at routine testing. It is expected that this should not involve more work than solely collecting information for Appendix 3.
- Appendix 5: Report comments. Comments in the report requiring action should be recorded here. Each comment will be classified e.g. artefacts, uniformity etc. The classification must match the pre-determined values. More options may be added on request. The comments must be about the equipment rather than processes associated with the equipment.

It should be noted that the spreadsheet for data collection contains a mixture of the data from Appendices 4 and 5. If data is re-categorised as core rather than additional, then this is a simple change.

On selecting a piece of equipment the core data outlined in Appendix 2 must be entered. This will be automatically validated for the correct format and will not allow submission if mismatches are identified. Users can either enter the data manually on the webpage or use a standardised spreadsheet which can be downloaded with the data headings and formats necessary to enable upload of all values at once. Local Physics services may then link this spreadsheet to local reporting mechanisms to automatically complete the document. On upload the data will be stripped, validated and entered into the system. Any data not in the correct format or which does not match one of the pre-determined values will be highlighted in red. The data can then be adjusted manually or the spreadsheet can be adjusted and uploaded again. The submission can then be accepted. It is the responsibility of the Lead for that physics service to ensure that the correct data is in the correct fields.

The database will allow blanks in the data entry for the physics data (Appendices 4 and 5). This will allow for tests that were not completed or would not be undertaken as part of the survey; for example if a partial survey was carried out to address a specific issue. It is highly recommended that both sets of physics data (Appendices 4 and 5) are uploaded as this will aid in national assessment and consistency in reporting. If required, the response rate of data collection for the physics data in Appendix 4 can be collated for the PCAs. It is expected that once the spreadsheet is set up then there should be no difference in the time required by each department for submitting only Appendix 4 data as opposed to submitting Appendix 5 data as well.

Once data is accepted, the PCA for medical physics for that region will receive notification that a new submission has been made. It is proposed that the lead of physics (or other nominated staff members) will review the submission and validate the data once they are satisfied. Once data has been validated then notification will be sent to the PCA.

Entering QC data

The overall process for the QC data is as follows:
1. Enter physics data
2. Approved by member of physics staff
3. Notification to physics PCA

Following a QC visit, the data can be entered into the database (Fig. 4), select 'Physics QA' 'Add New Data'. The data should be submitted to the database when the report to the screening centre is sent. Failure to submit these reports in a timely manner may result in the medical physics department fail the KPIs set.

Two options for entering data:

Spreadsheet: Select 'Download template' and select the screening unit for the survey. The data can then be entered into the spreadsheet or ideally linked to the physics department's standard output format. The spreadsheet can then be uploaded. The data should be checked for accuracy, especially names, and dates. Physics staff attending a test as a buddy visits will need to be added using the website rather than the excel sheet. See 'Linking spreadsheet template to department data'.

Directly to database: 'Show/Hide form'. The data can be entered directly. It is possible to use the 'Show/Hide non-mandatory fields' to show only the minimum required data.

Survey type: There are five option for classification (Commissioning / Routine / Upgrade / Fault repair / Other). Tube or detector replacement should be classed as fault repair. Occasionally, a non-routine test such as following an upgrade or fault repair is close to the due date of the routine QC test, that the full routine QC is undertaken. In this case, the test should be recorded as routine and a comment added for the reason for the visit.
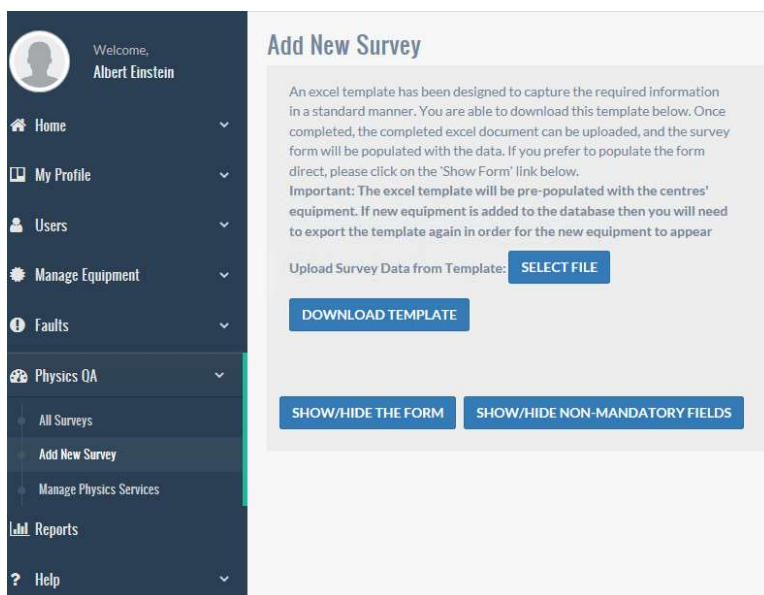

Fig. 4: Adding QC data to database

Adding staff names to QC form [Note this is not intuitive, please read]: Names entered onto the spreadsheet must be spelled in exactly the same way as the database. If a member of staff from another department (i.e. buddy visit) was also on the survey then the data must be added on the online form. Names can be added or modified on the online form by clicking on 'Click to update staff member' (Fig. 5a). Then a pop-out window (Fig. 6) for data entry is opened.

- *Local staff:* If the physics staff is in the local physics department then simply select the name from the drop down, if the name is not on the list then the physics lead needs to add them.
- *External staff:* For staff outside of the local physics, then enter the email address (registered to the user) if the email is correct then the users name will be added. If the email address is not on the database of users – then check the email address and if the physics staff member has actually been added as a user.

Fig. 5a: First half of data collection form, showing only mandatory fields (note area for selecting name is circled in red)

Fig. 5b: Second half of data collection form showing only mandatory fields

Fig. 6: How to add staff member to a survey

When the form is complete and checked then click on the 'Submit form' (Fig. 5b). The data will be checked for validity and that the necessary fields have been completed. Any errors will be highlighted in red (Fig. 8). If some data has not been collected it is possible to force the data to be accepted (Fig. 7).

Fig. 7: Force data to be accepted

Fig. 8: Data missing, or not complying with data rules

Linking spreadsheet template to department data

The template excel spreadsheet (Fig. 9) sets out the fields that are in the database, it includes the limits and specified options for data. It also has the names of the cells that are used by the database to identify the correct location for the data within the spreadsheet for each field in the database. Thus the organisation of the spreadsheet can be adapted providing that the cell names are in the spreadsheet that is uploaded.

Three possible general methods creating a spreadsheet suitable for uploading:
1. Manually enter the data into the template.
2. The KPI template can be combined with the departments existing excel template spreadsheets. This is considered the best way to automate the process.
   a. Note, use right click on 'data entry' tab and use 'Move or copy…' to copy whole sheet to another worksheet. Do not use: ctrl-A, ctrl-C, otherwise the cell names are not kept.
3. The cells in a department's existing excel template spreadsheets can be renamed to match those found in the KPI template.
   a. The cell name must be used only once. If there are upload problems, check excel sheet cell names using 'Formulas' and 'Name manager'.

Method 2 may be more practical for automating the process, in cases of difficulties then it can be exported as a separate sheet before uploading. Method 3 can be quite complex in situations where there are a lot of pre-defined cell names and macros. If method 3 is preferred then careful progress should be made and test that the upload will work before linking all of the cells. The use of 'Formulas' and 'Name Manager' in Excel will be useful in the setting up process.

	C	D	E	F
1				
2		Indicates a required field		
3				
4	Centre	Holby City | Middle England | ABC		
5	Equipment Type	x-ray set		
6	Equipment	GE | Essential | XXX123 | 2017 | ME1 | Static		
7				
8	Survey Type			
9	Survey Date			
10	Report Date			
11	Survey Lead		Once uploaded, please check that these names have recorded before submitting	
12	Attending Staff 1		Once uploaded, please check that these names have recorded before submitting	
13	Attending Staff 2		Once uploaded, please check that these names have recorded before submitting	
14	Attending Staff 3		Once uploaded, please check that these names have recorded before submitting	
15	Attending Staff 4		Once uploaded, please check that these names have recorded before submitting	
16	General Comments			
17	Is System operating satisfactorily?			
18				
19	*Physics upload spread sheet*			
20				
21	**Data item**	**Result**	**Instructions**	
22	MGD to Perspex (mGy)			
23	MGD for 20 mm PMMA			

Fig. 9: Template Excel sheet for uploading data. Red square indicates the name and location of the cell in D8 (Survey Type)

A list of the cell names are in Appendices 2-5.

Note that not all the cell names need to be included in the spreadsheet, but *centre, Equipment_Type, equipment* fields are required to link to the database. We recommend that all of the data is linked (Appendices 2 to 5), however, there is a minimum of linked data that is set out in Appendices 2 and 3.

Approve survey results
Once survey data has been entered then the survey can be approved by anyone on the approved list for that medical physics department. Those that can approve surveys can receive email notifications, this can be set in the user's profile, by default it is turned off (Fig. 3). The KPI report will only include the surveys that have been approved. If the survey data is edited then the survey will need to be re-approved.

Viewing and Reporting of data
Physics users can export and review data from the 'Physics QA' – 'All Surveys' tab – using the export button (Fig. 10).
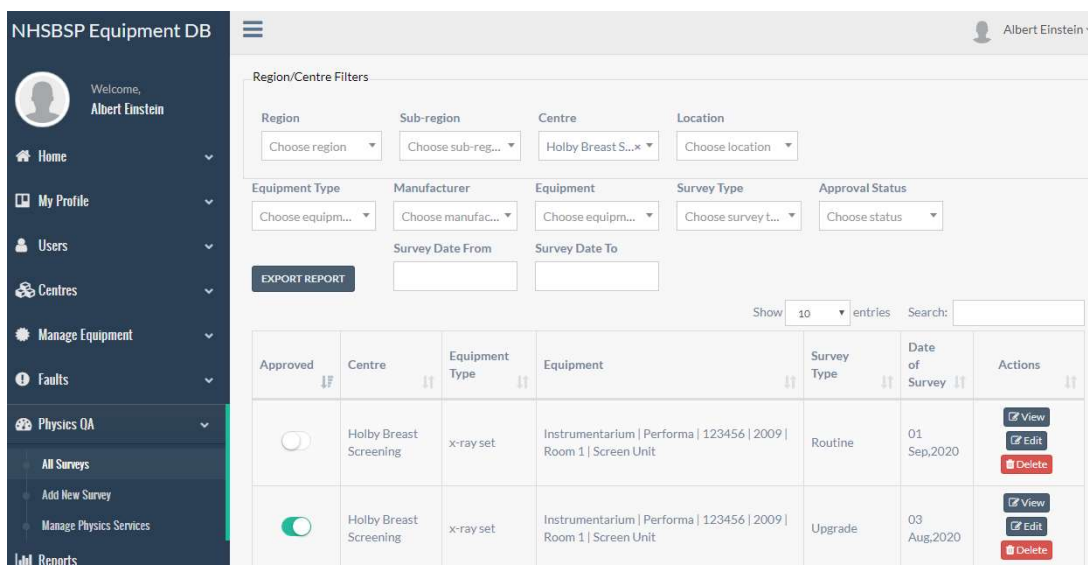
Fig. 10: Review of surveys on database and for approving

SQAS QA officers (as read only users) and SQAS physics PCA (as read only users) will be able to access the database to review the current progress of their region. Physics leads will be able to access the database to review the progress in their services and ensure that the data is of sufficient quality. It is possible to use the filters to see only data for a region, centre or one mammography unit.

Planned: A dashboard will display the number of pieces of equipment in their region, the surveys completed within 6 months of the last survey, and overdue surveys and reports. The pass or fail rates of the minimum datasets will be visible for the core data. This data may be interrogated further to determine sites of failures and further detail.

The additional data uploaded via spreadsheet will be available on request from NCCPM in order to allow wider access. A process for access to anonymous national data will need to be set up; certainly any request will need to be justified. NCCPM may use this information to provide reports to Public Health England and future advice on performance testing.

Reporting against key performance indicators

A summary report of the performance testing undertaken can be created using 'Reports' (Fig. 11). The user can choose the centre or region and date range, the results will be in excel format with two sheets:
- A list of all testing undertaken with key results
- A summary of the routine QC and commissioning undertaken for each system and a comparison against the KPIs.

Example outputs can be seen in Appendix 6. This only includes results that have been approved.

Fig. 11: Reports on KPIs and radiographer reported equipment faults

Fault database

The equipment database contains a list of equipment (Fig. 12), which is available for review by physics staff. This can be edited by Physics Leads.

The database contains the submitted faults from the equipment in the breast screening centres. Individual faults can be reviewed under 'Faults' – 'All Faults', this page can also be used for exporting data about faults according to the filters chosen by the user (Fig. 13).

A summary report of the faults added to the database can be produced (Fig. 11). This is useful for departments to understand which centres are reporting and what issues are arising in their centres. This has not been implemented for the Physics QA data but will be implemented in the near future.

Fig. 12: List of equipment in database

Fig. 13: Review of faults in database

Contact / Help required

Details for contacting NCCPM are on the website, though the best contact is by email (rsc-tr.nccpm@nhs.net). There is also some basic help available on the website.

If you are reporting a bug in the software, then please state if you are using a MAC or a PC and which internet browser and version you are using.

APPENDICES

Appendix 1: Structure of database

A database for recording faults in equipment used in the NHSBSP.

Tables:
- Users
- Centres
- Equipment
- Faults

Users: Titles and Access levels

All users of the database will have specific levels of access. Staff entering data will only be able to enter data against equipment that they are contracted to test (classed as general users). In the event equipment is not available or incorrectly recorded in the database, the centre admin users for the screening unit (normally the superintendent radiographer, lead QA radiographer, physics lead) may make changes. There may be advantages to the addition of the Physics KPI to the fault database in that there will be a double check on the data held on each piece of equipment.

	Physics data entry				Equipment Data				User Data			
	View	Add	Edit	Delete	View	Add	Edit	Delete	View	Add	Edit	Delete
Admin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Centre Admin	✓	✓	✓		✓	✓	✓		✓	✓	✓	
General User	✓	✓	✓		✓				✓			
Read-Only User	✓				✓				✓			

SQAS Senior QA Advisor - Centre Admin (All centres)
SQAS QA Facilitator - Read-Only User (All centres)
SQAS QA Officer - Read-Only User (All centres)
SQAS PCA Radiographer – Read Only User (Specified Regional Centres)
SQAS PCA physicist - Centre Admin (Specified Regional Centres)
Local Physics service- General User (Specified Centres)
Site Lead or QA radiographer - Centre Admin (Specified Regional Centres)
Lead of Physics service – Centre Admin (Specified centres)
NCCPM Admin- Admin (All centres)

Screening centres
- *Centres*
- *Sub-regions*
- *Regions*
- *Region Body*

Record organisation and who are the responsible superintendent, PCA (physics and radiography), physics service. This data will be edited by the admin at NCCPM and cannot be edited by physics staff.

Equipment

The equipment and suppliers are listed. The fault database covers all type of equipment, though at the moment the KPI only covers x-ray equipment. Physics staff will be able to check the contents of the database (Fig. 12), this is searchable but only for the centres that the staff member has been allocated.

- Equipment
- Equipment type
- Service agents
- Manufacturers
- Models
- Supplier

The physics lead will be able to edit this data. But this should be undertaken with caution that it does not add errors. If necessary, check with radiography staff.

Faults

Faults are recorded by the radiography staff. There are separate instructions for dealing with the recording of faults.
- Faults
- Faults type

The physics staff will be able to review the faults but not change or add faults (Fig. 13). Data can be exported here, there are also the opportunities to produce reports under the 'Reports' tab.

Physics QA survey data
The following tables are in the KPI part of the database..
- Quality Assurance Survey data
- Physics services
- Filters/targets
- Survey recommendation classification types

The data from the quality assurance is entered here for each survey undertaken, this feeds into checking the KPIs set out in "Breast screening: quality assurance for medical physics services". The main table uses sub tables to check the data such as anode, filter and recommendation types. Requests for any new Anode or Filter type should be made to the NCCPM admin.

Appendix 2 – QC visit details

Field title	Cell name (template)	Criteria
Centre	centre	dropdown box (choices based on user)
Equipment Type	Equipment_Type	'x-ray' (currently)
Equipment	equipment	dropdown box (choices based on screening service)
Survey Type	survey_type	Commissioning / Routine / Upgrade / Fault repair / Other
Survey Date	date_of_survey	Format: dd/mm/yyyy
Report Date	date_of_report	Format: dd/mm/yyyy
Survey Lead	reporter	Match name in database
Attending Staff *n* *	attendee_*n*	Match name in database
General Comments	description_of_survey	Free text
Is System operating satisfactorily?	system_working	Yes, No

n =1 to 4

*Buddy visitors can be only added manually on web using their email address.

Appendix 3 – Physics results: minimum recommended collection

Field title	Cell name (template)	Criteria
Breast dose at clinical settings		
MGD per exposure for 45mm PMMA (mGy)	mgd_45	0.05 - 10
CDMAM		
Threshold thickness 0.25 mm detail	cdmam_thickness_0_25mm	0.01 - 3
Threshold thickness 0.1 mm detail	cdmam_thickness_0_1mm	0.01 - 3
MGD to CDMAM (60mm breast equiv)	cdmam_mgd	0.05 - 10
Contrast-to-noise ratio		
CNR – 20mm PMMA	pmma_cnr_20	0 - 100
CNR – 50mm PMMA	pmma_cnr_50	0 - 100
CNR – 70mm PMMA	pmma_cnr_70	0 - 100

Appendix 4 – Physics results: commissioning/acceptance and ideally each visit

Field title	Cell name (template)	Criteria
Mean glandular dose (PMMA)		
MGD for 20 mm PMMA	mgd_20	0.05 - 10
MGD for 30 mm PMMA	mgd_30	0.05 – 10
MGD for 40 mm PMMA	mgd_40	0.05 – 10
MGD for 50 mm PMMA	mgd_50	0.05 – 10
MGD for 60 mm PMMA	mgd_60	0.05 – 10
MGD for 70 mm PMMA	mgd_70	0.05 – 10
Contrast to noise ratio (CNR)		
kV for 20 mm PMMA	pmma_kv_20	20 -80
target for 20 mm PMMA	pmma_target_20	[Rh, Mo, W]
filter for 20 mm PMMA	pmma_filter_20	[Ag, Al, Cu, Rh, Mo, Ti]
Displayed compressed breast thickness (mm)	pmma_thickness_20	0 - 160
kV for 30 mm PMMA	pmma_kv_30	20 -80
target for 30 mm PMMA	pmma_target_30	[Rh, Mo, W]
filter for 30 mm PMMA	pmma_filter_30	[Ag, Al, Cu, Rh, Mo, Ti]
Displayed compressed breast thickness (mm)	pmma_thickness_30	0 - 160
CNR for 30 mm PMMA	pmma_cnr_30	0 - 100
kV for 40 mm PMMA	pmma_kv_40	20 -80
target for 40 mm PMMA	pmma_target_40	[Rh, Mo, W]
filter for 40 mm PMMA	pmma_filter_40	[Ag, Al, Cu, Rh, Mo, Ti]
Displayed compressed breast thickness (mm)	pmma_thickness_40	0 - 160
CNR for 40 mm PMMA	pmma_cnr_40	0 - 100
kV for 45 mm PMMA	pmma_kv_45	20 -80
target for 45 mm PMMA	pmma_target_45	[Rh, Mo, W]
filter for 45 mm PMMA	pmma_filter_45	[Ag, Al, Cu, Rh, Mo, Ti]
Displayed compressed breast thickness (mm)	pmma_thickness_45	0 - 160
kV for 50 mm PMMA	pmma_kv_50	20 -80
target for 50 mm PMMA	pmma_target_50	[Rh, Mo, W]
filter for 50 mm PMMA	pmma_filter_50	[Ag, Al, Cu, Rh, Mo, Ti]
Displayed compressed breast thickness (mm)	pmma_thickness_50	0 - 160
CNR for 50 mm PMMA	pmma_cnr_50	0 - 100
kV for 60 mm PMMA	pmma_kv_60	20 - 80
target for 60 mm PMMA	pmma_target_60	[Rh, Mo, W]
filter for 60 mm PMMA	pmma_filter_60	[Ag, Al, Cu, Rh, Mo, Ti]
Displayed compressed breast thickness (mm)	pmma_thickness_60	0 - 160
CNR for 60 mm PMMA	pmma_cnr_60	0 - 100
kV for 70 mm PMMA	pmma_kv_70	20 -80
target for 70 mm PMMA	pmma_target_70	[Rh, Mo, W]
filter for 70 mm PMMA	pmma_filter_70	[Ag, Al, Cu, Rh, Mo, Ti]
Displayed compressed breast thickness (mm)	pmma_thickness_70	0 - 160
CDMAM		
kV – 6cm breast equiv	cdmam_kv	20 - 80
Target – 6cm breast equiv	cdmam_target	[Rh, Mo, W]
Filter – 6cm breast equiv	cdmam_filter	[Ag, Al, Cu, Rh, Mo, Ti]
Threshold thickness 1.0 mm detail(µm)	cdmam_thickness_1mm	0.01 - 3

Threshold thickness 0.5 mm detail(µm)	cdmam_thickness_0_5mm	0.01 - 3
CDMAM type	cdmam_type	
CDMAM serial number	cdmam_serial_number	
CDCOM/Analysis software versions used (forced choices)	cdmam_cdcom_version	
Detector resolution (either MTF or SWCTF) - perpendicular and parallel to chest wall		
MTF50 (perp to CW)	mtf50_perp	0-20
MTF20 (perp to CW)	mtf20_perp	0-20
MTF10 (perp to CW)	mtf10_perp	0-20
MTF50 (parallel to CW)	Mtf50_para	0-20
MTF20 (parallel to CW)	mtf20_para	0-20
MTF10 (parallel to CW)	mtf10_para	0-20
SWCTF lower frequency (group closest to 1 lp/mm) (perp to CW)	swctf_lower_frequency	0-20
SWCTF higher frequency (group closest to 4 lp/mm) (perp to CW)	swctf_higher_frequency	0-20
SWCTF frequency at about 80% of the Nyquist frequency (perp to CW)	swctf_nyquist_frequency	0-20
SWCTF (lower) (parallel to CW)	swctf_lower	0-20
SWCTF (higher) (parallel to CW)	swctf_higher	0-20
SWCTF (80% Nyquist) (parallel to CW)	swctf_nyquist	0-20
Detector normalised noise power spectra		
NNPS 0.5/mm (perp to CW) (mm^2)	nnps_0_5_perp	0-0.01
NNPS 2/mm (perp to CW) (mm^2)	nnps_2_0_perp	0-0.01
NNPS 0.5/mm (parallel to CW) (mm^2)	nnps_0_5_para	0-0.01
NNPS 2/mm (parallel to CW) (mm^2)	nnps_2_0_para	0-0.01

Appendix 5 – <u>Report Recommendations – direct or via spreadsheet to database</u>

Field title	Cell name (template)	Criteria
Recommendations	comment_body_n	Free text
Criteria	comment_criteria_n	(Artefacts, Uniformity, Detector response, NNPS, MTF, SWCTF, CNR, AEC Functionality, Compression force, Displayed breast thickness, Image Quality (TORMAM), Image Quality (CDMAM), MGD, Calliper calibration, kV Accuracy, Tube output accuracy, Filtration, Alignment, AWS monitor performance, others can be added)
Timescale	comment_timescale_select_n	Next service or specific date
Date	comment_timescale_n	Recommended date for action (if specified)

n =1,2,3……

Appendix 6: Output of KPI reports on QC tests

Summary of QC undertaken between 2020-01-02 to 2020-12-31

Screen Unit	Location	Unit	Unit satisfactory	Achievable (MGD, CDMAM)	Acceptable Commissioning(MGD, CDMAM)	QC within timescale	Last Routine or Commissioning test	No. Routine survey	No. Other	Decomm-issioned
Holby	Mobile 1	Siemens Inspiration	Yes	No	Yes	Yes	2020-08-10	2	1	
Holby	Room 2	GE Pristina	Yes	Yes	Yes	No	2020-03-23	1	0	
Holby	Room1	Hologic 3Dimensions						0	0	
Holby	Mobile 4	Company X MammoDud	No	No	No		2020-09-20	0	1	2020

Fig. 14: **Summary of QC for each system for a specified screening unit between chosen dates**

Key results from QC surveys undertaken between 2020-01-02 to 2020-12-31

Screen Unit	Location	Unit	Survey type	Date	Unit satisfactory	MGD (45mm PMMA (mGy)	CDMAM 0.1 mm disk (µm Au)	CDMAM 0.25mm (µm Au)	Days between test & report	Routine QC within timescale	Date last routine or Commissioning test
Holby	Mobile 1	Siemens Inspiration	Routine	2020-02-01	Yes	1.32	1.005	0.202	29		
Holby	Mobile 1	Siemens Inspiration	Software Upgrade	2020-05-06	yes	1.29			6		
Holby	Mobile 1	Siemens Inspiration	Routine	2020-08-10	Yes	1.31	1.11	0.22	28	Y	2020-02-01
Holby	Room 2	GE Pristina	Routine	2020-03-20	Yes	1.45	0.98	0.197	15	N	2019-08-02
Holby	Mobile 4	Company X MammoDud	Acceptance	2020-09-20	No	2.1	1.87	2.803	10		

Fig. 15: **List of all QC reports added to the database for a specified screening unit between chosen dates**