Form B03
Scheduled Maintenance Work Order

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Format Ref: - QMS/TSD-022 Rev.01

Work Order No.	PWO371727	Schedule Month	March 2018
Work Order Date	01/03/2018	Completed Date	08.03.2018
Clinic Name	Poliklinik Labuan	Clinic Code	WPL006
BE No.	WPL000473	Distict	LABUAN
BE Category	Radiographic/Fluoroscopic Systems	WO Assigned to	Ashmawi
Ownership	☑ Existing Equipment	☐ Purchase	☐ New
BE Condition	☑ Active	☐ BER Proposed	
Work Order Type	☑ Preventive Maintenance (PM)	☐ Third Party Calibration (TPC)	
	☐ Routine Inspection (RI)	☐ Statutory Certification (SC)	

Reschedule Date	

BE Third Party Calibration / Statutory Certification Details

Company Name	N/A	Cal / Cert Date	N/A
Contact Number		Cal / Cert Expiry Date	

Action Taken

- ppm service done. ok.
- cleaning of exterior & interior of the unit done. ok.
- Performance test done. ok.
- Unit is working in good condition & fit for use.

Schedule Maintenance Execution Details

Sl No	QMS Engineer / Technician Name	Date	Start Time	End Time
QBS 0103	FELIX BAHAN RADIOLOGY SPECIALIST, QMS 019-2536325	08.03.18	12.30	14.00

Customer Remarks

Engineer / Technician Signature
Name FELIX BAHAN
RADIOLOGY SPECIALIST, QMS
019-2536325
Date 08.03.18

Customer Signature
Name IRDAWATY BONGSO
Designation Juru X-Ray U32
Unit Pengimejan Diagnostik
Klinik Kesihatan W. P. Labuan
Date 8/3/18
Seal

For Internal Use

First Verification
QMS Circle Incharge
JULIUS LIAWSUN
BIOMEDICAL ENGINEER, QMS
019-3620179

Final Verification
QMS State Incharge

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BEMS Planned Preventive Maintenance Checklist

Radiographic / Fluoroscopic Systems.General-Purpose

BE CODE : 16-865

CHECKLIST NO: CL-119
REV.000

PART 1 ASSET DETAILS

WORK ORDER NO ► PWO371727

ASSET NO ► WPL000473

MANUFACTURER ► Shimadzu.

MODEL ► UD150B-40

FREQUENCY ► 3 MONTHLY ( ) 6 MONTHLY (√) 12 MONTHLY ( )

PPM HOURS ► 1:5

PART 2 SPECIAL PRECAUTION

If there is evidence of body fluid contamination, submit the device for cleaning and decontamination before inspecting it.

Wear appropriate Personnel Protection Equipment (PPE) during work.

Wear grounded electrostatic wristband when handling PCB or electronic components.

Refer to the safety procedure for additional precautions and guidance as per manufacturer guidelines.

Make sure the test equipment used are duly calibrated.

PART 3 TEST APPARATUS

Tick (√) where appropriate

NO	ASSET NO	DESCRIPTION	SERIAL NO	CALIBRATION DUE ON
		ELECTRICAL SAFETY ANALYZER		
	TRESA0401	KVP METER	30004222	04.02.19.
		mA METER		
		FOCAL SPOT TESTER		

PART 4 QUALITATIVE TASKS

Tick (√) where appropriate

		PASS	FAIL	NA
1	Chassis - verify physical integrity, cleanliness and condition	(√)	( )	( )
2	Mount/ Fasteners - verify physical integrity	(√)	( )	( )
3	Casters/Brakes - if mounted, verify physical integrity	(√)	( )	( )
4	Power Cord - verify proper insulation and integrity	(√)	( )	( )
5	Strain Relief - verify physical integrity at both ends of line cord	(√)	( )	( )
6	Electronic cabinet	(√)	( )	( )
7	Circuit Breaker/ Fuse - verify integrity of external circuit breaker and/or rating of external fuse	(√)	( )	( )
8	Fittings/ Connectors - check all fittings/connectors	(√)	( )	( )
9	Controls/ Switches/ Keypad - verify proper operation of controls	(√)	( )	( )
10	Indicators/ Displays - verify proper illumination and operation	(√)	( )	( )

		PASS	FAIL	NA
24	Tube mounting clamps – verify integrity	(√)	( )	( )
25	Tube rotation – Verify operation	(√)	( )	( )
26	Collimator mounts – verify integrity	(√)	( )	( )
27	Collimator rotation – verify operation	(√)	( )	( )
28	Collimator transverse & longitudinal adjustment knobs – verify integrity and operation	(√)	( )	( )
29	SID tape – Verify integrity and operation	(√)	( )	( )
30	Light field activation switch – verify integrity &operation	(√)	( )	( )
31	Cassette centering light – Verify operation	(√)	( )	( )
	TABLE AND CHEST STAND			
32	Table top movement – Verify integrity & operation	(√)	( )	( )

PART 4 QUALITATIVE TASKS

Continues...

Tick (√) where appropriate

		PASS	FAIL	NA
11	Over exposure safety contractor- Verify physical integrity	(✓)	( )	( )
12	Relays and contactors - Verify physicsl contactors	(✓)	( )	( )
13	PCB boards - verify physical integrity	(✓)	( )	( )
14	HV generator –Verify integrity & oil level	(✓)	( )	( )
15	High Voltage Cable harness – Verify integrity	(✓)	( )	( )
16	AEC Control - Verify operation	(✓)	( )	( )
	CEILING/FLOOR COLUMNS			
17	Up/Down movement – Verify integrity & operation	(✓)	( )	( )
18	Fittings and Bearings – Verify integrity & operation	(✓)	( )	( )
19	Locks and Latches - Verify integrity & operation	(✓)	( )	( )
20	Counter weight balance – Verify integrity & operation	(✓)	( )	( )
21	Gas / hydraulic suspension – Verify integrity & operation	(✓)	( )	( )
22	Auto latches at center – Verify operation	(✓)	( )	( )
23	Breaks and clutches –Verify integrity & operation	(✓)	( )	( )
33	Table/ Chest stand cassette trays – Verify integrity & operation	(✓)	( )	( )
34	Table / Chest stand grids – Verify integrity & operation	(✓)	( )	( )
35	Table up/down movement – Verify operation	(✓)	( )	( )
36	Table bucky movement – Verify operation	(✓)	( )	( )
37	Chest stand Bucky movement – Verify operation	(✓)	( )	( )
38	Centering light - orientation	(✓)	( )	( )
39	Cassette latches – Verify integrity & operation	(✓)	( )	( )
40	Latch release switches - Verify integrity & operation	(✓)	( )	( )
41	kVp, mAs, Sec, mA Selection – Verify operation	(✓)	( )	( )
42	Exposure switch - Verify operation	(✓)	( )	( )
43	Visual Exposure indicator – Verify operation	(✓)	( )	( )
44	Audible exposure signal– Verify operation	(✓)	( )	( )
45	Tube movment - Verify integrity and Operation	(✓)	( )	( )
46	Calibration	( )	( )	(✓)

PART 5 PREVENTIVE MAINTENANCE TASKS

Tick (√) where appropriate

		DONE	NOT DONE **	NA
1	Clean exterior and interior of the equipment	(✓)	( )	( )
2	Clean Collimator glass	(✓)	( )	( )
3	Check/ align collimator bulb	(✓)	( )	( )
4	Cleaniness of PWB - check and clean PWB of any dust of any dust.	(✓)	( )	( )
5	Exhaust Fan - clean and check condition.	(✓)	( )	( )

Notes: * For all parts, NA defined as NOT APPLICABLE
** If you have ticked 'NOT DONE', then justify in Part 8
*** Choose whichever applicable.

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BEMS Planned Preventive Maintenance Checklist

Radiographic / Fluoroscopic Systems,General-Purpose

BE CODE : 16-885

CHECKLIST NO: CL-119
REV.000

WORK ORDER NO ► PW0371727

PART 6 QUANTITATIVE TASKS

Tick (√) where appropriate

No	Description	Units / UOM	Set Values	Measured Values	Limit/Tolerance	PASS	FAIL	NA
1	KV	KV	50	48	± 5kv.	✓		
			70	67	"	✓		
			90	67	"	✓		
2	mA mAs output linearity.	mA		0.06	COL is within limit 0.1	✓		
3	Time	Sec	0.01	0.01	± 10%	✓		
			0.14	0.04	"	✓		
			0.1	0.1	"	✓		

PART 7 ELECTRICAL SAFETY TEST

ELECTRICAL SAFETY TEST, (attach report)

(In accordance to IEC 60601)

☐ PASS ☐ FAIL ☑ NA

PART 8 NOTES

PPM service done. Unit working in good condition.

☐ CORRECTIVE MAINTENANCE REQUIRED ☑ FUNCTIONING ☐ NOT FUNCTIONING

WORK ORDER NO ► N/A

NEXT PPM DATE ► 07/9/18

PPM has been performed in accordance to the checklist and the equipment is functioning to the intended purpose.

COMPLETED BY:

FELIX BAHAN
RADIOLOGY SPECIALIST, QMS
016-2536325

DATE : 08.03.18

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BE Number: WPL000473

PLAN PREVENTIVE MAINTENANCE REPORT FOR RADIOGRAPHIC/FLUOROSCOPIC SYSTEMS, GENERAL-PURPOSE

(BE Code: 16-885)

GENERAL INFORMATION

1.0 X-Ray Equipment

Console

Manufacturer: Shimadzu

Model	Serial No.
UD150B-40	09373S01L

Remarks:

2.0 Generator Detail

Manufacturer : Shimadzu

Model	Serial No.	Min / Max kVp	Min/Max mA/mAs	Min/Max Time	Single Phase	☐	Radiation Indication
UD150B-40	0662R74608	40/150	0.5-800 mA	0.02-1.25 (Sec)	Three Phase	■	Visual ■ Audio ■

Remarks:

3.0 X-Ray Tube

Manufacturer : Shimadzu

Insert Model 0.6/1.2P324DK-85	Housing Model 0.6/1.2P324DK-85	Filtration	Date of Manufacture	Tube Focus	
				Small	Large
Serial No. 532-24486	Serial No. 2XY0001961	1.5 mm, Al	Jun-10	0.6 mm	1.2 mm

Type : Floor to ceiling column stand ☐
: Ceiling suspended ■
: Others ☐

Remarks:

4.0 Light Beam Diaphragm

Manufacturer : Shimadzu

Model	Serial No.	Filtration
R-20J	503-59600	1.0 mmAl

LBD Type : Manual ■
Automatic ☐

Remarks:

MEASUREMENT DATA

1 Performance Criteria

1.a Table No. 1: kVp Accuracy Data

(Per PPM Service)

Set Factor SDD=100cm		Measured Reading	Difference Between Set and Measured Reading	Deviation Between Set and Measured Reading	Remarks and Conclusion
kVp	mAs	kVp	(+/- kVp)	(%)	
50	10	48.00	2	4.00%	The deviation is within the limit of +/- 5kVp or 5% **Pass**
60	10	58.50	1.5	2.50%	
70	10	67.00	3	4.29%	
80	10	77.00	3	3.75%	
90	10	87.00	3.00	3.33%	
100	10	97.00	3.00	3.00%	

Maximum Deviation:5% or +/-5kVp whichever is greater

Remarks:

1.b Table No. 2: Timer Accuracy

(Per PPM Service)

Set Factor SDD=100cm			Measured Time	Deviation Between Set and Measured Time	Remarks and Conclusion
kVp	Sec	mAs	Sec	(%)	
70	0.005	4.00	0.0050	0.00	The deviation is within 10% **Pass**
70	0.010	8.00	0.0100	0.00	
70	0.020	16.00	0.0200	0.00	
70	0.040	32.00	0.0400	0.00	
70	0.063	50.00	0.0630	0.00	
70	0.100	80.00	0.1000	0.00	

Maximum Deviation=10%

Remarks:

1.1c Relative Exposure Variation with kVp

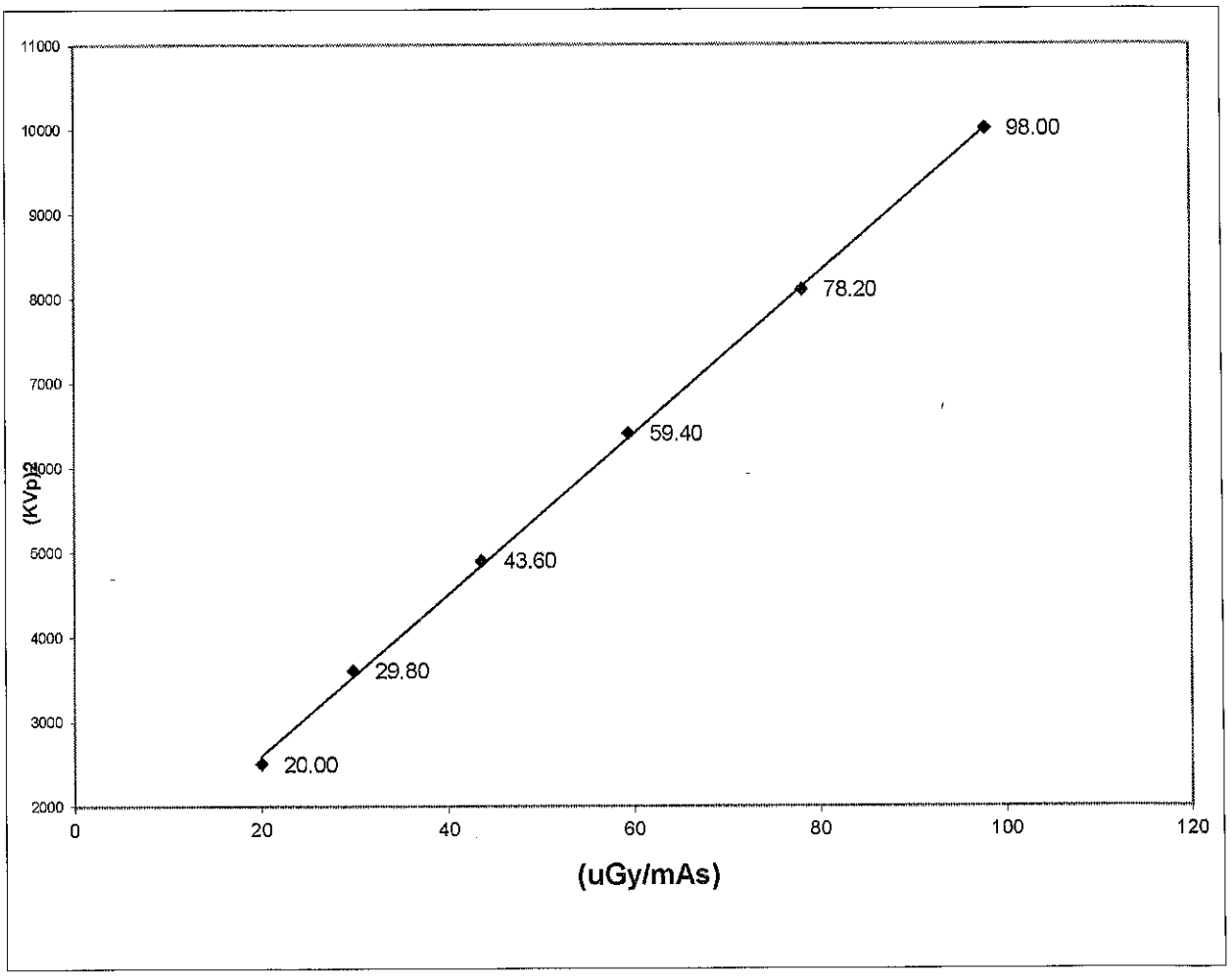
(Per PPM Service)

Set Factors SDD = 100cm		$(kVp)^2$	Measured Dose (uGy)	(uGy / mAs)	Remarks and Conclusion
(kVp)	(mAs)				
50	10	2500	200	20.00	Base on the graph below, the variaton of output with kVp is linear and deviation less than 10% **Acceptable**
60	10	3600	298	29.80	
70	10	4900	436	43.60	
80	10	6400	594	59.40	
90	10	8100	782	78.20	
100	10	10000	980	98.00	

* **Graph should be linear**
* **Maximum Deviation : 10%**

Remarks:

Graph for Relative Exposure Variation with kVp



Technical Specialist / Engineer's Comments :

The machine is working in good condition and it passed all the test.

Technical Specialist's Name & Signature
1 Felix Bahan
FELIX BAHAN *RADIOLOGY SPECIALIST, QMS* 019-2536325
2
Date : 8-Mar-17