

# **Sample Data Collection Monthly Report January 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



**Prepared by:  
McAdams Technologies, Inc.  
Chris Riha MS, CCE  
Wayne Collins BMET  
Report # 001**

## Table of Contents

Introduction-----	1
Scope-----	1
Data	
Summary of Times-----	2
Summary of Condition Codes-----	4
Summary of Battery Maintenance-----	5
Summary of 'Operator/Service Literature on hand'-----	6
Summary of 'Accessories Available'-----	7
Summary of 'Associated Labels affixed'-----	8
Summary of Comments-----	9
Data Analysis-----	10
Recommendations-----	12
Appendix A, Average Total Time per NSN-----	13
Appendix B, Average 'PM' time per NSN-----	18
Appendix C, Average 'ST' time per NSN-----	22
Appendix D, Listing of all comments per NSN-----	25
Appendix E, Sample Worksheet-----	32

### Listing of Tables and Figures

Tables
<b>Table 1</b> -Average Total Times greater than 1 hour
<b>Table 2</b> -Average PM Times greater than 1 hour
<b>Table 3</b> -Average ST Time greater than 0.2 hours
<b>Table 4</b> -Average RE Times
<b>Table 5</b> -Summary of battery maintenance
<b>Table 6</b> -Summary of comments listed more than once
<b>Table 7</b> -Analysis of condition codes

Figures
<b>Figures 1,1a,1b:</b> 'Condition Code' summaries
<b>Figure 2:</b> Summary of Battery Maintenance
<b>Figures 3, 3a, 3b:</b> Summary of 'Operators/Service' literature included
<b>Figures 4, 4a, 4b:</b> Summary of Proper Accessories included
<b>Figures 5, 5a, 5b:</b> 'Summary of Proper Labels affixed'

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc. to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This report, the first Sample Data Collection (SDC) report, will provide analysis from two maintenance sustainments, performed in May 2001, Sierra Depot (RCHD6), and July 2000, the 67<sup>th</sup> CSH (WBJBAA). The sustainment data was compiled and analyzed after entering 700 maintenance records into the SDC database from paper records provided by Mr. Lamar Reese, (contracting officers technical representative [COTR] from MEOD).

This report displays and analyzes the following elements from the collected data from these sustainments:

- Average time breakdown for work performed per device type
- Summary of condition codes
- Summary of battery maintenance
- Summary of 'operators/service literature on hand'
- Summary of 'accessories available'
- Summary of 'associated labels affixed'

The data displayed and analyzed was collated from only the records where the appropriate entries were made. This methodology reflects the most accurate method of displaying and calculating average values from a sample data collection.

**Data:**

**Summary of time required for sustainment per device<sup>1</sup>:** All the data calculated is the average value of time, (in hours), of the time listed on the data sheets for the Sierra Depot, **there were no times listed on the sustainment for the data sheets for the 67<sup>th</sup> CSH.**

**Total Time Required**

Table 1 lists all of the total average times over 1 hour, (Appendix A has the complete listing). These times were calculated by taking the total times entered for the devices divided by the total number of devices with times entered.

**Table 1**

Avg Total Time	NSN	Nomen	Model	Mfgr
8.00	6525013849296	X-RAY APPARATUS(PICKER)	Clinix VP4	PICKER INTL INC <i>See Marconi Medical Systems</i>
2.50	6530009262151	STER SURG DRES16X36IN	M138	ENVIRONMENTAL TECTONICS CORP
2.00	6525010992320	X-RAY APP FLD DENTAL	58 25 476 D 3152	PELTON AND CRANE CO
1.70	6525014226122	PROCESSOR X-RAY(AFP)	9992305300	AFP IMAGING CORP
1.25	6515013096647	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB
1.25	6520012724531	DEN OPER TREAT UNIT	36-00-99-00	A-DEC INC
1.25	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
1.03	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC
1.03	6530013087740	SINK UNIT SCRUB FLD	950S936	HAMILTON MFG CO
1.00	6525013697178	DARKROOM X-RAY PORT	PDR-1	DEFIANCE ELECTRONICS INC
1.00	6530007098175	TABLE OPER RM FIELD	A-200	EMERSON-SACK-WARNER CORP
1.00	6530011272215	BATH LEG230V50/60HZ	HM290	FERNO-WASHINGTON INC
1.00	6530013408001	STERILIZER SURG INSTR	VALIDATOR PLUS 10	PELTON AND CRANE CO
1.00	6530014428720	STERILIZER SURG INSTR	MC10	GETINGE/CASTLE INC
1.00	6545009268961	MICROSCOPE SE MED LAB	DATA NOT AVAIL	DEPARTMENT OF THE ARMY

The median value for the total average time is, **0.56 hours**

<sup>1</sup> Note; Only devices where there was data entry completed for the particular section are shown and utilized for calculating median values.

**Preventive Maintenance Time**

Table 2 lists the preventive maintenance (PM) times 1 hour or greater per the data from the Sierra Depot sustainment, (Appendix B shows the entire time breakdown per device).

**Table 2**

Avg PM Time	NSN	Nomen	Model	Mfgr
8.00	6525013849296	X-RAY APPARATUS(PICKER)	Clinix VP4	PICKER INTL INC <i>See Marconi Medical Systems</i>
2.50	6530009262151	STER SURG DRES16X36IN	M138	ENVIRONMENTAL TECTONICS CORP
1.50	6525014226122	PROCESSOR X-RAY(AFP)	9992305300	AFP IMAGING CORP
1.25	6515013096647	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB
1.25	6520012724531	DEN OPER TREAT UNIT	36-00-99-00	A-DEC INC
1.04	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
1.00	6525010992320	X-RAY APP FLD DENTAL	58 25 476 D 3152	PELTON AND CRANE CO
1.00	6525013697178	DARKROOM X-RAY PORT	PDR-1	DEFIANCE ELECTRONICS INC
1.00	6530007098175	TABLE OPER RM FIELD	A-200	EMERSON-SACK-WARNER CORP
1.00	6530013408001	STERILIZER SURG INSTR	VALIDATOR PLUS 10	PELTON AND CRANE CO
1.00	6530014428720	STERILIZER SURG INSTR	MC10	GETINGE/CASTLE INC
1.00	6545009268961	MICROSCOPE SE MED LAB	DATA NOT AVAIL	DEPARTMENT OF THE ARMY

The median value for all the PM times listed in Appendix A is; **0.44 hours**

**Electrical Safety Time**

Table 3 lists the devices with safety (ST) times averaging greater than 0.2 hours from the Sierra Depot sustainment. (Appendix C shows the entire breakdown per device).

**Table 3**

Avg ST Time	NSN	Nomen	Model	Mfgr
0.50	6525010992320	X-RAY APP FLD DENTAL	58 25 476 D 3152	PELTON AND CRANE CO
0.25	4110012917046	REFRIG BLD BNK (BBR37)	4570105	REVCOTECHNOLOGIES INC A UNIT OF SPX DBA JEWETT
0.25	6515014520625	PUMP,INTRAVENOUS INFUSION	Medsystem III	ALARIS MEDICAL SYSTEMS INC
0.25	6520014464170	LIGHT DEN OPER FIELD	ALU-29CF	ASEPTICO INC
0.25	6520014679899	CLEANER ULTRASON DENT	01-20	BARNSTEAD/THERMOLYNE CORP
0.25	6640013087749	CENTRIFUGE LAB REFRIG	PR 7000M	INTERNATIONAL EQUIPMENT CO (IEC) <i>See Thermo IEC</i>
0.25	6640013165084	CENTRIFUGE, LAB SM	708T W/PROVISIONING	DRUCKER CO
0.23	6515013784529	STIMULATOR ULTRASOUND	7975 W/PROVISIONING	CHATTANOOGA GROUP INC
0.23	6640014161385	INCUBATOR BACTERIOL	SP0200-96-C-8530	MEDI-PETH MEDICAL LABORATORY INC

The median value for all the ST times listed in Appendix B is; **0.15 hours**

**Repair Time**

Table 4 lists the repair times, (RE), per the data from the Sierra Depot sustainment.

**Table 4**

Listed RE time	NSN	Nomen	Model	Mfgr
2.5	4110012917046	REFRIG BLD BNK (BBR37)	4570105	REVCOTECHNOLOGIES INC
1.0	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS
0.5	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
0.5	6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC
0.5	6515013589480	SUCTION APPAR PRTBLE	2590-G-120	FEDERAL EQUIPMENT MFG

The median value for all the RE times listed is: **0.08 hours**

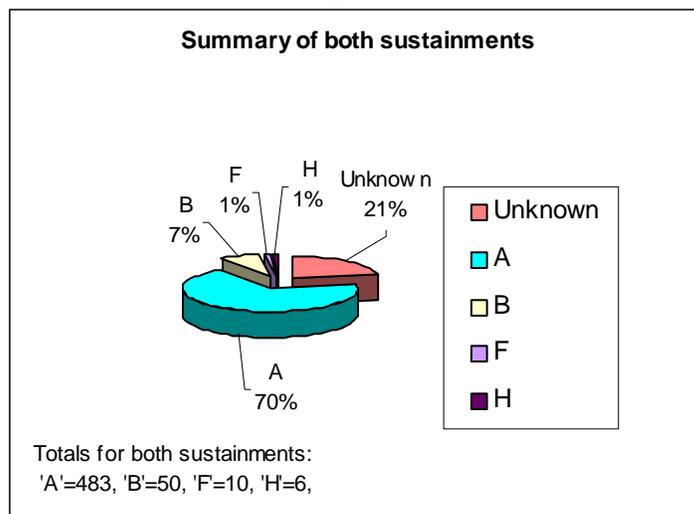
This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.

**Summary of Condition Codes:**

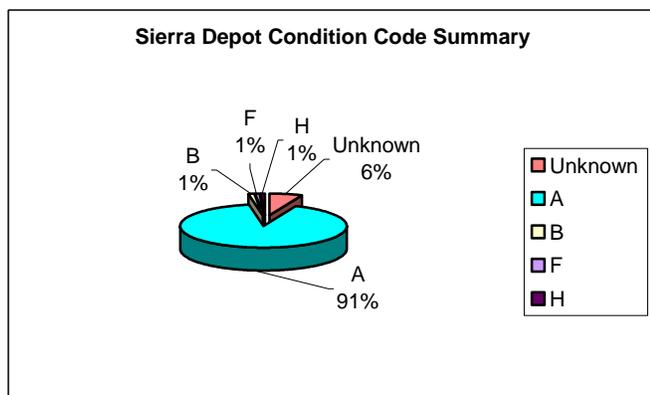
Figure 1 charts the breakdown of the condition codes recorded from both sustainments, while Figures 1a and 1b depict the condition code summaries from each of the sustainments individually. The condition codes are defined accordingly<sup>2</sup>:

- "A" - Serviceable medical equipment with life remaining in excess of 6 months.
- "B" - Serviceable medical equipment with less than 6 months life expectancy remaining, or has reached or exceeded its life expectancy.
- "F" - Unserviceable, economically reparable medical equipment.
- "H" - Unserviceable, uneconomically reparable medical equipment that does not meet the repair criteria; i.e., exceeding the MEL. Equipment for which repair parts or manufacturer's repair services are no longer available also qualifies for assignment of this condition code.
- "S" - Materiel that has no value except for the basic material content. Do not assign standard medical equipment this code. Assign only material that is actually scrap and cannot be identified as an end item with this code.

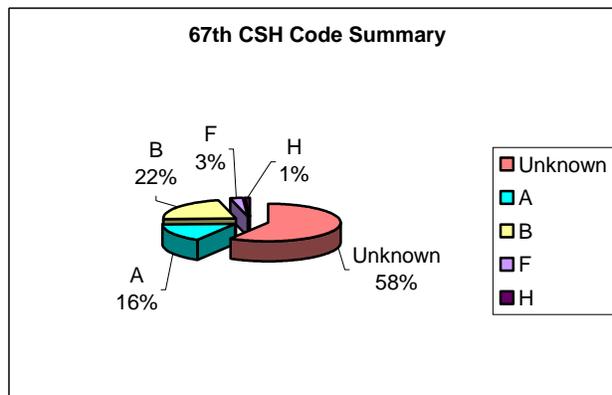
**Figure 1**



**Figure 1a**



**Figure 1b**



<sup>2</sup> From TB Med 750-1

**Summary of Battery Maintenance:**

Figure 2 shows the number of battery reported activities from the sustainment performed on the Sierra Depot (RHC6D).

**Figure 2**

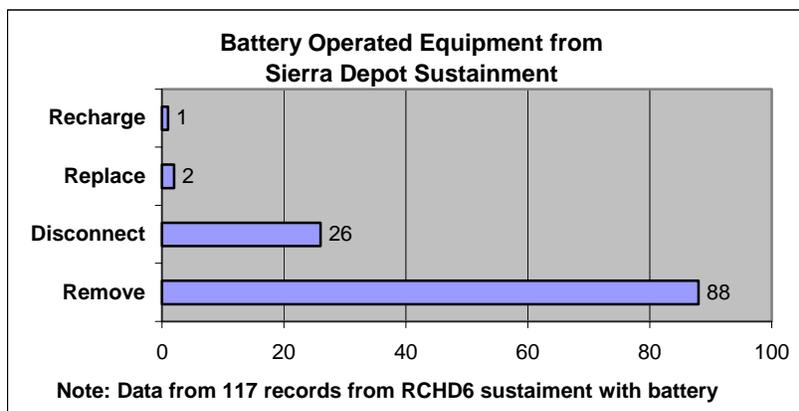


Table 5 is a summary of battery maintenance listed from the sustainment performed on the Sierra Depot, (RHC6D).

**Table 5**

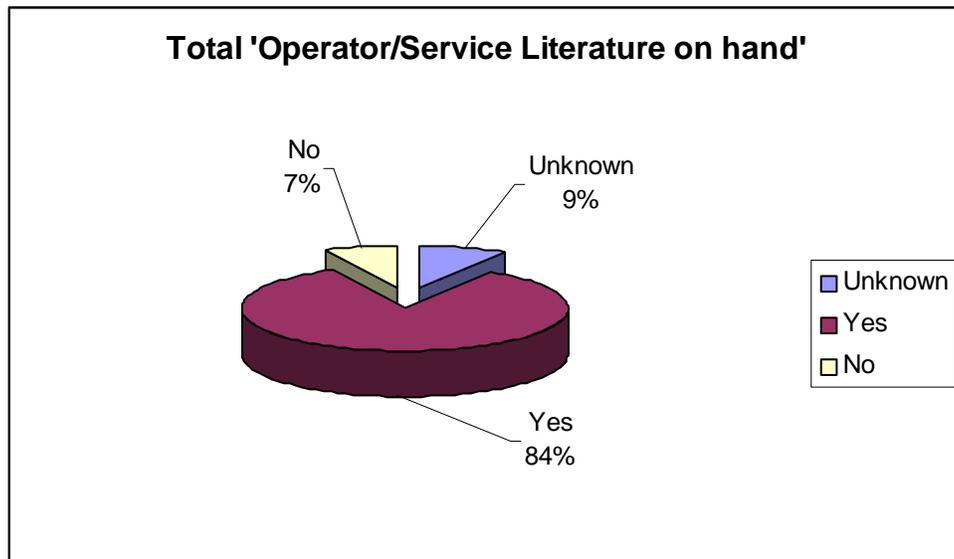
NSN	Nomen	Model	MFR.	Battery Cond.	Quantity
6515012911198	MONITOR-RECORDER ECG	HP43200MC	HEWLETT-PACKARD	Disconnect	3
6515012935577	OXIMETER PULSE	3040 G	SIMS BCI INC.	Disconnect	1
6515012935578	ULTRASONIC UNIT BLOOD	D8	MEDASONICS INC	Disconnect	4
6515013046497	SUCTION APPAR 120V	308 M	IMPACT INSTRUMENT	Disconnect	6
6515014534003	DEFIB/MONITOR	LP 10	MEDTRONIC PHYSIO-CONTROL	Disconnect	4
6530013432033	LIGHT SURGICAL FIELD	2410 MB	BARNSTEAD/THERMOL YNE CORP	Disconnect	2
6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC	Disconnect	5
4110014512356	REFRIGERATOR SOLID ST	M-30TR	THERMOPOL INC	Recharge	1
6515005507199	OTOSCOPE	98060	WELCH ALLYN INC	Remove	15
6515012455056	STETHOSCOPE 8MHZ	BF5A	COLGATE-PALMOLIVE	Remove	1
6515012789850	STIMULATOR PERIPHERAL	MS-1	LIFE-TECH INC	Remove	2
6515012861010	LARYNGOSCOPE SET	199176	PROPPER MFG CO INC	Remove	6
6515012911198	MONITOR-RECORDER ECG	HP43200MC	HEWLETT-PACKARD	Remove	3
6515012911199	DEFIBRILLATOR MONITOR	HP43110MC	HEWLETT-PACKARD	Remove	2
6515013136242	THERMOMETER CLINICAL	600	DIATEK INC	Remove	37
6515013864354	STIMULATOR NERVE TRAN	STAODYN MAXIMA II	DIVERSIFIED HEALTHCARE SERVICES	Remove	4
6515014534003	DEFIB/MONITOR	LP 11	MEDTRONIC PHYSIO-CONTROL	Remove	1
6515014660971	OXIMETER PULSE FINGER	9500	NONIN MEDICAL INC	Remove	18
6515012935577	OXIMETER PULSE	3041 G	SIMS BCI INC.	Replace	2

Note that the majority of the battery comments were either disconnect or removing the batteries. The only exceptions were the solid-state refrigerator highlighted in green, which required a recharge of the battery and that pulse oximeter highlighted in blue, which required battery replacement.

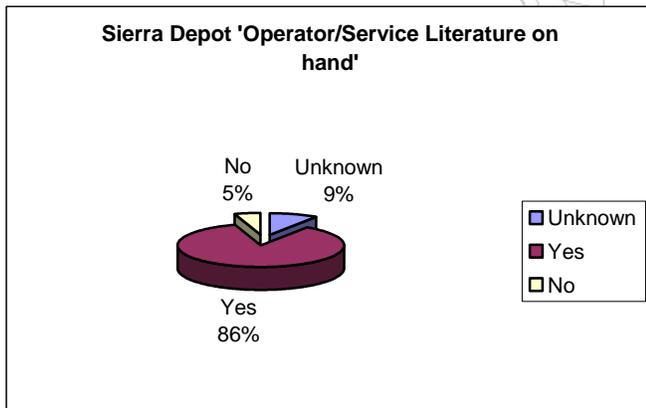
**Summary of 'Operator/Service Literature on hand':**

Figure 3 charts the availability of the proper operators and service literature. Figures 3a and 3b show the individual breakdowns from the two sustainments.

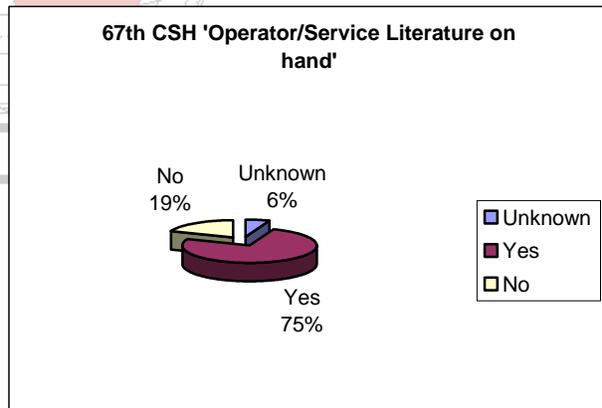
**Figure 3**



**Figure 3a**



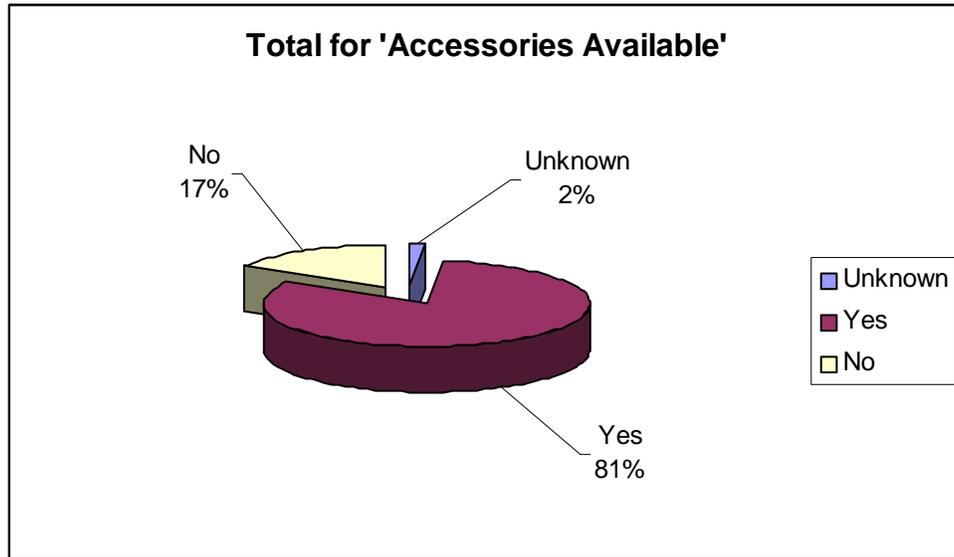
**Figure 3b**



**Summary of 'Accessories Available':**

Figure 4 charts the availability of the proper accessories. Figures 4a and 4b show the individual breakdowns from the two sustainments.

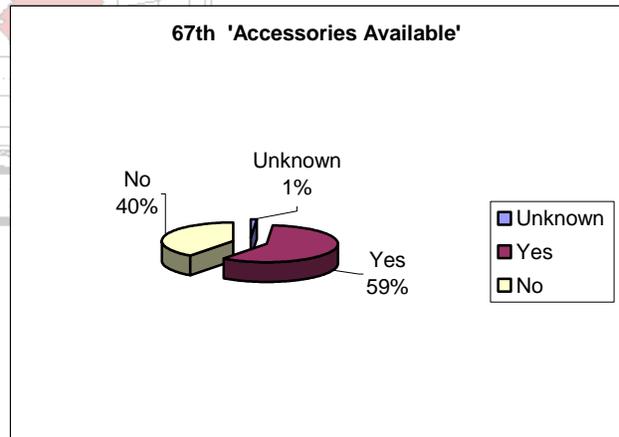
**Figure 4**



**Figure 4a**



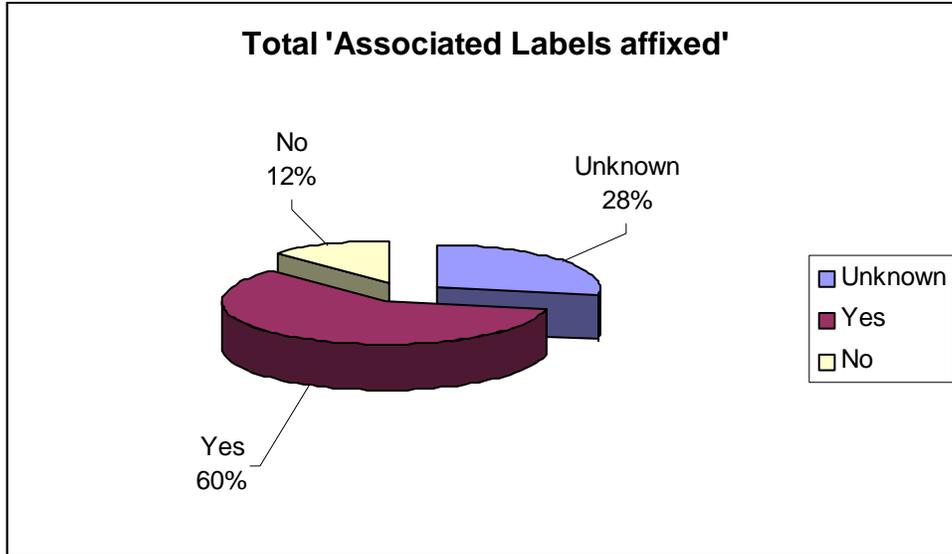
**Figure 4b**



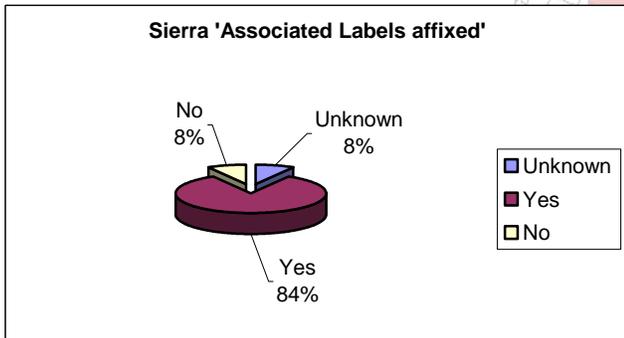
**Summary of 'Associated Labels affixed':**

Figure 5 charts the availability of whether the proper labels were affixed to the units. Figures 5a and 5b show the individual breakdowns from the two sustainments.

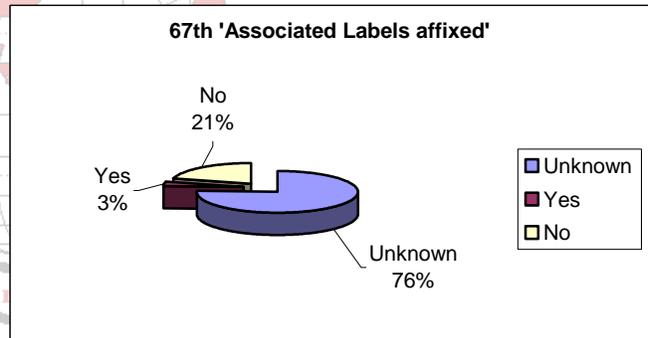
**Figure 5**



**Figure 5a**



**Figure 5b**



## Sample Data Collection Report

January 2002  
001

Report

### Summary of Comments:

Table 6 lists a summary of comments that were listed more than once. The complete listing of comments is in Appendix D. The comments were transcribed verbatim from the hardcopy reports and are sorted by number of similar comments per nsn, then by facility where the devices were.

**Table 6**

UID	# of Comments	Comments	NSN	Nomen	Model	Mfgr
RCHD6	6	Batteries not included	6515005507199	OPHTHALMOSCOPE & OTOSCOPE	GG000770	Welch Allyn
RCHD6	6	No bulb	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
RCHD6	5	Leaf valve may have to be replaced after extended storage	6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC
WBJBAA	4	M2 burner not modified.	6530009262151	STER SURG DRES 16X36IN		ENVIRONMENTAL TECTONICS CORP
WBJBAA	3	E1 appears on display screen.	6515012935577	PULSE OXIMTER	3040 G	SIMS BCI
RCHD6	3	Batteries need replacing.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
RCHD6	3	Added hydraulic fluid	6520001817349	CHAIR AND STOOL UNIT: DENTAL OPERATING PORTABLE	MIL-C-37021	DEN-TAL-EZ Inc.
WBJBAA	3	Missing wing nut	6530009372204	LIGHT SURGICAL FIELD: 110 VOLT AC OR 24 VOLT DC	MILL36531	MILITARY SPECIFICATIONS PROMULGATED BY MILITARY
RCHD6	3	Missing bulbs.	6530013061701	LIGHT FLOOR 120/230V		LANG F W CO
RCHD6	2	No detrimental effects form storage.	6515005507199	OPHTHALMOSCOPE & OTOSCOPE	GG000770	Welch Allyn
WBJBAA	2	Missing stand (tip resistant cart)	6515012672727	SUCTION APPAR 120/230	BF5A W/PROVISIONING	IMPACT INSTRUMENTATION INC
WBJBAA	2	Missing long tube, transformer.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
RCHD6	2	Batteries pulled. Packed since Dec 89.	6515013136242	THERMOMETER	600	DIATEK INC
WBJBAA	2	Not economically repairable due to corrosion and non-availability of repair parts.	6520001391246	COMPRESSOR DEHY DENTAL	M5B	AIR TECHNIQUES
RCHD6	2	Gas spring may need replacing at a later date.	6520009057894	LIGHT DEN OPERAT UNIT	LF II	PELTON AND CRANE CO
RCHD6	2	Bulb not included	6530012414393	LIGHT FLOOR 120/230AC	FEL-5100	BRENNER METAL PRODUCTS CORP
RCHD6	2	Needs antifreeze for storage.	6530013087740	SINK UNIT SCRUB FLD	950S936	HAMILTON MFG CO
RCHD6	2	All plastic ok	6530014612344	STAND, LIGHT, EXAMINATION, FIELD	1050	DAZOR MFG CORP

**Data Analysis:****Time Requirements**

Based upon the data in Appendix A the median total time required per device was **0.56 hours**. The majority of that time was listed as 'PM' time with a median value of 0.44 hours, (calculated from data in Appendix B). The 2nd most time consuming portion of the sustainment was the time required for 'ST' testing. The median value for 'ST' per device was 0.15 hours (calculated from data in Appendix C).

**Condition Code**

Table 7 lists the condition codes that were not condition code 'A'. The table is ordered by the number of occurrences per NSN at each facility.

**Table 7**

UID	CC	NSN	# of occurrences	NOMEN	Model	Manufacturer
WBJBAA	B	6525012300603	3	ILLUMINATOR XRAY115V	FI0212	BRENNER METAL PRODUCTS CORP
WBJBAA	B	4110012917046	2	REFRIG BLD BNK (BBR37)		REVCO TECHNOLOGIES INC A UNIT OF SPX DBA JEWETT
WBJBAA	B	6515011539649	2	LIGHT ENDOSCOPIC		PILLING WECK INC
WBJBAA	B	6515012672727	2	SUCTION APPAR SURG(306M)	306 MI	IMPACT INSTRUMENTATION INC
WBJBAA	B	6515012908949	2	LIGHT HEAD 120/230V		LUXTEC CORP
WBJBAA	B	6515012915447	2	CUTTER ORTHO CAST 10"	840	STRYKER CORP
WBJBAA	B	6515013096647	2	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB
RCHD6	B	6525013253740	2	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
WBJBAA	B	6530011841238	2	IRRIGATOR SURGICAL 120/230V 50/60 HZ AC FLOW RATE 1000ML P/MIN	CN 4-146-P	DEFENSE MEDICAL STANDARDIZATION
WBJBAA	B	6530013061701	2	LIGHT FLOOR 120/230V		LANG F W CO
RCHD6	B	6530014296715	2	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
WBJBAA	B	6630013008711	2	ANALYZER POTASSIUM AND SODIUM ION SELECTIV	614 ANALYZER W/PROV.	CIBA CORNING DIAGNOSTICS CORP
WBJBAA	B	6640012580006	2	SHAKING MACHINE LAB	G560 VORTEX GENIE 2 W/PROVISION	SCIENTIFIC INDUSTRIES INC
WBJBAA	B	7910013270757	2	CLEANER VACUUM ELEC	C83985-01 W/PROVISIONING	MINUTEMAN INTL INC
WBJBAA	F	6530014296715	2	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
RCHD6	H	6515012935577	2	OXIMETER PULSE: 120/230V 50/60HZ AC OR BATTERY OPERATED	3040 G	SIMS BCI
WBJBAA	H	6520001391246	2	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC

### ***Battery Maintenance***

Data from Table 5 shows that only one type of device required battery replacement, this was the OXIMETER PULSE, model 3041 G, manufactured by SIMS BCI INC in which two units required replacement batteries. There was only one unit, which required the battery to be recharged, (REFRIGERATOR SOLID ST, model: M-30TR, manufactured by THERMOPOL INC). Also the Impact suction device had several comments listed in Table 5 that mentioned the batteries needed to be replaced.

### ***Operators/Service Literature***

The diagrams 3, 3a, and 3b show that the 84% of the total had the proper literature with the 67<sup>th</sup> CSH having a 75% compliance rate, (figure 3b).

### ***Proper Accessories***

Figures 4, 4a, and 4b show that 81% of the total devices had the proper accessories, with the 67<sup>th</sup> CSH having a 59% compliance rate, (figure 4b).

### ***Associated Labels***

Figures 5, 5a, and 5b show that 60% of the devices had the proper labels affixed, however 76% of the devices from the 67<sup>th</sup> CSH (figure 5b) did not have the paperwork completed for this section.

### ***Comments***

Based upon the comments listed in Table 6 it would appear the leaf valve for the Impact ventilator would need to be replaced after the unit has been in storage. There were also several items that had corrosion and other storage related problems, (see Appendix D).

## **Recommendations**

Based upon the data collected from the two sustainments it would be the Sample Data Collection team's recommendation to standardize the data collected on these sustainments. The recommended hardcopy datasheet is shown in Appendix E.

Based upon the fact that the data collected in this report is from only two sustainments; and dissimilar datasheets were used for data collection, any conclusions based upon the data presented in this report are not statistically significant. In order for the data to be statistically significant a larger sample size, ( $n$ ), would be required. The data obtained from these surveys will be incorporated into additional sampling and will be used to calculate baseline data for future reports.

Observations based upon experience may be made from the data, this data may be useful in serving as documentation for experiential findings.



# Appendix A

## Average Total Times per Medical Device

**Appendix A**  
**Average Total Time per device from Sierra and 67<sup>th</sup> CSH sustainments**

Avg Total Time	NSN	Nomen	Model	Mfgr
8.00	6525013849296	X-RAY APPARATUS(PICKER)	Clinix VP4	PICKER INTL INC See Marconi Medical Systems
2.50	6530009262151	STER SURG DRES16X36IN	M138	ENVIRONMENTAL TECTONICS CORP
2.00	6525010992320	X-RAY APP FLD DENTAL	58 25 476 D 3152	PELTON AND CRANE CO
1.70	6525014226122	PROCESSOR X-RAY(AFP)	9992305300	AFP IMAGING CORP
1.25	6515013096647	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB
1.25	6520012724531	DEN OPER TREAT UNIT	36-00-99-00	A-DEC INC
1.25	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
1.03	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC
1.03	6530013087740	SINK UNIT SCRUB FLD	950S936	HAMILTON MFG CO
1.00	6525013697178	DARKROOM X-RAY PORT	PDR-1	DEFIANCE ELECTRONICS INC
1.00	6530007098175	TABLE OPER RM FIELD	A-200	EMERSON-SACK-WARNER CORP
1.00	6530011272215	BATH LEG230V50/60HZ	HM290	FERNO-WASHINGTON INC
1.00	6530013408001	STERILIZER SURG INSTR	VALIDATOR PLUS 10	PELTON AND CRANE CO
1.00	6530014428720	STERILIZER SURG INSTR	MC10	GETINGE/CASTLE INC
1.00	6545009268961	MICROSCOPE SE MED LAB	DATA NOT AVAIL	DEPARTMENT OF THE ARMY
0.98	6640014161385	INCUBATOR BACTERIOL	SP0200-96-C-8530	MEDI-PETH MEDICAL LABORATORY INC
0.94	6515014534003	DEFIB/MONITOR	LP 10	MEDTRONIC PHYSIO-CONTROL
0.85	6640013087749	CENTRIFUGE LAB REFRIG	PR 7000M	INTERNATIONAL EQUIPMENT CO (IEC) SeeThermo IEC
0.85	6640013165084	CENTRIFUGE, LAB SM	708T W/PROVISIONING	DRUCKER CO
0.80	4110014512356	REFRIGERATOR SOLID ST	M-30TR	THERMOPOL INC
0.80	6515012911199	DEFIBRILLATOR MONITOR	HP43110MC	HEWLETT-PACKARD
0.80	6520012139496	FORMER VACUUM DEN120V	MODEL STA-VAC	BUFFALO DENTAL MFG CO INC
0.78	6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC
0.78	6530013432033	LIGHT SURGICAL FIELD	2410 MB	BARNSTEAD/THERMOLYNE CORP
0.76	6515014520625	PUMP,INTRAVENOUS INFUSION	Medsystem III	ALARIS MEDICAL SYSTEMS INC
0.75	6520014464170	LIGHT DEN OPER FIELD	ALU-29CF	ASEPTICO INC
0.75	6545012843035	GENITOURINARY CYS KIT	MILGUDI-1	CIRCON CORP
0.73	6520001817349	CHAIR&STOOL UNIT DENT	CM-185	DEN-TAL-EZ INC See DentalEZ Group
0.73	6515013784529	STIMULATOR ULTRASOUND	7975 W/PROVISIONING	CHATTANOOGA GROUP INC
0.71	6515012911198	MONITOR-RECORDER ECG	HP43200MC	HEWLETT-PACKARD
0.70	4110014500060	FREEZER MECHANICAL	CTF1-1B-06	JEWETT INC See Revco Technologies Inc
0.70	6515013803846	SUCTION & PRESS APPAR	800-0317-00 W/PROVISIONING	IMPACT INSTRUMENTATION INC
0.70	6520009057894	LIGHT DEN OPERAT UNIT	LF II	PELTON AND CRANE CO
0.70	6520012878123	LIGHT SE DEN REUS CON	HB7-019585 W/TRANSFORMER AND PR-	PELTON AND CRANE CO
0.70	6520012968420	ENGINE AND HANDPIECE	40-L & C33 W/PROVISIONING	BELL INTL INC
0.70	6530013968351	HEATER HEAT TREATMENT	94-6432	DEFENSE SUPPLY AGENCY
0.70	6640012918390	STIRRER-HOT PLATE MAG	502P W/PROVISIONING	PMC INDUSTRIES INC See Barnstead/Thermolyne Corp An Apogent Technologies Co

This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.

**Appendix A**  
**Average Total Time per device from Sierra and 67<sup>th</sup> CSH sustainments**

Avg Total Time	NSN	Nomen	Model	Mfgr
0.70	6650013253747	MICROSCOPE OPTICAL	LABOPHOT 2	NIKON INSTRUMENTS INC
0.66	6515013589480	SUCTION APPAR PRTBLE	2590-G-120 W/PROVISIONING	FEDERAL EQUIPMENT MFG
0.63	6515012594307	DRAINAGE UNIT 115/230	6053	ALLIED HEALTHCARE PRODUCTS INC GOMCO DIV
0.63	6515012935577	OXIMETER PULSE	3040 G	SIMS BCI INC DBA BCI INTL
0.60	3540004572699	SEALING MACH ELECTRON	4R4335 W/PROVISIONINGONING	BAXTER HEALTHCARE CORP BAXTER FENWAL DIV
0.60	6515011741477	SUCTION & PRESSURE AP	317M	IMPACT INSTRUMENTATION INC
0.60	6520001407663	DEN OPER TREAT UNIT	3406	A-DEC INC
0.60	6520012835208	COMPRESSOR- DEHYDRATOR	M5 SERIES	AIR TECHNIQUES INC
0.60	6640012580006	SHAKING MACHINE LAB	G560 VORTEX GENIE 2 W/PROVISION	SCIENTIFIC INDUSTRIES INC
0.58	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
0.57	6525012685152	CAMERA IDENT XRAY	826-1703	EASTMAN KODAK CO
0.56	6515013046497	SUCTION APPAR 120V	308 M	IMPACT INSTRUMENT
0.55	6530011282442	BATH WHIRLPOOL 220V	HM200 W/PROVISIONING	FERNO-WASHINGTON INC
0.50	4110011173902	REFRIG MECH BLD BBR37	BBR37-SS-1B-01 W/PROVISIONING	JEWETT INC
0.50	4110012917046	REFRIG BLD BNK (BBR37)	4570105	REVC0 TECHNOLOGIES INC A UNIT OF SPX DBA JEWETT
0.50	6515013864354	STIMULATOR NERVE TRAN	STAODYN MAXIMA II	DIVERSIFIED HEALTHCARE SERVICES
0.50	6520014679899	CLEANER ULTRASON DENT	01-20	BARNSTEAD/THERMOLYNE CORP
0.50	6525012563259	ILLUMINATOR XRY WALL	21444	WOLF X-RAY CORP
0.50	6525012839958	PROCESSING MACH 220V	9992406100	DENT-X CORP
0.50	6525013036235	PROCESSING MACHINE	AFP14X-3MIL	AFP IMAGING CORP
0.50	6530007113000	HEATER HEAT TREAT 4PA	E1	CHATTANOOGA GROUP INC
0.50	6640013030255	BLOOD CELL WASHER AC	8818 G3 W/PROVISIONING	HAEMONETICS CORP
0.48	6515012935578	ULTRASONIC UNIT BLOOD	D8	MEDASONICS INC
0.47	7910013270757	CLEANER VACUUM ELEC	C83985-01 W/PROVISIONING	MINUTEMAN INTL INC
0.45	6520005390750	COLLECTOR UNIT 115 V	101	HANDLER MFG CO INC
0.45	6640012219091	INCUBATOR BACT STEAM	116	MINNESOTA MINING AND MFG CO <b>See 3M Health Care</b>
0.43	6520001391246	COMPRESSOR DEHY DENTAL	M5B	AIR TECHNIQUES
0.40	4110014395873	REFRIGERATOR COLD PAC	2085	MEDI-PETH MEDICAL LABORATORY INC
0.40	6515013797852	CUTTER-VACUUM ORTHO	940 CUTTER	M-PACT WORLDWIDE MANAGMENT CORP
0.40	6520001490123	AMALGAMATOR ELEC 115V	672200	CAULK/DENTSPLY <b>See Dentsply Caulk Div Dentsply International Inc</b>
0.40	6520012060299	SUCTION APP DEN 110V	3020 (SUCTION AP(NO. 2 TIP)	ALLIED HEALTHCARE PRODUCTS INC
0.40	6520014565709	CURING UNIT,DENTURE	ACRYDIG 10	ASTRON DENTAL CORP
0.40	6525014338676	CAMERA IDENTIFICATION	MODEL 2	EASTMAN KODAK CO
0.40	6530012461906	TRACTION APPAR 120V	TT92B200/WM0291 W/PROVISIONING	CURRENT THERAPEUTICS INC

**This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.**

**Appendix A**  
**Average Total Time per device from Sierra and 67<sup>th</sup> CSH sustainments**

Avg Total Time	NSN	Nomen	Model	Mfgr
0.40	6640011432055	CENTRIFUGE LAB PRTBLE	SERO-FUGE II W/PROVISIONINGISION	BECTON DICKINSON AND CO
0.40	6650010190423	MICROSCOPE OPTICAL	H110BU-E	AEARO CO
0.39	6515014660971	OXIMETER PULSE FINGER	9500	NONIN MEDICAL INC
0.38	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
0.36	6515013136242	THERMOMETER CLINICAL	600	DIATEK INC
0.35	6530012835169	LIGHT FLOOR 120/230V	GVFEL-1	COMMERCIAL PRODUCTS AND ENGINEERING
0.35	6530013061701	LIGHT FLOOR 120/230V	MOD FEL 5100	LANG F W CO
0.34	6525012300603	ILLUMINATOR XRAY115V	FI0212	BRENNER METAL PRODUCTS CORP
0.34	6525011470212	ILLUM X-RAY115VO50-60	FVS252744	PICKER INTL INC <b>See Marconi Medical Systems</b>
0.30	3540012520051	SEALING MACHINE HEAT	889-6549	SCHEIN HENRY INC
0.30	4110008828450	REFRIG 120V 50/60HZ	AA-R-00211	FEDERAL SPECIFICATIONS
0.30	6230008094284	LIGHT DESK 120V AC	697-9026	DEFENSE SUPPLY AGENCY
0.30	6515012789850	STIMULATOR PERIPHERAL	MS-1	LIFE-TECH INC
0.30	6515013556479	VAPORIZER ANESTHESIA	1101-9001-007	DATEX OHMEDA
0.30	6520014463783	CHAIR DENTAL OPERAT	ADC-01CS	ASEPTICO INC
0.30	6640010689612	CENTRIFUGE, LAB BAT 9V	4527	BAYER CORP DIAGNOSTICS DIV
0.28	6515005507199	OTOSCOPE&OPHTH SCOPE	98060	WELCH ALLYN INC
0.27	6530012414393	LIGHT FLOOR 120/230AC	FEL-5100	BRENNER METAL PRODUCTS CORP
0.25	6515012455056	STETHOSCOPE 8MHZ PORT	BF5A	COLGATE-PALMOLIVE CO
0.25	6515012908949	LIGHT HEAD 120/230V	GAC-2075-A	LUXTEC CORP
0.25	6515012915447	CUTTER ORTHO CAST 10"	840	STRYKER CORP
0.23	6530014612344	STAND, LIGHT, EXAMINATION, FIELD	1050	DAZOR MFG CORP
0.20	6525004559947	VIEWER DEN RAD 115 V	DATA NOT AVAIL	DEPARTMENT OF THE ARMY
0.20	6530008753714	CHAIR WHIRLPOOL BATH	078-1110-00	FERNO-WASHINGTON INC
0.16	6515012861010	LARYNGOSCOPE SET	199176	PROPPER MFG CO INC
0.15	6640012839308	VIEWER AGGLUTINATION	15-345-100 W/PROVISIONING	FISHER SCIENTIFIC CO LLC
0.10	6515014319631	ARTHROSCOPE SYSTEM	A7595A	OLYMPUS AMERICA INC

This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.



# **Appendix B**

## **Average PM Times per Medical Device**

**Appendix B**  
**Average PM times per device from Sierra and 67<sup>th</sup> CSH Sustainments**

Avg PM Time	NSN	Nomen	Model	Mfgr
8.00	6525013849296	X-RAY APPARATUS(PICKER)	Clinix VP4	PICKER INTL INC <i>See Marconi Medical Systems</i>
2.50	6530009262151	STER SURG DRES16X36IN	M138	ENVIRONMENTAL TECTONICS CORP
1.50	6525014226122	PROCESSOR X-RAY(AFP)	9992305300	AFP IMAGING CORP
1.25	6515013096647	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB
1.25	6520012724531	DEN OPER TREAT UNIT	36-00-99-00	A-DEC INC
1.04	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
1.00	6525010992320	X-RAY APP FLD DENTAL	58 25 476 D 3152	PELTON AND CRANE CO
1.00	6525013697178	DARKROOM X-RAY PORT	PDR-1	DEFIANCE ELECTRONICS INC
1.00	6530007098175	TABLE OPER RM FIELD	A-200	EMERSON-SACK-WARNER CORP
1.00	6530013408001	STERILIZER SURG INSTR	VALIDATOR PLUS 10	PELTON AND CRANE CO
1.00	6530014428720	STERILIZER SURG INSTR	MC10	GETINGE/CASTLE INC
1.00	6545009268961	MICROSCOPE SE MED LAB	DATA NOT AVAIL	DEPARTMENT OF THE ARMY
0.87	6515014534003	DEFIB/MONITOR	LP 10	MEDTRONIC PHYSIO-CONTROL
0.83	6530013087740	SINK UNIT SCRUB FLD	950S936	HAMILTON MFG CO
0.80	6530011272215	BATH LEG230V50/60HZ	HM290	FERNO-WASHINGTON INC
0.75	6640014161385	INCUBATOR BACTERIOL	SP0200-96-C-8530	MEDI-PETH MEDICAL LABORATORY INC
0.73	6520001817349	CHAIR&STOOL UNIT DENT	CM-185	DEN-TAL-EZ INC <i>See DentalEZ Group</i>
0.70	4110014512356	REFRIGERATOR SOLID ST	M-30TR	THERMOPOL INC
0.68	6530013432033	LIGHT SURGICAL FIELD	2410 MB	BARNSTEAD/THERMOLYNE CORP
0.60	6515012911199	DEFIBRILLATOR MONITOR	HP43110MC	HEWLETT-PACKARD
0.60	6520001407663	DEN OPER TREAT UNIT	3406	A-DEC INC
0.60	6520012139496	FORMER VACUUM DEN120V	MODEL STA-VAC	BUFFALO DENTAL MFG CO INC
0.60	6650013253747	MICROSCOPE OPTICAL	LABOPHOT 2	NIKON INSTRUMENTS INC
0.57	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC
0.55	6515012911198	MONITOR-RECORDER ECG	HP43200MC	HEWLETT-PACKARD
0.55	6545012843035	GENITOURINARY CYS KIT	MILGUDI-1	CIRCON CORP
0.50	3540004572699	SEALING MACH ELECTRON	4R4335 W/PROVISIONING	BAXTER HEALTHCARE CORP BAXTER FENWAL DIV
0.50	4110011173902	REFRIG MECH BLD BBR37	BBR37-SS-1B-01 W/PROVISIONING	JEWETT INC
0.50	4110014500060	FREEZER MECHANICAL	CTF1-1B-06	JEWETT INC <i>See Revco Technologies Inc</i>
0.50	6515012594307	DRAINAGE UNIT 115/230	6053	ALLIED HEALTHCARE PRODUCTS INC GOMCO DIV
0.50	6515013784529	STIMULATOR ULTRASOUND	7975 W/PROVISIONING	CHATTANOOGA GROUP INC
0.50	6515013803846	SUCTION & PRESS APPAR	800-0317-00 W/PROVISIONING	IMPACT INSTRUMENTATION INC
0.50	6515013864354	STIMULATOR NERVE TRAN	STAODYN MAXIMA II	DIVERSIFIED HEALTHCARE SERVICES
0.50	6520009057894	LIGHT DEN OPERAT UNIT	LF II	PELTON AND CRANE CO
0.50	6520012835208	COMPRESSOR-DEHYDRATOR	M5 SERIES	AIR TECHNIQUES INC
0.50	6520012878123	LIGHT SE DEN REUS CON	HB7-019585 W/TRANSFORMER AND PR-	PELTON AND CRANE CO
0.50	6520012968420	ENGINE AND HANDPIECE	40-L & C33 W/PROVISIONING	BELL INTL INC
0.50	6520014464170	LIGHT DEN OPER FIELD	ALU-29CF	ASEPTICO INC

**Appendix B**  
**Average PM times per device from Sierra and 67<sup>th</sup> CSH Sustainments**

Avg PM Time	NSN	Nomen	Model	Mfgr
0.50	6525012685152	CAMERA IDENT XRAY	826-1703	EASTMAN KODAK CO
0.50	6525012839958	PROCESSING MACH 220V	9992406100	DENT-X CORP
0.50	6525013036235	PROCESSING MACHINE	AFP14X-3MIL	AFP IMAGING CORP
0.50	6530013968351	HEATER HEAT TREATMENT	94-6432	DEFENSE SUPPLY AGENCY
0.50	6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC
0.50	6640012918390	STIRRER-HOT PLATE MAG	502P W/PROVISIONING	PMC INDUSTRIES INC <a href="#">See Barnstead/Thermolyne Corp An Apogent Technologies Co</a>
0.50	6640013087749	CENTRIFUGE LAB REFRIG	PR 7000M	INTERNATIONAL EQUIPMENT CO (IEC) <a href="#">See Thermo IEC</a>
0.50	6640013165084	CENTRIFUGE, LAB SM	708T W/PROVISIONING	DRUCKER CO
0.34	6515013589480	SUCTION APPAR PRTBLE	2590-G-120 W/PROVISIONING	FEDERAL EQUIPMENT MFG
0.46	6515014520625	PUMP,INTRAVENOUS INFUSION	Medsystem III	ALARIS MEDICAL SYSTEMS INC
0.45	6515012935577	OXIMETER PULSE	3040 G	SIMS BCI INC DBA BCI INTL
0.44	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
0.43	6515013046497	SUCTION APPAR 120V	308 M	IMPACT INSTRUMENT
0.40	6515011741477	SUCTION & PRESSURE AP	317M	IMPACT INSTRUMENTATION INC
0.40	6520001391246	COMPRESSOR DEHY DENTAL	M5B	AIR TECHNIQUES
0.40	6530011282442	BATH WHIRLPOOL 220V	HM200 W/PROVISIONING	FERNO-WASHINGTON INC
0.40	6640012580006	SHAKING MACHINE LAB	G560 VORTEX GENIE 2 W/PROVISION	SCIENTIFIC INDUSTRIES INC
0.39	6515014660971	OXIMETER PULSE FINGER	9500	NONIN MEDICAL INC
0.36	6515012935578	ULTRASONIC UNIT BLOOD	D8	MEDASONICS INC
0.35	6515013797852	CUTTER-VACUUM ORTHO	940 CUTTER	M-PACT WORLDWIDE MANAGMENT CORP
0.35	6515013136242	THERMOMETER CLINICAL	600	DIATEK INC
0.32	7910013270757	CLEANER VACUUM ELEC	C83985-01 W/PROVISIONING	MINUTEMAN INTL INC
0.30	4110014395873	REFRIGERATOR COLD PAC	2085	MEDI-PETH MEDICAL LABORATORY INC
0.30	6230008094284	LIGHT DESK 120V AC	697-9026	DEFENSE SUPPLY AGENCY
0.30	6515012789850	STIMULATOR PERIPHERAL	MS-1	LIFE-TECH INC
0.30	6515013556479	VAPORIZER ANESTHESIA	1101-9001-007	DATEX OHMEDA
0.30	6520005390750	COLLECTOR UNIT 115 V	101	HANDLER MFG CO INC
0.30	6520014463783	CHAIR DENTAL OPERAT	ADC-01CS	ASEPTICO INC
0.30	6520014565709	CURING UNIT,DENTURE	ACRYDIG 10	ASTRON DENTAL CORP
0.30	6525012563259	ILLUMINATOR XRY WALL	21444	WOLF X-RAY CORP
0.30	6525014338676	CAMERA IDENTIFICATION	MODEL 2	EASTMAN KODAK CO
0.30	6530007113000	HEATER HEAT TREAT 4PA	E1	CHATTANOOGA GROUP INC
0.30	6640011432055	CENTRIFUGE LAB PRTBLE	SERO-FUGE II W/PROVISIONINGISION	BECTON DICKINSON AND CO
0.30	6640012219091	INCUBATOR BACT STEAM	116	MINNESOTA MINING AND MFG CO <a href="#">See 3M Health Care</a>
0.30	6640013030255	BLOOD CELL WASHER AC	8818 G3 W/PROVISIONING	HAEMONETICS CORP
0.27	6515005507199	OTOSCOPE&OPHTH SCOPE	98060	WELCH ALLYN INC
0.26	6525011470212	ILLUM X-RAY115VO50-60	FVS252744	PICKER INTL INC <a href="#">See Marconi Medical Systems</a>
0.25	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP

This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.

**Appendix B**  
**Average PM times per device from Sierra and 67<sup>th</sup> CSH Sustainments**

Avg PM Time	NSN	Nomen	Model	Mfgr
0.25	4110012917046	REFRIG BLD BNK (BBR37)	4570105	REVCO TECHNOLOGIES INC A UNIT OF SPX DBA JEWETT
0.25	6515012455056	STETHOSCOPE 8MHZ PORT	BF5A	COLGATE-PALMOLIVE CO
0.25	6515012908949	LIGHT HEAD 120/230V	GAC-2075-A	LUXTEC CORP
0.25	6515012915447	CUTTER ORTHO CAST 10"	840	STRYKER CORP
0.25	6520012060299	SUCTION APP DEN 110V	3020 (SUCTION AP(NO. 2 TIP)	ALLIED HEALTHCARE PRODUCTS INC
0.25	6520014679899	CLEANER ULTRASON DENT	01-20	BARNSTEAD/THERMOLYNE CORP
0.23	6520001490123	AMALGAMATOR ELEC 115V	672200	CAULK/DENTSPLY See Dentsply Caulk Div Dentsply International Inc
0.22	6530013061701	LIGHT FLOOR 120/230V	MOD FEL 5100	LANG F W CO
0.22	6525012300603	ILLUMINATOR XRAY115V	FI0212	BRENNER METAL PRODUCTS CORP
0.22	6530014612344	STAND, LIGHT, EXAMINATION, FIELD	1050	DAZOR MFG CORP
0.20	6530008753714	CHAIR WHIRLPOOL BATH	078-1110-00	FERNO-WASHINGTON INC
0.20	6530012461906	TRACTION APPAR 120V	TT92B200/WM0291 W/PROVISIONING	CURRENT THERAPEUTICS INC
0.20	6530012835169	LIGHT FLOOR 120/230V	GVFEL-1	COMMERCIAL PRODUCTS AND ENGINEERING
0.20	6640010689612	CENTRIFUGE, LAB BAT 9V	4527	BAYER CORP DIAGNOSTICS DIV
0.20	6650010190423	MICROSCOPE OPTICAL	H110BU-E	AEARO CO
0.16	6515012861010	LARYNGOSCOPE SET	199176	PROPPER MFG CO INC
0.15	3540012520051	SEALING MACHINE HEAT	889-6549	SCHEIN HENRY INC
0.14	6530012414393	LIGHT FLOOR 120/230AC	FEL-5100	BRENNER METAL PRODUCTS CORP
0.10	4110008828450	REFRIG 120V 50/60HZ	AA-R-00211	FEDERAL SPECIFICATIONS
0.10	6515014319631	ARTHROSCOPE SYSTEM	A7595A	OLYMPUS AMERICA INC
0.10	6525004559947	VIEWER DEN RAD 115 V	DATA NOT AVAIL	DEPARTMENT OF THE ARMY
0.10	6640012839308	VIEWER AGGLUTINATION	15-345-100 W/PROVISIONING	FISHER SCIENTIFIC CO LLC

# **Appendix C**

## **Average ST Times per Medical Device**

**Appendix C**  
**Average ST times per device from Sierra and 67<sup>th</sup> CSH Sustainments**

Avg ST Time	NSN	Nomen	Model	Mfgr
0.01	6515013136242	THERMOMETER CLINICAL	600	DIATEK INC
0.01	6530014612344	STAND, LIGHT, EXAMINATION, FIELD	1050	DAZOR MFG CORP
0.03	6520001391246	COMPRESSOR DEHY DENTAL	M5B	AIR TECHNIQUES
0.05	6515013797852	CUTTER-VACUUM ORTHO	940 CUTTER	M-PACT WORLDWIDE MANAGMENT CORP
0.05	6640012839308	VIEWER AGGLUTINATION	15-345-100 W/PROVISIONING	FISHER SCIENTIFIC CO LLC
0.07	6515014534003	DEFIB/MONITOR	LP 10	MEDTRONIC PHYSIO-CONTROL
0.07	6525012685152	CAMERA IDENT XRAY	826-1703	EASTMAN KODAK CO
0.08	6525011470212	ILLUM X-RAY115VO50-60	FVS252744	PICKER INTL INC <a href="#">See Marconi Medical Systems</a>
0.10	3540004572699	SEALING MACH ELECTRON	4R4335 W/PROVISIONINGONING	BAXTER HEALTHCARE CORP BAXTER FENWAL DIV
0.10	4110014395873	REFRIGERATOR COLD PAC	2085	MEDI-PETH MEDICAL LABORATORY INC
0.10	4110014512356	REFRIGERATOR SOLID ST	M-30TR	THERMOPOL INC
0.10	6520012835208	COMPRESSOR-DEHYDRATOR	M5 SERIES	AIR TECHNIQUES INC
0.10	6520014565709	CURING UNIT,DENTURE	ACRYDIG 10	ASTRON DENTAL CORP
0.10	6525004559947	VIEWER DEN RAD 115 V	DATA NOT AVAIL	DEPARTMENT OF THE ARMY
0.10	6525014338676	CAMERA IDENTIFICATION	MODEL 2	EASTMAN KODAK CO
0.10	6530013432033	LIGHT SURGICAL FIELD	2410 MB	BARNSTEAD/THERMOLYNE CORP
0.10	6640010689612	CENTRIFUGE, LAB BAT 9V	4527	BAYER CORP DIAGNOSTICS DIV
0.10	6640011432055	CENTRIFUGE LAB PRTBLE	SERO-FUGE II W/PROVISIONINGISION	BECTON DICKINSON AND CO
0.10	6650013253747	MICROSCOPE OPTICAL	LABOPHOT 2	NIKON INSTRUMENTS INC
0.12	6515012935578	ULTRASONIC UNIT BLOOD	D8	MEDASONICS INC
0.13	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC
0.13	6515012594307	DRAINAGE UNIT 115/230		ALLIED HEALTHCARE PRODUCTS INC GOMCO DIV
0.13	6525012300603	ILLUMINATOR XRAY115V	FI0212	BRENNER METAL PRODUCTS CORP
0.13	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
0.13	6530012414393	LIGHT FLOOR 120/230AC	FEL-5100	BRENNER METAL PRODUCTS CORP
0.13	6530013061701	LIGHT FLOOR 120/230V		LANG F W CO
0.13	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
0.14	6515013046497	SUCTION APPAR 120V	308 M	IMPACT INSTRUMENT
0.15	3540012520051	SEALING MACHINE HEAT	889-6549	SCHEIN HENRY INC
0.15	6515013589480	SUCTION APPAR PRTBLE	2590-G-120 W/PROVISIONING	FEDERAL EQUIPMENT MFG
0.15	6520005390750	COLLECTOR UNIT 115 V	101	HANDLER MFG CO INC
0.15	6520012060299	SUCTION APP DEN 110V	3020 (SUCTION AP(NO. 2 TIP)	ALLIED HEALTHCARE PRODUCTS INC
0.15	6530011282442	BATH WHIRLPOOL 220V	HM200 W/PROVISIONING	FERNO-WASHINGTON INC
0.15	6530012835169	LIGHT FLOOR 120/230V	GVFEL-1	COMMERCIAL PRODUCTS AND ENGINEERING
0.15	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
0.15	6640012219091	INCUBATOR BACT STEAM	116	MINNESOTA MINING AND MFG CO <a href="#">See 3M Health Care</a>
0.15	7910013270757	CLEANER VACUUM ELEC	C83985-01 W/PROVISIONING	MINUTEMAN INTL INC
0.16	6515012911198	MONITOR-RECORDER ECG	HP43200MC	HEWLETT-PACKARD

**This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.**

**Appendix C**  
**Average ST times per device from Sierra and 67<sup>th</sup> CSH Sustainments**

Avg ST Time	NSN	Nomen	Model	Mfgr
0.18	6515012935577	OXIMETER PULSE	3040 G	SIMS BCI INC DBA BCI INTL
	6520001490123	AMALGAMATOR ELEC 115V	672200	CAULK/DENTSPLY See Dentsply Caulk Div Dentsply International Inc
0.18				
0.20	4110008828450	REFRIG 120V 50/60HZ	AA-R-00211	FEDERAL SPECIFICATIONS
0.20	4110014500060	FREEZER MECHANICAL	CTF1-1B-06	JEWETT INC See Revco Technologies Inc
0.20	6515011741477	SUCTION & PRESSURE AP	317M	IMPACT INSTRUMENTATION INC
0.20	6515012911199	DEFIBRILLATOR MONITOR	HP43110MC	HEWLETT-PACKARD
	6515013803846	SUCTION & PRESS APPAR	800-0317-00	IMPACT INSTRUMENTATION INC
0.20			W/PROVISIONING	
0.20	6520009057894	LIGHT DEN OPERAT UNIT	LF II	PELTON AND CRANE CO
0.20	6520012139496	FORMER VACUUM DEN120V	MODEL STA-VAC	BUFFALO DENTAL MFG CO INC
	6520012878123	LIGHT SE DEN REUS CON	HB7-019585	PELTON AND CRANE CO
0.20			W/TRANSFORMER AND PR-	
0.20	6520012968420	ENGINE AND HANDPIECE	40-L & C33	BELL INTL INC
			W/PROVISIONING	
0.20	6525012563259	ILLUMINATOR XRY WALL	21444	WOLF X-RAY CORP
0.20	6525014226122	PROCESSOR X-RAY(AFP)	9992305300	AFP IMAGING CORP
0.20	6530007113000	HEATER HEAT TREAT 4PA	E1	CHATTANOOGA GROUP INC
0.20	6530011272215	BATH LEG230V50/60HZ	HM290	FERNO-WASHINGTON INC
	6530012461906	TRACTION APPAR 120V	TT92B200/WM0291	CURRENT THERAPEUTICS INC
0.20			W/PROVISIONING	
0.20	6530013087740	SINK UNIT SCRUB FLD	950S936	HAMILTON MFG CO
0.20	6530013968351	HEATER HEAT TREATMENT	94-6432	DEFENSE SUPPLY AGENCY
0.20	6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC
0.20	6545012843035	GENITOURINARY CYS KIT	MILGUDI-1	CIRCON CORP
	6640012580006	SHAKING MACHINE LAB	G560 VORTEX GENIE 2	SCIENTIFIC INDUSTRIES INC
0.20			W/PROVISION	
	6640012918390	STIRRER-HOT PLATE MAG	502P W/PROVISIONING	PMC INDUSTRIES INC See Barnstead/Thermolyne Corp An Apogent Technologies Co
0.20	6640013030255	BLOOD CELL WASHER AC	8818 G3	HAEMONETICS CORP
			W/PROVISIONING	
0.20	6650010190423	MICROSCOPE OPTICAL	H110BU-E	AEARO CO
0.23	6515013784529	STIMULATOR ULTRASOUND	7975 W/PROVISIONING	CHATTANOOGA GROUP INC
	6640014161385	INCUBATOR BACTERIOL	SP0200-96-C-8530	MEDI-PETH MEDICAL LABORATORY INC
0.23				
	4110012917046	REFRIG BLD BNK (BBR37)		REVCO TECHNOLOGIES INC A UNIT OF SPX DBA JEWETT
0.25	6515014520625	PUMP,INTRAVENOUS INFUSION	Medsystem III	ALARIS MEDICAL SYSTEMS INC
0.25	6520014464170	LIGHT DEN OPER FIELD	ALU-29CF	ASEPTICO INC
0.25	6520014679899	CLEANER ULTRASON DENT	01-20	BARNSTEAD/THERMOLYNE CORP
	6640013087749	CENTRIFUGE LAB REFRIG	PR 7000M	INTERNATIONAL EQUIPMENT CO (IEC) SeeThermo IEC
0.25	6640013165084	CENTRIFUGE, LAB SM	708T W/PROVISIONING	DRUCKER CO
0.50	6525010992320	X-RAY APP FLD DENTAL	58 25 476 D 3152	PELTON AND CRANE CO

This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.

# **APPENDIX D**

## **Listing of all comments from Sierra and 67<sup>th</sup> CSH Sustainments**

**Appendix D**  
**Listing of Comments from Sierra and 67<sup>th</sup> CSH Sustainments**

UID	# of Comments	Comments	NSN	Nomen	Model	Mfgr
RCHD6	6	Batteries not included	6515005507199	OPHTHALMOSCOPE & OTOSCOPE	GG000770	Welch Allyn
RCHD6	6	No bulb	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
RCHD6	5	Leaf valve may have to be replaced after extended storage	6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC
WBJBAA	4	M2 burner not modified.	6530009262151	STER SURG DRES16X36IN		ENVIRONMENTAL TECTONICS CORP
WBJBAA	3	E1 appears on display screen.	6515012935577	PULSE OXIMTER	3040 G	SIMS BCI
RCHD6	3	Batteries need replacing.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
RCHD6	3	Added hydraulic fluid	6520001817349	CHAIR AND STOOL UNIT: DENTAL OPERATING PORTABLE	MIL-C-37021	DEN-TAL-EZ Inc.
WBJBAA	3	Missing wing nut	6530009372204	LIGHT SURGICAL FIELD: 110 VOLT AC OR 24 VOLT DC	MILL36531	MILITARY SPECIFICATIONS PROMULGATED BY MILITARY
RCHD6	3	Missing bulbs.	6530013061701	LIGHT FLOOR 120/230V		LANG F W CO
RCHD6	2	No detrimental effects form storage.	6515005507199	OPHTHALMOSCOPE & OTOSCOPE	GG000770	Welch Allyn
WBJBAA	2	Missing stand (tip resistant cart)	6515012672727	SUCTION APPAR 120/230	BF5A W/PROVISIONING	IMPACT INSTRUMENTATION INC
WBJBAA	2	Missing long tube, transformer.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
RCHD6	2	Batteries pulled. Packed since Dec 89.	6515013136242	THERMOMETER	600	DIATEK INC
WBJBAA	2	Not economically repairable due to corrosion and non-availability of repair parts.	6520001391246	COMPRESSOR DEHY DENTAL	M5B	AIR TECHNIQUES
RCHD6	2	Gas spring may need replacing at a later date.	6520009057894	LIGHT DEN OPERAT UNIT	LF II	PELTON AND CRANE CO
RCHD6	2	Bulb not included	6530012414393	LIGHT FLOOR 120/230AC	FEL-5100	BRENNER METAL PRODUCTS CORP
RCHD6	2	Needs antifreeze for storage.	6530013087740	SINK UNIT SCRUB FLD	950S936	HAMILTON MFG CO
RCHD6	2	All plastic ok	6530014612344	STAND, LIGHT, EXAMINATION, FIELD	1050	DAZOR MFG CORP
RCHD6	1	Splash shield missing.	3540004572699	SEALING MACH ELECTRON	4R4335	BAXTER HEALTHCARE CORP BAXTER FENWAL DIV
WBJBAA	1	Missing tubing to check out.	3540004572699	SEALING MACH ELECTRON	4R4335	BAXTER HEALTHCARE CORP BAXTER FENWAL DIV
RCHD6	1	Missing door keys.	4110011173902	REFRIG MECH BLD BBR37	BBR37-SS-1B-01	JEWETT INC
RCHD6	1	Upon initial start up the compressor motor was seized up. The compressor was allowed to warm up and was then forcefully tapped with a hammer, then allowed to cool. Once cool the unit was again plugged in and allowed to run normally for 2 hours.	4110012917046	REFRIG BLD BNK (BBR37)		REVCO TECHNOLOGIES INC A UNIT OF SPX DBA JEWETT
RCHD6	1	New	6515005507199	OPHTHALMOSCOPE & OTOSCOPE	GG000770	Welch Allyn
WBJBAA	1	O2 sensor bad (corroded).	6515011858446	ANES APP GAS: W/O2 MONITOR N2O O2 & VOLATILE LIQ 4 CY CAP PORT	885A &IL04026	DATEX OHMEDA

**Appendix D**  
**Listing of Comments from Sierra and 67<sup>th</sup> CSH Sustainments**

UID	# of Comments	Comments	NSN	Nomen	Model	Mfgr
WBJBAA	1	The installed battery is dead. Worked once then died, the uninstalled battery worked ok.	6515012455056	STETHOSCOPE ELECTRONIC ULTRASONIC PRTBLE 8MHZ W/CASE 5.6X2.6X.9"	BF5A W/PROVISIO NING	MEDASONICS INC SUB OF COLGATE-PALMOLIVE CO
RCHD6	1	Pump is bad. Pump is replaced.	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC
RCHD6	1	Pump not working, will not create a vacuum. Pump repaired.	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC
WBJBAA	1	Missing jars, tubing and filter.	6515012461938	SUCTION APPAR 120/230	6003	ALLIED HEALTHCARE PRODUCTS INC
RCHD6	1	No hose deterioration or rust	6515012594307	DRAINAGE UNIT 115/230		ALLIED HEALTHCARE PRODUCTS INC GOMCO DIV
RCHD6	1	2 'C' & 2 'AA' batteries included w/set, (not in devices).	6515012908949	LIGHT HEAD 120/230V		LUXTEC CORP
RCHD6	1	Handles were without batteries and there were four empty slots.	6515012915447	CUTTER ORTHO CAST 10"	840	STRYKER CORP
RCHD6	1	Battery needs replaced.	6515012911198	ECG Monitor Recorder	HP43200MC	HEWLETT-PACKARD CO See Philips Medical Systems Cardiac & Monitoring Systems Div
RCHD6	1	ECG waveforms verified, alarms initiated, cable and power no cuts or marks	6515012911198	ECG Monitor Recorder	HP43200MC	HEWLETT-PACKARD CO See Philips Medical Systems Cardiac & Monitoring Systems Div
RCHD6	1	Rubber in good condition	6515012911198	ECG Monitor Recorder	HP43200MC	HEWLETT-PACKARD CO See Philips Medical Systems Cardiac & Monitoring Systems Div
WBJBAA	1	Battery will not charge.	6515012911199	DEFIBRILLATOR MONITOR RECORDER	HP43110MC	HEWLETT-PACKARD CO See Philips Medical Systems Cardiac & Monitoring Systems Div
RCHD6	1	Battery needs replaced. Unit is outdated.	6515012935577	PULSE OXIMTER	3040 G	SIMS BCI
WBJBAA	1	Letters on rear panel chipping off.	6515012935577	PULSE OXIMTER	3040 G	SIMS BCI
WBJBAA	1	Missing electrical plug and patient probe.	6515012935577	PULSE OXIMTER	3040 G	SIMS BCI
WBJBAA	1	Missing patient probe.	6515012935577	PULSE OXIMTER	3040 G	SIMS BCI
RCHD6	1	Foam rubber packaging in good shape	6515012935578	ULTRASONIC UNIT BLOOD FLOW DETECTION	D8 W/P84 PROBE	MEDASONICS INC SUB OF COLGATE-PALMOLIVE CO
RCHD6	1	Rubber foot keeps falling off.	6515012935578	ULTRASONIC UNIT BLOOD FLOW DETECTION	D8 W/P84 PROBE	MEDASONICS INC SUB OF COLGATE-PALMOLIVE CO
RCHD6	1	This is a Medasonics, D8 doppler , note there was no NSN listed on the data sheet	6515012935578	ULTRASONIC UNIT BLOOD FLOW DETECTION	D8 W/P84 PROBE	MEDASONICS INC SUB OF COLGATE-PALMOLIVE CO
RCHD6	1	All seals good, xformer included.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
RCHD6	1	Missing 7mm - 1.8m tube used for testing.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
RCHD6	1	Plastic hoses turning yellow.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
WBJBAA	1	Does not operate on battery power. Missing long tube and transformer.	6515013046497	SUCTION APPAR OROPHARYNGEAL	308M	IMPACT INSTRUMENTATION INC
RCHD6	1	Good verficiation performed, brand new, rubber in good shape.	6515013096647	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB
WBJBAA	1	Corrosion and rust on back panel and footswtich.	6515013096647	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB

**Appendix D**  
**Listing of Comments from Sierra and 67<sup>th</sup> CSH Sustainments**

UID	# of Comments	Comments	NSN	Nomen	Model	Mfgr
WBJBAA	1	Corrosion on foot pedal and footswitch connectors. Some screws rusty on rear of unit.	6515013096647	ELECTROSURG APPARATUS	Force 2	TYCO HEALTHCARE GROUP LP DBA VALLEYLAB
RCHD6	1	3 'AA' batteries included with package, not in unit	6515013136242	THERMOMETER	600	DIATEK INC
RCHD6	1	Verified cal	6515013136242	THERMOMETER	600	DIATEK INC
RCHD6	1	Item must be commercially serviced.	6515013556479	VAPORIZER ANESTHESIA	1101-9001-007	DATEX OHMEDA
RCHD6	1	Reading too high not adjustable.	6515013589480	SUCTION APPAR PRTBLE	2590-G-120	FEDERAL EQUIPMENT MFG
RCHD6	1	Replaced plug.	6515013589480	SUCTION APPAR PRTBLE	2590-G-120	FEDERAL EQUIPMENT MFG
RCHD6	1	Tubing good, no rotting, collection jar good, unit good.	6515013589480	SUCTION APPAR PRTBLE	2590-G-120	FEDERAL EQUIPMENT MFG
RCHD6	1	When set to 90mm Hg, RT-200 reads 96.4. Tolerance is 85-95.	6515013589480	SUCTION APPAR PRTBLE	2590-G-120 W/PROVISIO NING	FEDERAL EQUIPMENT MFG
WBJBAA	1	missing 8' pulse oximeter sensor ext, CO2 sensor adapter	6515013627447	ECG Monitor	PROPAQ 106 EL BASIC	PROTOCOL SYSTEMS INC
RCHD6	1	Failed no ultrasound output. Light D/N light up and no output signal from meter.	6515013784529	STIMULATOR ULTRASOUND HIGH GALVANIC	7975 W/PROVISIO NING	CHATTANOOGA GROUP INC
RCHD6	1	No TMDE available	6515013784529	STIMULATOR ULTRASOUND HIGH GALVANIC	7975	CHATTANOOGA GROUP INC
WBJBAA	1	Batteries completely dead need recharging.	6515013809986	PACEMAKER CARDIAC	NTP 1000	ZOLL MEDICAL CORP
WBJBAA	1	Dead battery	6515013854396	STETHOSCOPE ELECTRONIC ULTRASONIC BTRY PWR PRTBLE	080-00H-	E M S PRODUCTS INC
RCHD6	1	Battery charger, NC-75PT by cadnice; leads 40in #1-2254-0040 2ea; Gel NDC 1-1200-004 1ea; Pads pk of 100 #1-0900-0025; Tens electrodes 4ea #5-1000-1028; 2ea 9V rechargeable batteries. (Parts required?)	6515013864354	STIMULATOR NERVE TRANSCUTANEOUS PORTABLE LIGHTWEIGHT	STAODYN MAXIMA II	DIVERSIFIED HEALTHCARE SERVICES
RCHD6	1	Battery is still charged from last servicing, USAH 0039908	6515014520625	PUMP,INTRAVENOUS INFUSION	Medssystem III	ALARIS MEDICAL SYSTEMS INC
RCHD6	1	USAH 0039908	6515014520625	PUMP,INTRAVENOUS INFUSION	Medssystem III	ALARIS MEDICAL SYSTEMS INC
RCHD6	1	Bad, rusty, foam inside case is rotting. Replace casing	6520001391246	COMPRESSOR DEHYDENTAL	M5B	AIR TECHNIQUES
WBJBAA	1	Pressure relief valve on outer casing missing.	6520001391246	COMPRESSOR DEHYDENTAL	M5B	AIR TECHNIQUES
WBJBAA	1	Timing a little slow.	6520001490123	AMALGAMATOR ELEC 115V	672200	CAULK/DENTSPLY See Dentsply Caulk Div Dentsply International Inc
RCHD6	1	Hydraulic leak, chair will not raise. Only supported by Ogden	6520001817349	CHAIR AND STOOL UNIT: DENTAL OPERATING PORTABLE	MIL-C-37021	DEN-TAL-EZ Inc.
RCHD6	1	Only supported by Ogden Depot.	6520001817349	CHAIR AND STOOL UNIT: DENTAL OPERATING PORTABLE	MIL-C-37021	DEN-TAL-EZ Inc.
RCHD6	1	Rubber gasket/diaphragm good except for being stretched out and piston in block was stuck until exercised. After long term storage blocks may need to be disassembled and gasket replaced & pistons manually moved.	6520012724531	DEN OPER TREAT UNIT	36-00-99-00	A-DEC INC
RCHD6	1	Gas spring may need replacing at a later date.	6520012878123	LIGHT SE DEN REUS CON	HB7-019585 W/TRANSFO RMER AND PR-	PELTON AND CRANE CO
WBJBAA	1	Cracked case.	6520013984613	COMPRESSOR - DEHYDRATOR DENTAL EQUIPMENT	MODEL PAC 6.7	DEFIANCE ELECTRONICS INC

**Appendix D**  
**Listing of Comments from Sierra and 67<sup>th</sup> CSH Sustainments**

UID	# of Comments	Comments	NSN	Nomen	Model	Mfgr
RCHD6	1	Good/new	6520014565709	CURING UNIT,DENTURE	ACRYDIG 10	ASTRON DENTAL CORP
WBJBAA	1	Missing collimator cap.	6525010992320	X-RAY APPARATUS FIELD DENTAL	58 25 476 D 3152	PELTON AND CRANE CO
RCHD6	1	NSN is for MMS. Need NSN for picker Illuminator.	6525011470212	ILLUM X-RAY115VO50-60	FVS252744	PICKER INTL INC See Marconi Medical Systems
WBJBAA	1	One fluorescent tube inop.	6525011470212	ILLUM X-RAY115VO50-60	FVS252744	PICKER INTL INC See Marconi Medical Systems
RCHD6	1	4 bulbs included-OK	6525012300603	ILLUMINATOR XRAY115V	FI0212	BRENNER METAL PRODUCTS CORP
RCHD6	1	Found loose screws, disconnected pwr board.	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
RCHD6	1	Missing one screw on collimator or tube housing.	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
RCHD6	1	Missing parts, has oil in bottom of case housing, tubehead leaking oil excessively. O-rings need replaced in gear box assy. Did not power unit up since repairs are needed.	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
RCHD6	1	Need new o-rings for gear box and short legs.	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
RCHD6	1	Tube head leaking oil, missing short legs, gear box needs o-rings.	6525013253740	X-RAY APP 50MA 90KVP	1200	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP
RCHD6	1	Missing scissors jack, grounding rod driver.	6525013849296	X-RAY APPARATUS(PICKER)	Clinix VP4	PICKER INTL INC See Marconi Medical Systems
WBJBAA	1	Broken central table board and locking posts on leg boards need replace mount, they won't lock into table.	6530001429239	TABLE OPERATING FLD	E99-000	DEFENSE LOGISTICS AGENCY DIRECTORATE OF MEDICAL MATERIEL
RCHD6	1	Small dents & dings on outer case. Loose and missing 1/2" nuts.	6530007098175	TABLE OPER RM FIELD	A-200	EMERSON-SACK-WARNER CORP
RCHD6	1	Heater/pump label installed upside down.	6530011282442	BATH WHIRLPOOL 220V	HM200 W/PROVISIONING	FERNO-WASHINGTON INC
RCHD6	1	Packed in 89-Good Condition, Thermometer good	6530011282442	BATH WHIRLPOOL 220V	HM200 W/PROVISIONING	FERNO-WASHINGTON INC
WBJBAA	1	Gas spring cylinder no good. Heads float down.	6530012440708	LIGHT SURG CEIL: 120/230V50/60HZ	LI2420CFH W/PROVISIONING	GETINGE/CASTLE INC
WBJBAA	1	Case clamps rusted.	6530012448101	THERMOREGULATOR: PATIENT AUTO&MANUAL 115/220V 50/60 HZ	77566-000	GAYMAR INDUSTRIES INC
WBJBAA	1	Face plate is peeling off - Display of machine - Latch is corroded	6530012448101	THERMOREGULATOR: PATIENT AUTO&MANUAL 115/220V 50/60 HZ	77566-000	GAYMAR INDUSTRIES INC
WBJBAA	1	Latches are corroded on case.	6530012448101	THERMOREGULATOR: PATIENT AUTO&MANUAL 115/220V 50/60 HZ	77566-000	GAYMAR INDUSTRIES INC
RCHD6	1	No rust, all components in good shape.	6530012835169	LIGHT FLOOR 120/230V	GVFEL-1	COMMERCIAL PRODUCTS AND ENGINEERING
WBJBAA	1	Possible safety message. Photos taken by USAMMA.	6530013194044	BLENDER AIR-OXYGEN 21 TO 100 PCT AT HIGH OR LOW OUPUT FLOWS	3804	BIRD PRODUCTS CORP
WBJBAA	1	Battery dead.	6530013270686	VENTILATOR VOLUME PORTABLE	M750 W/PROVISIONING	IMPACT INSTRUMENTATION INC

**Appendix D**  
**Listing of Comments from Sierra and 67<sup>th</sup> CSH Sustainments**

UID	# of Comments	Comments	NSN	Nomen	Model	Mfgr
RCHD6	1	Batteries were discharged on initial setup. Batteries are bad, will not charge.	6530013432033	LIGHT SURGICAL FIELD: 110 VOLT AC OR 24 VOLT DC	2410 MB W/PROVISIONING	GETINGE/CASTLE INC
WBJBAA	1	No avian manifold update checklist included.	6530013748903	VENTILATOR VOLUME PORTABLE	15304/WPROVISIONING	BIRD PRODUCTS CORP
RCHD6	1	All parts accounted for.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
RCHD6	1	Bad ground connection at terminal strip & case. Removed paint at ground point of case and retightened ground connection on terminal strip. Oxidation between terminal strip and spade connectors cause a ground resistance above 600 mohm.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
RCHD6	1	Basin cracked, case cracked, water in case and pump.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
RCHD6	1	Sink base busted. Repaired 22 May 01.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
WBJBAA	1	Male quick disconnect coupling damaged. Copper tubing needs to be longer.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
WBJBAA	1	Outlet connector broken off of pump housing.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
WBJBAA	1	Unit stored improperly. Brown fluid covering inside of container and equipment.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
WBJBAA	1	Unit was stored wet. Now everything is covered with mold and mildew. Unit was improperly packed and unsecured.	6530014296715	SINK UNIT, SURGICAL SCRUB	SP0200-96-C-8509	RAN-PAIGE CO INC
RCHD6	1	Minor leak around door gasket. Door not sealing properly.	6530014428720	STERILIZER SURG INSTR	MC10	GETINGE/CASTLE INC
RCHD6	1	Lamps w/out stands came in later	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
RCHD6	1	New	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
RCHD6	1	No base found with unit	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
RCHD6	1	Good Container code US AH-0041084. 4 light stands, 6530-01-461-2344	6530014612325	LIGHT EXAMINATION	MODEL 1069A	DAZOR MFG CORP
RCHD6	1	No cracks in stand or casters	6530014612344	STAND, LIGHT, EXAMINATION, FIELD	1050	DAZOR MFG CORP
RCHD6	1	Bad leaf valve. Replaced bad leaf valve. Unit will need to be calibrated before use.	6530014640267	VENTILATOR VOL PTBL	UNI-VENT EAGLE	IMPACT INSTRUMENTATION INC
RCHD6	1	No manual. Improved grounding to enable microscope to pass safety.	6545009268961	MICROSCOPE SE MED LAB	DATA NOT AVAIL	DEPARTMENT OF THE ARMY
WBJBAA	1	Reference electrode kit expiration date 2/92. Paper brittle	6630013008711	ANALYZER POTASSIUM AND SODIUM ION SELECTIVE	614 ANALYZER	CIBA CORNING DIAGNOSTICS CORP
WBJBAA	1	Fails operator confidence test logic check. Unable to conduct optical noise check dur to "OFF SCALE" condition.	6630013449996	COAGULATION TIMER UNIT: PLASMA SEMIAUTOMATIC TESTING	MLA ELECTRA 750	MEDICAL LABORATORY AUTOMATION INC
WBJBAA	1	Cord damage by packing unit while still hot. Cord needs replacing for safety. Unit does operate. Missing 220-110v transformer.	6640012918390	STIRRER-HOT PLATE MAG	502P	PMC INDUSTRIES INC See Barnstead/Thermolyne Corp An Apogent Technologies Co
RCHD6	1	Glass handle has metal handle broken due to glue rotting.	6640013030255	BLOOD CELL WASHER AC	8818 G3	HAEMONETICS CORP
RCHD6	1	Hose in good condition, no cracks	7910013270757	CLEANER VACUUM ELEC	C83985-01	MINUTEMAN INTL INC
RCHD6	1	No problems from storage	7910013270757	CLEANER VACUUM ELEC	C83985-01	MINUTEMAN INTL INC
RCHD6	1	Rust on handle, All seals good, Rubber parts on accessories good, no cracks in hard plastics of accessories	7910013270757	CLEANER VACUUM ELEC	C83985-01	MINUTEMAN INTL INC

**Appendix D**  
**Listing of Comments from Sierra and 67<sup>th</sup> CSH Sustainments**

<b>UID</b>	<b># of Comments</b>	<b>Comments</b>	<b>NSN</b>	<b>Nomen</b>	<b>Model</b>	<b>Mfgr</b>
RCHD6	1	Specifications in accordance with Army regulations and/or Mfg. Literature. USAH 0039908	7910013270757	CLEANER VACUUM ELEC	C83985-01	MINUTEMAN INTL INC
RCHD6	1	Water spot (rust) on top cover.	7910013270757	CLEANER VACUUM ELEC	C83985-01	MINUTEMAN INTL INC
WBJBAA	1	Rust on top of motor housing.	7910013270757	CLEANER VACUUM ELEC	C83985-01	MINUTEMAN INTL INC

**APPENDIX E**

**SAMPLE DATASHEET**

# Inspection Sheet

(Please complete as detailed as possible. Please print all information.)

Date: \_\_\_\_\_

Total Service Time: \_\_\_\_\_

Condition Code: \_\_\_\_\_

Tech Code: \_\_\_\_\_

MMCN: \_\_\_\_\_

NSN: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Nomenclature: \_\_\_\_\_

Model: \_\_\_\_\_

MMS /ACN-BDN: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

PM Time: \_\_\_\_\_

ST Time: \_\_\_\_\_

CAL Time: \_\_\_\_\_

RE Time: \_\_\_\_\_



Depot Inspected: Y / N

Operator/Service Literature on hand: Y / N

Battery Condition: Replace Recharge Remove Disconnect

Accessories Available: Y / N

Passed Safety Test: Y / N

Associated Labels affixed: Y / N

Physical Condition: \_\_\_\_\_

\_\_\_\_\_

Deficiencies: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

REMARKS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Parts Required: Y / N

Part: \_\_\_\_\_ Part Number: \_\_\_\_\_ UI: \_\_\_\_\_ Qty \_\_\_\_\_ Unit Price: \_\_\_\_\_

Part: \_\_\_\_\_ Part Number: \_\_\_\_\_ UI: \_\_\_\_\_ Qty \_\_\_\_\_ Unit Price: \_\_\_\_\_

Part: \_\_\_\_\_ Part Number: \_\_\_\_\_ UI: \_\_\_\_\_ Qty \_\_\_\_\_ Unit Price: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print: \_\_\_\_\_ Phone Number: \_\_\_\_\_

# **Sample Data Collection Monthly Report February 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



**Prepared by:  
McAdams Technologies, Inc.  
Chris Riha MS, CCE  
Wayne Collins BMET  
Report # 002**

## Table of Contents

Introduction----- 1

Scope----- 1

Data

Field Comments----- 2

Data Analysis----- 5

Recommendations----- 5

Addendum----- 6

Appendix A----- 7

### Listing of Photos

Photos
Photo A, Propaq pigtail cord, page 2
Photo B, Propaq power connector insert, page 2
Photo C, Ran-Paige Sink drain fitting, page 3
Photo D, Hamilton Sink fitting, page 3
Photo E, ISO Shelter hinge, page 4
Photo F, Plastic cases, page 4
Photo G, Oxygen Connector, page 5

### Listing of Tables

Tables
Table I, Summary of repair data on targeted items, page 5

### Listing of Diagrams

Tables
Figure 1, Summary of repair data on Propaq monitors, page 5

### Acknowledgements

This report was made possible only with the assistance of all the personnel from the RTS-MED site at Fort Gordon; especially Mr. Michael McCann, Mr. Gerald Atkinson and Mr. Bobby Knight.

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc. to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This report, the second Sample Data Collection (SDC) report, will provide analysis from the first Sample Data Collection Assistance Visit (SDCAV). This visit was to the RTS-MED site at Fort Gordon, 12-13 Feb-02. This visit consisted of discussing this unit's utilization of TAMMIS and obtaining a copy of the maintenance data. During this visit data was collected on weight, cube and electrical power requirements on approximately 50 types of DEPMEDS equipment. This data was obtained by actual measurements, and recording any pertinent nameplate information. This information will be utilized to verify the data in Fed Log and will be added to the SDC database.

**Note:** During the course of this visit the RTS-MED staff expressed the following concerns with the conversion from TAMMIS to ULLS-G:

- The device and parts inventory will need to be manually entered into the ULLS-G database.
- Certain functionality may be lost, such as the ability to review the repair history on devices, track repair parts inventory and loading parts that are non-standard, (i.e. not in the master data file).

**Field Comments:**

- Propaq 106EL (NSN: 6515-01-423-5872): The power transformer plug for this unit does not fit properly into the drop down power receptacles in the DEPMEDS units so the RTS-MED staff has made the pigtail adapter, shown in Photo A, a standard accessory. The battery charger jack for this unit has also shown to be very susceptible to the insert being pulled out. This is a non-standard mini-jack, which results in the replacement of the entire power transformer assembly, (\$70) when this connector is damaged, see Photo B.

**Photo A**

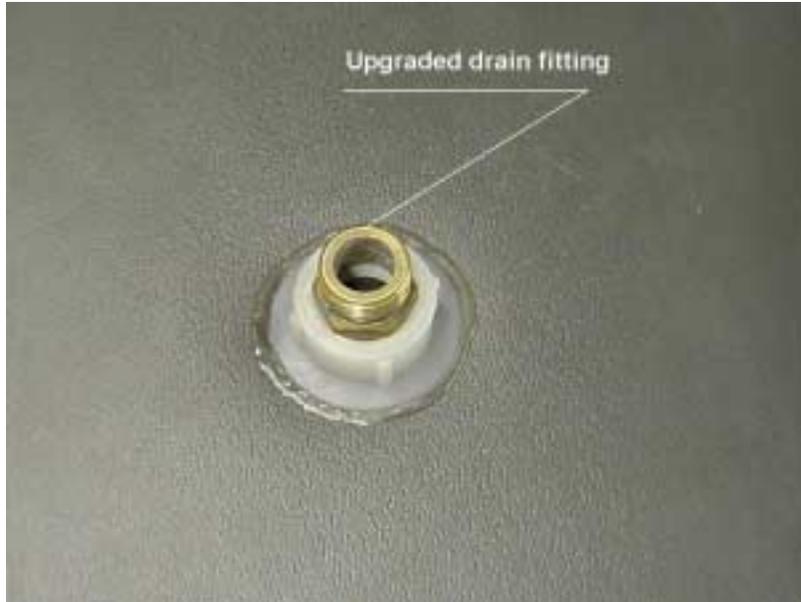


**Photo B**



- Ran-Paige Sink (NSN:6530-01-429-6715): The brass fitting shown in Photo C was installed as an upgrade to these units as a more durable replacement for the original drain fitting.

**Photo C**



- Hamilton Sink (NSN:6530-01-308-7740): The fitting shown in Photo D will split when not properly drained in a cold environment.

**Photo D**



- ISO Shelter (NSN 5411-01-124-1377) The ISO shelter for the Picker Radiographic unit shows damage to the hinge on the pop-out section, see Photo E.

**Photo E**



- For a variety of medical devices; such as : Ultrasonic stethoscopes, vortex mixers, endoscopic light supplies, balances and blood warmers, the RTS-MED staff has purchased plastic cases and foam to both protect the equipment and aid in the transportation and stocking of the devices. An example of this is shown in Photo F, note the labeling on the case. These cases were purchased from Flambeau Industries, 800-344-5716.

**Photo F**



**Data Analysis:** Based upon the Field Comments in this report the following four items were highlighted for data analysis in this report:

- ISO Shelter (NSN 5411-01-124-1377)
- Hamilton Sink (NSN:6530-01-308-7740)
- Ran-Paige Sink (NSN:6530-01-429-6715)
- Propaq 106EL (NSN's: 6515-01-423-5872 & 6515-01-423-5796 [106EL with capnography])

Appendix A shows the repair history on these devices from the RTS-MED TAMMIS data collected, a synthesis of this information is shown in Table I

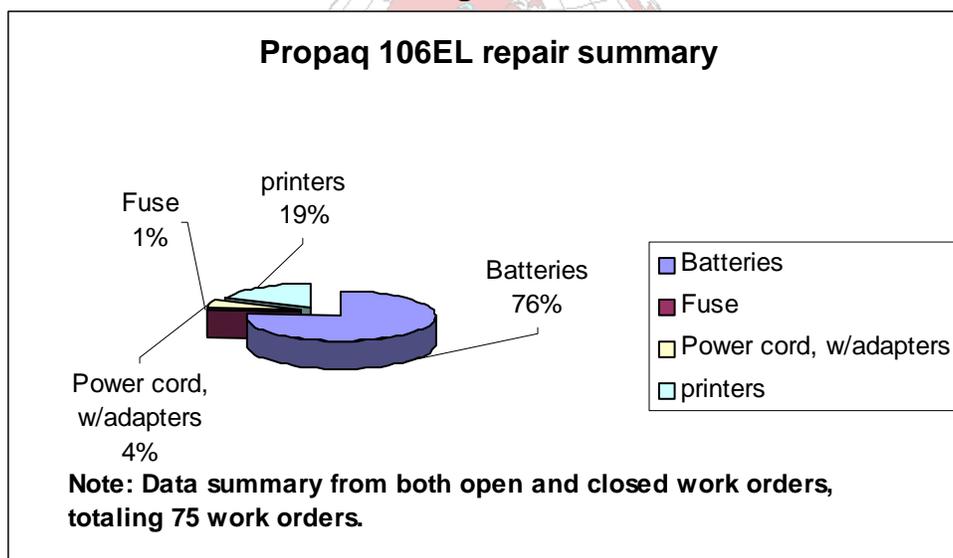
**Table I**

NSN	Nomen	Mfgr	Median labor costs	Median parts costs	Median Total repair costs
6530013087740	sink unit	Hamilton	\$50.00	\$22.08	\$97.08
6515014235872	monitor patient vital	Propaq	\$50.00	\$39.60	\$89.60
6515014235796	monitor patient vital	Propaq	\$50.00	\$36.90	\$89.60
5411011241377	Shelter Tactical	Marion Compos.	N/A	N/A	N/A
6530014296715	Sink unit Surg Scrub	Ran-Paige	\$50.00	\$5.00	\$55.00

Note: ISO shelters values not calculated as their where only two closed work orders.

Figure 1 displays a synthesis of the repairs performed on the two versions, (with and without CO<sub>2</sub> monitoring capabilities) of the Propaq 106 EL.

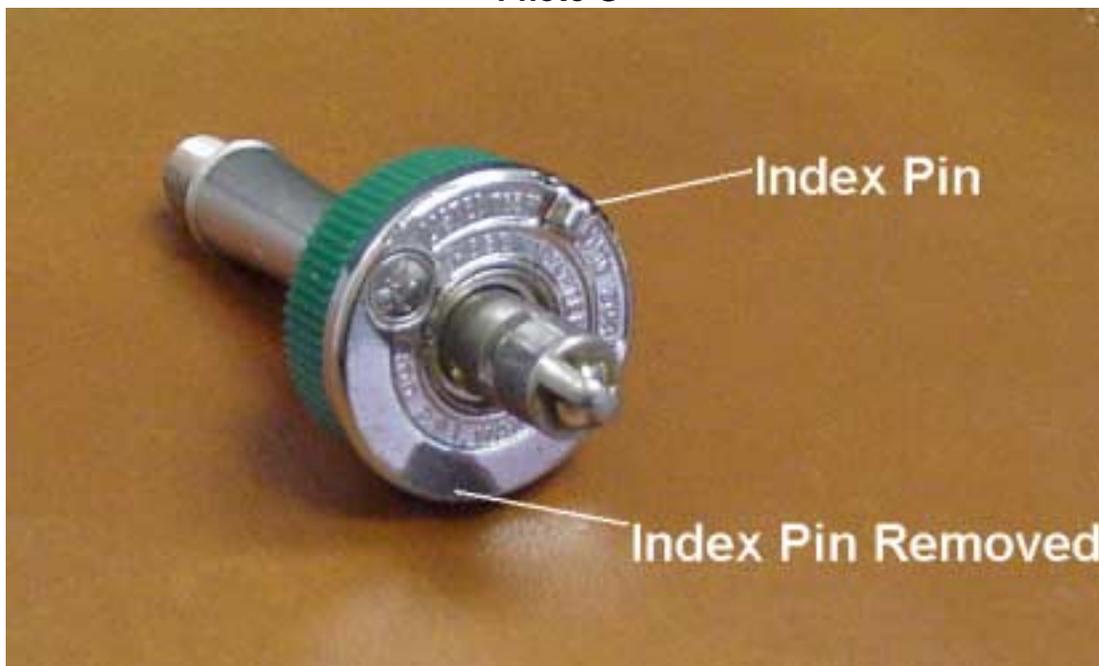
**Figure 1**



**Recommendations:** Based upon the data collected during this site visit it appears that the most common failure for the Propaq 106 EL is the batteries. These are at a cost of approximately \$40 a piece with a \$50 labor component. Consideration should be given to either improving the shelf life of these components.

**Addendum:**

During the timeframe that this report was generated there was also an alert concerning oxygen connectors. This alert was submitted by, Larry Whisenant/ HQ US Army Medical Command Safety Office, ATTN: MCSM, 2050 Worth Road, Ft. Sam Houston, TX, 78234/ Commercial (210) 221-8101/6838 or DSN 471-8101//. The focal point of the alert is that **if an O<sub>2</sub> connector or receptacle has damaged or removed indexing pins there is a possibility that the incorrect gas could be connected, resulting in possible catastrophic events.** The photo below was submitted by Tom Archer WAMC Safety Manager (910) 907-SAFE, [thomas.archer@na.amedd.army.mil](mailto:thomas.archer@na.amedd.army.mil)

**Photo G**

## Appendix A Completed repairs of targeted devices

NSN	Nomen	WO #	Comments	Manhrs	Total Labor Costs	Total Parts	Total Cost	Description of Repair
6530013087740	sink unit	12050014	Check-out and return to unit	2.0	50.00	10.97	60.97	Replaced line strainer
6530013087740	sink unit	12210024		0.1	2.50	0.00	2.50	
6530013087740	sink unit	12320001	Missing gasket on inlet hose	2.0	50.00	0.00	50.00	Replaced gasket unit ok
6530013087740	sink unit	12760071	H2O leaking from several locations on pump housing	6.0	150.00	149.42	299.42	Replaced injector & assorted fittings
6530013087740	sink unit	12850002	Water heater unit is on without water flow.	2.0	50.00	428.40	478.40	Left parts with Bartorelli. Closing WO
6530013087740	sink unit	20290003	Needs new pvc valve and injector assy.	4.0	100.00	33.18	133.18	Replaced injector, hot H2O valve & 1 1/4" MPT X 1/2" FPT bushing
			<b>Median values</b>	<b><u>2.0</u></b>	<b><u>50.00</u></b>	<b><u>22.08</u></b>	<b><u>97.08</u></b>	
6515014235872	monitor patient vital	01520006	Needs 2 transport batteries	2.0	50.00	39.60	89.60	
6515014235872	monitor patient vital	01520007	Needs 2 transport batteries	2.0	50.00	39.60	89.60	
6515014235872	monitor patient vital	11160003	Both spare batteries dead/ order new	2.0	50.00	39.60	89.60	Replace Battery
6515014235872	monitor patient vital	11160004	Both spare batteries dead/ order new	2.0	50.00	39.60	89.60	Replace Battery
6515014235872	monitor patient vital	11160005	Both spare batteries dead/ order new	2.0	50.00	39.60	89.60	Replace Battery
6515014235872	monitor patient vital	11160006	Both spare batteries dead/ order new	2.0	50.00	39.60	89.60	Replace Battery
6515014235872	monitor patient vital	11160007	Both spare batteries dead/ order new	2.0	50.00	39.60	89.60	Replace Battery
6515014235872	monitor patient vital	11160008	Both spare batteries dead/ order new	2.0	50.00	39.60	89.60	Replace Battery
6515014235872	monitor patient vital	12180001	Doesn't work properly	1.0	25.00	0.00	25.00	Charged battery and performed full function test passed / NPF
6515014235872	monitor patient vital	12750482	Dead battery	2.0	50.00	39.60	89.60	Replaced battery
6515014235872	monitor patient vital	12750482	Dead battery	2.0	50.00	39.60	89.60	Replaced battery
			<b>Median values</b>	<b><u>2.0</u></b>	<b><u>50.00</u></b>	<b><u>39.60</u></b>	<b><u>89.60</u></b>	
6515014235796	monitor patient vital	11160001	Both spare batteries dead/ order one new	2.0	50.00	36.90	89.60	Replaced Battery
6515014235796	monitor patient vital	11160002	Both spare batteries dead/ order one new	2.0	50.00	36.90	89.60	Replaced Battery
6515014235796	monitor patient vital	12750485	Dead Battery	2.0	50.00	36.90	89.60	Replaced Battery
6515014235796	monitor patient vital	12750486	Dead Battery	2.0	50.00	36.90	89.60	Replaced Battery
6515014235796	monitor patient vital	12750487	Dead Battery	2.0	50.00	36.90	89.60	Replaced Battery
			<b>Median values</b>	<b><u>2.0</u></b>	<b><u>50.00</u></b>	<b><u>36.90</u></b>	<b><u>89.60</u></b>	

This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.

**Appendix A**  
**Completed repairs of targeted devices**

<b>NSN</b>	<b>Nomen</b>	<b>WO #</b>	<b>Comments</b>	<b>Manhrs</b>	<b>Total Labor Costs</b>	<b>Total Parts</b>	<b>Total Cost</b>	<b>Description of Repair</b>
5411011241377	Shelter Tactical	01320002	Broken inside door handle & broken door hasp, x-ray hold down table broken, missing knock out panel screws.	4.0	100.00	57.08	157.08	RPR
5411011241377	Shelter Tactical	20100011	Bumper damage on ISO wall.	2.0	50.00	10.53	60.53	Replace bumper, unit OK
			<b>Median values</b>	<b><u>3.0</u></b>	<b><u>75.00</u></b>	<b><u>33.81</u></b>	<b><u>108.81</u></b>	
6530014296715	Sink unit Surg Scrub	02240008	Missing brass 50 PSI regulator.	2.0	50.00	0.00	50.00	Replaced 50 PSI regulator
6530014296715	Sink unit Surg Scrub	02240015	Sink pump won't prime	2.0	50.00	12.30	62.30	Replaced pump housing and GFCI breaker
6530014296715	Sink unit Surg Scrub	10190008	Missing drain hose	2.0	50.00	0.00	50.00	Repaired
6530014296715	Sink unit Surg Scrub	12970020	Broken female fitting on control unit.	2.0	50.00	5.00	55.00	replaced
6530014296715	Sink unit Surg Scrub	13120004	Inlet couple broken, leaking water	2.0	50.00	7.34	57.34	
			<b>Median values</b>	<b><u>2.0</u></b>	<b><u>50.00</u></b>	<b><u>5.00</u></b>	<b><u>55.00</u></b>	
<b>Note: All values from completed work orders in the RTS MED database.</b>								

This is propriety document of McAdams Technologies, Inc. and USAMMA, and is not to be shared with other contractors or consultants.

# **Sample Data Collection Monthly Report March 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
McAdams Technologies, Inc.  
Chris Riha MS, CCE  
Wayne Collins BMET  
Report # 003

## Table of Contents

Introduction-----	1
Scope-----	1
Data	
Data Analysis-----	2
Field Comments-----	5
Recommendations-----	6
Appendix A-----	7

### **Acknowledgements**

This report was made possible only with the assistance of Mr. Mike McCann and Mr. Jerry Atkinson and all the personnel from the RTS-MED at Fort Gordon.

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc. to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This report, the third Sample Data Collection (SDC) report, will provide analysis from maintenance data obtained from the RTS-MED site at Fort Gordon. This is in addition to the information from Fort Gordon reported in the second SDC report, (February 2002).

**Data Analysis:**

All of the following data analysis was compiled from the TAMMIS data obtained from the RTS-MED site at Fort Gordon. The raw data is shown on Appendix A.

**HP Defibrillator Monitors:**

Diagram 1 shows the breakdown on the repairs that were documented in the RTS-MED site at Fort Gordon for the HP Defibrillator/Monitor. The items that were listed as “Repaired” and “Unit sent parts” are considered to be indeterminate as the documentation did not give a definitive repair parts.

**Diagram 1**

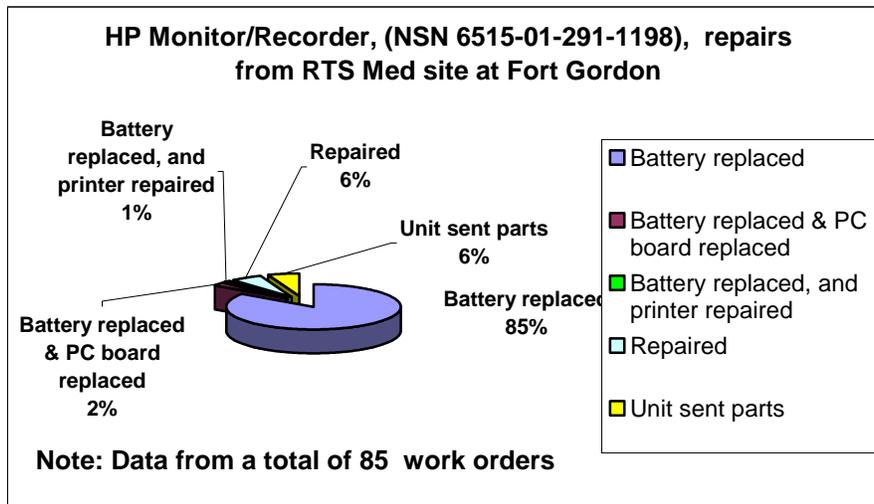
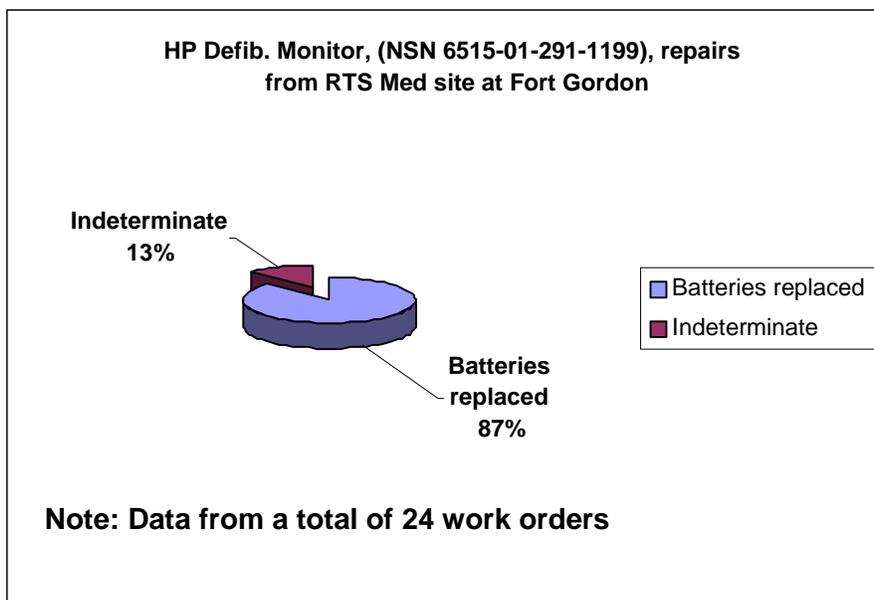


Diagram 2 shows the breakdown on the repairs that were documented in the RTS-MED site for the HP Defibrillator/Monitor. The items listed as ‘Indeterminate’ were units that were not battery related yet had definitive information as to what was done to repair these units.

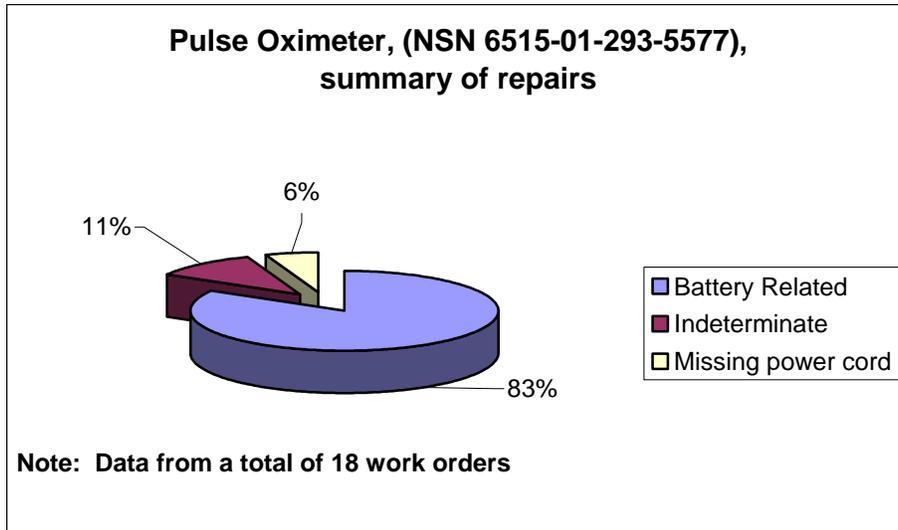
**Diagram 2**



**Pulse Oximeters:**

Diagram 3 shows the breakdown on the repairs that were documented in the RTS-MED site for the BioChem pulse oximeters.

**Diagram 3**



**Ventilators:**

Diagram 4 shows the breakdown on the repairs that were documented in the RTS-MED site for the Impact 750 ventilators.

**Diagram 4**

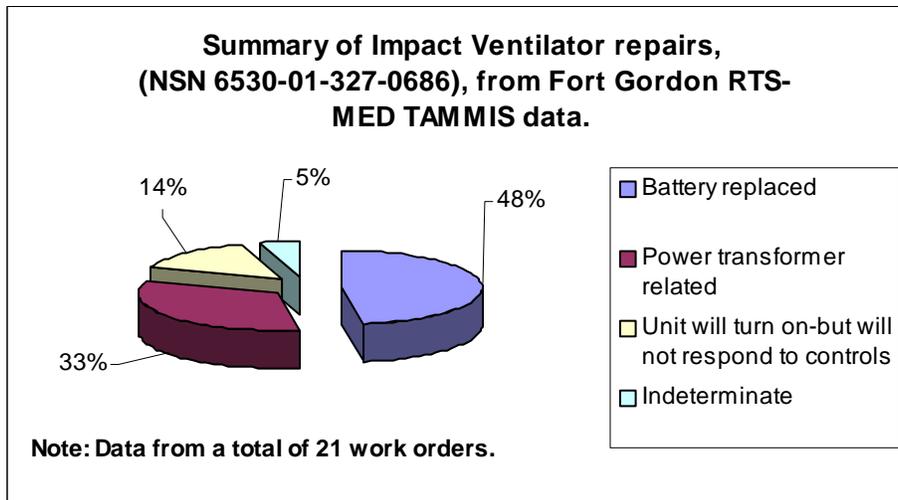
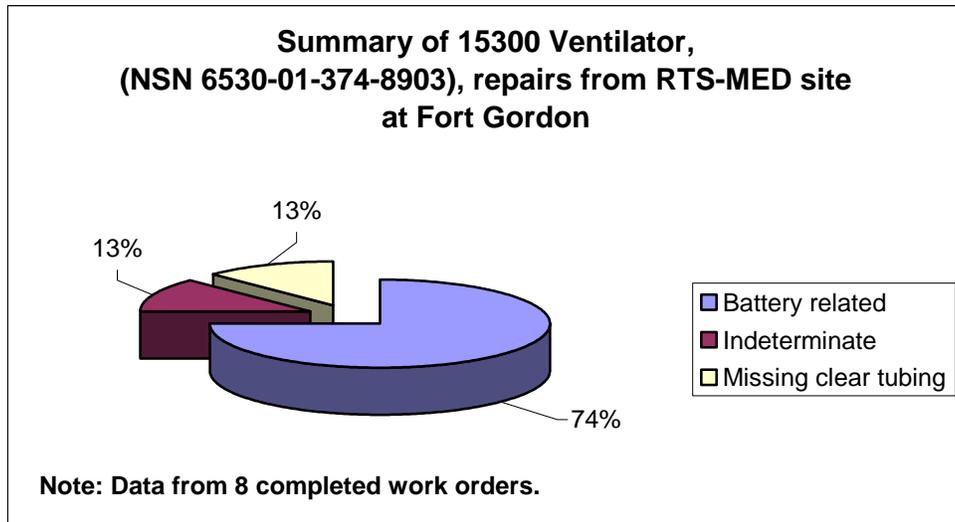


Diagram 5 shows the breakdown on the repairs that were documented in the RTS-MED site for the 15300 ventilators.

**Diagram 5**



Data from BV843-01 Ventilator repairs (NSN 6530013259299), from Fort Gordon RTS-MED site showed that all of the seven repairs in the database were battery related.

**Field Comments:**

- The recent fielding of the computed radiography system (NSN 6525-01-480-2199) has brought out the following comments from the deployment of this newer technology:

***The unit did operate properly but there were some problems with artifacts due to dust etc. Recommendations were made for a \$16K repair kit to be fielded with this unit. This kit consists of the following items:***

**PART #**

0070-611	PMT (2 per unit)	\$ 3,080.00
0068-853	GALVO BOARD	\$ 712.25
0000-777	GALVO SCANNER	\$ 2,786.16
0070-953	PRE-AMP CR	\$ 123.12
4E9382	DACQ 4, CR	\$ 1,973.09
0071-923	MELLES GRIOT LASER MODULE	\$ 4,623.84
0071-269	PMT HIGH VOLTAGE	\$ 914.38
0071-325	ASSY, MOTOR/GEARHEAD	\$ 1,497.66
4E8541	INTERNAL SCSI CARD W/ISODRVR VER.	\$ 2,999.87
0002-319	P/S LINEAR, +/- 12/15V	\$ 264.90
0062-086	TRIPLE VOLT SUPPLY	\$ 298.38

**Note: These comments are a paraphrased from an email sent from CW4 Scot Sturzebecker, (15-March 2002) concerning the digital x-ray system deployment.**

**Recommendations:**

The major maintenance trend from the data obtained from the Fort Gordon RTS-MED site was the fact that the majority of repairs were battery related. Access Medical, (a third party supplier) was contact by the SDC to determine what the shelf life of batteries are. The manufacturers response was as follows:

- “A Sealed Lead Acid battery can be stored for up to two years but must be kept in a charged condition. A periodic topping charge is required. This is best accomplished by checking the voltage on the batteries every three months and applying the necessary charge. Access Battery offers a twelve month warranty on our lead acid batteries.”

With the knowledge that these recommendations may be impractical for the majority of unit's; batteries for monitors, defibrillators, ventilators and other high density devices should be recognized as normally requiring replacement if the equipment has not been fielded for several months. Data will continue to be collected on these items in both 'active duty' units, 'caretaker units' and long-term storage units.

The associated battery costs and part numbers are listed below:

HP (Both monitor and defib.)	PN: B10976	Price: \$44.40
Ventilator 750	PN: B10483	Price: \$79.05
Ventilator 15300	PN: B00904	Price: \$32.00
Pulse Oximeter	PN: B00902	Price: \$31.29
Ventilator BV-843	PN: B00804	Price: \$14.00

### Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site

WO#	NSN	Nomenclature	MDL	Problem
20100011	5411011241377	SHELTER TACTICAL	2 FOR 1	Bumper damaged on ISO Wall
03540047	5411011241377	SHELTER TACTICAL	2 FOR 1	
01320002	5411011241377	SHELTER TACTICAL	X-RAY ISO	broken inside door handle & broken door hasp, xray hold down table broken
20170001	5411011369838	SHELTER	3 FOR 1	ROOF LATCH BENT
11420006	5411012949866	SHELTER	3 FOR 1	HASP ON PERSONNEL DOOR BROKEN
11100002	5411012953433	SHELTER, TACTICAL	ISO	
12960003	6515012461938	SUCTION APPAR 120/230	6003	NEEDS CHECK VALVE ASSY
12960004	6515012461938	SUCTION APPAR 120/230	6003	NEEDS NEW CHECK VALVE ASSY
12960002	6515012461938	SUCTION APPAR 120/230	6003	
12760009	6515012461938	SUCTION APPAR 120/230	6003	
12760010	6515012461938	SUCTION APPAR 120/230	6003	WILL NOT SUSTAIN SUCTION/REPLACE VALVES
12760008	6515012461938	SUCTION APPAR 120/230	6003	WILL NOT SUSTAIN SUCTION/ REPLACE VALUES
13090573	6515012461938	SUCTION APPAR 120/230	6003	will not turn on .. no suction
13090575	6515012461938	SUCTION APPAR 120/230	6003	no suction
13090574	6515012461938	SUCTION APPAR 120/230	6003	will not turn on
03530003	6515012461938	SUCTION APPAR 120/230	6003	failed cal/needs check valve REPAIRED
11780008	6515012672727	SUCTION APPAR SURG	306M	need battery
11780009	6515012672727	SUCTION APPAR SURG	306M	needs battery
02630011	6.51501E+12	MONITOR-RECORDER ECG	43200MC	DNE IN BATTERY MODE.
00180004	6515012911198	MONITOR-RECORDER ECG	43200MC	Battery Dne
11140004	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS NEW BATTERY
11140001	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS NEW BATTERY
11140002	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS NEW BATTERY
11140007	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS NEW BATTERY
11140005	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS NEW BATTERY
11140006	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS NEW BATTERY
11140003	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS NEW BATTERY
03550007	6515012911198	MONITOR-RECORDER ECG	43200MC	WNE/BATTERY NEEDED
03550008	6515012911198	MONITOR-RECORDER ECG	43200MC	WNE/ NEEDS BATTERY
03530004	6515012911198	MONITOR-RECORDER ECG	43200MC	wne/needs battery
03550009	6515012911198	MONITOR-RECORDER ECG	43200MC	WILL NOT OPERATE IN AC OR BATTERY MODE...BAD PRINTER
03560004	6515012911198	MONITOR-RECORDER ECG	43110MC	WNE/NEEDS NEW BATTERY
03560005	6515012911198	MONITOR-RECORDER ECG	43110MC	WNE/NEEDS NEW BATTERY

### Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site

WO#	NSN	Nomenclature	MDL	Problem
03550003	6515012911198	MONITOR-RECORDER ECG	43200MC	WNE REPLACE BATTERY
03550004	6515012911198	MONITOR-RECORDER ECG	43200MC	WNE NEED BATTERY
03550005	6515012911198	MONITOR-RECORDER ECG	43200MC	WNE/NEEDS BATTERY
03550006	6515012911198	MONITOR-RECORDER ECG	43200MC	NE/NEEDS BATTERY
12970006	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12970005	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12770003	6515012911198	MONITOR-RECORDER ECG	43200MC	unit will not turn on in battery mode
12770002	6515012911198	MONITOR-RECORDER ECG	43200MC	will not turn-on in battery mode
12970002	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12970004	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12970001	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12840001	6515012911198	MONITOR-RECORDER ECG	43200MC	will not operate in battery mode
12970003	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12670009	6515012911198	MONITOR-RECORDER ECG	43200MC	UNIT DNE AC/DC - LIKELY BATTERY
12670006	6515012911198	MONITOR-RECORDER ECG	43200MC	UNIT DNE AC/DC - LIKELY BATTERY
12670005	6515012911198	MONITOR-RECORDER ECG	43200MC	UNIT DNE AC/DC LIKELY BATTERY
12680005	6515012911198	MONITOR-RECORDER ECG	43200MC	
12470002	6515012911198	MONITOR-RECORDER ECG	43200MC	will not work in battery mode
12680004	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DEAD - DISREGARD MMCN - ALL ITEMS ARE ON SHELF IN MOTO
12670007	6515012911198	MONITOR-RECORDER ECG	43200MC	UNIT DNE AC/DC - LIKELY BATTERY
12680006	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DEAD
12670002	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
12470001	6515012911198	MONITOR-RECORDER ECG	43200MC	will not work in battery mode
12670004	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DEAD
12670003	6515012911198	MONITOR-RECORDER ECG	43200MC	UNIT DNE AC/DC - LIKELY BATTERY
12480005	6515012911198	MONITOR-RECORDER ECG	43200MC	Non operational in battery mode
12480008	6515012911198	MONITOR-RECORDER ECG	43200MC	Non operational in battery mode
12620001	6515012911198	MONITOR-RECORDER ECG	43200MC	needs new battery
12670001	6515012911198	MONITOR-RECORDER ECG	43200MC	NEEDS BATTERY - UNIT DNE AC/DC
12210012	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATT
12210010	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATT
12210011	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATT
12210009	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATT
12260006	6515012911198	MONITOR-RECORDER ECG	43110MC	UNIT DNE
12260005	6515012911198	MONITOR-RECORDER ECG	43110MC	UNIT DNE
12260004	6515012911198	MONITOR-RECORDER ECG	43110MC	UNIT DNE
12260003	6515012911198	MONITOR-RECORDER ECG	43110MC	UNIT DNE

### Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site

WO#	NSN	Nomenclature	MDL	Problem
12260002	6515012911198	MONITOR-RECORDER ECG	43110MC	UNIT DNE
12210013	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATT
12210006	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATT
12210007	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATT
12210008	6515012911198	MONITOR-RECORDER ECG	43200MC	BATT DEAD
11720002	6515012911198	MONITOR-RECORDER ECG	43200MC	WILL NOT WORK IN "AC" OR BATTERY MODE...BAD PRINTER
11720003	6515012911198	MONITOR-RECORDER ECG	43200MC	WILL NOT OPERATE IN AC OR BATTERY MODE
13090586	6515012911198	MONITOR-RECORDER ECG	43200MC	does not work in battery mode
13320003	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
13320004	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
13320002	6515012911198	MONITOR-RECORDER ECG	A3200MC	DEAD BATTERY
12970014	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
12970015	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
12970016	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
12970007	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12970011	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
12970010	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DEAD OR MISSING
12970018	6515012911198	MONITOR-RECORDER ECG	43200MC	UNIT DNE WITH OR WITHOUT BATTERY. NEEDS NEW BATTERY AS WELL
12970008	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE/REPLACE
12970012	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
13090578	6515012911198	MONITOR-RECORDER ECG	43200MC	monitor does not work in battery mode
12970013	6515012911198	MONITOR-RECORDER ECG	43200MC	DEAD BATTERY
20340142	6515012911198	MONITOR-RECORDER ECG	43200MC	called from chief culburn....does not work in battery mode
20340143	6515012911198	MONITOR-RECORDER ECG	43200MC	called from chief culburn....will not work in battery mode
20380002	6515012911198	MONITOR-RECORDER ECG	43200MC	
20380003	6515012911198	MONITOR-RECORDER ECG	43200MC	
20350003	6515012911198	MONITOR-RECORDER ECG	43200MC	BATTERY DNE >> REPLACE
20380006	6515012911198	MONITOR-RECORDER ECG	43200MC	
20380005	6515012911198	MONITOR-RECORDER ECG	43200MC	
20340139	6515012911198	MONITOR-RECORDER ECG	43200MC	called from chief culburn does not work in battery mode
20380001	6515012911198	MONITOR-RECORDER ECG	43200MC	
20340140	6515012911198	MONITOR-RECORDER ECG	43200MC	called from chief culburn....does not work in battery mode
20340141	6515012911198	MONITOR-RECORDER ECG	43200MC	called from chief culburn....does not work in battery mode
20340144	6515012911199	DEFIBRILLATOR MONITOR	43110MC	called from chief culburn....will not work in battery mode
13600003	6515012911199	DEFIBRILLATOR MONITOR	43110MC	battery in monitor DEAD//REPLACE

### Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site

WO#	NSN	Nomenclature	MDL	Problem
13600002	6515012911199	DEFIBRILLATOR MONITOR	43110MC	battery dead in monitor//REPLACE
13600001	6515012911199	DEFIBRILLATOR MONITOR	43110MC	both batteries dead// REPLACE
13350003	6515012911199	DEFIBRILLATOR MONITOR	43110MC	no qrs on crt
13350002	6515012911199	DEFIBRILLATOR MONITOR	43110MC	no display on monitor...bad recorder
13600004	6515012911199	DEFIBRILLATOR MONITOR	43110MC	monitor battery dead//REPLACE
13610001	6515012911199	DEFIBRILLATOR MONITOR	43110MC	speacker wne/broken lead--repair
13090577	6515012911199	DEFIBRILLATOR MONITOR	43110MC	monitor does not work on battery only
12970009	6515012911199	DEFIBRILLATOR MONITOR	43110MC	BATTERY DNE/REPLACE
13100023	6515012911199	DEFIBRILLATOR MONITOR	43110MC	INSUFFICIENT BATTERY CAPACITY OF BOTH THE MONITOR AND DEFIB SI
13090585	6515012911199	DEFIBRILLATOR MONITOR	43110MC	
13090584	6515012911199	DEFIBRILLATOR MONITOR	43110MC	defib side does not work in battery mode
11420003	6515012911199	DEFIBRILLATOR MONITOR	43110MC	BOTH MODULES DNE – BATTERIES
11830222	6515012911199	DEFIBRILLATOR MONITOR	43110MC	will not turn on in AC or battery mode
11690001	6515012911199	DEFIBRILLATOR MONITOR	43110MC	
12210001	6515012911199	DEFIBRILLATOR MONITOR	43110MC	Battery Dead
12750481	6515012911199	DEFIBRILLATOR MONITOR	43110M	DEAD BATTERY
12750484	6515012911199	DEFIBRILLATOR MONITOR	43110M	DEAD BATTERY
12340004	6515012911199	DEFIBRILLATOR MONITOR	43110MC	Monitor does not energize in batt mode
12960001	6515012911199	DEFIBRILLATOR MONITOR	43110MC	BATTERIES DEAD
03540001	6515012911199	DEFIBRILLATOR MONITOR	43110MC	neither side works/replace battery
11140008	6515012911199	DEFIBRILLATOR MONITOR	43110MC	
02640001	6515012911199	DEFIBRILLATOR MONITOR	43110M	NEEDS NEW BATTERIES
2640002	6515012935577	OXIMETER PULSE	70680A1	NEEDS NEW BATTERY
11100004	6515012935577	OXIMETER PULSE	70680A1	NEEDS NEW POWER CORD
10940006	6515012935577	OXIMETER PULSE	70680A1	NEEDS BATTERY
10330002	6515012935577	OXIMETER PULSE	3040G	unit dne
3500004	6515012935577	OXIMETER PULSE	3040G	inop battery mode
3500005	6515012935577	OXIMETER PULSE	3040G	inop battery mode
12770006	6515012935577	OXIMETER PULSE	3040G	ERROR CODE 2
12470008	6515012935577	OXIMETER PULSE	3040G	E1 error code
12470007	6515012935577	OXIMETER PULSE	3040G	E1 error code
11560002	6515012935577	OXIMETER PULSE	3040G	E1 ERROR CODE - BAD RAM BATTERY
13090580	6515012935577	OXIMETER PULSE	3040G	"E1" error .. no battery
13090581	6515012935577	OXIMETER PULSE	3040G	
12970021	6515012935577	OXIMETER PULSE	3040G	BATTERY DNE/REPLACE

### Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site

WO#	NSN	Nomenclature	MDL	Problem
12970022	6515012935577	OXIMETER PULSE	3040G	BATTERY DNE/REPLACE
13020001	6515012935577	OXIMETER PULSE	3040G	E1 ERROR CODE
20350001	6515012935577	OXIMETER PULSE	3040G	DEAD BATTERY
20250001	6515012935577	OXIMETER PULSE	3040G	DEAD BATTERY
20280001	6515012935577	OXIMETER PULSE	3040G	error e1
10570007	6515013046497	SUCTION APPAR 120V	308M	NEEDS NEW VACUUM GAUGE
11100009	6515013046497	SUCTION APPAR 120V	308M	GAGE BROKEN---NEED NEW GAGE
10570006	6515013046497	SUCTION APPAR 120V	308M	NEEDS NEW BATTERY
03500008	6515013046497	SUCTION APPAR 120V	308M	missing rinse bottle
03500007	6515013046497	SUCTION APPAR 120V	308M	inop in battery mode
03530007	6515013046497	SUCTION APPAR 120V	308M	gauge broke--replace
03530002	6515013046497	SUCTION APPAR 120V	308M	wne in battery mode/ needs battery
03500006	6515013046497	SUCTION APPAR 120V	308M	inop in battery mode
03640004	6515013046497	SUCTION APPAR 120V	308M	NEED 1 RUBBER FOOT
03640003	6515013046497	SUCTION APPAR 120V	308M	NEEDS 1 RUBBER FOOT
03640002	6515013046497	SUCTION APPAR 120V	308M	NEEDS 2 RUBBER FEET
12970024	6515013046497	SUCTION APPAR 120V	308M	WEAK BATTERY/ EVEN AFTER CHARGING
12970023	6515013046497	SUCTION APPAR 120V	308M	BATTERY WEAK/EVEN AFTER CHARGING
13090593	6515013046497	SUCTION APPAR 120V	308M	
13090590	6515013046497	SUCTION APPAR 120V	308M	
13100020	6515013046497	SUCTION APPAR 120V	308M	MISSING (1EA.) SUCTION CUP FOOT
91450008	6515013046497	SUCTION APPAR 120V	308M	GAUGE OUT OF TOLERANCE
91680003	6515013046497	SUCTION APPAR 120V	308M	GAUGE OUT OF TOLERANCE
91680005	6515013046497	SUCTION APPAR 120V	308M	GAUGE OUT OF TOLERANCE
91680006	6515013046497	SUCTION APPAR 120V	308M	GAUGE OUT OF TOLERANCE
11410005	6515013046497	SUCTION APPAR 120V	308M	BATTERY DEAD
91680007	6515013046497	SUCTION APPAR 120V	308M	GAUGE OUT OF TOLERANCE
11900003	6515013046497	SUCTION APPAR 120V	308M	
91680009	6515013046497	SUCTION APPAR 120V	308M	GAUGE OUT OF TOLERANCE
11900002	6515013046497	SUCTION APPAR 120V	308M	will not operate in battery mode
11900001	6515013046497	SUCTION APPAR 120V	308M	will not operate in battery mode
12200014	6515013046497	SUCTION APPAR 120V	308M	MISSING 2ea. RUBBER FEET
11900005	6515013046497	SUCTION APPAR 120V	308M	will not operate in battery mode
11900004	6515013046497	SUCTION APPAR 120V	308M	will not operate in battery mode
12670008	6515013046497	SUCTION APPAR 120V	308M	BAD GAUGE

**Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site**

<b>WO#</b>	<b>NSN</b>	<b>Nomenclature</b>	<b>MDL</b>	<b>Problem</b>
12960005	6515013274155	LIGHT, ENDOSCOPIC INST	1008822	RIGHT LIGHT NOT AS BRIGHT AS THE LEFT
11720013	6515013274155	LIGHT ENDSCPC INSTR	1008822	BULB BROKE/REPLACE
20230001	6515013274155	LIGHT, ENDOSCOPIC INST	1008822	BULB BLOWN
11070008	6515013274155	LIGHT ENDSCPC INSTR	1008822	NEEDS THREE BULBS
02510003	6515013274155	LIGHT, ENDOSCOPIC INST	1008822	MISSING EXTRA BULB KNOB.
20360001	6515013589480	SUCTION APPAR PRTBLE	2590-120G	WILL NOT HOLD SUCTION
20360002	6515013589480	SUCTION APPAR PRTBLE	2590-120G	UNIT WILL NOT HOLD SUCTION
20180003	6515013589480	SUCTION APPAR PRTBLE	2590-120G	NO WHITE LIGHT FOR 120MM OR 90MM
20180002	6515013589480	SUCTION APPAR PRTBLE	2590-120G	NO SUCTION ANO NO WHITE LIGHTS FOR 120MM OR THE 90MM
13300009	6515014355350	SUCTION APPAR OROPHAR	325	DEAD BATTERY
01520004	6515014355350	SUCTION APPAR OROPHAR	325	Vac guage broken
01520005	6515014355350	SUCTION APPAR OROPHAR	325	Vac guage broken
01520001	6515014355350	SUCTION APPAR OROPHAR	325	Vac guage broken
01520002	6515014355350	SUCTION APPAR OROPHAR	325	Vac guage broken
01520003	6515014355350	SUCTION APPAR OROPHAR	325	Vac guage broken
10500024	6520000000158	LIGHT SET DENT 115V	LF-II	LIGHT WILL NOT HOLD POSITION
10310024	6520000000158	LIGHT SET DENT 115V	LF-II	LIGHT WILL NOT HOLD POSITION
10500045	6520000000158	LIGHT SET DENT 115V	LF-II	LIGHT WILL NOT HOLD POSITION
10500026	6520000000158	LIGHT SET DENT 115V	LF-II	LIGHT WILL NOT HOLD POSITION
10500025	6520000000158	LIGHT SET DENT 115V	LF-II	LIGHT WILL NOT HOLD POSITION
12050009	6520000000158	LIGHT SET DENT 115V	LF-II	NEEDS SPRING
12210015	6520001391246	COMP DEHY DEN	M5B	unit will not run
12210014	6520001391246	COMP DEHY DEN	M5B	missing 1 ea. latch
13300001	6520001391246	COMP DEHY DEN	M5A	motor seized, repair exceeds MEL. RECOMMEND CODE H
12990008	6520001391246	COMP DEHY DEN	M5A	UNIT REQUIRES PM AND REPAIRS
12990011	6520001391246	COMP DEHY DEN	M5	UNIT REQUIRES PM AND REPAIRS
12990014	6520001391246	COMP DEHY DEN	M5B	UNIT REQUIRES PM AND REPAIRS

### Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site

WO#	NSN	Nomenclature	MDL	Problem
12990013	6520001391246	COMP DEHY DEN	M5	UNIT REQUIRES PM AND REPAIRS
12990012	6520001391246	COMP DEHY DEN	M5A	UNIT REQUIRES PM AND REPAIRS
12990010	6520001391246	COMP DEHY DEN	M5A	UNIT REQUIRES PM AND REPAIRS
12990009	6520001391246	COMP DEHY DEN	M5A	UNIT REQUIRES PM AND REPAIRS
10310003	6520001391246	COMP DEHY DEN	M5A	
10190001	6520001391246	COMP DEHY DEN	M5A	TANK IS REMOVED FROM MOORINGS, DISCONNECTED LINES AND NEEDS
10940004	6520001391246	COMP DEHY DEN	M5B	
02150009	6520001391246	COMP DEHY DEN	M5B	power plug needs replacing
10310010	6520012724531	DEN OPER TREAT UNIT	3406	
10310022	6520012724531	DEN OPER TREAT UNIT	3406	H2O LEAKING FROM H2O REGULATOR
10310023	6520012724531	DEN OPER TREAT UNIT	3406	H2O LEAKING FROM H2O REGULATOR
02240001	6520012724531	DEN OPER TREAT UNIT	3406	WATER LEAKING FROM REGULATOR
02240002	6520012724531	DEN OPER TREAT UNIT	3406	WATER LEAKING FROM REGULATOR
10520012	6520012724531	DEN OPER TREAT UNIT	3406	
10310009	6520012724531	DEN OPER TREAT UNIT	3406	H2O LEAKING FROM H2O REGULATOR
10310008	6520012724531	DEN OPER TREAT UNIT	3406	AVS TUBING TORN
10310005	6520012724531	DEN OPER TREAT UNIT	3406	NO H2O FLOW FROM HAND PIECE
10500033	6520012724531	DEN OPER TREAT UNIT	3406	
10500035	6520012724531	DEN OPER TREAT UNIT	3406	H2O GAUGE INOP, MISSING SUCTION FILTER
10300001	6520012724531	DEN OPER TREAT UNIT	3406	
10500036	6520012724531	DEN OPER TREAT UNIT	3406	MISSING SUCTION FILTER
10500038	6520012724531	DEN OPER TREAT UNIT	3406	MISSING SUCTION FILTER
10500039	6520012724531	DEN OPER TREAT UNIT	3406	MISSING SUCTION FILTER
10500047	6520012724531	DEN OPER TREAT UNIT	3406	
02240003	6520012724531	DEN OPER TREAT UNIT	3406	SYRINGE TIP MISSING , NEEDS SYRINGE KIT
01230010	6520012724531	DEN OPER TREAT UNIT	3406	needs syringe tip and hexhead cap screw
01230011	6520012724531	DEN OPER TREAT UNIT	3406	needs cap screw
12050013	6520012724531	DEN OPER TREAT UNIT	3406	SALIVA AIR HOSE IS CUT OPEN/ REPLACE
12050016	6520012724531	DEN OPER TREAT UNIT	3406	AIR SALIVA HOSE CUT/ REPLACE
11720010	6520012724531	DEN OPER TREAT UNIT	3406	NO WATER AND / OR AIR FROM HANDPIECES
11720012	6520012724531	DEN OPER TREAT UNIT	3406	
11720011	6520012724531	DEN OPER TREAT UNIT	3406	NO WATER AND/OR AIR FROM HANDPIECES
12330001	6520012724531	DEN OPER TREAT UNIT	3406	missing tray
12340002	6520012724531	DEN OPER TREAT UNIT	3406	tray missing
13030001	6520012724531	DEN OPER TREAT UNIT	3406	water valve is needed

**Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site**

<b>WO#</b>	<b>NSN</b>	<b>Nomenclature</b>	<b>MDL</b>	<b>Problem</b>
13300003	6520012724531	DEN OPER TREAT UNIT	3406	NOT HOLDING PRESSURE?
12270009	6525004209588	PROCESSING MACH 115 V	D-0129	INDICATOR BULB BLOWN OUT.
12270008	6525004209588	PROCESSING MACH 115 V	D-0129	MISSING SPACER AND SPRING.
12270007	6525004209588	PROCESSING MACH 115 V	D-0129	MISSING SPACER AND SPRING.
11720018	6525010992320	X-RAY APP FLD DENTAL	D3152	TIMER NOT CALIBRATING AT SHORT OR LONG SETTINGS, R13 ON TIMER I
12270004	6525010992320	X-RAY APP FLD DENTAL	D3152	TIMER BOARD WILL NOT CALIBRATE, EVACUATE TO TRACY.
12270003	6525010992320	X-RAY APP FLD DENTAL	D3152	TIMER BOARD WILL NOT CALIBRATE, EVACUATE TO TRACY.
12270001	6525010992320	X-RAY APP FLD DENTAL	D3152	TIMER WILL NOT CALIBRATE, EVACUATE TO TRACY.
12270002	6525010992320	X-RAY APP FLD DENTAL	D3152	TIMER BD WILL NOT CALIBRATE, EVACUATE TO TRACY.
02150007	6525010992320	X-RAY APP FLD DENTAL	D3152	bad timer board
02150008	6525010992320	X-RAY APP FLD DENTAL	D3152	needs digital display board and buzzer
02150006	6525010992320	X-RAY APP FLD DENTAL	D3152	timer board bad
12200011	6530012207186	CARRIER LITTER WHEEL	A11	MISSING 4 EA. FEET
12200010	6530012207186	CARRIER LITTER WHEEL	A11	missing 4 ea. feet
12200009	6530012207186	CARRIER LITTER WHEEL	A11	MISSING 4 FEET AND FEET HOUSINGS LOOSE ON TWO OF THEM
12210025	6530012207186	CARRIER LITTER WHEEL	A11	needing to replace all litter rubber feets 60ea
12310002	6530012207186	CARRIER LITTER WHEEL	A11	rubber feet needs replacing
11770002	6530012440708	LIGHT SURG2HEADS AC	2420C	needs new spring
11760001	6530012440708	LIGHT SURG2HEADS AC	2420C	needs new spring
11720014	6530012448101	THERMOREGULATOR PATIENMTA 4700		LEAKS/FLOW SWITCH CRACKED-UP
20280003	6530012448101	THERMOREGULATOR PATIEN4700-D		BROKEN FLOW SWITCH
20380004	6530012448101	THERMOREGULATOR PATIEN4700-D		called from chief (Pat) .. has a bad flow switch
11070012	6530012448101	THERMOREGULATOR PATIENMTA-4700		WILL NOT GO BELOW 11 DEGREES CEL./REPLACE SOLINODS
10880005	6530012448101	THERMOREGULATOR PATIEN4700-D		needs cool silenod, silenod control board
11070013	6530012544135	CLEANER, ULTRASONIC	MSC-900T	

**Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site**

<b>WO#</b>	<b>NSN</b>	<b>Nomenclature</b>	<b>MDL</b>	<b>Problem</b>
10880002	6530012544135	CLEANER, ULTRASONIC	MSC-900T	replaced fuse holder,needs 2 power mods
11070022	6530012544135	CLEANER, ULTRASONIC	MSC-900T	NEEDS POWER BOARD
20320001	6530012544135	CLEANER, ULTRASONIC	MSC 900T	PCB BAD
20160002	6530012544135	CLEANER, ULTRASONIC	MSC 900T	unit doesn't not produce ultra sound , frad power cord
11780007	6530012544135	CLEANER, ULTRASONIC	MSC-900T	needs power module
11720015	6530012544135	CLEANER, ULTRASONIC	900T	UWNE/REMOVED 3 PCBS AND TOOK BACK TO RTS--REBUILD
12760001	6530012544135	CLEANER, ULTRASONIC	MSC 900T	UNIT TIMER SWITCH OPERATES INTERMITTENTLY, UNIT APPEARS TO BE
12900001	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	DOES NOT CYCLE
12050017	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	NEEDS 2 NEW FEET
12270006	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	PRESSURE ALARM INDICATED, UNIT DEVELOPES TOO HIGH PRESSURE, E
12050008	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	H2O SENSOR FAILURE CODE
12990016	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	UNIT REQUIRES PM AND REPAIRS
12990015	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	UNIT REQUIRES PM AND REPAIRS
12990018	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	UNIT REQUIRES PM AND REPAIRS
12990019	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	UNIT REQUIRES PM AND REPAIRS
12990017	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	UNIT REQUIRES PM AND REPAIRS
10500051	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	UNIT DISPLAYS H2O ERROR AND IS MISSING TRAY HANDLING ACCESSOR
10500043	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	MISSING DRAIN HOSE
10500041	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	MISSING DRAIN HOSE
02150010	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	bad temp / pressure board and sensor
02240006	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	UNIT DISPLAYS PRESSURE WHILE CHAMBER DOOR IS OPEN AND NOT PR
01330001	6530013061771	STERILIZER SURGICAL	VALIDATO R 8	DISPLAYS H2O ERROR CODE; WILL BEGIN STERILIZE MODE

**Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site**

<b>WO#</b>	<b>NSN</b>	<b>Nomenclature</b>	<b>MDL</b>	<b>Problem</b>
01520009	6530013259299	VENTILATOR VOL PRTBLE	BV843-01	Will not operate on internal battery
01520012	6530013259299	VENTILATOR VOL PRTBLE	BV844-01	Will not operate on internal battery
01520010	6530013259299	VENTILATOR VOL PRTBLE	BV843-01	Will not operate on internal battery
01550001	6530013259299	VENTILATOR VOL PRTBLE	BV843-01	Will not operate on internal battery
01550002	6530013259299	VENTILATOR VOL PRTBLE	BV844-01	Will not operate on internal battery
01520011	6530013259299	VENTILATOR VOL PRTBLE	BV844-01	Will not operate on internal battery
10570008	6530013259299	VENTILATOR VOL PRTBLE	BV844-01	UNIT DNE IN BATTERY MODE
01590001	6530013270686	VENTILATOR VOLUME	750M	unit dne.
02640003	6530013270686	VENTILATOR VOLUME	750M	NEEDS NEW BATTERY
12750490	6530013270686	VENTILATOR VOLUME	750M	
12750489	6530013270686	VENTILATOR VOLUME	750M	DEAD BATTERY
12750491	6530013270686	VENTILATOR VOLUME	750M	
12750492	6530013270686	VENTILATOR VOLUME	750M	BATTERY DEAD
12750493	6530013270686	VENTILATOR VOLUME	750M	
12750494	6530013270686	VENTILATOR VOLUME	750M	
12750495	6530013270686	VENTILATOR VOLUME	750M	BATTERY DEAD-REPLACE
12750496	6530013270686	VENTILATOR VOLUME	750M	BATTERY DEAD/REPLACE
12750497	6530013270686	VENTILATOR VOLUME	750M	POWER SUPPLY/CHARGER-DNE>>
12750498	6530013270686	VENTILATOR VOLUME	750M	BATTERY DEAD/REPLACE
12210003	6530013270686	VENTILATOR VOLUME	750M	MISSING POWER TRANSFORMER
20350002	6530013270686	VENTILATOR VOLUME	750M	DEAD BATTERY
13510001	6530013270686	VENTILATOR VOLUME	750M	will not operate in battery mode....battery missing
13460004	6530013270686	VENTILATOR VOLUME	750M	missing ac dc power adapter
12970029	6530013270686	VENTILATOR VOLUME	750M	BATTERY DNE/REPLACE
12970028	6530013270686	VENTILATOR VOLUME	750M	BATTERY DNE/REPLACE
12970032	6530013270686	VENTILATOR VOLUME	750M	UNIT WILL TURN ON--BUT--WILL NOT RESPOND TO CONTROLS
12970027	6530013270686	VENTILATOR VOLUME	750M	UNIT WILL TURN ON-BUT-WILL NOT RESPONE TO CONTROLS
12970025	6530013270686	VENTILATOR VOLUME	750M	UNIT WILL TURN ON-BUT-WILL NOT RESPOND TO CONTROLS
12970031	6530013270686	VENTILATOR VOLUME	750M	BATTERY DNE/ REPLACE
12210005	6530013432033	LIGHT SURGICAL FIELD	2410MB	BULB BLOWN
12210004	6530013432033	LIGHT SURGICAL FIELD	2410MB	DEAD BATTERY

**Appendix A TAMMIS Raw Data from Fort Gordon RTS-MED site**

<b>WO#</b>	<b>NSN</b>	<b>Nomenclature</b>	<b>MDL</b>	<b>Problem</b>
12750499	6530013432033	LIGHT SURGICAL FIELD	2410MB	BATTERY DEAD/REPLACE
11100006	6530013432033	LIGHT SURGICAL FIELD	2410MB	NEEDS NEW BATTERY
12120104	6530013748903	VENTILATOR VOL PORTBL	15300	OLD WORK ORDER # 11710003
11710003	6530013748903	VENTILATOR VOL PORTBL	15300	MISSING CLEAR TUBING FOR FOR EXHALATION PORT.
20420001	6530013748903	VENTILATOR VOL PORTBL	15300	NEEDS NEW BATTERY >> REPLACE
20420004	6530013748903	VENTILATOR VOL PORTBL	15300	NEEDS NEW BATTERY >> REPLACE
20420003	6530013748903	VENTILATOR VOL PORTBL	15300	NEEDS NEW BATTERY >> REPLACE
20420002	6530013748903	VENTILATOR VOL PORTBL	15300	NEEDS NEW BATTERY >> REPLACE
20420006	6530013748903	VENTILATOR VOL PORTBL	15300	NEEDS NEW BATTERY >> REPLACE
20420005	6530013748903	VENTILATOR VOL PORTBL	15300	NEEDS NEW BATTERY >> REPLACE

# **Sample Data Collection Monthly Report April 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
McAdams Technologies Inc.  
Chris Riha MS, CCE  
Wayne Collins BMET  
Report # 004

## Table of Contents

Introduction-----	1
Scope-----	1
Data	
Data Analysis-----	2
Field Comments-----	4
Recommendations-----	7
Appendix A-----	8
Appendix B-----	9

### List of Diagrams

Diagram 1, Battery Failure Rates	Page 2
Diagram 2, Repair Frequency Rates	Page 3

### List of Photos

Photo A, Low Capacity X-Ray	Page 4
Photo B, Steris OR table	Page 4
Photo C, Bear 33 ventilator	Page 5

### Acknowledgements

This report was made possible with the assistance of Mr. Malcolm Inniss from Goose Creek Naval Weapons Station. Credit also to Mr. Ken Coulter for building the McAdams SDC Team.

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This report, the fourth Sample Data Collection (SDC) report, will provide analysis from maintenance data obtained from the sustainment on the Gibson at Goose Creek Naval Weapons Station, April-May 2002, in addition to the previous sustainments performed at the Sierra Depot, (UID # RCHD6), in May of 2001 and the 67<sup>th</sup> CSH, (UID # WBJBAA), July of 2000

The data presented in this report was collected from 1,511 sustainment maintenance records that have been entered into the SDC database. The records from the Gibson sustainment represent approximately 60% of the items from this project.

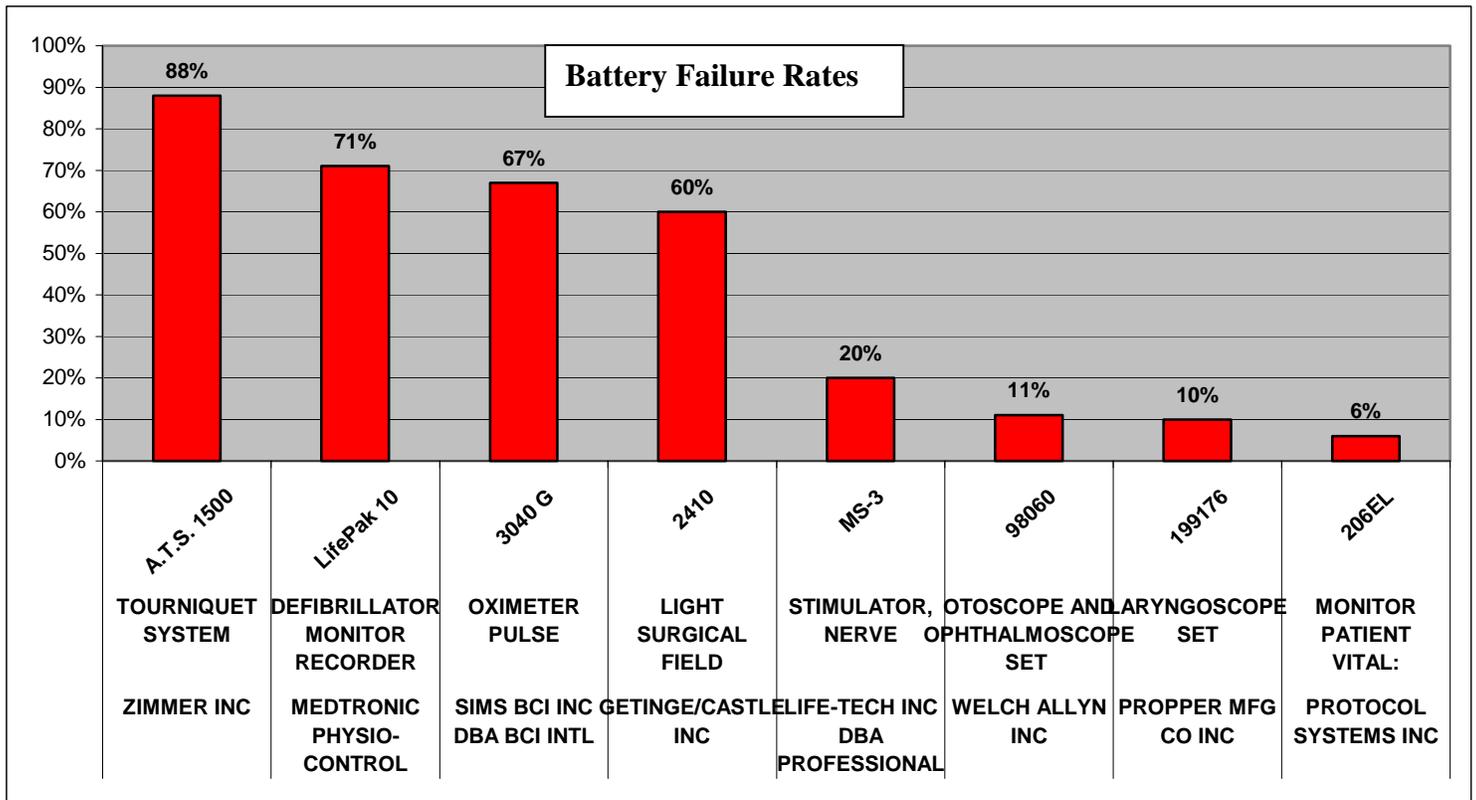
**Data Analysis:**

**Battery Failure Analysis:**

Based upon data entered in the SDC database **Diagram 1** charts the battery failure rate of medical devices. *Note this data is only from devices that were noted as having the batteries replaced in the submitted sustainment documentation.*

The raw data for this chart is shown in Appendix A.

**Diagram 1**

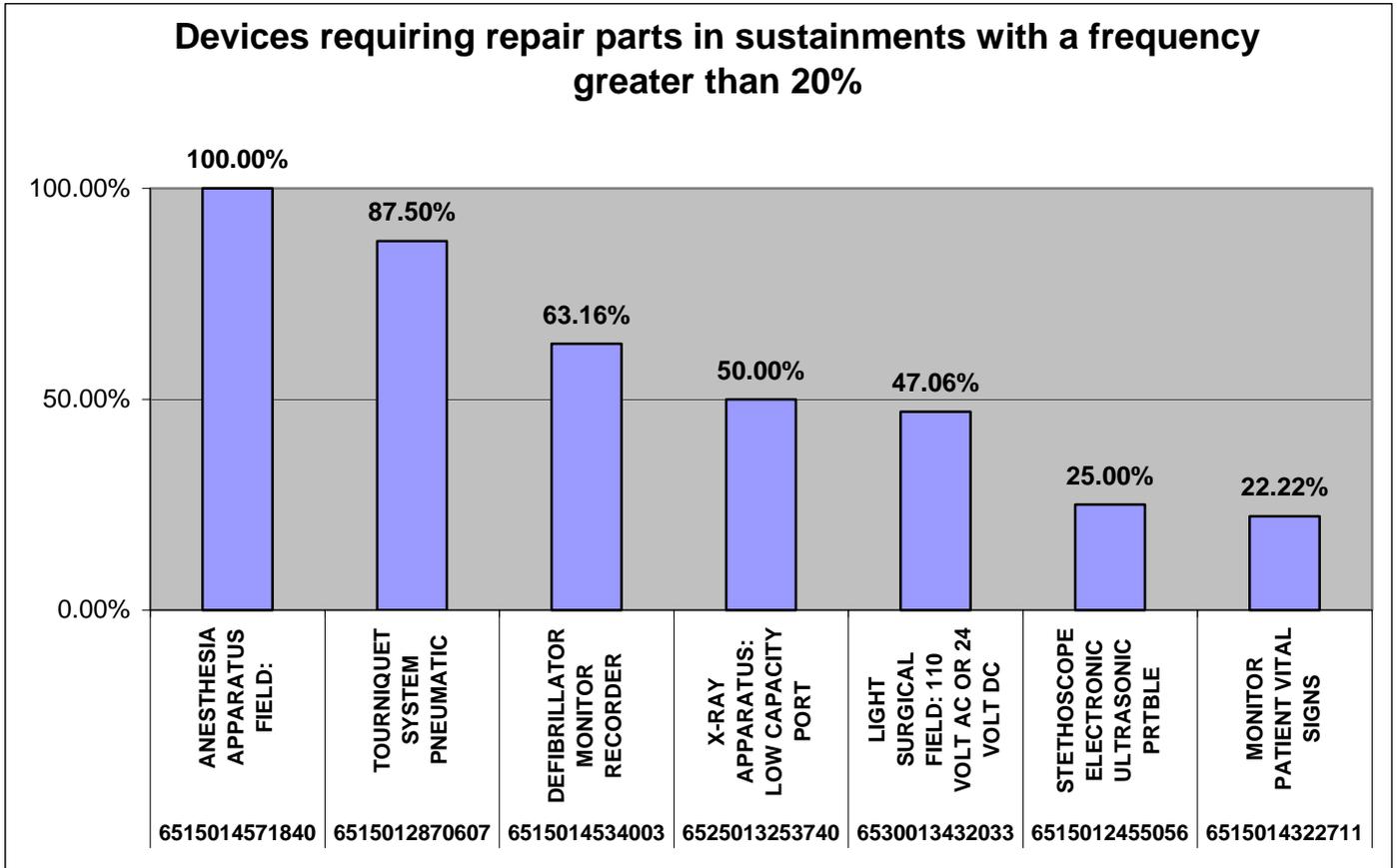


**Percentage of units requiring repairs:**

Based upon the data entered into the SDC database, **Diagram 2** displays the types of devices that have shown a trend to have a repair rate of greater than 20%. This rate is calculated by taking the percentage of units requiring repairs vs. the total number of those devices in the SDC database. Devices that had less than 4 items entered in the database were considered statistically irrelevant.

**The overall frequency of repair parts being required for devices was 4%.** Raw data for this chart is shown in Appendix B.

**Diagram 2**



**Note:** The anesthesia unit, (NSN 6515014571840) had a 100% frequency of repair due to the fact that those units were being enhanced to accomodate both the seroflurane and the sevoflurane vaporizer. Of the 7 anesthesia units listed in the database only one (14%) required parts additional to the enhancement.

Differences in percentages between battery failure rates and frequency of repairs indicate differences in documentation completion, (i.e. on the maintenance sustainment form the 'Battery Replaced' item could be circled, while no parts were entered).

**Field Comments:**

**International and Domestic Development Corp, Low Capacity X-Ray,**  
(NSN 6525013253740), Model 1200, shown in Photo A

During the SDC visit for the Gibson, May 2002, it was observed that this device when in extended storage requires the storage capacitors to be replaced.

**Photo A**

Rick Wolfe, USAMMA, MEOD Equipment Specialist recommends that after long term storage, or high heat conditions, it is beneficial to slowly reform the insulating surface material of the electrolytic capacitors before use. To accomplish the "capacitor reformation", the unit must be powered by a Variac (0 -130 VAC 15 AMP), the same one that is used for calibration, and allowed to operate on lower voltages (25, 50, 85, and 120 VAC) for some time (about 15 minutes per voltage selection, until full voltage is applied to the system - about 1 hour). Operation of the unit at progressively higher input voltages will re-activate the electrolyte / insulating barrier of the power supply capacitors and saves time spent in capacitor replacement.

**Steris OR table, (NSN 6530013539883), Model 2080A, (shown in Photo B).**

**From:** Winthrop, Thomas G MAJ WRAMC-Wash DC  
**Sent:** Tuesday, March 05, 2002 5:02 AM  
**To:** Robinette, Linda LTC JRCAB  
**Subject:** RE: Portable Suction, OPT Table and electric blanket

Linda, We have had a lot of problems with the Steris OR tables lately. The kidney supports have been a problem and the hand controls have all broken leaving us with manually adjusting the tables. The OPT would be a perfect solution in the field. Thanks again, Tom

**Photo B**

**Note:** The SDC database has 8 maintenance sustainment records from the Gibson with no history of the afore mentioned problems. However the Gibson's equipment has been in storage and the comments above reflect actual utilization issues.

**Bear 33 Volume Ventilator**, (NSN 6530013259299), Model BV833, shown in Photo C  
 Submitted by From: COL Sandra Brunken

**Photo C**



1. We've used the Bear 33 Volume Ventilator a fair amount during this deployment and would like to share this information with anyone who's interested. We supply O2 into the Bear 33 via the inlet port by a NewLife ECO Check Air Sep O2 Concentrator. This particular concentrator puts out 90-92% FIO2 at a maximum flow of 5 L/min. To enhance our capability I've "Y" connected two concentrators using standard O2 tubing. At one point to utilize higher Vt I put three concentrators on line together. All rates below are 14 bpm, Peak Flow 60.

**\*\*One major CAUTION:** The O2 concentrator does not have battery back-up. The alarm on the concentrator has a 9 volt battery back-up but the concentrator does not. Out of power, out of O2.

Vt	L/M	% FIO2	Vt	L/M	%FIO2	Vt	L/M	%FIO2	Vt	L/M	%FIO2
500	1	34	600	2	41	700	2	40	750	2	39
500	2	44									
500	3	55	600	4	58	700	4	60	750	4	55
500	4	63									
500	5	72	600	6	70	700	6	72	750	6	70
500	6	76									
500	7	80	600	8	82	700	8	80	750	8	78
500	8	83									
500	9	85	600	10	85	700	10	81	750	10	78
500	10	86									
500	15	88							750	15	84
Vt	L/M	%FIO2	Vt	L/M	%FIO2	Vt	L/M	%FIO2	Vt	L/M	%FIO2
800	2	39	850	2	37	900	2	37	1000	2	36
800	4	52	850	4	50	900	4	49	1000	4	47
800	6	68	850	6	65	900	6	63	1000	6	60
800	8	76	850	8	72	900	8	70	1000	8	65
800	10	78	850	10	76	900	10	74	1000	10	71
800	15	83	850	15	83	900	15	82	1000	15	80

**\*\*This information may be helpful to nurse not familiar with the Bear 33 or the O2 Concentrators. \*\*Why not just use the chart in the clinical manual. Well, the chart shows FIO2 values we just can't reach. If the O2**

concentrator only puts out 88%, it can't reach 90% at the ET tube. **So the lesson here is know YOUR equipment capabilities. Charts are guides, hook it up and find out what's out there.**

3. The electrical humidifier provided with the Bear 33 has not been used. It requires cleaning, filling and power. Use a humid inline filter instead. The filters are easy to store and use. Plus clean-up is throw away. This is probably better for the patients infection risk than the other.

4. The Bear 33 has been used in all available modes without difficulty. Install an inline peep value which has performed well for peep of 5, 10 and 15. Suctioning could be enhanced with an inline suction device further reducing potential infection risk to the patient.

5. The tray on the bottom of the vent used to mix room air with the oxygen source has a foam filter inside it. In dusty environments this filter becomes clogged and is very difficult to get to for cleaning.

6. Need to have the operator manual -the Vent Manual is not as useful to the clinician. The Vent Manual refers to the operator manual for extensive clinical subject matter. In the Ventilator Manual there is a center-fold two page area that has a graph and the formula to compute FIO<sub>2</sub> calculations, etc. The ventilator manual is helpful to med maintenance but is not very helpful to a nurse trying to figure out how to operate the ventilator. An operator's manual is needed for the field.

7. Maintenance problems:

A. One vent lock up due to electrical spike. Med Maintenance was unable to repair it, and it's not been replaced due to logistical slowness.

B. One failed for 30 min for unknown reasons. We turned it back on after 30 min, and it worked OK

C. The O<sub>2</sub> concentrators amber warning lights frequently come on, when this occurs the FIO<sub>2</sub> drops from 90% to 80% rapidly but returns when the light goes off.

**Recommendations:**

- Based upon the data displayed in **Diagram 1**, Battery Failure Rates, it may be prudent to insure that the units utilizing the equipment when it is fielded would transport batteries for the following devices:
  - a. **Life Pak-10 Defib-Monitor**
  - b. **ATS 1500 tourniquet**
  - c. **3040 Pulse Oximeter**
  - d. **2410 Surgical Lamp**

A policy of having batteries arrive with the equipment would add labor time for the 91A's during fielding with devices that require opening up of a device to install the batteries, (e.g. 2410 lamps). The time required for devices such as the Life Pak 10's where the batteries are easily accessible would be minimal. An alternative solution would be to increase the PM frequency of the items that have shown a propensity to have dead batteries after being in storage for two years.

- The frequency of repairs data, **Diagram 2**, highlights the problem of batteries being the most prevalent maintenance issue with stored equipment. Only two items on from **Diagram 2**, the 2410 surgical lamp and the "low capacity x-ray unit" had statistically significant problems required parts in addition to batteries.

In addition to the 2410 surgical lamp battery related problems, the units also had a high rate of failure of the seals on the hydraulic cylinders for maintaining the lamp position (8 of 32 records in SDC database show cylinders being replaced, 25% failure rate). A third party vendor or the OEM should be contacted to improve the design of this device.

Mr. Wolfe suggestion of 'capacitor reformation' should be adhered to and be implemented as part of the training process for 91A's, for the low capacity x-ray units, see page 4

**Note: These recommendations and all data analyzed in this report are from devices that were in storage and not in general use.**

## Appendix A, Battery Failure Raw Data

Data collected from sustainments performed at the Sierra Depot, (UID # RCHD6), in May of 2001, the 67<sup>th</sup> CSH, (UID # WBJBAA), and on the Gibson, (UID # W81YR6). The columns in blue were taken directly from the maintenance sustainment sheets.

NSN	Manf.	Nomen	Model	Discon	N/A	Recharge	Remove	Replace	Total	% Failure*
6515012870607	ZIMMER INC	TOURNIQUET SYSTEM	A.T.S. 1500			1		7	8	88%
6515014534003	MEDTRONIC PHYSIO-CONTROL	DEFIBRILLATOR MONITOR RECORDER	LifePak 10	4			1	12	17	71%
6515012935577	SIMS BCI INC DBA BCI INTL	OXIMETER PULSE	3040 G	1				2	3	67%
6530013432033	GETINGE/CAS TLE INC	LIGHT SURGICAL FIELD	2410	2			10	18	30	60%
6515013003530	LIFE-TECH INC	STIMULATOR, NERVE	MS-3	1			3	1	5	20%
6515005507199	WELCH ALLYN INC	OTOSCOPE AND OPHTHALMOSCOPE SET	98060	1			30	4	35	11%
6515012861010	PROPPER MFG CO INC	LARYNGOSCOPE SET	199176	4	2		12	2	20	10%
6515014322707	PROTOCOL SYSTEMS INC	MONITOR PATIENT VITAL:	206EL	4		60		4	68	6%

\* Failure rate calculated from following formula: (# batteries replaced/# total \* 100%)

Appendix B, % of units requiring repair parts raw data

Data collected from sustainments performed at the Sierra Depot, (UID # RCHD6), in May of 2001, the 67<sup>th</sup> CSH, (UID # WBJBAA), and on the Gibson, (UID # W81YR6). The columns in blue were taken directly from the maintenance sustainment sheets.

NSN	NOMEN	Manufacturer	Model	# req. parts	# not reg. parts	% requiring parts
6515014571840	ANESTHESIA APPARATUS FIELD:	DRAEGER MEDICAL INC	Narkomed M	7	0	100%
6515012870607	TOURNIQUET SYSTEM PNEUMATIC	ZIMMER INC	ATS 1500	7	1	88%
6515014534003	DEFIBRILLATOR MONITOR RECORDER	MEDTRONIC PHYSIO- CONTROL CORP	Life Pak 10	12	7	63%
6525013253740	X-RAY APPARATUS: LOW CAPACITY PORT	INTERNATIONAL AND DOMESTIC DEVELOPMENT CORP	1200	3	3	50%
6530013432033	LIGHT SURGICAL FIELD:	GETINGE/CASTLE INC	2410	16	18	47%
6515012455056	STETHOSCOPE ELECTRONIC ULTRASONIC PRTBLE	COLGATE PALMOLIVE	BF 5A	1	3	25%
6515014322711	MONITOR PATIENT VITAL SIGNS	PROTOCOL SYSTEMS INC	206	2	7	22%
6515012461938	ALLIED HEALTHCARE PRODUCTS	SUCTION APPARATUS	6003	1	8	11%
6530012414393	BRENNER METAL PRODUCTS CORP	LIGHT FLOOR	FEL-5100	1	9	10%
6515013589480	FEDERAL EQUIPMENT MFG	SUCTION APPARATUS SURG	2590-G-120	2	18	10%
6530012440708	GETINGE/CASTLE INC	LIGHT SURG CEIL	LI2420CFH	1	12	8%
6515012911198	HEWLETT-PACKARD CO	MONITOR-RECORDER ECG:	HP43200MC	1	16	6%
6515013046497	IMPACT INSTRUMENTATION INC	SUCTION APPAR OROPHARYNGEAL	308M	1	19	5%
6530014640267	IMPACT INSTRUMENTATION INC	VENTILATOR VOLUME PTBL:	754M	1	57	2%
6530014612325	DAZOR MFG CORP	LIGHT EXAMINATION	MODEL 1069A	1	60	2%
6530014296715	RAN-PAIGE CO INC	SINK UNIT SURGICAL SCRUB	RPC 1000	1	83	1%

Aggregate Total of Devices Requiring Parts

Total Number of Devices requiring parts	Total Number of Devices Inspected	% Requiring Repair Parts
60	1511	4%

# **Sample Data Collection Monthly Report May 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
Information Systems Support Inc.  
Chris Riha MS, CCE  
Wayne Collins BMET  
Report # 005

# Table of Contents

Introduction-----	1
Scope-----	1
Data	
Data Analysis-----	2
Field Comments-----	4
Recommendations-----	7
Appendix A-----	15

## List of Charts

10 most maintenance time consuming devices during 339th deployment	Page 2
Comparison of average maintenance time requirements of devices that were depot inspected vs. same device that were not depot inspected	Page 3

## List of Tables

Required Maintenance Parts for 339 <sup>th</sup> Fielding	Page 3
---	--------

## Acknowledgements

This report was made possible with the assistance of SGM Culihan who directed the collection of sample data for the 339<sup>th</sup> fielding.

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

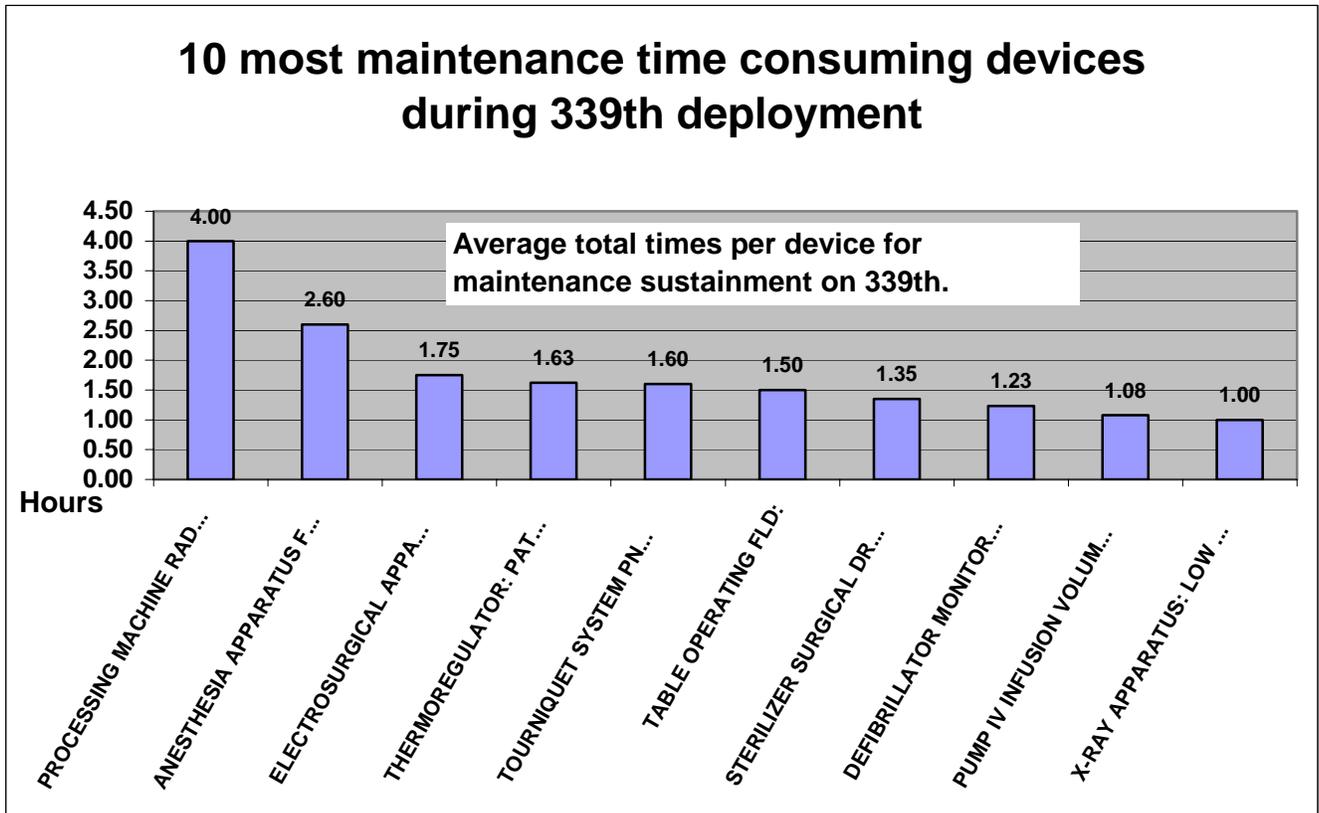
**Scope:** This report, the fifth Sample Data Collection (SDC) report, will provide analysis from maintenance data obtained from the deployment of the 339<sup>th</sup> CSH, (a 44-bed slice was deployed for this exercise). The numerical analysis of the data is from 273 sustainment records collected during the fielding of this unit.

Comparisons of maintenance times between equipment that was inspected at a depot prior to being shipped, (to the 339<sup>th</sup>, and for the Gibson sustainment) vs. the same type of device that was not inspected at a depot is also contained in this report.

**Data Analysis:**

**339<sup>th</sup> Deployment Average Maintenance Times:** Chart 1 depicts the ten most maintenance intensive medical devices during the deployment work for the 339<sup>th</sup> deployment. Appendix A contains the raw data that this chart was derived from.

Chart 1



**Note:** Average overall time per device was .64 hours

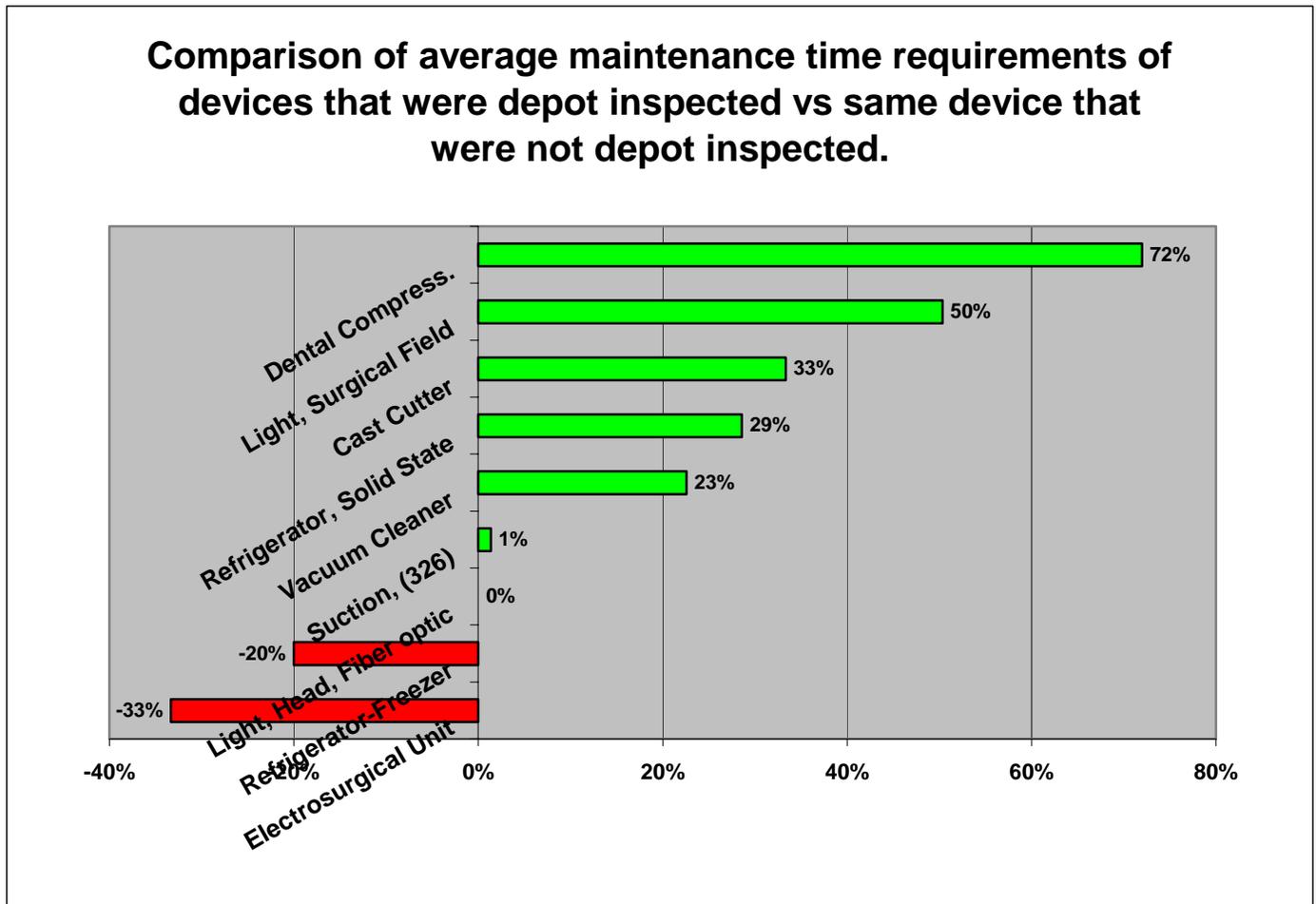
**339<sup>th</sup> Deployment Required Maintenance Parts:** Table A lists the required maintenance parts that were documented during the deployment of the 339<sup>th</sup>.

**Table A**

NSN	Nomen	Part	Quan.
4110012494476	Blood Bank Refrigerator	Battery	1
6515012789850	Muscle Stimulator, MS-1	9V Alkaline	1
6515012870607	ATS 1500 Tourniquet	Battery	1
6515012870607	ATS 1500 Tourniquet	Battery	1
6515012935578	Ultrasonic Blood Flow Detector	Nicad battery	1
6515013046497	Impact 308 Suction	Battery	1
6515013046497	Impact 308 Suction	Battery	1
6515013046497	Impact 308 Suction	Battery	1
6515013046497	Impact 308 Suction	Battery	1
6515013046497	Impact 308 Suction	Battery	1
6515013101687	Ext. Pacemaker	Battery 9V	1
6515013101687	Ext. Pacemaker	Battery 9V	1
6515014322707	Propaq Monitor, 206 EL	Spare battery	1
6515014322707	Propaq Monitor, 206 EL	Battery	1
6515014571840	Anesthesia Apparatus	Lube kit for spirometer.	1
6520013984613	Dental Compressor	Air hose	2
6530012544135	Ultrasonic Cleaner	Cover (Lid)	1

**Maintenance Time Comparisons between Depot Inspected and Non Depot Inspected Units:** Chart 2 displays the differences in the average maintenance time required for the deployment and sustainment teams. This data was collected during the deployment of the 339<sup>th</sup> and the Gibson sustainment. The displayed data reflects the difference in the average maintenance time required for medical devices that were both inspected at the depot prior to shipment and also the same device that was not inspected at a depot prior to shipment. The intent of Chart A is to show the time savings offered by depot inspection of equipment. The percentages shown reflect the % of time differences between having the equipment inspected at the depot vs. pulled out of storage. The items in green represent time savings while the items in red represent actual longer time averages for the depot inspected equipment, (note that this may be due to the method in which this data was collected).

Chart 2



**Recommendations:**

Neglecting the two items in red, which were statistical anomalies; the equipment that is depot inspected prior to shipment generally required substantially less maintenance time than the same device being pulled out of storage. This process should continue and the SDC team will continue to track this to help to determine the financial advantage of this program.

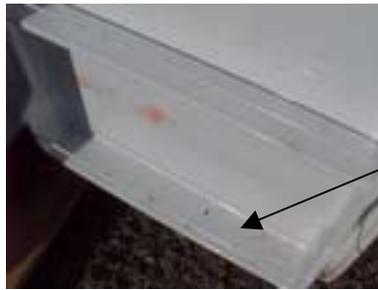
**Field Comments:****339<sup>TH</sup> TRIP REPORT**

A SDCV was conducted at the 339 CSH in Ft Dix, New Jersey from 8 May through the 17 May 2002. 177 sustainment sheets were recorded. Additional sheets will be obtained by SGM Culihan and forwarded to the SDC team. The following is a preliminary list of issues or potential problems observed.

**339th MEET SET**

1. A refrigerator, 4110-01-291-7046, (See Photo A) stored in the Medical Maintenance ISO had a dented and bent rear panel next to the power cord. There was also mold observed inside the refrigerator. The grill on the lower front was not attached on one side.

**RECOMMENDATION: Replace or straighten rear panel, secure front grill to refrigerator with proper screws, and clean interior of refrigerator.**



Example of mold.

**Photo A**

2. The Medical Maintenance TMDE was not in calibration. Their RF 302 electrosurgical tester was due calibration in May 96, Signal generators were due in Aug 01 and Mar 02, Voltmeter due Jan 02, Digital counter was tagged inoperable and due cal in Dec 01, Oscilloscope due Mar 02, X-ray cal timer due Feb 02.

**RECOMMENDATION: Send TMDE to appropriate facility for calibration.**

3. Stasar III Spectrophotometer, 6650-01-117-3904, (See Photo B) did not have a DD Form 2163 calibration sticker. Tubing to vacuum receivers is dry rotted.

**RECOMMENDATION: Replace tubing to vacuum receivers and calibrate item.**



Dry Rotted tubing

**Photo B**

4. IL 614 Analyzer, 6630-01-300-8711, 2 ea, one did not have a DD Form 2163 calibration sticker. The other was last serviced 5/99.

**RECOMMENDATION: Calibrate analyzer.**

5. Sorvall Instrument Centrifuge, MDL T6000B, 6640-01-247- 4992, did not have a DD Form 2163 calibration/verification sticker.

**RECOMMENDATION: Calibrate centrifuge.**

6. 809T Centrifuge, – did not have a DD Form 2163 calibration/verification sticker.

**RECOMMENDATION: Calibrate centrifuge.**

7. Clay Adams QBC Centrifuge – did not have a DD Form 2163 calibration/verification sticker.

**RECOMMENDATION: Calibrate centrifuge.**

8. Hermle Z320 Centrifuge, (See Photo C), Did not have a DD Form 2163 calibration/verification sticker. The centrifuge was tagged, code F in May 00 for missing emergency release cap. (Still missing) The power cord was discolored in places indicating it may have been exposed to heat or a flame. No Charring was on the outside of the cord.

**RECOMMENDATION: Perform a complete service to determine reason for discolored power cord. Replace emergency release cap and power cord.**



Discoloration on  
power cord

**Photo C**

9. Crystalab Inc, Water demineralizer, 4610-01-252-5592, (See Photo D) - Bottom and top container seals were dry rotted.

**RECOMMENDATION: Replace seals.**



Dry rotted  
seal.

**Photo D**

10. Cell Saver, Blood Recovery, did not have a DD Form 2163 calibration sticker.

**RECOMMENDATION: Perform a complete service IAW MFR specifications or turn-in.**

### RCHD 30

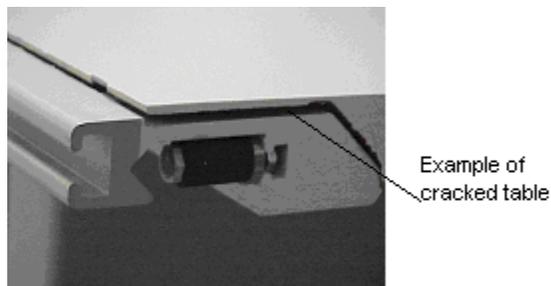
1. An RTS Maintenance Technician recommended that transport cases be issued to the Lab for their small tabletop centrifuges. Once deployed, the cardboard boxes they are issued in are usually thrown away. When the unit re-deploys, the equipment is usually poorly packed causing equipment damage. According to RTS Technicians, the cases are listed in the TM.

**RECOMMENDATION: Research TM's to verify if containers are available. If not, obtain appropriate storage/shipping containers.**

2. VP 4 X-ray Table, (See Photo E).

a. There was a dent in the front side panel. Looking from the foot and head of the tabletop, there are diagonal cracks on all 4 corners, starting at the track indent and going up diagonally to the outside corner.

**RECOMMENDATION: Repair dent and replace tabletop.**



**Photo E**

b. The right collimator knob has a minor crack near the setscrew that holds the knob to the collimator.

**RECOMMENDATION: Replace collimator knob.**

c. The X-ray was due calibration in April 02.

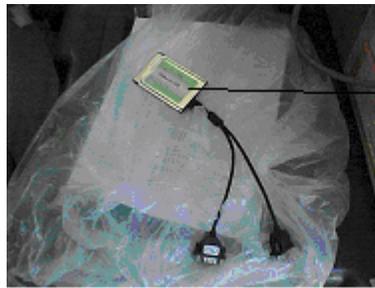
**RECOMMENDATION: Perform calibration and preventive maintenance.**

754 Ventilators, 6530-01-464-0267.

a. RTS MED maintenance technicians reported that the 754 Ventilator requires a manifold kit to run the ventilator for extended, continuous operation. This is not true. The ventilator has an internal compressor that will operate the machine and a letter dated 26 March 2001 from manufacturer states that their life test unit has been running continuously, 24/7, for more than 3 ½ years.

**RECOMMENDATION: Disseminate information to RTS MED personnel.** b. The service manual lists a Push Button Assembly with a 2-pin connector and a dual serial port connector (See Photo F) that are needed for the calibration but are not issued with the equipment. A 9 to 25-pin adapter are also needed for the calibration but are not supplied. After talking with Mr. Lamar Reese with MEOD and Mr. David Thorton at Hill AFB, a calibration kit is available on a loaner basis until kits can be fielded.

**RECOMMENDATION: Perform a complete study of needed items for operation and maintenance services.**



Dual Serial Port  
Connector for th.754  
Ventilator. Connects  
the RT 200 and 754  
Ventilator to a Laptop.

**Photo F**

4. Propaq monitor, 6515-01-432-2707.

a. One of the monitors was missing a LED segment in the display. A replacement item was requested.

b. One monitor had a bad internal battery and spare while another had a bad spare.

**RECOMMENDATION: Cycle batteries IAW MRF recommendations.**

c. The hole for the spare battery stored in case is not large enough. The battery is fitted so tightly that when the battery is pulled out the connector catches and sticks in the foam sometimes ripping the wires from the connector.

**RECOMMENDATION: Enlarge the holes for tehe batteries in the storage case.**

5. Surgical light, 6530-01-343-2033, – All four need batteries and the gas springs.

**RECOMMENDATION: Replace gas springs and batteries.**

6. Tourniquet System, 6515-01-287-0607, 2 ea - Batteries dead on both units.

**RECOMMENDATION: Cycle batteries IAW MFR recommendations.**

### **RCHD 23**

1. FlowTemp II Blood Warmer, 6515011507840, did not come up to temp. Replacement item was requested.

**RECOMMENDATION: Calibrate or replace item.**

2. Ultrasonic cleaner, 6530-01-254-4135, was missing top cover. Cover was ordered from the depot at Hill AFB and received. The fuse holder was broken while being placed back into the box. The RTS Med personnel indicated that this was a common problem and the fuse holder should be flushed mounted.

**RECOMMENDATION: Instruct operator/maintenance personnel on proper handling and look at the possibility of flush mounting the fuse holder.**

3. Ceiling mounted OR lights, 6530-01-244-0708 - all four of the lights needed the gas springs replaced. Getinge was contacted to see if a possible upgrade or replacement spring was available. Tech Support at Getinge indicated that there is no improved spring available for that OR light.

**RECOMMENDATION: Replace gas springs.**

4. 4700 Thermal regulators, 6530-01244-8101 - One unit had mildew in the pumps and the left side outlet valves were clogged. Algaecide solution was run through to clean out the valves. The second had a cracked flow switch, which resulted in water leaking inside the unit. It was determined that since this item was in storage since 1992 and additional problems could be detected once the switch was replaced that a replacement should be shipped in.

**RECOMMENDATION: Ensure unit is properly prepared for long-term storage by completely draining the reservoir and run Algaecide solution through on a routine basis.**

5. Freezer, 4110-01-450-0060, door gasket has indented from Styrofoam packing material shut in door.

**RECOMMENDATION: When item is packed, ensure Styrofoam is not stuck in door gasket.**

6. Dental chair CM-185, 6520-00-181-7349 – Low hydraulic fluid. This chair may not be issued. Unit was to receive new Aseptico chair.

**RECOMMENDATION: If issued, add hydraulic fluid.**

7. Atlantic Industries OR Table, (See Photo G), The locking nut and bearing assembly came out of the trendelenburg shaft assembly while tilting the table. The retainer ring that holds assembly separated from the shaft. Parts were ordered from the depot at Hill AFB.

**RECOMMENDATION: Repair as needed.**

Trendelenburg Shaft  
Assembly



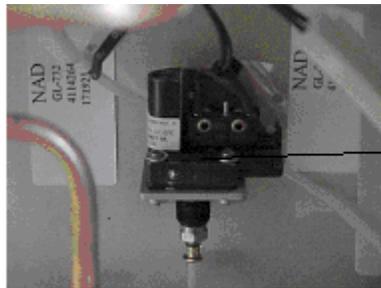
**Photo G**

### Ship Short Items

1. Narcomed anesthesia apparatus, 6515-01457-1840.

a. During a calibration check, the O2 low-pressure alarm on the monitor could not be adjusted. The unit should alarm between 34 – 40 psi. The regulator (See Photo H) could not be adjusted above 6 psi. The item was last calibrated April 02. The regulator was removed, taken apart and a brown residue was found in the valve that looked like Loctite. The regulator was reinstalled and adjusted to the proper alarm limit. There was also a problem with the Peep valve leaking during the pressure test of the absorber assy. disassembling, cleaning and reinstalling the peep valve resolved the leak. Mr. Parise from Tobyhanna would like one of these regulators included in a parts kit.

**RECOMMENDATION: Pay particular attention to the low O2 pressure alarm calibration and track problems with this regulator.**



Regulator that adjusts the  
Low O2 Pressure Monitor  
Alarm.

**Photo H**

b. The RTS Med personnel addressed that regulators are needed to connect the ventilator to Nitrous bottles. Large cylinder adapters (See Photo I) are needed to hook the system to “M” and “H” cylinders. These can be taken from the 885A anesthesia units being turned-in. The ventilator hoses do not have a quick disconnect and may present a problem during a procedure if the tank needs to be swapped out. A manifold kit is needed to hook more than one anesthesia apparatus to an air compressor. As it stands, only one air compressor is issued to the OR. The ventilator can run solely run off of oxygen but that will consume excessive amounts of oxygen.

**RECOMMENDATION: Perform a complete study of items needed for operation. Verify if quick disconnects adapters are needed. Issue manifold kits with the Narcomed.**



Large Cylinder Adapter  
from 885A Anesthesia  
Apparatus.

**Photo I**

2. CMS Sterilizers, 6530-00-926-2151.

a. SN 1059: Temperature gauge cover was cracked. The pressure control knob was partially broken. Front door dented on side and buckled seam. Last checked Aug 01.

**RECOMMENDATION: Replace temperature gauge.**

b. SN 1100: Thumbscrews that locks the front and rear doors that support the sterilizer are corroded. Last checked Aug 01.

**RECOMMENDATION: Remove corrosion from thumbscrews.**

c. SN 1174: Thumbscrews that locks the front and rear doors that support the sterilizer are corroded. Last checked Aug 01.

**RECOMMENDATION: Remove corrosion from thumbscrews.**

3. 306 Suction, NSN: 6515012672727 – (Marked as ship short.).

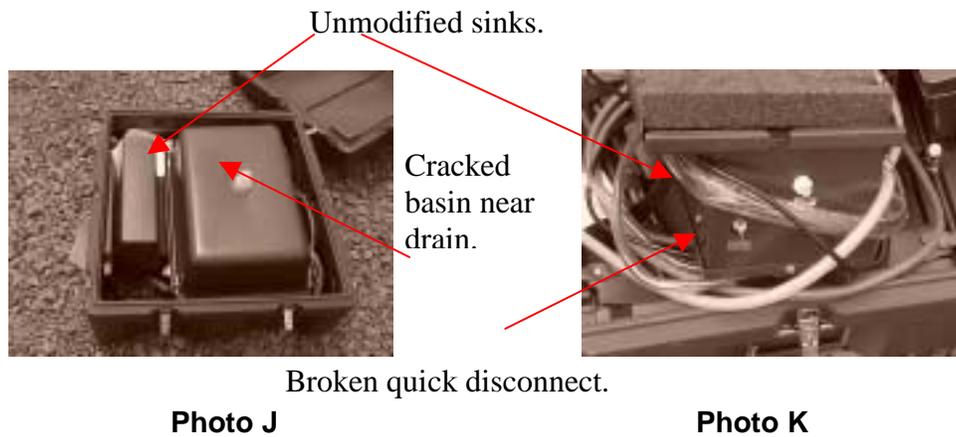
a. SN: 8904065 - missing accessory kit, dead battery, and was missing the power mode light bulb.

b. SN: 8804008 – Dead Battery, Blown charge lamp and missing power mode light bulb.

**RECOMMENDATION: Cycle batteries IAW MFR recommendations. Create better quality assurance measure for equipment coming from depots.**

4. Ran Paige Sink, 6530-01-429-6715, (See Photo's J & K) 2 sinks were not modified. They were not secured correctly when packed which resulted in cracked basins. Plastic quick disconnect was also broken on one.

**RECOMMENDATION: Issue modified sinks and return old ones to depot for modification and repair.**



**Issues from RTS MED Techs:**

1. Aseptico Dental Lights, 6520-01-446-4170, RTS MED Technicians complained of damage to the dimmer control knob. It seems that the soft container does not protect the light properly.

**RECOMMENDATION: Repairs should be tracked and if needed replace case a more durable container.**

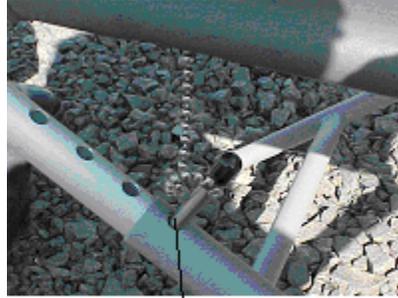
2. Aseptico Dental Chair, 6520-01-446-3783, (See Photo's L & M) pins that hold armrests are not properly secured to the vinyl causing them to become easily lost. The pins that adjust the seat height do not completely go through the chair frame. There is a possibility of a pin falling out and this may result in damage to the chair or injury to the patient.

**RECOMMENDATION: Re-evaluate design of the chair.**



Pin is not properly secured to arm rest and may fall out over time..

**Photo L**



Pin does not go completely through and may be dislodged causing damage to chair or injury to patient.

**Photo M**

3. Expandable Shelter, 5411012949866, (See Photo N) the roof beam bolts loosen up and possibly falls out of the ceiling. The RTS MED tightened numerous bolts throughout the shelters.  
**RECOMMENDATION: Check the roof beam bolts as part of the preventive maintenance checks.**



Bolts loosen and fall out.

**Photo N**

## Oxygen Generation Systems

The following was taken from an E-mail from Steve Hawbecker of TSD;

- > The POGS was trained today. We had to change out the power plug  
>from a female to a male. The high-pressure compressor for cylinder  
>fill is leaking oil and will require fixing back at the factory. This  
>doesn't affect operation of the system and we weren't going to use the  
>POGS to fill cylinders anyways. Just going to keep it as a backup to  
>E-DOCS.
- > The water distribution system is in a couple of stages. The main  
>supply side feed loop is complete except that there are a total of 12  
>field sinks to supply and we only have enough fittings for 6. Also,  
>the in-line filter is missing its holder and can not be installed. We  
>wired both pumps today and tested them. Both worked. Neither pump has  
>a circuit breaker so any electrical short in the DICE box will wipe out  
>the pumps. They only draw 5.7 Amps and the circuit breaker on the DICE  
>won't trip until 60 Amps. For future fieldings we need to find an  
>in-line marine(waterproof) circuit breaker. We put electrical  
>connectors on the ends of all the in-line heaters but one. It is only  
>a spare anyways. I remounted the pump on the hypochlorinator that had  
>stripped off in shipment. Since Chuck is returning to USAMMA tomorrow,  
>I talked to the RTS water guy and we are going to try to run the system tomorrow.
- > Power is still not hooked up throughout the complex, so we  
>are at the power teams mercy until they complete the layout.
- > The waste water discharge loop is incomplete. It is missing a lot of hose. Chuck has a list of all the  
pieces needed to make both the supply and discharge systems complete and is working with depot to get  
them in here. The PODS, SSODS, HOBS, and provision kit are here but we did not see delivery of the E-  
DOCS today.

## Appendix A

Average Time Required per Medical Device for 339th Deployment	AVG Time
PROCESSING MACHINE RAD FILM TABLE TOP: COMPACT120/230V50/60HZ AC	4.00
ANESTHESIA APPARATUS FIELD:	2.60
ELECTROSURGICAL APPARATUS MOBILE 115V 50/60HZ OR 220V 50HZ AC:	1.75
THERMOREGULATOR: PATIENT AUTO&MANUAL 115/220V 50/60 HZ AC	1.63
TOURNIQUET SYSTEM PNEUMATIC AUTO 110/220V 50/60HZ AC WITH CASE	1.60
TABLE OPERATING FLD:	1.50
STERILIZER SURGICAL DRESSING: PRESSURE FUEL HTD CRS 16X36 IN	1.35
DEFIBRILLATOR MONITOR RECORDER: 120/230V 50/60HZ AC OR DC	1.23
PUMP IV INFUSION VOLUMETRIC PORTABLE RECHARGEABLE115V50/60HZ AC	1.08
X-RAY APPARATUS: LOW CAPACITY PORT	1.00
STERILIZER SURGICAL INSTRUMENT AND DRESSING120/230V	0.85
FREEZER MECHANICAL BLOOD PLASMA 24X25X36INCHES MINUS 30 DEG TEMP	0.80
REFRIGERATOR MECHANICAL COMMERCIAL: BLOOD BANK	0.80
LIGHT SURGICAL FIELD: 110 VOLT AC OR 24 VOLT DC	0.77
REFRIGERATOR MECHANICAL BLOOD BANK 5.4CU FT	0.70
BLOOD CELL COUNTER:	0.68
SINK UNIT SCRUB FIELD HOSPITAL CRS 30 INCH: DEPMEDS	0.67
MONITOR PATIENT VITAL:	0.65
REFRIGERATOR SOLID STATE BIO:	0.60
WARMER BLOOD 115/230V 50/60HZ AC SOLID STATE PRTBL W/50IV EXT SE	0.60
SINK UNIT SURGICAL SCRUB AND UTENSIL HOSPITAL FIELD: 110V 60C AC	0.56
OXIMETER PULSE FINGER PULSE OXIMETER SELF CONTAINED	0.56
COMPRESSOR - DEHYDRATOR DENTAL EQUIPMENT:	0.53
SUCTION APPAR OROPHARYNGEAL 120V 50/60/400HZ AC PRTBLE BTRY OPER	0.53
ANALYZER CLINICAL CHEM:	0.50
CABINET SOLUTION WARMING:	0.50
CAMERA IDENTIFICATION X-RAY	0.50
CURING UNIT DENTURE 110V 60HZ 11.5X11 INCHES	0.50
CUTTER-VACUUM ORTHOPEDIC CAST 120/230V 50/60HZ AC PORTABLE	0.50
SEALING MACHINE ELECTRONIC 115 VOLT 50-60 HZ AC	0.50
SUCTION & PRESS APPAR 115/230V 50/60HZ AC 19X15X7" PRTBLE W/CASE	0.50
OXIMETER PULSE PORTABLE REUSEABLE 7.24"H 3.3"W 1.85" DP	0.49
LIGHT ENDOSCOPIC INSTRUMENT FIBER OPTIC 120/240V 50-60HZ AC	0.48
SUCTION APPARATUS SURG PROGRAMMABLE BATTERY 11-30V OR AC PRTBLE	0.45
REFRIGERATOR-FREEZER MECHANICAL FIELD WARD 4.5CUFT FREEZER OLIVE	0.43
DRAINAGE UNIT PLEURAL SPACE & MEDIASTINAL 115/230V 50/60HZ AC	0.42
CURING SYSTEM DEN VISUAL LIGHT PORTABLE FIBER OPTIC 120V 60HZ AC	0.40
CURING UNIT 110V AC 60HZ 13X9.25X10"100-212 DEG CELSIUS	0.40
STIRRER-HOT PLATE MAG LAB AC 50/60HZ 120V 700 DEG F 5.5X11X7.25"	0.40
THERMOMETER CLINICAL HUMAN 120/230V 50/60HZ AC ELEC BTRY POWER	0.40
VENTILATOR VOLUME PTBL:	0.40
ANALYZER BLOOD:	0.35
CLEANER VACUUM ELECTRIC VERTICAL TANK 120/230V 50HZ 900W AC	0.35
MICROSCOPE OPTICAL GP BINOCULAR 10X/40X/100X 120/230V 50/60HZ AC	0.35
CENTRIFUGE LAB ROTOR 3400 RPM 110/220V 50/60HZ 150W AC PORTABLE	0.30
CENTRIFUGE LABORATORY MICROHEMATOCRIT BATTERY POWERED 9 VOLT DC	0.30

## Appendix A

Average Time Required per Medical Device for 339th Deployment	AVG Time
INCUBATOR DRY HEAT 25TO115DEG C 120/230V 50/60HZ AC 600WATTS	0.30
IRRIGATOR SURGICAL 120/230V 50/60HZ AC FLOW RATE 1000ML PER MIN	0.30
SEALING MACHINE HEAT 110 VOLTS	0.30
CENTRIFUGE LAB TRUNNION SEPARATION 6 HD PLACE TABLE 120/230V AC	0.25
PACEMAKER CARDIAC EXT TYPE BTRY PWR 13.50X10X4" IN CARRYING CASE	0.25
SUCTION APPARATUS SURG 125/230V 50/60HZ PRTBLE WITH VACUUM VALVE	0.23
COLLECTOR UNIT DUST 115 V 60 HZ AC 1/2HP MOTOR 1725 RPM SINGLE	0.20
DENTAL OPERATING AND TREATMENT UNIT FIELD:	0.20
DRAINAGE UNIT PLEURAL SPACE&MEDIASTINAL 120/230V 50/60HZ MOBILE	0.20
ICE MAKING MACHINE CUBE: MANUAL DISPENSING 200LB CAP PER 24HR PD	0.20
LIGHT HEAD FIBER OPTIC 120/230V 50/60HZ AC 5MM IN CARRYING CASE	0.20
REFRACTOMETER HAND IMMERSION TYPE ALUMINUM 3SCALE DIRECT READING	0.20
SHAKING MACHINE LAB RECIPROCATING 120/230V 50/60HZ 15WATTS	0.20
SUCTION APPARATUS DENTAL AC 110VOLTS 60HERTZ MOBILE	0.20
TESTER PULP DENTAL DC DIGITAL READOUT POWERED BY 4 AA BATTERIES	0.20
THERMOMETER CLINICAL HUMAN ORAL/RECTAL BTRY PWR 120/230V 50/60HZ	0.20
VIEWER AGGLUTINATION TEST TUBE 120/230V 50/60HZ AC	0.20
AMALGAMATOR ELECTRIC DENTAL 3700-4200RPM 120V 60HZ 100W	0.10
SCALE WEIGHING PRTBLE DIGITAL LIGHTWEIGHT 50/60 HZ 115 V AC	0.10
STETHOSCOPE ELECTRONIC ULTRASONIC PRTBLE 8MHZ W/CASE 5.6X2.6X.9"	0.10

# **Sample Data Collection Monthly Report June 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
Information Systems Support Inc.  
Chris Riha MS, CCE  
Wayne Collins BMET  
Report # 006

# Table of Contents

Introduction-----	1
Scope-----	1
Data Analysis-----	2
Recommendations-----	4
Field Comments-----	5
Appendix A-----	8

## List of Charts

Medical Parts Expenditures for Tobyhanna	Page 2
Top Ten Parts Utilized at Tobyhanna	Page 2
249th Medical devices with the highest number of unscheduled repairs.	Page 3
249th unscheduled repairs	Page 3

## Acknowledgements

This report was made possible with the assistance of CW3 Tolly for providing the data from the 249<sup>th</sup> and Mike McCann and the RTS MED staff at Fort Gordon. Also thanks to Ms Judy Nunnally for providing the MEMMS data from Tobyhanna.

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This report, the sixth Sample Data Collection (SDC) report, will provide analysis from a Sample Data Collection visit to Fort Gordon, 13-15 June. This visit involved interviewing members of the 349 GH and the 348 FH who were involved in a training exercise. A summation of the SDC visit is documented in the Field Comments.

Parts utilization and cost analysis from the Medical Equipment Maintenance Management System (MEMMS) data collected from Tobyhanna is also analyzed in this report, as well as TAMMIS data from the 249<sup>th</sup>.

**Data Analysis:**

**MEMMS Data from Tobyhanna**

Chart 1 lists the parts cost per fiscal year from Tobyhanna.

**Chart 1**

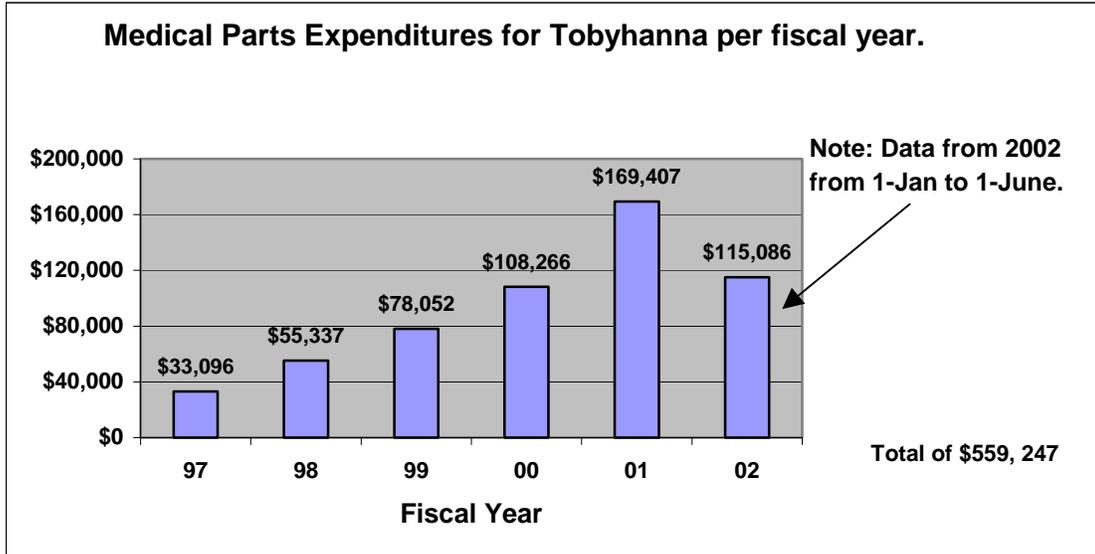
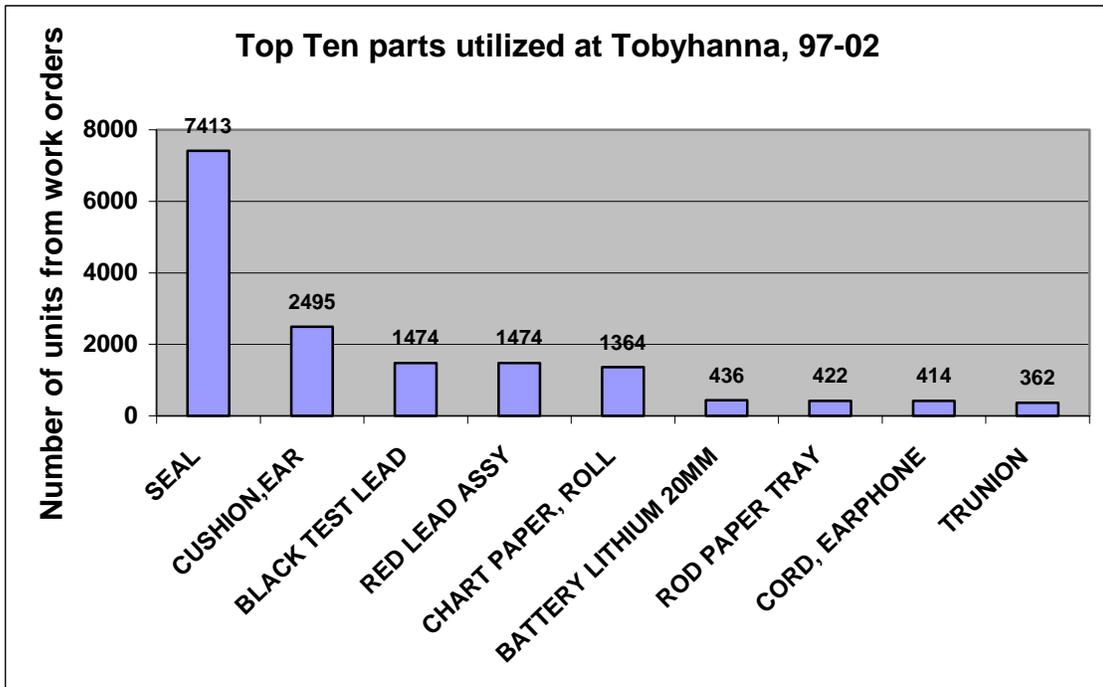


Chart 2 lists the top ten parts that were replaced, sorted by the number of parts replaced in the time frame from 1997 through June 2002.

**Chart 2**



All of the items listed in Chart 2 are components of audiometers systems that are serviced by the depot at Tobyhanna.

**TAMMIS Data from the 249<sup>th</sup>**

Chart 3 shows the items that were the most commonly repaired items listed in the unscheduled work orders.

**Chart 3**

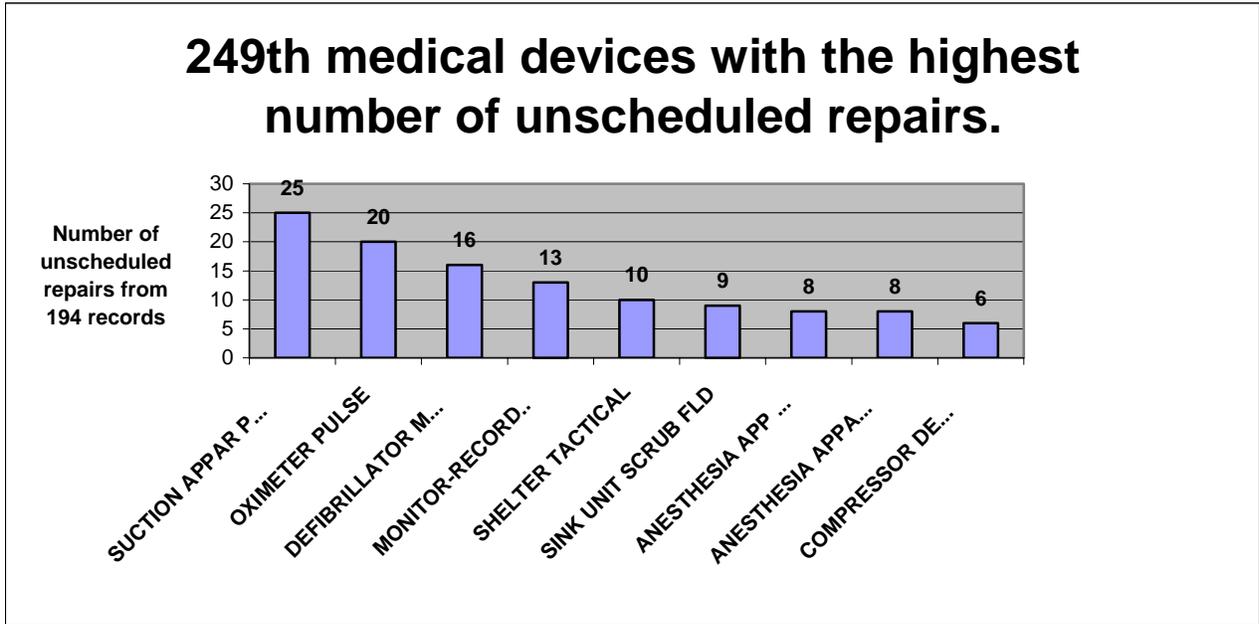
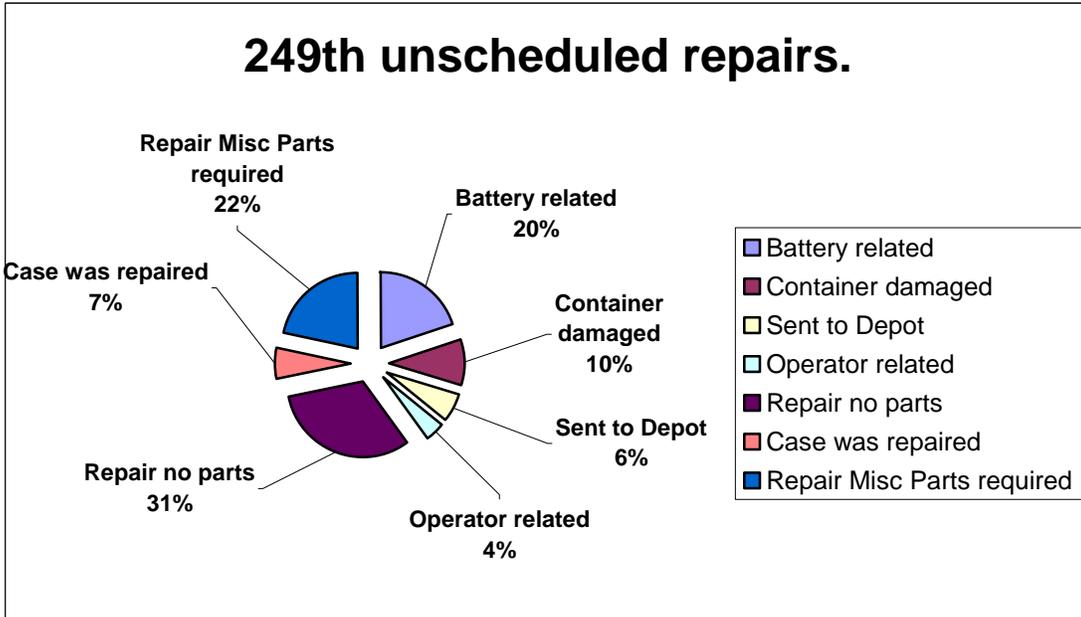


Chart 4 shows the types of unscheduled repairs performed by the 249<sup>th</sup>.

**Chart 4**



Note: 249<sup>th</sup> data collected from 194 unscheduled repairs from Feb 2000 through April 2002.

**Recommendations:**

Based upon the data shown in Chart 2 the audiometers constitute the largest part utilization of all the devices that are maintained by the medical maintenance staff at Tobyhanna. Perhaps more durable headset, seals, cushions and lead assemblies could be located to reduce their parts consumption.

Data in Chart 4 shows that while batteries remain a large factor in unscheduled repairs, repairs with miscellaneous parts required were a slightly larger factor.

**Field Comments:****349th GH**

LTC Sabety, chief of surgery from the 349<sup>th</sup>, made the following recommendations:

1. Include an orthopedic set for the OR.
2. Remove the neurology microscope and the power drill set photo A, (these items are not required to accomplish the stated mission of the 349 GH).



**Photo A**

Add surgical staples for bowel and lung cases. (listed below is the current staple set the unit has stocked<sup>1</sup>).

<b>Nomenclature</b>	<b>NSN</b>	<b>Quan. Issued</b>
STAPLER SURG 50ML CAP	6515011304923	2
STAPLE UNIT 3.25MM12S	6515010949645	2
STAPLER SURG AUTO90MM	6515011304922	2
STAPLER SURG 55ML CAP	6515011304924	2
STAPLER SURG 30ML CAP	6515011304925	2
STAPLER SURG AUTO SS	6515011561557	2
STAPLE BONE SMALL 1"	6515011752316	18
STAPLE BONE XSM 1" LG	6515011760690	18
STAPLE UNIT 3.25MM12S	6515010949645	1
STAPLE UNIT 31.5MM 12	6515012078221	1
STAPLE UNIT 91.5MM 12	6515012078222	1
STAPLE UNIT 3.5MM 12S	6515012078223	1
STAPLE UNIT 4MMID 12S	6515012078224	1
STAPLE UNIT 53MM 12S	6515012078225	1

3. Add halos to the OR set.
4. Review splint set so that femurs are more properly immobilized for transporting patients.

After reviewing the above comments LTC Sabety responded with the following clarification and rationale:

"I have no idea what the stapler inventory you listed means. I do know that the one marked "orthopedic staples" is not the kind of staples that I meant.

What we meant was the kind of disposable soft tissue staples that are used in general and thoracic surgery. Ethicon and other companies make these.

<sup>1</sup> Data from SAP system, 18 June, 2002

In private practice these are used more and more. In a combat situation the speed of these techniques would save lives. Determining which types of staples would be reasonable to inventory would really be in the domain of general and thoracic surgery. Again the reason for these types of staples is for speed of bowel surgery and lung surgery. The speed difference is substantial.

The drill set for the neurosurgeons was brought by the neurosurgical detachment that was sent from Missouri. I do not think that this set is part of the normal equipment for a CSH. Likewise the operating microscope. I mentioned these things because they are symbolic of the requisition process gone awry.

For example, if the neurosurgical detachment was sent to Landstuhl, this equipment might make some sense although I suspect they have the same equipment in house at Landstuhl. Perhaps this would make some sense if the detachment was going to work out of a fixed base hospital in Bangladesh or Afghanistan where this equipment is not available.

The use of these types of expensive and hard to move instruments is for craniotomies or reconstructive spine surgery. Neither of these operations should be done in the field. An emergency craniotomy can be done with the hand twist drill. An extended craniotomy over hours could well cause unnecessary deaths in a mass casualty situation. Historically gun shots to the head go to the expectant tent. Even in the civilian world the outcome is poor for these types of injuries.

Certainly in the case of a CSH this detachment's equipment would be useless. The only operation that the power burr and drill set might be used for in the field would be for burr holes in the skull and there should be a hand twist drill set in the inventory.

From the orthopedic standpoint we really should be doing procedures that will get the patients safely back to Landstuhl or the COMMZ to a fixed facility. There would be very few procedures that we could do that would return the soldier to combat in less than 30 days. The average case is going to consist of cleaning up the mess, washing it out, leaving it open and then immobilizing the part for transport. The Viet Nam experience showed that doing any more than that in the field was a disaster.

In Desert Storm, for example, most all of this was done with plaster. The one area that the setup is weak on is traction equipment in the CSH as well as for transport. One needs traction splints and rope. It may be doctrine to cast all these cases prior to transport and if it is one need not consider the splints as essential. I do not think that the doctrine has been made clear at least to me.

Even if one was to cast these cases it would be wise to have them in traction for several days on the ward prior to casting them and thus the splints and set up would need to be available. In Desert Storm we jury rigged all that and we could have done a lot better. That is why I mentioned splints.

In the civilian sector we rod most all of these fractures and that is what would reasonably be done at Landstuhl or in the COMMZ. Rodding femurs in the field is not very sensible given the environment.

Now an intermediate facility in the war zone might be able to do it such as a ship in the Persian Gulf but in the Depmeds OR it is ridiculous to consider it."<sup>2</sup>

---

<sup>2</sup> Taken from email from LTC Sabety, dated 24- June 2002

**348<sup>th</sup> GH**

1. The bearings on the tube stand for the Picker VP had to be replaced as they had corroded and were inoperable when the ISO shelter was opened. Also the SID potentiometer and associated cable had to be replaced as they were damaged from storage. Photo B shows the Picker unit packaged in the ISO.



Tube stand where bearings and SID potentiometer and cables were corroded

**Photo B**

Recommendations: When the unit is packaged for storage, as shown in photo B covering the tube stand with plastic, (as the tabletop is in the photo), would help to keep condensate and dust from the bearings. Also there has been previous reports of the tabletop on the Picker separating in storage, see SDC Report May 02. RTS-Med staff recommends when the table is put in storage to make sure that it is centered on the base.

2. The 2080 OR table, (NSN 6530013539883) Photo C, for the GH did not have the required accessories. The staff recommended the addition of stirrups and liter holders.



**Photo C**

3. There is no external fixation kit authorized for this unit (this was verified via SAP). This kit would suffice as an orthopedic kit, see item #1 for the 349<sup>th</sup>.

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

WO Number	Stock Number	Equipment Model	Short Nomenclature	Comment	Description Of Repair	Repair Code
00600001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	Unit needs new capacitors in the battery/power lock in circuit.	REPLACED BATTERY AND CHECKED OUT UNIT	B
00600002	6515012911199	43110MC	DEFIBRILLATOR MONITOR	Unit needs new battery. also needs capacitor	REPLACED POWER SUPPLY BOARD	B
00750001	6545014296715	ZERO	SINK UNIT SURG SCRUB	water does not come thru the faucet	REPLACED WATER PUMP	RP
00750002	6525013126411	CS-8952	X-RAY APP RADIOGRAPH	table tilt stuck in 90degree position	REPAIRED MOTOR FOR THE TABLE TILT.	R
00750003	6520013984613	PAC6-7	COMPRESSOR DEHYDRATOR	grinding noise, malfunction	ADJUSTED MOTOR COVER UNIT FMC	R
00760001	5411012953433	ONE SIDE	SHELTER TACTICAL	LIGHT INOP	REPLACED BALLAST	RP
00760002	6545013087740	950S936	SINK UNIT SCRUB FLD	OPERATOR NOT FAMILIAR WITH EQUIPMENT	WALKED OPERATOR THRU SET UP PROCEDURES	O
00760003	6545013087740	950S936	SINK UNIT SCRUB FLD	OPERATOR NOT FAMILIAR WITH EQUIPMENT	WALKED OPERATOR THRU SET UP PROCEDURES	O
00760004	6515012908949	GAC-2075-A	LIGHT HEAD 120/230V	LIGHT DIM	REPLACED BULB	R
00760005	5411012949866	TWO SIDE	SHELTER	LIGHT DRIFTS	TIGHTENED THE SCREW ON THE LIGHT ARM	R
00760006	6545014296715	ZERO	SINK UNIT SURG SCRUB	GROUND FAULT INDICATOR BAD	REPLACED GROUND FAULT INDICATOR	RP
00810001	6520012724531	3406	DEN OPER TREAT UNIT	LOW SPEED SUCTION INOPERATIVE	FIXED	R
00810002	6520001817349	CM185	CHAIR&STOOL UNIT DENT	SUPPORT BAR BROKEN ON BACK REST	WELDED BACK SUPPORT BAR BACK ON	R
00810003	6530009262151	FS1986	STER SURG DRES16X36IN	JACKET NEVER REACHED PROPER PRESSURE	ADJUSTED LOW WATER CUTOFF SWITCH TESTED UNIT	R

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

00810004	6530009262151	FX1636	STER SURG DRES16X36IN	JACKET LEAKS	FOUND NO PROBLEMS WITH UNIT	R
00810005	6545013087740	950S936	SINK UNIT SCRUB FLD	LEAKING AROUND DRAIN COCK	FOUND NO LEAK AROUND DRAIN	R
00810006	6545013087740	950S936	SINK UNIT SCRUB FLD	LEAKING FROM BOTTOM	RELPAVED VALVE	RP
00810007	6530009262151	FX1637	STER SURG DRES16X36IN	WATER LEAK	REPAIERED LEAK, UNIT FMC	R
00900001	6525013036235	AFP14X3MIL	PROCESSING MACHINE	water tank corroded, heater inop, rollers damaged	ESTIMATED REPAIR COST EXCEEDS MEL, CODE "H" EQUIPMENT	C
00950001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	display bad	REPLACED POWER BOARD. RECIEVED BOARD FROM OGDEN	RP
01880001	6545013087740	950S936	SINK UNIT SCRUB FLD	Water does not heat up. Bad ECO on super power pack		RP
02150001	6515012935577	3040G	OXIMETER PULSE	display showing E1 error code		R
02150002	6515011858446	885A	ANESTHESIA APP NITROU	Peep valve sticking need to order new rubber diaphragm	REPLACED DIAPHRAM	RP
02150009	6530001429239	E99-001	TABLE OPERATING FLD	PLATE ASSEMBLY BROKEN AND MISSING LOCKING POST ASSEMBLY	UNIT TURNED IN TO S4	C
02150010	6545014296715	ZERO	SINK UNIT SURG SCRUB	SINK BASIN CRACKED		RP
02340010	6515012935577	3040G	OXIMETER PULSE	UNIT DISPLAYING E1 ERROR CODE	TI FOR TURN IN	C
02340011	6515012935577	3040G	OXIMETER PULSE	UNIT DISPLAYING E1 ERROR CODE / BAD BATTERY	TI FOR TURN IN	C
02340012	6515011858446	885A	ANESTHESIA APP NITROU	UNIT NEEDS DIAPHRAGM IN PEEP VALVE REPLACED	REPLACED DIAGHRAM	RP
02340013	6515011858446	885A	ANESTHESIA APP NITROU	DIAPHRAGM IN PEEP VALVE NEEDS TO BE REPLACED	REPLACED DIAGHPRAM	RP

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

02340014	6515011858446	885A	ANESTHESIA APP NITROU	DIAPHRAGM IN PEEP VALVE NEEDS TO BE REPLACED	REPLACED DIAPHRAGM	RP
02340015	6515011858446	885A	ANESTHESIA APP NITROU	DIAPHRAGM IN PEEP VALVE NEEDS TO BE REPLACED	REPLACED DIAGPHRAM	RP
02340016	6515011858446	885A	ANESTHESIA APP NITROU	DIAPHRAGM IN PEEP VALVE NEEDS TO BE REPLACED	REPLACED DIAPHRAM	RP
02340017	6515011858446	885A	ANESTHESIA APP NITROU	DIAPHRAGM IN PEEP VALVE NEEDS TO BE REPLACED	REPLACED DIAPHRAM	RP
02340018	6515011858446	885A	ANESTHESIA APP NITROU	DIAPHRAGM IN PEEP VALVE NEEDS TO BE REPLACED	REPLACED DIAPHRAM	RP
02870001	4110012917046	61RF0503	REFRIGERATOR- FREEZER	UNIT TRIPPING CIRCUIT BREAKER	TURN IN	C
02870006	6515014235872	160EL	MONITOR PT VITAL SIGN	UNIT DISPLAYING ERROR CODE	OPERATOR ERROR	O
02870007	6515014235872	160EL	MONITOR PT VITAL SIGN	UNIT DOES NOT STAY ON/ SHUT OFF AFTER ONE MINUTE	CHECKED BAT CONNECTIONS, CHARGED UNIT, INSPECTED UNIT	B
02870010	6515012935577	3040G	OXIMETER PULSE	UNIT DISPLAYING E-2 ERROR CODE	TI FOR TURN IN	C
02870011	6520013984613	PAC6-7	COMPRESSOR DEHYDRATOR	NEEDS NEW PSI GUAGE AND MOISTURE INDICATOR	REPLACE DRYNESS IND. & PRESSURE GAUGE	RP
02870012	6515011760704	SP-1A	SPIROMETER PORTABLE	UNIT NOT READING AIR FLOW		R
02870013	6530013748903	BIRD	VENTILATOR VOL PORTBL	OXYGEN BLENDER DAMAGED DUE TO NEGLIGENCE BY SGT MUIR	O2 BLENDER REPLACED	RP
02870015	6515012911199	43110MC	DEFIBRILLATOR MONITOR	PRINTER DISPLAYING ERROR 8 CODE	REPAIRED UNIT, RECHARGED, INSPECTED UNIT	R
02910002	6520013984613	PAC6-7	COMPRESSOR DEHYDRATOR	MOISTURE INDICATOR NEEDS TO BE REPLACED	REPLACED DRYNESS IND.	RP

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

02910003	6515012935577	3040G	OXIMETER PULSE	DISPLAY READING E1 ERROR CODE	TI FOR TURN IN	C
02910004	5411012953433	ONE SIDE	SHELTER TACTICAL	OUTERSHELL PUNCTURED AND ROOF SEAL DAMAGED/ REPORT OF SURVEY INITIATED BY S4	REBUILT OUTER WEATHER SEAL, BELTON DID GREAT	R
03040001	6525013036235	AFP14X3MIL	PROCESSING MACHINE	UNIT NEEDS TO BE REBUILT	CONDITION CODE H SEE TI	C
03040002	6525013036235	AFP14X3MIL	PROCESSING MACHINE	UNIT NEEDS TO BE REBUILT	CONDITION CODE H SEE TI	C
03220001	6515012911198	43110MC	MONITOR-RECORDER ECG	not powering up.	REPLACED FUSE	R
10230001	6515014696996	VAPOR 2000	VAPORIZER	Evac to Ogden Depot for Cal	CALIBTATED AT DEPOT	D
10230002	6515014696996	VAPOR 2000	VAPORIZER	Evac to Ogden Depot for Cal	RETURNED FROM DEPOT FOR CAL	D
10230003	6515014696996	VAPOR 2000	VAPORIZER	Evac to Ogden depot for cal	CALIBRATED AT DEPOT	D
10230004	6515014696996	VAPOR 2000	VAPROIZER	Evac to Ogden Depot for Cal	CALIBRATED AT DEPOT	D
10230005	6515014696996	VAPOR 2000	VAPROIZER	Evac to Ogden Depot for Cal	RETURNED FROM OGDEN FOR CAL	D
10230006	6515014696996	VAPOR 2000	VAPROIZER	Evac to Ogden Depot for Cal	CALIBRATED AT DEPOT	D
10230007	6515014696996	VAPOR 2000	VAPROIZER	Evac to Ogden Depot for cal	CALIBRATED AT DEPOT	D
10230008	6515014696996	VAPOR 2000	VAPORIZER	Evac to Ogden Depot for Cal	RENTURNED FROM DEPOT CAL	D
10250001	6525012300603	FI-0212	ILLUMINATOR XRAY 115V	Needs new on/off switch	REPLACED ON/OFF SWITCH	RP
10360001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	Needs Batteries, printer error code 8	REPLACE DFUSE FOR PRINTER, REPLACED BATTERIES, FINAL INSPECTION	B
10570001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	BATTERY NEED TO BE REPLACED	REPLACED BATTERY	B

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

10570002	6515012911199	43110MC	DEFIBRILLATOR MONITOR	BATTERY NEEDS TO BE REPLACED	REPLACED BATTERY	B
10570004	5411012953433	ONE SIDE	SHELTER TACTICAL	TENSION CABLE CONNECTOR BROKEN		R
10580001	6545013087740	950S936	SINK UNIT SCRUB FLD		INSTRUCTED OPERATOR ON HOW TO SET UP UNIT	O
10580002	6515013589480	2590-120G	SUCTION APPAR PORTABLE		REPAIRED UNIT, PERFORMED OPERATIONAL CHECKOUT	R
10590001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	display malfunction	UNIT REPAIRED	R
10590002	5411012949866	TWO SIDE	SHELTER	light assembly doesnt work, area light switch doesnt work		R
10590004	6525013126411	CS-8952	X-RAY APP RADIOGRAPH	table wont tilt		R
10590005	9999999999999	99999	SECTION ZULU	Head board doesnt stay flat		R
10590006	6515014235872	160EL	MONITOR PT VITAL SIGN	Not charging	REPLACED FUSE,CHECKED OUT UNIT	R
10870002	6530013046497	308M	SUCTION APPAR PORTABLE	needs regulator	REPLACED VACUUM GAUGE ASSEMBLY AND LIGHT BULB	RP
10870003	6530013046497	308M	SUCTION APPAR PORTABLE	needs case	REPLACED CASE	RC
10870004	6530013046497	308M	SUCTION APPAR PORTABLE	needs case, gauge, and bulb	REPLACED CASE, VACUUM GAUGE AND LIGHT BULB	RC
10870005	6530013046497	308M	SUCTION APPAR PORTABLE	needs case, gauge, bulb	REPLACED CASE, GAUGE, AND BULB	RC
10870006	6530013046497	308M	SUCTION APPAR PORTABLE	needs case, gauge, and bulb	REPLACED CASE, GAUGE, AND BULB	RC
10880001	6530013046497	308M	SUCTION APPAR PORTABLE		NO FAULT FOUND	R
10890001	6530013061771	AB	STERILIZER SURGICAL	Will not heat	REAPIRED UNIT, OPERATIONAL CHECKOUT OK	R

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

10930001	4110012917046	61RF0503	REFRIGERATOR-FREEZE	Doesn't Work	CHECKED UNIT, UNIT FULLY MISSION CAPABLE	R
11000001	6515012911198	43110MC	MONITOR-RECORDER ECG	Doesn't run on battery power	BATTERY REPLACED	B
11010001	6695012552855	RT200	CALIBRATOR-ANALYZER	needs to go to Tracy Depot for Cal and repair	REPAIRED AT TRACY	D
11010002	6695012552855	RT200	CALIBRATOR-ANALYZER	Needs to go to Tracy Depot for cal and repair	REPAIRED AT TRACY	D
11010003	6515012911198	43110MC	MONITOR-RECORDER ECG	no power	PERFORMED AA	R
11020001	6545014296715	ZERO	SINK UNIT SCRUB FLD	Outlet valve broken. Water leaking from pump.	REPLACED OUTLET VALVE. INSPECTED GASKETS/O-RINGS. TIGHTENED PUMP.	RP
11410001	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	TI FOR TURN IN	C
11410002	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	TI FOR TURN IN	C
11410003	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	TI FOR TURN IN	C
11410004	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	CODE H,	C
11410005	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	CODE H	C
11410006	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	TI FOR TURN IN	C
11410007	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	CODE H	C
11410008	6515012935577	3040G	OXIMETER PULSE	E1 ERROR CODE	CODE H	C
11440001	4110012917046	61RF0503	REFRIGERATOR-FREEZE	COMPRESSOR SHORTED	TI FOR TURN IN	C
12050001	5411012953433	ONE SIDE	SHELTER TACTICAL	replace expander and sleeve screw on tension cable		R
12260001	6515013589480	2590-120G	SUCTION APPAR PRTBLE	need to replace check valve	REPLACED CHECK VALVE	RP
12260002	6520001490123	VMD	AMALGAMATOR ELEC 115V	speed control inop	ADJUSTED SET SCREW	R
12260003	6530013046497	308M	SUCTION APPAR PORTABLE	control knob loose	ADJUSTED SET SCREW	R
12260004	6530013046497	308M	SUCTION APPAR PORTABLE	no suction	OPERATOR ERROR	R

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

12330001	6530013748903	BIRD	VENTILATOR VOL PORTBL	Showing external power failure.	RECONDITIONED BATTERY VERIFIED OPERATION	B
12330002	6530013046497	308M	SUCTION APPAR PORTABLE	Case is cracked.	INSPECTED UNIT. UNIT FUNCTIONS PROPERLY.	RC
12330003	6530013046497	308M	SUCTION APPAR PORTABLE	Case is cracked.	REPLACED CASE	RC
12330004	6530013046497	308M	SUCTION APPAR PORTABLE	Case is cracked	REPLACED GAUGE AND CASE	RC
12330005	6515012935577	3040G	OXIMETER PULSE	Battery won't charge	REPLACED BATTERY	B
12330006	6515012935577	3040G	OXIMETER PULSE	Battery won't charge		B
12330007	6515012911198	43110MC	MONITOR-RECORDER ECG	Battery won't charge	PERFORMED AA	B
12330008	6515012911198	43110MC	MONITOR-RECORDER ECG	Battery won't charge	REPLACED BATTERY	B
12330009	6530013046497	308M	SUCTION APPAR PORTABLE	Case broken	RELPAED CASE	RC
12330010	6515012911198	43110MC	MONITOR-RECORDER ECG	Battery won't charge	PERFORMED INSPECTION. REFERRED UNIT TO DEPOT.	B
12330011	6515012935577	3040G	OXIMETER PULSE	Battery won't charge	BATTERY REPLACED	B
12330012	6530013046497	308M	SUCTION APPAR PORTABLE	Battery won't charge	REPLACED BATTERY	B
12330013	6515012935577	3040G	OXIMETER PULSE	Battery won't charge	BATTERY REPLACED	B
12330014	6515012935577	3040G	OXIMETER PULSE	Battery won't charge	UNIT TURNED IN	C
12330015	6530013046497	308M	SUCTION APPAR PORTABLE	Battery won't charge	BATTERY OK. REPLACED GAUGE.	B
12330016	6530012448101	MTA4700D	THERMOREGULATOR PATIE	Will not reach operating temp.	ADJUSTED THERMOSTAT	R
12360001	5411012953433	ONE SIDE	SHELTER TACTICAL	Hinge pins on passenger side(wall)/(floor) slightly extended from wall		R

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

12360003	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12360004	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12360005	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12360006	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12360007	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12360008	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12360009	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12360010	6515014571840	NARKOMED M	ANESTHESIA APPARATUS	replace battery	REPLACED BATTERY	B
12400001	5411012953433	ONE SIDE	SHELTER TACTICAL	The Ballast on the light assembly's are over heating and burning up causing the	REPLACED BALLAST	R
12400002	6520012965760	OPTILUX 400	CURING SYSTEM DENTAL	Missing power cord.	REPLACED POWER CORD	RP
12400003	6515012911198	43110MC	MONITOR-RECORDER ECG	Bad battery	REPLACED BATTERY	B
12490001	6530013046497	308M	SUCTION APPAR PORTABLE	unable to build pressure	OPERATOR ERROR	O
12560001	6515012911198	43110MC	MONITOR-RECORDER ECG	will not charge	PERFORMED AA	R
12560002	6515012911198	43110MC	MONITOR-RECORDER ECG		PERFORMED AA	R
12560003	6515012911198	43110MC	MONITOR-RECORDER ECG	Battery will not charge	PERFORMED AA	R
12560004	6515012911198	43110MC	MONITOR-RECORDER ECG	Battery will not charge		B
12560005	6530013046497	308M	SUCTION APPAR PORTABLE	Carrying case broken		RC

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

12560006	6530012544135	MSC-9007-11-21	CLEANER ULTR 120/230V	Timer inop		R
12560007	6640013165084	708T	CENTRIFUGE LAB TABLE	Rubber seal on instrument panel assy is cracked and torn		RP
12560008	6515012911199	43110MC	DEFIBRILLATOR MONITOR	Battery will not charge	REPLACED BATTERY	B
12560009	6530013046497	308M	SUCTION APPAR PORTABLE	Container broken		RC
12560010	6515013797852	0295-252	CUTTER-VACUUM ORTHO	Screw missing for head saw attachment		R
12560011	6545013087740	950S936	SINK UNIT SCRUB FLD	Pipe cracked on elbow	REBUILT SINK USING PARTS PACKAGE SENT FROM DEPOT	RP
12560012	5411012953433	ONE SIDE	SHELTER TACTICAL	Crack in ceiling		R
12630001	6515014235872	160EL	MONITOR PT VITAL SIGN	power cord broken		RP
12630002	6530013748903	BIRD	VENTILATOR VOL PORTBL	battery will not charge	REPLACED BATTERY	B
12630003	6515012911198	43110MC	MONITOR-RECORDER ECG	will not charge	REPLACED BATTERY	B
12630004	6515012935577	3040G	OXIMETER PULSE	will not charge	REPLACED BATTERY	B
12630005	6515011507840	FLOTEM IIE	WARMER BLOOD 115/230V	incorrect temperature readings		R
12630006	6515012911199	43110MC	DEFIBRILLATOR MONITOR	hinge pin bent	BENT HINGE BACK IN POSITION	R
12630007	6515012911198	43110MC	MONITOR-RECORDER ECG	will not charge	REPLACED BATTERY	B
12630008	6520001817349	CM185	CHAIR&STOOL UNIT DENT	connecting pin missing, hydraulics inoperative		R
12630009	6520001817349	CM185	CHAIR&STOOL UNIT DENT	wing nut will not tighten on light pole bracket, chair tilts improperly when		R
12630010	6520012052349	FUS336	DEN OPER TREAT UNIT	saliva ejector pushing out air		R

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

12670001	6640012491212	006974	SHAKING MACHINE LAB	pipette support is broken, part # 1002306 page 6 of mfg lit		RP
12680001	6515012935577	3040G	OXIMETER PULSE	Replace battery	REPLACED BATTERY	B
12680002	6640012580006	G-560	SHAKING MACHINE LAB	Speed Knob is missing, MFG Phone # is 631-567-4700		RP
12700001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	200 energy select will not energize	FLEXIBLE, SWITCH REPLACED. A3A1 ASSY APEX PADDLE ASSY REPLACED	RP
12700002	6530013046497	308M	SUCTION APPAR PORTABLE	Replace Pressure gauge	REPLACED PRESSURE GAUGE. CHANGED LITE BULB.	RP
12700003	6530013046497	308M	SUCTION APPAR PORTABLE	Replace pressure gauge	REPLACED PRESSURE GAUGE. CHANGED LITE BULB.	RP
12750001	6545014296715	ZERO	SINK UNIT SURG SCRUB	BASIN CRACKED		RP
12770001	6545013087740	950S936	SINK UNIT SCRUB FLD	cracked inner pipe		RP
12850001	6515012911198	43200MC	MONITOR-RECORDER ECG	Printer does not work.		R
13020001	6525014226122	MINI MEDICAAL MIL	PROCESSOR X-RAY	Broken Racks	NEW RACK PURCHASED, ACCESORY ITE SO NO PARTS CHARGED	RP
20070001	6530009262151	M138	STER SURG DRES16X36IN	Keeps tripping Circuit Breaker	OPERATOR ERROR	O
20070003	6520013984613	PAC6-7	COMPRESSOR DEHYDRATOR	The cycle from 80psi to 60psi takes longer than 15secs	OPERATOR ERROR	O
20070004	6515011507840	FLOTEM IIE	WARMER BLOOD 115/230V	Power switch broken.		RP
20070005	6520013984613	PAC6-7	COMPRESSOR DEHYDRATOR	Moister indicator bad		RP

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

20070006	5411012953433	ONE SIDE	SHELTER TACTICAL	Close out panel side and end wall are missing 9 screws.Light makes unusual		R
20070007	4110012917046	61RF0503	REFRIGERATOR-FREEZE	Does not cool.		R
20070008	6520013984613	PAC6-7	COMPRESSOR DEHYDRATOR	Cycle pressure takes only 4 sec to increase from 60psi to 80psi	NO PROBLEM FOUND	R
20100001	6530013046497	308M	SUCTION APPAR PORTABLE	Broken case, broken gauge.		RC
20150001	6515012870607	ATS1500	TOURNIQUET SYS PNEU	Power cord hanging out of unit		R
20170001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	PRINTER WILL NOT PRINT		R
20170002	8115012417524	MIL-C-52661	CONTAINER 105-11300-A	BAD GAUGE		RP
20250001	6530013748903	BIRD	VENTILATOR VOL PORTBL	Case damaged	REPLACED DAMAGED CASE	RC
20280001	8115012417524	MLI-C-52661	CONTAINER 105-11300-A	Needs certification		R
20280002	5411012953433	ONE SIDE	SHELTER TACTICAL	The locking hole for the lock to be secured is broken off the double door side.		R
20280003	6545013087740	950S936	SINK UNIT SCRUB FLD	Broken valve		RP
20290001	6530013046497	308M	SUCTION APPAR PORTABLE	Adjustment knob needs repair		R
20350001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	Power board bad.No power from defib	REPAIRED	RP
20360003	6515013589480	2590-120G	SUCTION APPAR PRTBLE	Unit not cycling properly		R
20360004	6515013589480	2590-120G	SUCTION APPAR PRTBLE	Actual suction at 120mmhg is 150mmhg		R
20420001	6530013046497	308M	SUCTION APPAR PORTABLE	battery will not charge	REPLACED BATTERY	B
20700001	6520012052349	FUS336	DEN OPER TREAT UNIT	Salava ejector pushing out air	OPERATOR ERROR	O

**Appendix A**  
**Raw Data from 249<sup>th</sup> TAMMIS**

20720109	6530012448101	MTA4700D	THERMOREGULATOR PATIE	Unit inop	CLEANED FLOW SWITCH,LINES AND TANK.	R
20720110	6530012448101	MTA4700D	THERMOREGULATOR PATIE	Remove from service light is displayed		R
20720111	6515012911199	43110MC	DEFIBRILLATOR MONITOR	Error code F2	REPLACED BATTERY	B
20720112	6530013046497	308M	SUCTION APPAR PORTABLE	case broken		RC
20720113	6530012448101	MTA4700D	THERMOREGULATOR PATIE	will not heat, alarm and remove from service light comes on		R
20720114	5411012953433	ONE SIDE	SHELTER TACTICAL	Inlet panel screws missing, jack locking pin inop too large		R
20720115	6515012935577	3040G	OXIMETER PULSE	battery will not charge	REPLACED BATTERY	B
20720116	6530013253746	SPECIFIC	CABINET SOL WARM ELEC	warmer knob broken		RP
20720117	5411012949866	TWO SIDE	SHELTER	knock out panel missing 6 screws, latches missing for ceiling and side walls		R
20980001	6640012580006	G-560	SHAKING MACHINE LAB	missing knob		RP
20980002	6640013165084	708T	CENTRIFUGE LAB TABLE	RPM guage inop		RP
20990001	6515012911199	43110MC	DEFIBRILLATOR MONITOR	defib inop	REPAIRED BY HILL DEPOT	D
20990002	6515012911199	43110MC	DEFIBRILLATOR MONITOR	monitor damaged in shipment from hill AFB, monitor only sent back to HILL Depot		D
21060001	6515012935577	3040G	OXIMETER PULSE	Will not illuminate		R
21060002	6515013136242	600	THERMOMETER CLINICAL	Will not come on		R
21190001	6530013046497	308M	SUCTION APPAR PORTABLE	Week battery	REPLACED BATTERY	B
21200001	6515014235796	160EL	MONITOR PATIENT VITAL	Will not work with battery power only		B

Appendix A  
Raw Data from 249<sup>th</sup> TAMMIS

21210001	6515013136242	600	THERMOMETER CLINICAL	Missing battery terminals		B
----------	---------------	-----	-------------------------	---------------------------	--	---

# **Sample Data Collection Monthly Report July 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
Information Systems Support Inc.  
Chris Riha MS, CCE  
Report # 007

# Table of Contents

Introduction-----	1
Scope-----	1
Data Analysis-----	2
Recommendations-----	5
Field Comments-----	6
Appendix A-----	7
Appendix B-----	11
Appendix C-----	21

## List of Tables

Table A, Average PT times for W05JAA Sustainment	Page 2
Table B, Failure Rates for W05JAA Sustainment	Page 2
Table C, Parts costs from Hill AFB	Page 4
Table D, Parts Quantities from Hill AFB	Page 4

## List of Charts

Chart 1, Percentages of Operators literature included from W05JAA sustainment	Page 3
Chart 2, Percentages of Proper labels included from W05JAA sustainment	Page 3
Chart 3, Percentages of Proper accessories included from W05JAA sustainment	Page 3

## Acknowledgements

This report was made possible with the assistance of Mr. Lamar Reese who provided data from the W05JAA, (Korea), sustainment. Also thanks to Ms Judy Nunnally for providing the MEMMS data from Hill AFB.

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This report, the seventh Sample Data Collection (SDC) report, will provide analysis from the W05JAA, Korea Sustainment that occurred in April of 2002.

Parts utilization and cost analysis from the Medical Equipment Maintenance Management System (MEMMS) data collected from the AMEDD Medical Repair Depot at Hill Air Force Base is also analyzed in this report. The data from Hill is from 1 Jan 2002 through June 2002.

**Data Analysis:**

WO5JAA Korea Sustainment: The most time consuming medical maintenance items are listed in Table A, the raw data is listed in Appendix A.

Table A

NSN	Item description	Average PT, in hours
6525013849296	X-RAY APPARATUS RADIOGRAPHIC MEDICAL:	8.0
6525013253740	X-RAY APPARATUS: LOW CAPACITY PORT	3.0
6530012448101	THERMOREGULATOR: PATIENT AUTO&MANUAL 115/220V 50/60 HZ AC	2.0
6520001817349	CHAIR AND STOOL UNIT: DENTAL OPERATING PORTABLE	1.0
6530013408001	STERILIZER SURG INSTR DRESS AC 115 TO 230 V ELEC 14X23.5X19.25"	1.0
6530014428720	STERILIZER SURGICAL INSTRUMENT AND DRESSING120/230V	1.0
6520012724531	DENTAL OPERATING AND TREATMENT UNIT FIELD:	0.8
6515013096647	ELECTROSURGICAL APPARATUS MOBILE 115V 50/60HZ OR 220V 50HZ AC:	0.7
6520012052289	LIGHT SET DENTAL OPERATING: 115V	0.6
6525014338676	CAMERA IDENTIFICATION X-RAY	0.6
6520011327970	N/A	0.6

Table B lists the devices and the associated failure rates of the medical devices noted during the W05JAA sustainment.

Table B

NSN	Item description	Parts Not Required	Parts Required	Total Number of Devices	Failure Rate
6530012440708	LIGHT SURG CEIL: 120/230V50/60HZ	0	14	14	100%
6525013253740	X-RAY APPARATUS: LOW CAPACITY PORT	0	3	3	100%
6520014002005	DENTAL HANDPIECE SET FIELD PORTABLE 110/220 VOLTS	0	2	2	100%
6530012376088	IRRIGATOR SURGICAL 120/230V50/60HZ AC PUMP	0	2	2	100%
6520014679899	ULTRASONIC CLEANER	0	1	1	100%
6630013449996	COAGULATION TIMER UNIT: PLASMA	0	1	1	100%
4610012525592	DEMINERALIZER WATER ION EXCHANGE	1	1	2	50%
6520014565709	CURING UNIT DENTURE 110V 60HZ 11.5X11 INCHES	1	1	2	50%
6525012685152	CAMERA IDENTIFICATION X-RAY	3	2	5	40%
4110012494476	REFRIGERATOR MECHANICAL BLOOD BANK 5.4CU FT	2	1	3	33%
6530013253746	CABINET SOLUTION WARMING:	3	1	4	25%
6515013046497	SUCTION APPAR OROPHARYNGEAL	28	8	36	22%
6515014534003	DEFIBRILLATOR MONITOR RECORDER	12	3	15	20%
6520001391246	COMPRESSOR - DEHYDRATOR DENTAL EQUIPMENT:	22	5	27	19%
6515012672727	SUCTION APPAR SURG	6	1	7	14%
6530013432033	LIGHT SURGICAL FIELD: 110 VOLT AC OR 24 VOLT DC	39	2	41	5%

Note: Surgical Light, 6530012440708, gas cylinders were the only parts installed. The Low Cap X-Ray units required a variety of parts, short legs, mAs board and X-Ray tube.

Chart 1 shows the percentage of equipment that had the 'proper operators' literature packaged with the equipment.

Chart 1

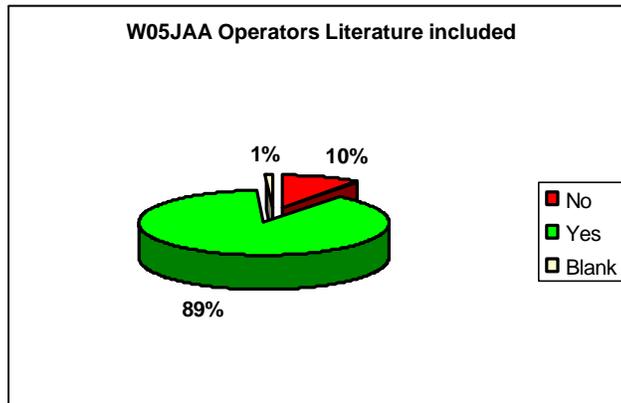


Chart 2 shows the percentage of equipment that had the 'proper labels' affixed.

Chart 2

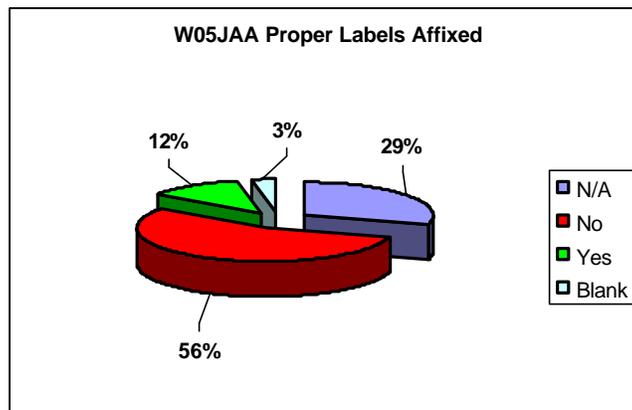
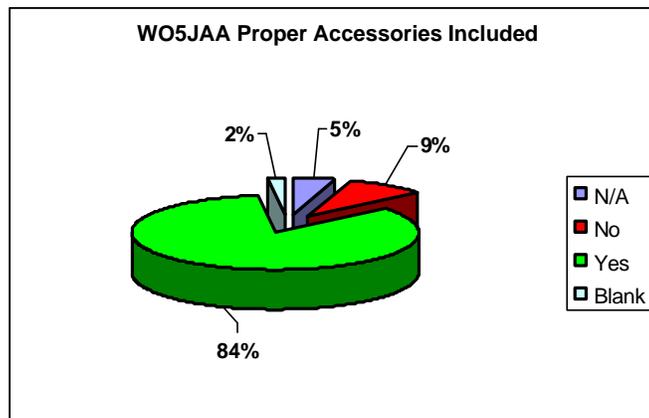


Chart 3 shows the percentage of equipment that had the 'proper accessories' packaged.

Chart 3



**Hill Air Force Base MEMMS Data:** Table C lists the top ten expenditures on parts, note the number represented are aggregate totals per specific part. All parts expenditures totaling over \$100 are shown in Appendix B.

Table C

Parts Nomen	Cost
AVIAN 2 YEAR OVERHAUL KIT	\$56,000.00
PRINTER ASSEMBLY (EXCHANGE ITEM)	\$34,780.00
BATTERY/ ACCESS BATT. # SLA12180)	\$23,063.82
BATTERY 12 VOLT, (part number MLA43131D)	\$21,687.64
BATTERY, SET OF TWO	\$20,215.00
SWIVEL CASTERS	\$19,357.53
UPPER CASE (MFR.# 703-0750-15)	\$13,996.50
O2 SENSOR(MFG#6850645)EXPIRATION???	\$13,497.00
BATTERY--ACCESS# MLA518	\$12,847.79
LOWER CASE ASSY.// BOTTOM COVER	\$9,675.00

Note: Total parts expenditures for Hill from 1 Jan 2000 through June 2002 were \$651,297.36

Table D list the top ten parts replaced listed by total number replaced.

Table D

Parts Nomen	QTY replaced
325M SUCTION HARD CASE	211
HOSE, STERILE, SUCTION, 6' LG.	207
SWIVEL CASTERS	203
BATTERY/ ACCESS BATT. # SLA12180)	175
BATTERY 12 VOLT, (part number MLA43131D)	162
BATTERY (MFG# MLA2640) ACCESS BATT.	112
BATTERY--ACCESS# MLA518	90
GAS SPRING CYLINDER(MFG#65024S)	86
LOWER CASE ASSY.// BOTTOM COVER	86
VACUUM GAUGE	83

**Recommendations:**

The information in Table B documents the known problem of the gas cylinders failing in the Gettinge/Castle surgical lamps, 6530012440708. The failure rate documented from the W05JAA would warrant that the manufacture be approached about a retrofit for the cylinders, (note: while the failure rate documented in Table B is 100% that does not mean that 100% of the cylinders failed, but that at least one cylinder on every lamp failed)

Table B also shows a 100%, (2 for 2), failure rate on the field dental hand piece, 6520014002005. Both units exhibited the same failure, a cracked knob on the battery pack. Perhaps these units could be packaged in different manner to prevent this problem in the future.

Chart 2 depicts that 56% of devices did not have the proper labels affixed to them. Further sample data should be collected to determine if the labels are falling off during storage or where not installed.

The MEMMS data from Hill AFB should be re-analyzed with work orders included in the query to be analyzed, ( that information was not included in the data sent to the SDC team). With the work order number the yearly tabulation of parts expenses could be calculated and archived and also the failure rate of individual components within a device could be tracked.

**Field Comments:**

- Email submitted from MAJ Thomas Winthrop, WRAMC, 5 March 2002 to LTC Robinette documents problems with the Steris 2080 OR table kidney supports and hand controls breaking.
- Email submitted from Peter Dudley, Hill AFB to Yoshi Shino documents that the arthroscopic unit, 6515013181558 is no longer supported by the manufacturer.
- ----Original Message-----  
**From:** Boards, Alphonso CW2 [mailto:boardsa@campbell.army.mil]  
**Sent:** Tuesday, June 18, 2002 4:45 PM  
**To:** 'Pierson Jerry C Civ MMA/MCMR'; 'jack.rosarius@det.amedd.army.mil'  
**Subject:** RE: PLL for Med Maint "new equipment"  
**Importance:** High

Mr Pierson and Mr. Rosarius,

We've compiled this list first for deployment to Uzbekistan then to assist the 339th to compile PLL requirements. We saw this as the minimum PLL and TMDE requirements TAT or (Medical Equipment Repairers) for a 44 Bed Slice with the MMS make-up prescribed in the call forward documents. Of course the lists may and should be modified to meet the need of individual units. Please also consider all Laboratory Consumable Requirements -- Very Important.

[sturzebeks@BRAGG.ARMY.MIL](mailto:sturzebeks@BRAGG.ARMY.MIL); [hortonwl@BRAGG.ARMY.MIL](mailto:hortonwl@BRAGG.ARMY.MIL)

I recommend that you contact CW4 Sturzbecker and/or SSG Horton at the 32nd MEDLOG. They may be able to provide a repair parts "Demand Log", if available, of part requirements from the theatre. It would be a bonus to be able to glean the historical knowledge from their experiences. I hope this helps you. Please don't hesitate to contact me if I may be of additional assistance.

**CW2 ALPHONSO BOARDS****86<sup>TH</sup> CSH**

Note: Appendix C contains the PLL, TMDE and the consumables Chief Boards is referring to.

**Appendix A  
Raw Data Average PT times for W05JAA Sustainment**

<b>NSN</b>	<b>Item desc</b>	<b>Average PT</b>
6525013849296	X-RAY APPARATUS RADIOGRAPHIC MEDICAL:	8.0
6525013253740	X-RAY APPARATUS: LOW CAPACITY PORT	3.0
6530012448101	THERMOREGULATOR: PATIENT AUTO&MANUAL 115/220V 50/60 HZ AC	2.0
6520001817349	CHAIR AND STOOL UNIT: DENTAL OPERATING PORTABLE	1.0
6530013408001	STERILIZER SURG INSTR DRESS AC 115 TO 230 V ELEC 14X23.5X19.25"	1.0
6530014428720	STERILIZER SURGICAL INSTRUMENT AND DRESSING120/230V	1.0
6520012724531	DENTAL OPERATING AND TREATMENT UNIT FIELD:	0.8
6515013096647	ELECTROSURGICAL APPARATUS MOBILE 115V 50/60HZ OR 220V 50HZ AC:	0.7
6520012052289	LIGHT SET DENTAL OPERATING: 115V	0.6
6525014338676	CAMERA IDENTIFICATION X-RAY	0.6
6520011327970	N/A	0.6
6515014534003	DEFIBRILLATOR MONITOR RECORDER: 120/230V 50/60HZ AC OR DC	0.5
4110008376441	ICE MAKING MACHINE CUBE: MANUAL DISPENSING 200LB CAP PER 24HR PD	0.5
4110008828450	REFRIGERATOR MECHANICAL HOUSEHOLD: ELEC 14.5 CU FT MAX CAP	0.5
6515013809986	PACEMAKER CARDIAC 120/230V 50/60HZ AC DESK TOP NONINVASIVE TEMP	0.5
6515014341999	BLOOD FLUID WARMER&PRESSURE INFUSION SYSTEM 120/230V AC 50/60HZ	0.5
6520001407663	DENTAL OPERATING AND TREATMENT UNIT FIELD:	0.5
6520014463783	CHAIR DENTAL OPERATING FOLDING ADJ HEADREST PAD ARM SLING SPT	0.5
6525014681672	X-RAY UNIT FIELD DENTAL	0.5
6530009262151	STERILIZER SURGICAL DRESSING: PRESSURE FUEL HTD CRS 16X36 IN	0.5
6530013539883	TABLE OPERATING FLD:	0.5
6630013165085	ANALYZER CENTRIFUGAL HEMATOLOGY: 120/230V 50/60HZ AC	0.5
6630013449996	COAGULATION TIMER UNIT: PLASMA SEMIAUTOMATIC TESTING	0.5
6640013087749	CENTRIFUGE LABORATORY REFRIGERATED 120/230V 50/60HZ AC:	0.5
6640013155382	CENTRIFUGE LAB 4000RPM 120/230V 50/60HZ SGL PHASE AC GEN PURPOSE	0.5
6515012911199	N/A	0.5
6515011167903	VENTILATOR MOBILE VOLUME:	0.5
6515014322707	MONITOR PATIENT VITAL:	0.5
6520005390750	COLLECTOR UNIT DUST 115 V 60 HZ AC 1/2HP MOTOR 1725 RPM SINGLE	0.5
6520012139496	FORMER VACUUM DENTAL 120V MIRROR FINISH	0.5
6525014226122	PROCESSING MACHINE RAD FILM TABLE TOP: COMPACT120/230V50/60HZ AC	0.5
6530013432033	LIGHT SURGICAL FIELD: 110 VOLT AC OR 24 VOLT DC	0.4
6530014640267	VENTILATOR VOLUME PTBL:	0.4
6515011741477	SUCTION & PRESS APPAR 115/230V 50/60HZ AC 19X15X7" PRTBLE W/CASE	0.4

**Appendix A  
Raw Data Average PT times for W05JAA Sustainment**

<b>NSN</b>	<b>Item desc</b>	<b>Average PT</b>
6515013784529	STIMULATOR ULTRASOUND HIGH GALVANIC 120/230V 50/60HZ AC 20 WATTS	0.4
6520012060299	N/A	0.4
6520012918389	GRINDING & POLISHING MACHINE DEN LAB 24000RPM 115/230V AC 60HZ	0.4
6520014464170	LIGHT DENTAL OPERATING FIELD COMMAND AIR PORT LIGHT 115/230 V	0.4
6630014689142	BLOOD CELL COUNTER:	0.4
6640010689612	CENTRIFUGE LABORATORY MICROHEMATOCRIT BATTERY POWERED 9 VOLT DC	0.4
6525012685152	CAMERA IDENTIFICATION X-RAY TO IDENTIFY ESSENTIAL PATIENT INFO	0.4
6530013253746	CABINET SOLUTION WARMING:	0.4
6515012911198	MONITOR-RECORDER ECG:	0.4
6515013046497	SUCTION APPAR OROPHARYNGEAL 120V 50/60/400HZ AC PRTBLE BTRY OPER	0.4
6515014322711	MONITOR PATIENT VITAL SIGNS:	0.4
6525012965059	DUPLICATOR DENTAL XRAY 115V 18X10"X8" DUPLICATES UP TO6"X12"FILM	0.4
6520001391246	COMPRESSOR - DEHYDRATOR DENTAL EQUIPMENT:	0.3
6515012672727	SUCTION APPAR SURG 120/230V 50/60HZ MOBILE PROGRAMMABLE HIGH VOL	0.3
6515014661478	PUMP INTRAVENOUS INFUSION POWER INFUSER RAPID IV MODEL M100	0.3
6515012935577	OXIMETER PULSE: 120/230V 50/60HZ AC OR BATTERY OPERATED	0.3
6515011507840	WARMER BLOOD 115/230V 50/60HZ AC SOLID STATE PRTBL W/50IV EXT SE	0.3
4110011173902	REFRIGERATOR MECHANICAL COMMERCIAL: BLOOD BANK	0.3
4110012494476	REFRIGERATOR MECHANICAL BLOOD BANK 5.4CU FT	0.3
4110014500060	FREEZER MECHANICAL BLOOD PLASMA 24X25X36INCHES MINUS 30 DEG TEMP	0.3
6515012696056	ELECTROSURGICAL APPARATUS MOBILE 115V 50/60HZ OR 220V 50HZ AC:	0.3
6515013797852	CUTTER-VACUUM ORTHOPEDIC CAST 120/230V 50/60HZ AC PORTABLE	0.3
6515014138046	DERMATOME PORTABLE 110/220V 50/60HZ F/SURGICAL SKIN GRAFTING	0.3
6520014002005	DENTAL HANDPIECE SET FIELD PORTABLE 110/220 VOLTS	0.3
6520014565709	CURING UNIT DENTURE 110V 60HZ 11.5X11 INCHES	0.3
6520014679899	ULTRASONIC CLEANER	0.3
6525012839958	PROCESSING MACH RAD FILM AUTO AC 115/220V 50/60HZ 23X15.187X12"	0.3
6530007113000	HEATER HEAT TREATMENT PAD FOUR PAD 120V 50 OR 60 HZ AC	0.3
6530012376088	IRRIGATOR SURGICAL 120/230V50/60HZ AC PUMP FLOW RATE1000ML P/MIN	0.3
6530014551653	VENTILATOR VOLUME PTBL 8.870X11.5IN UNI-VENT 120/220V AC	0.3
6630013215592	N/A	0.3
6630014112405	ANALYZER BLOOD:	0.3
6630014151593	ANALYZER CLINICAL CHEM:	0.3
6640012461989	WATER BATH ELECT RECT 26"L 13"W 7.25"D AC 110/220V 50/60HZ 1120W	0.3

**Appendix A  
Raw Data Average PT times for W05JAA Sustainment**

<b>NSN</b>	<b>Item desc</b>	<b>Average PT</b>
6640012491212	SHAKING MACHINE LAB RECIPROCATING 120/230V 50/60HZ 15WATTS	0.3
6640012714094	INCUBATOR DRY HEAT 25TO115DEG C 120/230V 50/60HZ AC 600WATTS	0.3
6640014462597	INCUBATOR BIOLOGICAL	0.3
6515012870607	TOURNIQUET SYSTEM PNEUMATIC AUTO 110/220V 50/60HZ AC WITH CASE	0.3
6530012544135	CLEANER ULTRASONIC: 120/230V 50/60CYC HZ 23.75X17.75X31 IN 18GAL	0.3
6530012440708	LIGHT SURG CEIL: 120/230V50/60HZ	0.3
6520001490123	AMALGAMATOR ELECTRIC DENTAL 3700-4200RPM 120V 60HZ 100W	0.3
6530013087740	SINK UNIT SCRUB FIELD HOSPITAL CRS 30 INCH: DEPMEDS	0.2
6515013274155	LIGHT ENDOSCOPIC INSTR FIBER OPTIC 18X14X10" 120/240V 50/60HZ AC	0.2
7910013270757	CLEANER VACUUM ELECTRIC VERTICAL TANK 120/230V 50HZ 900W AC	0.2
4110012917046	REFRIGERATOR-FREEZER MECH FIELD WARD 4.5CUFT 110/120V 50/60 HZ	0.2
6515014177875	LIGHT SOURCE ENDOSC	0.2
6515014350050	SUCTION APPARATUS SURG PROGRAMMABLE BATTERY 11-30V OR AC PRTBLE	0.2
6515014864310	PUMP INTRAVENOUS INFUSION 3-CHANNEL VOLUMETRIC PORTABLE	0.2
6515012455056	STETHOSCOPE ELECTRONIC ULTRASONIC PRTBLE 8MHZ W/CASE 5.6X2.6X.9"	0.2
4110014258009	REFRIGERATOR-FREEZER MECHANICAL FIELD WARD 4.5CUFT FREEZER OLIVE	0.2
3540004572699	SEALING MACHINE ELECTRONIC 115 VOLT 50-60 HZ AC	0.2
3540012520051	SEALING MACHINE HEAT 110 VOLTS	0.2
4610012525592	DEMINERALIZER WATER ION EXCHANGE 120/240 VOLT 50/60 HZ AC	0.2
6515012935578	ULTRASONIC UNIT BLOOD FLOW DETECTION 120/230V 50/60HZ AC DOPPLER	0.2
6515013508172	N/A	0.2
6515013864354	STIMULATOR NERVE TRANSCUTANEOUS PORTABLE LIGHTWEIGHT IN CASE	0.2
6520012963743	SANDBLASTING UNIT DENTAL LABORATORY 120/230V 50/60HZ 15 WATTS	0.2
6520012965760	CURING SYSTEM DEN VISUAL LIGHT PORTABLE FIBER OPTIC 120V 60HZ AC	0.2
6520012968420	ENGINE & HANDPIECE DEN LAB 117VOLT 50/60HZ AC PORTABLE	0.2
6525011256593	CHAMBER X-RAY FILM PROCESSING DENTAL TABLE TOP MANUAL DARKROOM	0.2
6640011432055	CENTRIFUGE LAB ROTOR 3400 RPM 110/220V 50/60HZ 150W AC PORTABLE	0.2
6640012219091	INCUBATOR BACTERIOLOGICAL 53-59 DEG CELSIUS INTEGRAL HEAT STEAM	0.2
6640012406876	SOLDERING UNIT LABORATORY 10TEMP LT&HEAVY SOLD PREC/NON-PREC MET	0.2
6640012918390	STIRRER-HOT PLATE MAG LAB AC 50/60HZ 120V 700 DEG F 5.5X11X7.25"	0.2
6640013165084	CENTRIFUGE LAB TRUNNION SEPARATION 6 HD PLACE TABLE 120/230V AC	0.2
6640014315696	ROTATOR LABORATORY BASE&TOP MOUNTED PLATFORM120V AC 50/60HZ.4AMP	0.2
6515014660971	OXIMETER PULSE FINGER PULSE OXIMETER SELF CONTAINED	0.2
6515014696996	VAPORIZER ANESTHESIA SEVOFLURANE VAPOR 2000	0.2

**Appendix A**  
**Raw Data Average PT times for W05JAA Sustainment**

<b>NSN</b>	<b>Item desc</b>	<b>Average PT</b>
6515013003530	STIMULATOR PRPHRL NRV	0.1
6515013429195	THERMOMETER CLINICAL HUMAN 120/230V 50/60HZ AC ELEC BTRY POWER	0.1
6640012416968	SHAKING MACHINE LAB OSCILLATING 120/230V 50/60HZ AC	0.1
6640012580006	SHAKING MACHINE LABORATORY 120/230V 50/60 HZ 6.2"LX6"HX5"W	

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
AVIAN 2 YEAR OVERHAUL KIT	\$56,000.00
PRINTER ASSEMBLY (EXCHANGE ITEM)	\$34,780.00
BATTERY/ ACCESS BATT. # SLA12180)	\$23,063.82
BATTERY 12 VOLT, (part number MLA43131D)	\$21,687.64
BATTERY, SET OF TWO	\$20,215.00
SWIVEL CASTERS	\$19,357.53
UPPER CASE (MFR.# 703-0750-15)	\$13,996.50
O2 SENSOR(MFG#6850645)EXPIRATION???	\$13,497.00
BATTERY--ACCESS# MLA518	\$12,847.79
LOWER CASE ASSY././ BOTTOM COVER	\$9,675.00
GAS SPRING CYLINDER(MFG#65024S)	\$9,320.61
CRANKSHAFT ASSEMBLY	\$8,938.90
PS-50B POWER SUPPLY	\$8,625.00
SIMULATOR CARTRIDGE	\$7,500.00
BATTERY PACK 6V	\$6,973.00
SINK BASIN (HARD PLASTIC)	\$6,906.60
325M SUCTION HARD CASE	\$6,840.00
INTERNAL BATTERY(ACCESS SLA1234)	\$6,697.00
MANIFOLD-SOLENOID,COIL,REGULATOR	\$6,667.50
RELAY, ARMATURE (CONTACTOR) (OBS)	\$6,355.30
MAINSTREAM CO2 SENSOR (EXCHANGE)	\$6,200.00
FLOW MANIFOLD (BUY FROM TRYCO)	\$6,137.12
POWER MODULE	\$5,820.00
TE ASSEMBLY	\$5,533.50
TOP COVER DOOR (CLEAR PLASTIC)	\$4,797.00
A2A2BD CONTROL CIRCUIT BOARD	\$4,600.00
HEPA FILTER	\$4,428.00
CONTROLLER PCB	\$4,295.00
DISPLAY PCB	\$4,248.05
MOTOR, 1HP, SINGLE PHASE, A.C.	\$4,201.20
BATTERY PACK	\$4,115.00
BATTERY (MFG# MLA2640) ACCESS BATT.	\$4,057.56
A2A3BD ECG POWER SUPPLY BOARD	\$4,000.00
ASSEMBLY, BATTERY PACK	\$3,864.00
PS/RF PCB	\$3,851.49
A3A1 ASSY. RECORDER ASSY.	\$3,600.00
MONITOR PCB (NEW)	\$3,586.00
A2A1BD POWER SUPPLY-OEM	\$3,520.00
SERVICE KIT,LCD ASSY,T/M/A/ SERIES	\$3,496.00
VACUUM GAUGE	\$3,374.40
BOTTOM CASE	\$3,282.00
PCB ASSY.	\$3,242.00
FRONT PANEL ASSEMBLY	\$3,200.00
HEATER ASSEMBLY	\$3,091.56
SWITCH,FLOW ALTERED/OLD P#77377-000	\$3,041.24

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
MEMBRANE PANEL	\$3,034.00
BATTERY MFG. # 200-0502-010	\$3,000.00
THERMAL TEST CARTRIDGE	\$3,000.00
NICAD BATTERY PACK	\$2,977.50
CARTRIDGE, O2 SENSOR (EXPIRATION?)	\$2,959.38
ANALOG PCB ASSY.	\$2,899.80
ELECTRODE, REFERENCE	\$2,820.69
POWER BOARD	\$2,795.60
REGULATOR, HIGH PRESSURE, OXYGEN	\$2,755.90
DISPLAY BOARD	\$2,671.42
CONTROL BOARD ASSEMBLY	\$2,600.00
BATTERY (ACCESS SLA1234)	\$2,512.36
STEPDOWN TRANSFORMER MODULE	\$2,454.60
CONDUCTIVE GEL (ORDER 10 PER CASE)	\$2,396.10
SPIROMED (FOR REPAIR SEE SE4106362)	\$2,372.52
SEE P/N 120-0475-00 PRINTER ASSY.	\$2,350.00
PUMP CARTRIDGE (BOX OF 10)	\$2,253.84
MOTHER BOARD ASSY.(EXCHANGE P/N ^)	\$2,250.00
CONTROL PANEL ASSY	\$2,229.79
EXPOSURE SWITCH	\$2,100.00
MINISOOM BOARD	\$2,100.00
A2A5 CRT DEFLECTION CIRCUIT	\$2,070.00
ELECTRODE, NA+ SODIUM	\$2,031.26
BATTERY ANALYZER 7400 CADEX	\$1,995.00
REGULATOR ASSY OXYGEN	\$1,994.60
EXTERNAL CABLE	\$1,983.68
BATTERY (SEE PART # 704-0750-03	\$1,904.14
O2 FLOW METER ASSY.	\$1,828.00
POWER SUPPLY PCB	\$1,814.97
ACCESSORY KIT, DEFIBRILLATOR	\$1,806.64
A2 MONITOR ASSY. (LESS PCB'S)	\$1,800.00
SINK PUMP/MOTOR (MFG.# LC-2CP-MD)	\$1,761.20
ELECTRODE, K+ POTASSIUM	\$1,757.52
MOTOR ASSY.	\$1,738.00
O2 SENSOR HOUSING ASSY.	\$1,685.00
ELECTRICAL CORD ASSEMBLY	\$1,675.76
A2A4BD ECG MEMORY CIRCUIT BOARD	\$1,650.00
BATTERY PACK W/FUSES	\$1,584.00
ELECTROMETER BOX ASSY.	\$1,583.45
CALIBRATION KIT	\$1,566.40
ECG CABLE 3 LEAD	\$1,507.00
308 SUCTION HARD CASE	\$1,476.00
GAUGE, PRESSURE,JACKET OBSOLETE	\$1,467.45
FORCEPS, 7" OBSOLETE	\$1,432.00
FRONT CHASIS (INCLUDING WINDOW)	\$1,425.00

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
PEEP VALVE	\$1,404.00
CENTURY II CONTROL ASSY	\$1,380.00
LAMP, HALOGEN, IND., 60W 24V	\$1,354.56
BP REG. CUFF ASSY. (MFG#008-0006-98	\$1,350.00
A2A2BD CONTROL CIRCUIT	\$1,320.00
PATIENT CIRCUIT KIT	\$1,306.00
TABLE SUPPORT ASSY.	\$1,300.60
VACUUM DRYER	\$1,300.00
DEFIBRILLATOR PCB	\$1,252.08
LEAD SET (BRASS EAGLE)	\$1,228.38
COMPLETE SOLENOID VALVE	\$1,207.05
SWITCH, FLOW SEE NEW P# 77451-000	\$1,190.00
DNF LUMINATOR CARTRIDGE	\$1,175.84
GAUGE, PRESSURE,CHAMBER (OBSOLETE)	\$1,173.96
2-STAGE GAS REGULATOR	\$1,172.00
BATTERY (MFG.# SLA613)	\$1,168.30
SOCKET W/BATTERY BACK UP	\$1,164.00
CYLINDER	\$1,071.75
MANIFOLD REPLACEMENT KIT (EXCHANGE)	\$1,062.00
FORCEPS, STRAIGHT 4 3/4" OBSOLETE!	\$1,060.00
SOLENOID VALVE K1 AND K2	\$1,058.10
MONITOR BOARD (EXCHANGE ONLY)	\$1,028.00
GAUGE ASSEMBLY	\$1,027.00
PCB MAIN	\$1,011.21
PCB	\$1,006.25
2 YEAR MAINT. KIT/MFG.#15741	\$1,000.00
DRIVE MODULE KIT	\$1,000.00
POWER SUPPLY II	\$1,000.00
VENTILATOR MANIFOLD ASSY.	\$996.24
EAR PROBE/UNIVERSAL Y PRO(OLD P3042	\$995.40
GEMSTAT SOFTWARE KIT	\$975.00
MODULE ASSY	\$950.00
OUTER CASE (BLACK)	\$945.00
SYRINGE	\$925.00
BURNER UNIT, GASOLINE, FIELD RANGE	\$918.52
INSPECTION VALVE	\$912.00
DISPLAY PCB BOARD(A.K.A.30002828)	\$900.00
STRAIGHT SUPPLY VALVE/ALSO #53030	\$882.00
CHART PACER PCB	\$877.00
REGULATOR, NITROUS OXIDE	\$856.02
KIT, O2 FLOW-METER	\$852.21
MAIN PCB BOARD (A.K.A.30002827)	\$850.00
RECORDER ASSY.	\$850.00
RELIEF VALVE	\$850.00
PUMP & MOTOR ASSY.(P/N BY HAMILTON)	\$848.00

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
KIT,N2O FLOW-METER	\$843.93
CONNECTOR PANEL	\$837.00
PWER CORD 220	\$829.15
HEAT SENSOR MOD. KIT C	\$821.40
PUMPCASE	\$821.28
PACING ELECTRODES (DATED)2002	\$816.50
CAL. CHECK TUBE (VENOUS)ORD.#424281	\$796.00
ELECTRODE, DISPERSIVE DISPOSABLE	\$779.40
TRANSDUCER ASSY.	\$775.20
PCB, TIMER	\$771.00
POWER SUPPLY	\$759.04
LINE SET PCB ASSY.	\$750.00
KIT, O2 -LOW-FLOW FOR VAPOR	\$747.36
KIT, O2-HIGH-FLOW FOR VAPOR	\$747.36
POWER SUPPLY BOARD	\$745.22
FLOW CONTROL VALVE	\$700.00
CO2 SENSOR(BAD-FOR TRADE-IN ONLY)	\$675.00
1/8" 1.0 HOSE	\$672.00
3/16" 1.0 HOSE	\$660.00
PUMP, ALTERED (SEE OLD P#77378-000)	\$660.00
RING, COMPRESSION	\$647.60
LAMP ASSEMBLY, LONG ARM	\$646.50
MOTOR DRIVE PCB	\$643.95
CORD ASSY. BASE TO OUTLET	\$638.40
DRYNESS INDICATOR	\$635.10
COMPRESSOR	\$629.10
LCD BACKLIGHT & GRAPHICS DISPLAY	\$629.10
VALVE DISC.	\$620.00
OVERFLOW CUTOFF VALVE	\$616.50
PREVENTIVE MAINT.KIT(FILTER INCLUD)	\$616.00
AUX POWER SUPPLY (MFR #806311-00)	\$612.00
VALVE, UNLOADER	\$611.80
HANDLE ASSY	\$602.00
BELLOWS,ADULT(OLD#1500-378-000)	\$600.00
KIT, PEEP VALVE	\$600.00
HEATING ELEMENT, ELECTRICAL	\$594.00
THERMOMETER,RECORDER-MANUAL/ELECTRC	\$588.00
CAL.CHECK TUBE/CAPILLARY/ORD.424287	\$579.70
CONTROLLER BOARD (EXCHANGEABLE)	\$574.00
DRYING CHAMBER ASSEMBLY	\$572.20
FLASH LAMP-DTSC	\$566.50
SHIM	\$563.40
MAN/AUTO SELECTOR VALVE	\$563.00
RUBBER FEET	\$560.00
SOLENOID VALVE REPLACEMENT PART KIT	\$553.86

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
OXISENSOR II KIT (SEE TRYCO)	\$547.25
MAIN CONTROL BOARD	\$541.16
HOSE, STERILE, SUCTION, 6' LG.	\$536.40
ORC ASSY.	\$520.20
MONITOR BOARD (NEW BD 51000-08252)	\$514.00
MUFFLER EXHAUST/ INTAKE SILENCER	\$504.45
HOSE, NITROUS OXIDE, 40" LENGTH	\$500.00
POWER BOARD ASSY OLD P#77402-000	\$500.00
PUMP, ROTARY VACUUM	\$498.00
DISPLAY LATCH KIT	\$497.00
LAMP, HALOGEN TUNGSTEN, 150W, 120V	\$496.99
INNER COVER ASSY.	\$495.84
POWER SUPPLY, 28VDC, 3 A	\$487.50
DOPPLER PROBE P84	\$486.50
CALIBRANTS & REAGENTS (PACK OF 4)	\$477.53
L.C. PUMP HOUSING/PLUG ASSEMBLY	\$473.60
POWER CORD	\$472.94
VOLTAGE SENSOR	\$466.14
STAINLESS STEEL WATER TANK	\$456.00
DISPERSIVE ELECTRODE (EXPIRATION??)	\$453.96
PRESSURE REGULATOR	\$450.62
PADDLE ASSY.	\$450.00
ROLLER BEARINGS (CAMSHAFT)	\$446.50
IC CHIP (MFG.#R80B-379 MARCONI MED	\$444.60
BATTERY 12V. 2.3A/ MFG.# SLA1222	\$440.62
A3A2BD MONITOR CONTROL DISPLAY	\$440.00
WATER FILTER	\$435.00
DTE PIPETTE	\$430.00
LOADER ASSY. (MFG.# 9992406001)	\$425.00
SWITCH VALVE (BAG TO VENTILATOR)	\$425.00
VALVE, SAFETY RELIEF, BRONZE (OBS)	\$420.00
PUSH BUTTON SWITCH	\$416.50
RUBBER MAT (MFG.# S32047-100)	\$410.00
AMPLIFIER PCB	\$409.74
HOSE, VACUUM (P# 2036A)	\$405.00
C1 HIGH VOLTAGE CAPACITOR	\$400.00
HOSE, AIR SUPPLY	\$400.00
LEG BOARD PLATE (LEFT)	\$400.00
LEG BOARD PLATE (RIGHT)	\$400.00
GAUGE, PRESSURE, DIAL INDICATOR	\$387.50
PRESSURE GAUGE	\$387.25
PRESSURE ASSY.	\$384.00
VALVE ASSEMBLY	\$381.85
BP CUFF KIT-SM & LG ADULT, THIGH	\$380.00
ADULT, CHILD MASK	\$378.00

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
CAPACITOR, RUN, FIXED	\$375.30
TE ASSEMBLY W/THERMISTOR	\$375.25
SENSOR, TEMPERATURE PROBE	\$372.06
FUSE KIT (SPECIAL BUY FOR JAPAN)	\$371.91
FINGER PROBE	\$371.00
KIT, ACCESSORY	\$366.00
TEMPERATURE MONITOR	\$362.00
8FT. PULSE OXIMETER SENSOR CABLE	\$360.00
KIT,LUBRICATION-SENSOR	\$356.00
CASSETTE, PUMP TUBE	\$353.80
SCP BOARD	\$350.00
A3A3 DISPLAY CIRCUIT	\$345.00
FRONT PANEL	\$345.00
HOSE W/60" TAPERED HANDPIECE	\$338.58
HAND HOLE ASSY. (MFG# 873-011012)	\$331.53
PLUNGER	\$328.00
HYDROLOK	\$317.00
PCB CONTROL PANEL(AKA #044178)	\$316.20
BATTERY	\$312.95
DUST COVER- CLEAR PLASTIC PIECE	\$312.00
TUBE,INHALER-32"	\$307.20
WALL CHARGER	\$302.40
BATTERY PAK ASSY KIT	\$300.00
MANIFOLD	\$300.00
PC BOARD	\$300.00
PEDIATRIC BELLOWS HOUSING	\$300.00
A3 POWER SUPPLY BOARD	\$293.90
PISTON-GAS SPRING	\$292.32
PEDIATRIC BELLOWS	\$292.00
VALVE,RELIEF	\$280.00
INLET PORT COVER	\$279.00
3-WAY VALVE	\$278.00
STRAPS	\$278.00
8 FT CONNECTION RETURN/SUPPLY HOSE	\$276.50
HOSE, EXTENSION FOR DBK-9	\$276.50
BATTERY SHOP	\$275.00
250MM OBJ. LENS	\$270.00
GAUGE AND BLOCK KIT	\$270.00
STEAM TRAP	\$270.00
VENT FILTERS (PAK OF 25) (TRYCO)	\$269.00
LIGHT, INCANDESCENT	\$264.42
FILTER SCREEN	\$262.50
CLAMP ASSY, LATCH (OBSOLETE)	\$260.00
PRESSURE SWITCH ASSEMBLY	\$258.10
WASTE RECEPTICLE	\$257.80

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
VALVE, PRESSURE SENSOR	\$257.00
ALLIGATOR CLIPS	\$255.00
RATCHET HANDLE	\$252.00
N20 REGULATOR	\$250.74
PROBE, UNIVERSAL Y	\$249.80
BASE ASSEMBLY, BELLOWS	\$245.00
VAPORIZER (OBSOLETE)	\$245.00
ADAPTER,POWER SUPPLY	\$244.00
FILTER	\$243.00
VALVE SHUTTERS (PAK OF 10)	\$242.26
CALIBRATOR IVAC IV PUMP	\$241.52
TIMER, INTERVAL (OLD P# S821012)	\$240.00
12V BATTERY (MFG.# SLA1229)	\$239.00
DT PIPETTE	\$238.00
SWITCH ASSEMBLY	\$235.49
REAR CHASIS (MFR.# 020-0170-50)	\$235.00
CABLE, MONITOR, OXYGEN SENSOR	\$234.00
POWER SUPPLY, 24VDC, 2.5 A	\$234.00
JAR ASSEMBLY, COLLECTION	\$231.00
AUTOCLAVABLE SYRINGE	\$230.00
O2 EXTERNAL REGULATOR	\$230.00
SCREW ASSEMBLY	\$230.00
IC	\$225.00
SURGICAL HANDLE & CORD	\$225.00
PCB, FILAMENT CONTROL	\$224.50
KIT, CONNECTING TUBING	\$223.40
PATIENT PROBE	\$220.00
PRINTER PAPER (PAK OF 2)	\$220.00
PROBE ASSEMBLY	\$216.60
SLEEVE HEATING ELEMENT	\$216.00
CLAMP ASSEMBLY	\$212.39
SWITCH, ROTARY	\$211.60
ACCESSORY KIT	\$211.00
PATIENT VALVE ASSY.	\$210.00
PUMP	\$210.00
15V LIGHT BULB	\$209.00
TRANSPORT KIT	\$207.45
ADULT ELECTRODE (MFG.# 8900-1055)	\$206.52
NEON LIGHT(LOW&HIGH),OLD#1000563	\$206.04
ECG ELECTRODE(SUBSTITUTE#1700-030)	\$206.00
HOSE FLEX ASSY/HOSE AIR DUCT	\$204.80
AUTOCAL VALVE	\$203.32
CCA, CONTROL BOARD ASSEMBLY	\$200.00
SENSOR PCB BOARD(A.K.A.30002830)	\$200.00
SMALL BREATHING BAG	\$200.00

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
CYLINDER HEAD	\$198.90
BASE ENCLOSURE	\$196.00
8.0 AIRWAY TRANSLUCENT	\$194.40
PEDIATRIC PADDLE	\$192.00
LIGHT REFLECTOR	\$190.90
HEAT SENSOR MOD. KIT A	\$190.02
PRINTER KIT	\$187.70
PAPER,ELECTROCARDIOGRAPH	\$187.50
COMPLETE VACUUM HEAD (MFG# 2027P)	\$186.00
TUBE, 40", 22MM CORR., CONDUCTIVE	\$185.60
POWER CABLE	\$185.00
BRACKET MOUNTING RS-6 (MFG#2049P)	\$184.25
BLOOD WARMER (D-50)ORDER PER CASE	\$183.75
PUMP CASE	\$183.24
LATCH, CASE (WITH PIN)	\$180.20
ENCLOSURE ASSEMBLY	\$180.00
PLUG, COMPONENT	\$177.25
PCB, CPU	\$175.00
CABLE, PATIENT	\$173.80
TUBE (12 PER PACKAGE)	\$173.03
10.0 AIRWAY TRANSLUCENT	\$172.80
PCB DISPLAY	\$171.40
AIR FILTER REGULATOR (P# 336 V 010)	\$168.00
ONE WAY VALVE	\$168.00
STEM, FLOW CONTROL VALVE (NEEDLE)	\$168.00
11MM LIGHT GUIDE	\$165.50
CDM PROM 1949077 GET LATEST VERSION	\$165.00
CLM PROM MFG. #J02135	\$165.00
COLUMN ASSEMBLY	\$165.00
THERMOSTAT	\$165.00
ACCESSORY KIT, MILITARY 306	\$164.12
THERMOMETER, BIMETAL	\$163.96
MANUAL	\$162.90
CHECK VALVE, OLD P# 1062025	\$162.00
SWITCH ASSY, SAFETY	\$161.58
CANISTER, SUCTION, SURGICAL	\$161.00
8WS-6 ASSY.	\$160.00
SEAT P#207-5384-700	\$159.00
BACK RELEASE	\$155.00
PACING CABLE	\$154.00
BREATHING PRESSURE HOSE ASSEMBLY	\$153.54
LID LOCK ASSEMBLY	\$152.50
OFPD ASSY.	\$150.00
PWB DISPLAY (A.K.A. 70734A1)	\$150.00
TESTER	\$150.00

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
INTERNAL CABLE	\$149.00
LABELS W/SERIAL NUMBERS IMPRINTED	\$148.00
SWITCH, PUSH	\$145.24
POWER ADAPTOR	\$143.26
PATIENT BOTTLE TOP ASSEMBLY	\$142.32
HEAT SINK ASSY	\$141.95
E-PROM	\$140.00
SAFELIGHT FILTER	\$139.26
MASK,ADULT,LARGE,W/ HOOK RING	\$139.20
FUSE HOLDER	\$137.25
2 INCH SPOON	\$135.00
BELLOWS HOUSING, ADULT	\$135.00
D-RING LATCH W/MOUNTING CLIP	\$134.90
DT PRINTER PAPER	\$133.81
FACEPLATE, MULTIPOINT	\$130.00
WATER SEAL TUBE (OLD P#01-90-2846)	\$126.72
ADAPTER ASSY AUTOPOWER 12 VDC	\$126.00
LAMP, INCANDESCENT, DNF LUMINATOR	\$124.92
SWITCH, ON/OFF (CIRCUIT BREAKER)	\$121.26
MEMORY BACKUP BATTERY KIT	\$120.28
CHAIR BACK COVER	\$120.00
HEAD SECTION	\$120.00
HOSE, HIGH PRESSURE	\$120.00
HOSE, OXYGEN, NON-METALLIC	\$120.00
VALVE, RELIEF(A.P.L.)??PEEP??	\$118.42
BOTTOM ENCLOSURE	\$117.76
FOAM, SOUND SUPPRESSOR	\$115.90
AIR HOSE	\$115.50
TOP PANEL	\$115.00
BUMPER	\$114.00
OXYGEN RESERVOIR SYSTEM ADULT	\$114.00
QUICK COUPLING FEMALE(CONTROL BOX)	\$114.00
TACH. READ OUT PC ASSY.	\$114.00
PARTS KIT, MULTI-PORT (OBSOLETE)	\$112.50
EXTRACTOR ROD (MFG.# A000902)	\$112.00
STAINLESS STEEL HUMIDITY PAN	\$112.00
THERMOMETER (OBSOLETE)	\$111.67
TRAP BOTTLE TOP	\$110.08
A1A1BD PC ASSY.-INFARED LINK	\$110.00
NI-CAD BATTERY	\$109.00
POWER CORD FOR BATTERY SYSTEM	\$108.00
PEDIATRIC ELECTRODE(MFG.#8900-1065)	\$105.00
RICO SANI LINER, 24/PK	\$105.00
CONTROLLER,TEMP (S4)	\$104.53
SWITCH, ASSEMBLY	\$104.23

## Appendix B

## Total Parts Cost breakdown per part, (totaling over \$100) from Hill MEMMS data

Parts Nomen	Cost
CHASSIS WITH WINDOW (106/LCD)	\$104.00
FOOT CONTROL	\$103.95
CAPACITOR, START, FIXED	\$103.00
POWER SWITCH	\$102.87
TOP HALF OF CASE	\$102.85
8"X 2" NON CONDUCTIVE TAPE	\$102.20
HANDLE, MANUAL, STEAM STERILIZABLE	\$101.84
FILTER ASSEMBLY// INTAKE SILENCER	\$101.25
DRAIN TUBE 3/8 ALSO #0048642-34	\$100.30
IMPELLER/MAG. ASSY FOR PUMP	\$100.05
HOSE	\$100.00
PINION SHAFT	\$100.00
SUPPORT (OBSOLETE)	\$100.00

**Appendix C  
PLL. TMDE and Consumables list for 339th  
PLL List**

NSN	NOMENCLATURE	MANUF.	MODEL	LOC.	MINIMUM RECOMENDED PARTS LIST	RQ. QTY
	Dielectric Sealer		4R4330	BLAB	Parts:	
					PN#- 17-11-00-500 Sealer Head (Source: Depot)	1
	Demineralizer, H2O Exc		CL-5	BLAB	Parts:	
	Daigger Scientific, 4002 University Dr., Fairfax, VA. 22030 Ph 1-703-246-9090				Filter- Crystal Lab Deeminite Resin Filter Cartridge Model FC10	2
	Analyzer, Hematology	Beckman Coulter	ACT 10	BLAB	Parts:	
	Cellular Analysis Technology Center Beckman Coulter, Inc. 11800 S.W. 147th Avenue Miami, FL 33196-2500 Phone: (800) 526-3821, option 7 FAX: (800) 232-3828				PN# 3213214 - Pump Tubing	12
					PN# 6232803 - Filter, Fluid Barrier (Green, White)	10
					PN# 6233052 - Filter, Fluid (Blue / White)	10
					PN# 6214108 - Check Valve	10
4110-00-837-6441	Ice Maker 120V	Scottsman	AC25	BLAB	Parts:	
	Source: Any water purification & Filtration Equipment Co. Scottsman- Ph 1-847-215-4500				PN#- SSM1 Water Filter	3
4110-01-117-3902	Refrig. Mech Bld.	Jewett	BBR37	BLAB	Parts:	
					6130-01-279-2398- Power Supply	1
4110-01-179-0124	Refrigerator Bld Bank			OR		
4110-01-249-4476	Refrig Mech Bld Bank	Jewett	CT1	OR		
4110-01-291-7046	Refrigerator-Freezer	Marvel Industries	61RF0503	EMT		
6515-01-061-0662	Suction, Manuel	Rico	RS-6	EMT		
6515-01-150-7840	Warmer Blood	DataChem	Flotem II	EMT		
6515-01-174-1477	Suction & Pressure Ap		317M	OR		
6515-01-245-5056	Stethoscope 8MHz		BF5A	ICU		
6515-01-259-4307	Drainage Unit 115/230	Gomco	6053	ICU		
	Suction Pump	Impact	305		Parts:	
	Source: Access Batteries Ph. 1-303-646-9400				PN#- 703-0305-04 Battery, Storage	4
6515-01-261-0484	Suction Appar Surg	Impact	306M	OR	Parts:	
					6140-01-288-4416- Battery, Storage	4

**Appendix C  
PLL. TMDE and Consumables list for 339th**

NSN	NOMENCLATURE	MANUF.	MODEL	LOC.	MINIMUM RECOMENDED PARTS LIST	RQ. QTY
6515-01-278-9850	Stimulator Prphrl Nrv		MS-II	OR		
6515-01-283-6221	Light Endo 120-240V	Burton Medical Prod.	52-1201	OR		
6515-01-285-4617	Broncoscope		99-6200	CMS		
6515-01-286-1010	Laryngoscope Set	Propper MFG CO	199176	ICU		
6515-01-287-0607	Tourniquet Sys Pneu	Zimmer	ATS 1500	OR	Parts: 6140-01-440-0957- Battery, Storage	2
6515-01-290-8949	Light Head Fiber Optic	LUXTEC	GAC-2075-A	ICU		
6515-01-291-5447	Cutter Ortho	Amer. Orthopedic	0295-202	OR		
6515-01-452-7697	Oximeter Pulse	BioChem	3303G	ICU	Parts: MFG PN# 20605B3 Battery Pack	3
BCI International e-mail: bciintl@bciintl.com Ph 1-800-558-2345 Fax 1-414-542-0718						
6515-01-293-5578	Ultrasonic Unit Blood	Medasonics Inc	D8	ICU		
6515-01-300-3530	Stimulator Prphrl Nrv		MS-3	OR		
6515-01-304-6497	Suction Appar 120V	Impac	308	EMT	Parts: 5930-01-312-0832- Switch, Rotary 5930-01-384-4844- Switch, Rotary 6140-01-312-0948- Battery, Storage 6v 6210-01-288-4407- Indicator, Light	2 2 3 2
6515-01-309-6647	Electrosurg Apparatus	Valley Labs	Force-2	OR	Parts: 5999-01-319-6658- Heatsink Assy, RF Out 5999-01-319-6659- Heatsink Assy, Clamp	1 1
6515-01-310-1687	Pacemaker, Cardiac, Ext.		EC 4542 G	EMT		
6515-01-327-4155	Light Endoscpc Instr.	Burton Medical Prod.	1008822	ICU	Parts: 6515-01-333-0648- Lamp Cartridge Assy. (4EA) or 6240-01-254-7598- Lamp Cartridge (4EA)	4 4
6515-01-353-9883	Cutter-Vacuum Ortho	Amer. Orthopedic	0295-252	OR		
6515-01-358-9480	Suction Appar Prtble	Sorenson	2590-120G	ICU		
6515-01-373-7292	Thermometer, Clinical		MC-101	EMT		
6515-01-380-9986	Pacemaker Cardiac	Zoll	NTP-1000	EMT	Parts: MFG PN# NTP-3004 Battery PK	1
Zoll Medical Corp., 32 Second Ave., Burlington, MA 01803-4420 Ph 800-348-9011						
6515-01-397-5258	Fiberscope Trach intu		LF-2	OR		

**Appendix C  
PLL. TMDE and Consumables list for 339th**

NSN	NOMENCLATURE	MANUF.	MODEL	LOC.	MINIMUM RECOMENDED PARTS LIST	RQ. QTY
6515-01-417-7875	Light Source, Endo		LH-150P	CMS		
6515-01-423-5796	Monitor Patient Vital Sign	Propaq	206EL	OR	Parts:	
					6135-01-396-0704- Battery, Stroage	3
					DL2032 Duracell, Inc. Lithium Battery	3
					or	
					BR-2032 Matsushita Elec Inc., Lithium Battery	3
					0237-2120-300- Gas, Cal Can 5%CO2, 30%O2, 65%N20	1 CASE
Datex-Ohmeda (For Cal Gas) 1-800-345-2700----->						
6515-01-434-1999	Blood-Fluid Warmer		H-1025	OR		
6515-01-446-6766	Oximeter Pulse Prtble	Biochem Intl, Inc	BCI 3303	EMT		
6515-01-452-0625	Infusion Pump	Alaris/IVAC	2863B	ICW	Parts:	
Alaris/Ivac Corp. Parts 1-800-854-7128 Comm 1-619-458-6005						
					MFG PN# 2860703- Battery PK Assy Kit	3
					MFG PN# 2860729- Memory Backup Batt Kit	2
					MFG PN# 2860653- 3A Fuse (5 pr bx)	2 BOXES
	Defibrillator/Monitor	Hewlett Packard	HP 43110	EMT	Parts:	
Ordered from Access Battery Ph. 1-303-646-9400						
					MFG PN# MLA 43131D Battery PK	3
6515-01-453-4003	Defibrillator/Monitor	Physio Control Corp	LIFEPAK 10	EMT	Parts:	
Physio-Control Ph 800-426-8047 Comm 206-867-4000						
					MFG PN# 09-10424 FastPak Battery	9
6515-01-457-1840	Anesthesia Apparatus	N. American Dragar	Narkomed M	OR	Parts:	
Requirements: Oxygen, Nitrous Oxide, O2 Sensors, Also require Anesthetic Agent Isoflurane & Sevoflurane Local source for agent is Bergen Brunswig Corp. Ph 1-615-641-1000 MFG. North American Dreager 800-462-7566 Comm 215-721-5403						
					6140-01-468-5056- Battery, Storage	2
					MFG PN# 6850645- O2 Cell, 41-6803290P	6
					MFG PN# 1101690- Absorber Valve Mnt Gasket	8
					MFG PN# B-113- Vap-o-ring	8
6515-01-461-2325	Light Exam	Dazor	N/A	ICW		
6515-01-C00-0226	Charger, Fixator		5048-020	OR		
6515-01-C00-0227	Drill, Fixator		5071-001	OR		
6520-00-139-1246	Comp Dehy Den		M5B	RT	Parts:	
					4820-01-100-2239- Cock, Drain	2
					4820-01-299-1017- Valve, Unloader	2
					5910-01-295-7188- Capacitor, Fixed Elect	1
					5910-01-297-4152- Capacitor, Fixed Elect	1
					6685-01-291-4376- Indicator, Humidity	3

**Appendix C  
PLL. TMDE and Consumables list for 339th**

NSN	NOMENCLATURE	MANUF.	MODEL	LOC.	MINIMUM RECOMENDED PARTS LIST	RQ. QTY
6520-01-242-2375	Comp-Dehy W/ Reus		PAC 6.7	RT	Parts:	
Defense Standard, Ft. Detrick, MD 1-301-619-2186					4310-01-429-6683- Filter Element, Intake	2
					MFG PN# PAC6.7-017- Intake Silencers	2
6530-00-926-2151	Ster Surg Dres 16x36	Environmental Tech.	M138	CMS	Parts:	
					4540-00-935-1505- Heating Element	6
					4730-01-243-1237- Trap, Steam 2.5"L	2
					5330-00-182-3392- Gasket, Door	4
					5330-00-832-5767- Gasket, Asbestos 7.75"	12
					5945-00-782-6843- Relay, Electromagnetic	2
					6685-00-832-5739- Thermom, 50-300 Deg F	2
					9340-00-926-4625- Tubing, Glass 3/4"	2
6530-01-244-0708	Light Surg 2 Heads AC	Castle	LI2420CFH	OR		
6530-01-244-8101	Thermoregulator Pat.	Gaymar	MTA-4700	OR	Parts:	
					6530-01-192-9447- Flow Switch	2
6530-01-254-4135	Cleaner Ultr 120/230V		MSC-900T	CMS	Parts:	
					5355-01-360-5684- Knob	1
6530-01-306-1771	Sterilizer Surgical		Validator-8	CMS	Parts:	
					6530-01-315-3382- Solenoid, Vent Assy.	1
					6645-01-267-2544- Timer, Interval	1
6530-01-325-3746	Cabinet Sol Wrm Elec			CMS		
6530-01-343-2033	Light Surgical Field	Castle	2410MB	EMT		
6530-01-353-9883	Table Operating Hosp.		2080M	OR		
6530-01-388-1638	Irrigator Surgical	Zimmer	G330	OR		
6530-01-461-2325	Light Examination		1069A	EMT		
6530-01-374-8903	Ventilator Vol Portable	Bird	Avian	RT	Parts:	
					6140-01-417-6631- Battery, Storage	3
6530-01-464-0267	Ventilator Vol Portable	Impac	754M	ICU	Parts:	
Impact Instrumentation, Inc. Ph 973-882-1212					MFG PN# 704-0754-01 Battery Pack Assy.	3
6545-01-308-7740	Sink Unit Scrub Fld	Hamilton	9505936	BLAB	Parts:	
Jacuzzi, Waiter Kidde Div, Inc. 1-501-455-1234					MFG PN# 03063609R000, RP2 Case #5427 1 1/4 x 1 Iron	2
6545-01-429-6715	Sink Unit Surg Scrub	Ran-Paige Co., Inc.	RPC-1000	ICU	Parts:	

**Appendix C  
PLL. TMDE and Consumables list for 339th**

NSN	NOMENCLATURE	MANUF.	MODEL	LOC.	MINIMUM RECOMENDED PARTS LIST	RQ. QTY
					4730-01-317-8460- Coupling Assembly	2
					4730-01-432-3982- Coupling, Half Quick	2
6630-01-200-4305	Blood Warmer	Fenwal	4R4305	OR		
6630-01-316-5085	Analyzer Centrifugal	Clay Adams	4207	BLAB		
6630-01-376-9823	Analyzer Clin Chem	Kodak	DTE II	BLAB		
6640-01-068-9612	Centrifuge Lab 9V		M1100	BLAB		
6640-01-135-5071	Water Bath Elec Serl		148007	BLAB		
6640-01-143-2055	Centrifuge Lab Port.		0541	BLAB		
6640-01-260-1219	Incubator Biological		SP10-3	CMS		
6640-01-271-4094	Incubator Dry Heat		110444	BLAB		
6640-01-291-8390	Stirrer-Hot Plate Mag		502P	BLAB		
6640-01-308-7749	Centrifuge Lab Refrg	I.E.C	PR-7000M	BLAB		
6640-01-446-2597	Incubator Biological		S-3080	CMS		
7910-01-327-0757	Cleaner Vacuum Elec.	Minuteman	C83985-01	EMT	Parts:	
Minuteman World Headquarters, Minuteman International, Inc., 111 South Rohlwing Road, Addison, IL 60101 (630)627-6900 Fax (630)627-1130					MFG PN# 1100-10 HEPA Filter	2
					MFG PN# 1101-21 Impact Filter (Pack of 3)	2
6520-01-272-4531	Dental Op Unit, Fld, Prtb	Adec	3406	DENT	Parts:	
					6520-01-296-7429- Svc Kit, Mstr Blk	1
5180-01-460-9328	Tool Kit, Elec Equip	CECOM	TK-105A/G	MedMnt		
5411-01-136-9838	Blood Bank	DEPMEDS	M304	BLAB	Parts: For ISO Shelters	
5411-01-124-1377	Cent. Mat. Sect	DEPMEDS	M302	CMS	6240-00-152-2987- Lamp, Preheat, Flourescent	6
5411-01-136-9838	Operating Room	DEPMEDS	M301	OR	6210-01-032-0825- Light Shield & End Caps	4
5925-01-018-3041- Ckt Brkr, 15Amp, 1pole, 115V, GFI					6230-01-225-3931- Light Assy, Exterior Flood	1
5925-00-936-3933- Ckt Brkr, Main, 60Amp, 3pole, 240V (DPH60amp)					6320-01-225-3932- Bulb, Floodlight, 150W	3
Ref# PN QOB3100, MFR Code 14280- Ckt Brkr, Main, 100Amp, 3pole, 240V (ERK-100amp)					5320-00-097-6520- Leveling Jack Assy. (Expansion Sides)	2
Ref# 5-4-2866-1, MFR Code 81337- Jack Assy (ISO Corner, w/locks)					5925-00-785-4251- Ckt Brkr, 40Amp, 3pole, 240V	2
					5925-00-728-1289- Ckt Brkr, 20Amp, 1pole, 120V	2
					5925-00-984-2163- Ckt Brkr, 15Amp, 1pole, 120V	2
	Light Set, Port, Fluro		Type I	Temper	Parts: For Temper Bruce Light Set	

**Appendix C  
PLL. TMDE and Consumables list for 339th**

NSN	NOMENCLATURE	MANUF.	MODEL	LOC.	MINIMUM RECOMENDED PARTS LIST	RQ. QTY
					Technical Manuel- TM 10-8340-224-23P	1
					6240-00-152-2987- Lamp, Floro (Bulb)	3
					6230-01-339-4637- Light, Extension (Complete Lamp)	1
					5920-00-280-4960- Fuse Cartridge	3
					5920-00-556-0144- Fuse Holder	3
<b>Recommendations:</b> These are recommended items to maintain on hand for equipment support.						
Batteries, Expendable- AA - 50 EA, AAA - 100 EA , C - 50 EA , D - 50 EA, 9V - 30 EA						
<b>REMARKS:</b> This is a composite listing of parts requirements generated from TAMMIS. It primarily consists of Demand and Non-recurring parts requests, and includes parts which are most likely to fail during operation, or require periodic replacement per manufacturer.						

## TMDE List

LIN	NOMENCLATURE	NSN	MANUFACTURER	MODEL	TYPE	REQUIRED (T261)
M60449	Digital Multimeter	6625-01-265-6000	Fluke	27/FMW/ACC	AN/PSM45A	T261
M60449	Digital Multimeter	6625-01-265-6000	Fluke	27/FMW/ACC	AN/PSM45A	T261
Z14582	SpO2 Simulator	6515-01-449-1422	Dynatech Nevada	Cardio Stat 100		T261
Z28075	Test Lung	6515-01-449-1421	Michigan Instruments	3600 I		T261
Z27500	Tester, Infusion Pump	6515-01-449-2331	Dynatech Nevada	IPT-1		T261
Z07763	Analyzer, Noninvasive BP	6515-01-449-1423	Dynatech Nevada	Cuff-Link		T261
Z05382	Tester, Defib / Pacemaker	6515-01-449-1420	Dynatech Nevada	Impulse 4000		T261
C61523	Calibrator Analyzer	6695-01-255-2855	Timeter	RT200	TS4121/P	T261
C61455	Calibrator Gen ECG	6515-01-049-9449	Dynatech Nevada	ECG100	SG1264/P	T261
T90883	Test Set, Electrosurgical	6625-01-042-8213	Bio-Tek	RF302	TS4122/P	T261
T61791	Tester, Current Leakage	6625-01-142-8233	Dynatech Nevada	232D	TS2514/P	T261
Z47763	Oscilloscope, Digital	6525-01-448-9577	Tektronix	THS720P	Hand Held	T261
	Analyzer, Gas Indicator		Riken	18		T261
T07421	Tachometer, Stroboscopic	6680-01-307-8190	Ametek	1893A	TS4134/G	T261

Appendix C  
 PLL. TMDE and Consumables list for 339th  
**Consumables List**

SYSTEM 100 FLUIDWARMER 2 EACH/ OR SUITE  1-800-5LEVEL1 DISPOSABLE DELIVERY SET 4 TYPES: Depends on Flow Rate Specified D-50, \$521/ CASE OF 20 D-100, \$689/CASE OF 10 D-60 HL \$442/CASE OF 10 D-300 \$937/CASE OF 10	THERMOREGULATORS 2 EACH / OR SUITE 1-800-828-7341 REUSABLE PADS ADULT GENERAL USE HP-7010 \$168  77451000 \$202.00	NARKOMED NORTH AMERICAN DRAGER 1-800-543-5047, FX215-723-5935 DATEX-OHMEDA (FOR CAL GAS) 1- 800-345-2700 OXYGEN SENSORS ISOFLURANE AGENT must be provided in Theatre (USAMMCE) CALIBRATION GAS FOR PROPAQ MONITOR: 5% CO2, 65% N2O, 30% O2 6850645 \$176.00 6505011179832 \$ 71.88 0237-2120-300 \$ 30.00 **HAZMAT**	PROPAQ MONITOR / CO2 Jenny: 1-800-289-2500 COMMED 1-800-765-8375 SINGLE USE MAINSTREAM CO2 AIRWAY ADAPTER PATIENT LEAD ADAPTERS PATIENT ELECTRODES 008-0132 \$145.00 008-0367 \$288.00 008-0319 \$40.00 (INVASIVE BLOOD PRESSURE) TRANSDUCER 008-0232 \$375.00 case of 10 008-0225 \$140.00 each	ALARIS INFUSION PUMP 1-800-854-7128 X6351 POC: Linda CASSETTE & TUBING 281-25 \$150.00/CASE OF 50
--	---	---	--	---

# **Sample Data Collection Monthly Report September 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
Information Systems Support Inc.  
Robert Zak MS  
Report # 008

## Table of Contents

<b>Introduction-----</b>	<b>1</b>
<b>Scope -----</b>	<b>1</b>
<b>Unit Assemblage Equipment Review-----</b>	<b>2</b>
<b>Hygroscopic Humidifier Condenser/Heat-Moisture Exchanger-----</b>	<b>4</b>
<b>Leisegang Model LM-90 Electrosurgical Generator Accessories-----</b>	<b>5</b>
<b>Field Comments</b>	
<b>31<sup>ST</sup> Combat Support Hospital (CSH) After-Actions Report-----</b>	<b>6</b>
<b>247<sup>TH</sup> Forward Surgical Team (FST) In-Theater Experiences -----</b>	<b>7</b>

### List of Tables

<b>1. Status of Ophthalmology Equipment</b>	<b>Page 2</b>
<b>2. Hygroscopic Condenser Humidifiers</b>	<b>Page 4</b>
<b>3. Accessories and Supplies for Leisegang LM-90 Electrosurgical Generator</b>	<b>Page 5</b>

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This document, the eighth Sample Data Collection (SDC) report, provides a summary of the review of equipment items in a total of thirteen Ophthalmology Unit Assemblages (UAs), information from a review of passive humidifiers based on recommendations from both a request from the field and a ventilator manufacturer recommendation, and the results of a search for accessories for the Leisegang LM-90 Electrosurgical Generator. In addition, the field comments section includes the text of an after actions report for the 31<sup>st</sup> CSH, Fort Bliss, TX training session held 9-17 September, 2002 as well as comments received from 247<sup>th</sup> FST staff regarding the performance of equipment used in-theater.

**Unit Assemblage Equipment Review**

A number of Ophthalmology Unit Assemblages (UAs) were forwarded to MCMR-MMT-S for review. During this review, the UA listings were examined to identify medical equipment items and then determine if the equipment was still current or obsolete. The following UAs were reviewed: D215, D306, D315, D319, D344, D419, G111, G112, GX22, GX23, T077, T078, and Sutures and Needles. Table 1 shows the equipment items, which UAs they are listed on and pertinent information for that equipment.

**Table 1. Ophthalmology UA Medical Equipment Review**

<b>NSN</b>	<b>Nomenclature</b>	<b>Manufacturer</b>	<b>Model #</b>	<b>Remarks</b>
6540001818037 <b>D215 D315</b>	Lensmeter	Marco Ophthalmic	4001	Obsolete, hasn't been manufactured for a number of years. LM 201, part number 4005 is current replacement, NSN 6540-01-473-0353
6530004808286 <b>D215 D315</b>	Diagnostic light	Spectronics Corp.	Q-22	Current
6540011800479 <b>D215 D315 D319 D419</b>	Binocular Ophthalmoscope	Coded as a "w" item. Phrase statement says to stock as 6540-01-283-8650 but this stock number has been cancelled without replacement		Obsolete with no replacement identified
6540002998688 <b>D215 D315</b>	Ophthalmoscope, retinoscope and transilluminator set	Welch-Allyn	18311 and 41100	Current
6515005507199 <b>D215 D315</b>	Otoscope and ophthalmoscope set	Welch-Allyn	GG000770	Current
6540014919995 <b>D315 D319 D344</b>	Portable surgical microscope	Scan Optics	SO-5000	Current
6540014863181 <b>D215 D315 D419</b>	Ultrasound scanner, ophthalmic diagnostic	Sonomed Inc.	A/B-5500	Current
6540014587838 <b>D215 D315 D319</b>	Applanation tonometer	Medtronic Solan	Tono-Pen XL	Current
6530014319005(w) 6530014296715(stock as NSN) <b>D306 D315</b>	Field surgical scrub sink	Ran-Paige Co. Inc.	RPC 1000	Current
6540008776464 <b>D215</b>	Phoropter	Reichert	Ultramatic RX Master	Current
6540014953386 <b>D215 D315</b>	Refractor & Keratometer, Automatic	Nidek Co.	ARK-700A	Current
6540014910211 <b>D215 D315</b>	Visual acuity projector	Reichert	Long life Project-O-Chart	Current
6515013765164 <b>D319</b>	Aspiration unit, vitrectomy	Mentor O&O, Inc.	22-1765	Cannot locate company

NSN	Nomenclature	Manufacturer	Model #	Remarks
6515013765165 <b>D319</b>	Vitrectomy system	Mentor O&O, Inc	22-1720	Cannot locate company
6540004435864 <b>D215 D315</b>	Visual Acuity Projector	Reichert	11082T11084 appears to be obsolete-replaced by Longlife Project-O-Chart	Appears to be obsolete
6540014937935 <b>D215 D315</b>	Visual Acuity Projector Head	Reichert	Longlife Project- O-Chart	Current
4110011803420 (w)  4110014258009 stock as NSN 4110012917046 stock as NSN <b>D306</b>	Refrigerator-freezer	Marvel Industries of Northland	6CRF 61RF0600 4570105 (old number but it cross references to a 61RF0600)	All are Current
6730011027697 <b>D306</b>	Microfiche viewer	None identified	Military specification MIL- V-80240	Is microfiche still used? Fed Log has remark- Discontinued without replacement
7020014876268 <b>D306</b>	Computer, laptop	Toshiba	Satellite Pro series PS460U- 0M4N41GC	The Satellite Pro series is now at 6100 while the NSN is for the 4600 series
6515012052378 (w)  stock as NSN 6515014143607 <b>D419</b>	Cryosurgical System: nonelectric	Cooper Surgical	CE-2000	Current The probes all cross- reference to a model CE-82 unit, which is obsolete, but the probes are fully interchangeable
6515013723149 <b>D419</b>	Filtered halogen light source	Grieshaber now owned by ALCON	630.61	Discontinued by manufacturer without direct replacement. Item still supported.
6515013723150 (w)  <b>D419</b>	Cutter, membrane peeler set	None identified	None identified	Appears to be a 1993 contract number but no "stock as NSN" number identified.
6530012139524 (w) <b>D419</b>	Diathermy apparatus ophthalmic, battery powered	None identified	None identified	No "stock as NSN" number identified for this item in the UDR
6540011682601 (w) stock as NSN 6540013110363 stock as NSN 6540013078186 <b>D419</b>	Ophthalmic ultrasonic scanner	SonoMed  CooperVision (cannot locate)	A/B 3600  404 ABX	Obsolete since 1994 but still supported  Cannot locate
6540013932146 (w) stock as NSN 6540013932142  <b>D419 D319</b>	Diode Laser System	Iris Medical Instruments (now IRIDEX)	OcuLight SLx	Still being produced but age of unit determines maintenance support. If 8 years or older, may not have parts available.

NSN	Nomenclature	Manufacturer	Model #	Remarks
6540011790076(w) 6540012474937 is the stock as NSN <b>D215</b>	Slit lamp	Topcon	SL-6E	Obsolete as of 6 or 7 years ago. Replaced by SL-7E (6540-01-485-1697)
6515014865835 (w) stock as NSN 6515013932141 <b>D419 D319</b>	Vitreoretinal surgical system	Bausch and Lomb Surgical	DP-GOVT DP was their designation for a Daisy Premier system.	Obsolete as of late 1996. Millenium CX2000 is current model in production. The Premier line is still being supported with accessories and maintenance but not for much longer. No phase out date was given.
6540013660909 <b>D319</b>	Hand-held slit lamp	Carl Zeiss	HSO-10	Current

### Hygroscopic Humidifier Condenser/Heat and Moisture Exchanger (HCH/HME)

SUBJECT: Need for Passive In-Line Humidifiers for Patients on Portable Ventilators

1. BACKGROUND. Two concerns from the field were received and researched concerning the subject item. The first concern was a recommendation from the manufacturer of the Uni-Vent Eagle Model 754 Portable Ventilator-Compressor-Air/Oxygen Mixer, Impact Instrumentation, to include an in-line humidifier on patient breathing circuits to keep moisture in their breathing air. The second issue was an inquiry from an Intensive Care Unit (ICU) provider at the 339<sup>th</sup> Combat Support Hospital as to whether or not there was any filtering available to prevent the spread of disease either from patients or to patients requiring mechanical ventilation.

2. DISCUSSION. The patient circuit identified on the UA for use with the Uni-Vent Eagle Model 754 Portable Ventilator is NSN 6515-01-470-4215, Ventilator Circuit Universal Adult Portable. There are several in-line passive HCH/HME filters available for use with this ventilator circuit depending on the filtering requirements and tidal volumes of the patients. Hygroscopic Condenser Humidifiers (HCH)/Heat and Moisture Exchangers (HME) can meet the humidification as well as bacteriological and viral protection requirements, depending on which units are required. These HCH/HMEs are compatible with the patient circuit purchased for use with the Uni-Vent Eagle ventilator, NSN 6515-01-470-4215 manufactured by Allegiance Healthcare of Waukegan, Illinois. Currently, none of these HCH/HME's have a national stock number assigned.

Table 2. Hygroscopic Condenser Humidifiers from Allegiance Healthcare, Inc. compatible with NSN 6515-01-471-4215, Ventilator Circuit Universal Adult Portable.

Allegiance Healthcare Part No.	Nomenclature	Filter Efficiency	Tidal Volumes	Qty	Estimated Price
003003	Type I- Adult, non-filtered HCH	N/A	150 to 1500mL	50	\$102.14
003004	Type II-Small volume, non-filtered HCH	N/A	70 to 600mL	50	\$102.65
003005	Adult, filtered HCH	BFE, 99.997% VFE, 99.947%	200 to 1500mL	25	\$66.82
003006	Small volume, filtered HCH	BFE, mil 99.987% VFE, mil 99.907%	70 to 600mL	50	\$124.80

003007	HEPA Filtered HCH	BFE, mil> 99.9999% VFE, mil 99.99993% at 0.3 micron 99.9995%	250 to 1500mL	20	\$71.30
--------	-------------------	--	------------------	----	---------

3. CONCLUSION. Hygroscopic Condenser Humidifiers (HCH) and Heat-Moisture Exchangers (HME) are the common name for passive in-line humidifiers. All HCHs are HMEs but not all HMEs are HCHs. For instance, a pleated membrane HME would not be an HCH because it would lack hygroscopic material. Compatible in-line humidifiers are available from Allegiance Healthcare, Inc. and national stock numbers (NSNs) should be assigned. There is an immediate need for the purchase of part number 003005, Adult, filtered HCH, manufactured by Allegiance Healthcare, Inc., phone number (800) 444-1166. Table 2 contains several other compatible HCHs that can be purchased depending on specific needs of the patient-types seen in the units using the Uni-Vent Eagle ventilators.

### **Leisegang Model LM-90 Electrosurgical Generator Accessory Availability**

Subject: Accessories for the Leisegang Electrosurgical Generator Model LM-90

This information is supplied in response to an email sent by Diana Smith to Dawn Rosarius in regards to NSN 6515-00-137-6511, Electrosurgical Apparatus. There are several models of electrosurgical generators by different manufacturers using this same NSN. The electrourge in question is a Leisegang Model LM-90. The patient pads, NSN 6515-01-119-2930, are manufactured by the 3M Company and are supposed to be a universal patient pad but they evidently don't connect correctly with the LM-90.

The following accessories for the Leisegang LM-90 electrosurgical generator are available from CooperSurgical Incorporated of Shelton, Connecticut who acquired Leisegang Medical. This equipment item has been discontinued but is still being supported by the company. None of the items have National Stock Numbers assigned to them. Both the UDR and Fed Log were reviewed. Orders can be placed through CooperSurgical customer service at (800) 243-2974 or to their fax number (800) 262-0105.

**Table 3. Accessories and supplies for Leisegang LM-90 Electrosurgical Generator**

<b>Original Part #</b>	<b>New Part # (as applicable)</b>	<b>Nomenclature</b>	<b>Cost</b>
72100		Smoke-E-Vac, for use with LM-90	\$995.00
72102		Filter/Hose Set for Smoke-E-Vac (set of 3)	\$99.00
72300		Deluxe foot control	\$295.00
72301	72311	Patient return cable	\$50.00
72306	72308	Dual section grounding pads (box of 10)	\$60.00
72304		Electrosurgical foot control pencil (box of 10)	\$50.00
72305	395-310	Electrosurgical hand control pencil (box of 25)	\$165.00
72309	395-210	Electrode tip cleaner (Box of 25)	\$60.00
72101		Foot-switch for Smoke-E-Vac	\$95.00

**Field Comments:****31<sup>ST</sup> COMBAT SUPPORT HOSPITAL (CSH) AFTER ACTION REPORT**

**SUBJECT:** After Action Report for 31<sup>ST</sup> CSH, Ft. Bliss, TX, 9 Sep to 17 Sep 2002

**PURPOSE OF MISSION:** Training for the CSH personnel

**DISCUSSION AND COMMENTS:**

On 9 September 02, I, SPC Worrying traveled to Ft. Bliss, TX, to train the 31<sup>ST</sup> CSH personnel on the Narkomed M Anesthesia App., the Gem-Stat Clinical Analyzer, and the Bird Avian Ventilator. I arrived in El Paso and went straight to the base to get a vehicle pass then checked into the Embassy Suites. At 1745 I met with Mr. Lamar Reese to discuss the mission.

On 10 September 02, I reported to bldg. 1094 on Tailor Rd and met with Chief Tulud, SSG Williams, and SPC Houston. Six personnel from the 591<sup>ST</sup> at Ft. Sam Houston was assigned to the 31<sup>ST</sup> CSH TDY. They were there assisting in the mission. SPC Houston immediately ordered parts to complete a Narkomed M test kit. SSG Williams located all medical gases needed for the PMS (preventive maintenance and service) procedures on the Anesthesia App. I helped the 591<sup>ST</sup> personnel with sterilizers and set up and Avian Ventilator for training. SPC Houston and several 591<sup>ST</sup> personnel received training on a Test Lung, a RT 200 Calibration Analyzer, and the Bird Avian Ventilator.

On 11 September 02, I returned to duty and immediately set up a Narkomed Training Station. Chief Tulud informed me that his personnel would be out of the shop so I set up a Gem-Stat Analyzer and began PMCS procedures. It passed all tests and I trained a few of the 591<sup>ST</sup> personnel on the analyzer. After lunch SPC Martucci and I serviced 15 SPO2 Analyzers. Six needed batteries and nine are condition code A.

On 12 September 02, I was informed the 31<sup>ST</sup> CSH would not be in the rest of the week. Chief Tulud needed two Narkomed M for his CSH. I started the PMS procedures on the anesthesia app (serial # 10230). I briefed Mr. Reese on a few issues USAMMA has with the Narkomed M as far as checkout procedures in the manual. The Spiromed was malfunctioning. I tagged the unit and informed SSG Williams to send the unit to USAMMA-UT for repairs.

On 13 September 02, I reported for duty and performed the PMS procedures on one Narkomed M (serial # 10224). The unit was labeled and staged to be put with the other code A equipment in the hospital.

On 16 September 02, I trained SFC Williams and the 591<sup>ST</sup> personnel on the Narkomed M (serial # 10224). I completed the training and labeled the unit to be put with the hospital. I out-briefed with Chief Tulud and left the post. I flew home on 17 September 02.

**ISSUE:** TMDE found out of calibration

**DISCUSSION:** The personnel at the 31<sup>ST</sup> CSH were unaware of what some TMDE is used for, much less if the equipment is calibrated or not. They are constantly assigned to Post details by their commander and don't get the proper time to perform their biomedical duties. The issues were discussed and they were in the process of trying to correct the problem.

**ISSUE:** Narkomed M Anesthesia units were all clustered and parts were mixed between cases. Extra parts were found to a unit that was loaned to William Beaumont Medical Center for training.

**ACTION TAKEN:** I correctly matched all units and notified SSG Williams of the extra parts and discrepancies. I believe the extra parts belonged to the unit at WBMC.

**ISSUE:** Narkomedes were missing O2 Sensors.

**DISCUSSION:** I was informed that the O2 Sensors were expired and been disposed of. New sensors were being ordered by SSG Williams.

**ISSUE:** 31<sup>ST</sup> CSH personnel did not get training.

**DISCUSSION:** Two specialists did not get to train on the Gem-Stat, the Narkomed, and one specialist missed the Avian training. The commander had one specialist on details and the other specialist was on leave. They missed some critical information.

**RECOMMENDATION:** The personnel at the 31<sup>ST</sup> CSH need time to perform their duties. They have a lot of equipment that is tagged condition code A. however, most of the equipment has some type of discrepancy. These soldiers need more time in their medical maintenance shop.

Overall, I am concerned with the deployability of the 31<sup>ST</sup> CSH. The equipment needs more attention than presently given. Someone needs to take the initiative to control the TMDE. They have cages or offices to properly store their TMDE. The biomedical technicians should be left in their shop to correct the hospital equipment and handle medical maintenance issues. The soldiers at the CSH are unhappy wit their Army experience and I feel this id due to lack of job specific duties. I recommend more time to train on equipment and medical readiness.

Point of contact is the undersigned at 586-5045.

Joseph K. Worrying  
SPC, USA  
Biomedical Technician

### **247<sup>TH</sup> Forward Surgical Team (FST) In-Theater Experiences**

**SUBJECT:** Experiences of the 274<sup>th</sup> Forward Surgical Team (FST) with New Equipment Items In-Theater

1. **BACKGROUND.** Gather information relating to experiences with new medical equipment being used in the OEF theater by the 274<sup>th</sup> FST.
2. **CONCLUSION.** Old ventilators should be replaced with the IMPACT Eagle units. This has already been established in the new UA. Portable blood analyzers should continue to be investigated to find a more robust unit.
3. **DISCUSSION.**
  - a. The ACR 2000 CR reader and MinXray portable x-ray unit were referred to as “awesome.” It was well suited for the types of patient injuries. Between 80-90% of the patient load consisted of extremity wounds. Time from exposure to an actual image view was around 20 seconds. They also appreciated the way the exposures could be manipulated. The unit was well designed for the environmental conditions encountered and it came with everything needed for use in the field.
  - b. The iSTAT portable blood analyzer was not robust enough for the environmental conditions in which it was used. The ambient temperature of the area adversely affected the unit, exclusive of the

cartridges (which were refrigerated as required). The unit was problematic when the ambient temperature was either cold or hot.

- c. The SonoSite ultrasound machine performed admirably. It provided excellent resolution, and organs were easily identifiable. Its use helped in treating wounds quickly. The padded backpack should be used.
- d. The AirSep oxygen generator worked very well and provided higher concentrations than the listed specifications.
- e. The IMPACT Eagle ventilator worked well. This unit should replace all other ventilators . The Air Force only uses this unit and standardizing would make handing-off the patients easier.

Robert Zak  
Clinical Engineer, ISS, Inc.  
301-619-6982/DSN 343-6982

# Sample Data Collection Monthly Report October 2002



**Submitted to:**  
**U.S. Army Medical Materiel Agency**  
**U.S. Army Medical Research and Materiel Command**  
**Fort Detrick, Maryland**



Prepared by:  
Information Systems Support Inc.  
Robert Zak MS  
Kevin Culihan  
Report # 009

## **Table of Contents**

<b>Introduction-----</b>	<b>1</b>
<b>Scope -----</b>	<b>1</b>
<b>Republic of Tajikistan Equipment Request-----</b>	<b>2</b>
<b>Automated External Defibrillators -----</b>	<b>8</b>
<b>Bair Hugger and Thermoregulator Comparison -----</b>	<b>12</b>
<b>TMDE Calibration Verification Sampling Results -----</b>	<b>12</b>

### **List of Tables**

<b>1. TMDE Calibration Status</b>	<b>Page 13</b>
<b>2. Percentages of TMDE within calibration and property book data</b>	<b>Page 13</b>

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This document, the ninth Sample Data Collection (SDC) report, provides a summary of a review of medical equipment items requested by the Republic of Tajikistan and possible equipment items that could fulfill that request. Also included is the outcome of a search that was conducted to find Automated External Defibrillators (AED) with assigned national stock numbers. Additionally, the results of a request that was fielded to determine if a Thermoregulator was the same type of equipment as the Bair Hugger patient warming system is provided. Finally, the results of a Test, Measurement, and Diagnostic Equipment (TMDE) calibration verification sampling study is included.

**Republic of Tajikistan Equipment Request**

Subject: Equipment with valid NSNs for Republic of Tajikistan equipment request

The following information is supplied in response to a request from the Republic of Tajikistan for a variety of medical equipment, kits, and sets. The items on the list were researched to determine if NSNs exist and, if so, were the items still available. Each item includes the item nomenclature, NSN, manufacturer, part number, price, short description and available picture.

- Two examples of ophthalmoscope are included. One uses a rechargeable battery while the second item uses non-rechargeable batteries.
- Trial Lens Set.
- There are two audiometer examples, one is a screening unit while the other is a diagnostic unit.
- Two examples of Slit Lamp units are included. One is a stationary unit while the other is a hand-held portable unit.
- For the Defibrillator/Monitor, the unit available is a Lifepak 10 from Medtronic Physio Control.
- The Intensive Care Monitor available is the Welch Allyn Protocol Propaq 206 EL.
- The Mobile X-Ray Machine recommended and available consists of two parts, the MinXray HF100, which is a portable x-ray apparatus and the Kodak ACR 2000 reader system, which provides for filmless imaging.
- An example of a Dry Heat Sterilizer is the Steri-Dent Model 200.
- The Draeger Narkomed M is available to fill the requirement for the Anesthesia Apparatus.
- Two separate Binocular Microscopes are identified, the Nikon Ecipse E400 and the Olympus BX41.
- Cardio Test Bike (Cannot determine what is really required without additional information of what the bike will be used for. There are several exercise bikes that would normally be found in Physical Therapy sections for rehabilitation purposes but there isn't an NSN for a bike that could be calibrated to provide testing of cardio function.)
- Spectrophotometer (Currently not used in the field, units with an NSN are no longer available from the manufacturers.)
- EKG Machines (Currently not used in the field, unable to identify a valid NSN.)
- Air cleaner for Operating Room (Have not been able to locate the item as of this date)

**Ophthalmoscope, Otoscope Set, Battery Powered, NSN 6515-00-165-6544**, Propper Manufacturing, Part Number: 196100, \$137.82



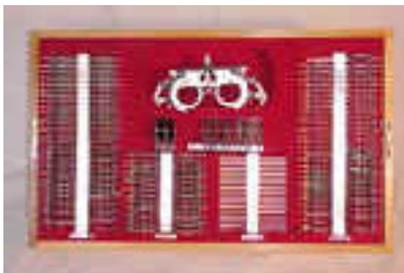
Ophthalmoscope head with bulb. Otoscope head with bulb. 2 handles with AA batteries. Pneumatic connector. 10 reusable speculas (2.5 and 4.00 mm). Case.

**Ophthalmoscope, Retinoscope and Transilluminator Set, Battery Type, NSN 6540-00-299-8688**, Welch Allyn, Part Numbers: 18311 and 41100, \$475.76



3.5v Ophthalmic Diagnostic Set with Diagnostic Ophthalmoscope, Streak Retinoscope, Rechargeable Handle, and Soft Case. The retinoscope's external focusing sleeve is easy to grip and manipulate. It has bright halogen light for true tissue color and consistent, long-lasting illumination. Six apertures for general and specialist use, and 28 lenses with -25 to +40 diopters for better resolution. An illuminated lens dial clearly identifies settings. The universal handle's smooth, non-abrasive knurled finish ensures a no-slip grip. The chrome-plated brass handle provides durable, long-life construction.

**Trial Lens Set, NSN 6540-01-056-7377**, Marco Ophthalmic, Part Number: 7007, \$3,150.66



Refraction set, without retinoscope, in tray, with standard range of plus and minus spheres and cylinders (242 lenses).

**Audiometer, Screening, 115/230v, 50/60 Hz Microprocessor Control, NSN 6515-01-388-6390, Monitor**

Instruments, Part Number: MI-5000M, \$1,425.00.

Screening, microprocessor controlled audiometer with integral electrostatic printer. The MI-5000B Series II Microprocessor Audiometer is one of the lowest-priced field serviceable microprocessor audiometers available today. It administers computerized tests securing valid, reliable data quickly and cost effectively. It is very easy to understand and use, and can be used either alone, or interfaced with an external printer or computer. Interface settings can be changed by the operator. Tones are generated and controlled entirely by digital circuits, allowing output levels of the MI-5000B to be adjusted by through secured keyboard entry. The LCD display simultaneously shows all

thresholds established for both ears, as well as on-going test conditions.

**Audiometer Non-portable, Diagnostic, NSN 6515-01-473-0370, Tremetrics Inc., Part Number: RA 500, \$3,777.00**

The RA500 microprocessor audiometer can streamline your hearing testing program. A versatile, touch-sensitive alphanumeric keyboard allows the user to enter up to 25 customized test questions as well as company name and location, subject names, etc. The large, view-adjustable LCD screen lets you monitor complete test status as it occurs. In addition to setting up a complete custom audiometric testing protocol, the unit will store up to 1200 audiograms, retrieve baselines from your computer and provide detailed audiogram records via a high quality graphics printer. A built-in talkover microphone, multi-level security system and dual RS232C interfaces are standard features

**Slit Light, Ophthalmic, NSN 6545-01-485-1697, Topcon, Part Number: SL-7E, \$6,245.00**

Convergent binocular tubes provide a stereoscopic image with the Galilean-type microscope. Select from five magnification ratios (6X, 10X, 16X, 25.6X & 40X with the standard 12.5X eyepiece) without the need to refocus after changes. Can provide background illumination for extremely detailed photography of peripheral areas, as well as diffused illumination for natural, fine detail reproduction of the anterior segment. Select any of the four built-in filters. Filtration choices include: cobalt blue, red-free, 13% neutral density and heat-absorption is built in.

**Slit Lamp, Ophthalmic, Hand-Held, NSN 6540-01-366-0909, Carl Zeiss Meditec, Part Number: HSO-10, \$3,300.00**



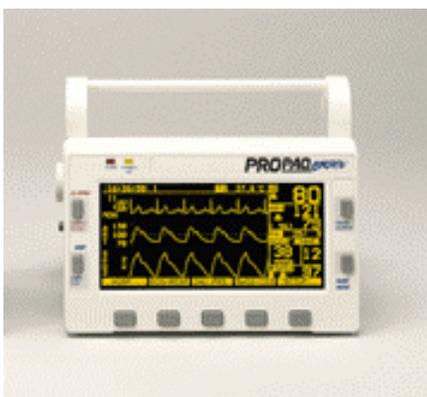
Slit lamp handy for mobile use. Hand held; 25 Watt; Voltage selector for 100, 110, 127, 220, and 240 V, 50/60 Hz AC with rechargeable battery pack 110/220 V, 50/60 Hz. Can easily be converted from slit lamp to an indirect ophthalmoscope. The equipment includes a power supply unit or a rechargeable battery unit. With the possibility of line-independent operation, the instrument is always ready for use – a major benefit for sport, military and veterinary medicine.

**Defibrillator/Monitor, NSN 6515-01-453-4003, Medtronic Physio-Control, Part Number: 804200-59 (Lifepak 10), \$8635.77**



Defibrillator/Monitor/Pacemaker designed to withstand the harsh environment faced by emergency medical providers throughout the world including wet environments. Features include simple 1-2-3 operations and user-friendly display, and CODE SUMMARY critical event record, which recap critical events from the moment of “power on.” Also includes optional built-in noninvasive pacing, AC or DC auxiliary power supply, and a defibrillation adapter for hands-free defibrillation. Energy selection levels include 5, 10, 20, 50, 100, 200, 300, and 360 Joules. Unit is certified for use on aircraft.

**Intensive Care Patient Monitors, NSN 6515-01-432-2711, Welch Allyn Protocol, Part Number: Propaq 206 EL with SPO<sub>2</sub> and CO<sub>2</sub> \$21,277.80**



A compact, rugged, versatile, and reliable solution for transport and bedside applications. The bright EL display provides patient vital sign waveforms and numeric data. Standard features include an ECG channel, heart/pulse rate, Smartcuf® noninvasive blood pressure, pulse oximetry, impedance respiration, and temperature, as well as full patient alarms and equipment alerts, trends, and programmable default settings. Additional options include up to two channels of invasive blood pressure, capnography (mainstream, sidestream, or dualstream), and apnea. The integrated printer option provides high-resolution, fully annotated, real-time printouts of three waveforms and numerics for all active vital signs.

**X-Ray Apparatus, Radiographic, Medical, Portable, Single Focus, NSN 6525-01-480-0445, MinXray, Inc., Part Number: HF100H, \$15,400.00**



MinXray high frequency portable medical x-ray units offer the highest power-to-weight ratios available from any manufacturer. These models are designed for use in nursing homes, private homes, correctional facilities, field clinics, hospitals, or anywhere an x-ray machine must be brought to a patient. MinXray's high frequency x-ray units and their companion stands provide the most easily transportable, user-friendly systems available for general purpose off-site medical diagnostic radiography. Rugged, dependable MinXray equipment is capable of all routine radiographic views you would expect from a portable unit. Detailed images of chest, abdomen, skull, spine and extremities are easily obtained with short exposure times. For maximum power, the HF100H x-ray unit is the unit of choice. The total weight of the system, including the innovative XGS Mk II stand, is less than 85 lbs. (38.6 kg.). The HF100H features an integral 60 kHz full-wave rectified power supply, permitting shorter exposure times and minimizing potentially harmful, lower kV radiation. Output is variable from 40 to 100 kVDC (20 mA at all settings) in 2 kV steps. The unit has an ultra high-resolution timer, adjustable in 0.01-second increments to a maximum of 80 mAs.

**Medical Filmless Imaging System, NSN 6525-01-480-2199, Kodak, Part Number: ACR 2000 \$56,100.00**



The Kodak ACR 2000 is a tabletop computed radiography system. Images can be acquired in less than a minute with no film, no chemicals, and no environmental issues. Compact and easy to use, this complete DICOM image-acquisition system provides performance and reliability. This compact system provides a simple plug-and-play CR solution for integrating x-ray studies into PACS, mini-PACS, teleradiology, centralized reading, image distribution, and archives. This system allows the user to acquire, process, and send images to DICOM destinations on a Local or Wide Area Network (LAN/WAN). The system consists of a CR phosphor plate reader, plate eraser, image-acquisition workstation, and software.

**Sterilizer, Surgical Instrument Dry Heat Type, NSN 6530-00-962-9965, Steri-Dent Corporation, Part Number: 200, \$420.03**



Dry heat sterilizers kill bacteria without moisture and will not dull sharp instruments. They can be used to dry wet packs or as a back-up sterilizer. Works without pressure, steam, or chemicals, which increases safety. High quality stainless steel construction means no rust. Unlike wet heat methods, dry heat sterilizers require no routine cleaning. Model 200 has two trays, weights 17 pounds, and operates on 115 AC and has a power consumption of 500 Watts. Dimensions of the unit is 15.5" W x 10.5" H x 9.5" W.

**Anesthesia Apparatus, NSN 6515-01-457-1840, Draeger Medical, Part Number: 7114179 (Narkomed M), \$48,102.64**



The Narkomed M is a full-featured state-of-the-art anesthesia machine that can be deployed in its transit containers virtually anywhere in the world by means of trucks, aircraft and ships. The system design minimizes the number of required components thereby minimizing assembly/disassembly time and reducing loss of components. The Narkomed M's modular architecture is extremely robust and flexible enough for use in a wide variety of military, mobile and space limited applications. Once assembled the Narkomed M provides the clinician with an anesthesia system that incorporates the same high standards found in anesthesia systems within conventional operating rooms. Gas delivery system includes O<sub>2</sub>, N<sub>2</sub>O, and Air gas circuits. Integrated ventilator incorporates venturi-based design that conserves the drive gas by as much as 50%. Ventilator drive gas is user selectable to be either oxygen or air. System electronics are powered by a 100-240 VAC continuous range power supply.

Electronics are automatically supported by a 90 minute rechargeable back up battery in the event of a power failure. System incorporates the Vapor 2000 which is tippable and spill proof. The compact absorber system is provided with an adjustable PEEP and Auto/Bag valves. Waste gas scavenging is compatible with active or passive systems. The Narkomed M is equipped with a single monitor screen providing volume, pressure and oxygen data. The parameters are shown on a bright, easy to read adjustable display. Monitor settings and configuration of the system can be made by use of the intuitive control keys.

**Microscope, Binocular, Clinical Laboratory NSN 6640-01-499-1784, Nikon, Part Number: Eclipse E400, \$5,117.00**



The Eclipse E400 Clinical Microscope is a standard laboratory microscope with superior ergonomic and unsurpassed optical imagery. Optimized for comfort in extended clinical applications. In-line focus and stage controls are ergonomically positioned to allow a natural sitting posture for comfort and convenience even over long periods of use. CFI60 Optical System, 60mm Parfocal Distance, 25mm thread

size, longer working distances with highest N.A. objectives. Excellent optical performance with brilliant, sharp images in all magnifications along with high resolution and contrast, chromatic aberration free correction, and top transmission rates. Also allows the use of multiple observation techniques such as brightfield, darkfield, epi-fluorescence, and phase contrast. Low profile stage facilitates smooth nosepiece rotation and ease of specimen handling for quicker, more efficient and strain-free operation. The Eclipse E400 also has a five position, reversed nosepiece, and 6 volt, 30 Watt halogen pre-centered and pre-focused light for bright illumination.

**Microscope, Binocular, Clinical Laboratory NSN 6650-01-499-5673, Olympus, Part Number: BX41, \$5,108.00**



Olympus Model BX41 microscope features an ergonomic design and Olympus universal infinity system optics. Y-shaped frame brings all adjustable features toward the user for easy access to controls, while also providing stability. Transmitted light frame with low-positioned coarse/fine focus, coarse focus tension adjustment, Kohler illumination, detachable nosepiece and light intensity dial in front. Modular design allows for easy attachment of accessories without image compromise. The BX41 accepts all UIS optics, delivering bright, sharp and high-contrast images. Eight position universal condenser for use in brightfield, darkfield, phase contrast, polarization, and DIC (Nomarski) allows continuous observation over the wide magnification range of 1.25x-100x

without condenser change. A 6 Volt, 30-Watt halogen illumination light includes a photo-preset button for bright images and convenient photo documentation.

### **Automated External Defibrillators (AED) with National Stock Numbers Assigned**

1. BACKGROUND. This information paper was generated in response to a request from the field looking for information on AEDs in the military system and whether or not any are air certified.

2. DISCUSSION. AED stands for *automated external defibrillator*. A defibrillator is a medical device that delivers an electric shock to a patient's chest, which in turn passes through the heart. This is done to terminate lethal cardiac rhythms and cause the heart to resume normal pumping activity.

AEDs are called automated because they take the decision to deliver a shock out of the hands of rescuers and place it in an internal computer chip. Audible prompts tell the rescuer what to do, from attaching electrodes to the patient's chest to pushing a button to deliver a shock. AEDs have been commercially available for the past ten years. Currently, some AEDs can weigh as little as 4 pounds and are as portable as they are automated.

The most common lethal rhythm leading to a sudden cardiac arrest, ventricular fibrillation causes the lower portion of the heart (the ventricles) to quiver uncontrollably. The heart cannot pump blood, and death quickly follows unless CPR and rapid defibrillation occurs. Sudden cardiac arrest is by nature unpredictable and can strike anyone at anytime. It is for this reason that the issue of public access defibrillation is so urgent. The following are a selection of AEDs with assigned NSNs:

- **Defibrillator Monitor-Recorder System, Reusable, NSN 6515-01-479-4267, Philips Medical, Part Number M3861, Heartstream FR2 AED, \$2,187.50**

The Heartstream FR2 automated external defibrillator (AED) is portable, lightweight, virtually anyone can be trained to operate this life-saving device for administering first aid immediately to a victim of [sudden cardiac arrest](#), and the [FR2 is the only AED cleared for use on people of all ages](#).

Due to its easy-to-use design, superior technology and affordability, AEDs are now being placed in a wide range of settings such as hospitals and clinics, offices and industrial locations, airports and airplanes, schools, government buildings, health clubs and golf courses. This innovative AED technology has also enabled a broader range of people beyond community EMS professionals to provide lifesaving therapy.

The FR2 AED operates with long-life maintenance-free, lithium manganese batteries, which are designed specifically for high-volume consumer applications, where safety and reliability are of the utmost importance. The FR2 performs daily automated self-tests that check readiness for use. Other features include easy-to-follow voice prompts, and a bright LCD display to reinforce the voice prompts, making it easy to use in noisy or dark settings; the FR2 also has enhanced features that can be enabled for improved hand-off to advanced life support (ALS) responders. Additionally, the FR2 has on-board training capabilities when used with the fully rechargeable Training and Administration Pack. This allows users to safely train on the FR2 using realistic training scenarios.

The FR2 AED incorporates a number of breakthrough technologies that distinguish it from other AEDs on the market, including the Philips' low-energy SMART Biphasic technology. Additionally, the SMART Analysis system automatically determines if a shock is required and protects against inappropriate delivery of a shock. This feature eliminates the need for the operator to be trained in reading and interpreting the patient's electrocardiogram (ECG).



Figure 1. Philips Medical FR2 AED

- **Defibrillator, External, NSN 6515-01-459-1784, SurvivaLink Corporation, Part Number 9100-101 SurvivaLink FirstSave® AED, Part Number 9100-101, \$2,199.00.**

Designed for use by virtually anyone, the FirstSave AED is the answer to saving more victims of sudden cardiac arrest. It is the only AED with one-button operation and pre-connected, interchangeable electrodes, making FirstSave the easiest defibrillator to use. Its exclusive RescueReady® feature also makes FirstSave the most reliable AED, as it ensures that the battery, circuitry and electrodes are in working condition. In fact, FirstSave is the only defibrillator with patented technology that checks if the electrodes are in the device and ready for use. It is also the first AED with an escalating, variable energy biphasic waveform, demonstrating 100 percent effectiveness in clinical trials.

#### **RescueReady Reliability**

One of the most important features of the FirstSave AED is its high degree of reliability. Performing the most comprehensive self-testing in the industry ensures that FirstSave is "rescue ready" whenever you need it. Daily, weekly and monthly testing occurs automatically. Each day, the battery, electronics and electrodes are checked. Every seven days, FirstSave performs a partial charge internally to test its high-voltage circuitry. Then, once a month the device performs a full charge internally to test its high voltage circuitry. If FirstSave fails any one of its self-tests, the status indicator on the outside of the device changes from green to red and an audible alert is emitted. In addition to providing the most extensive self-testing available for the battery and circuitry, FirstSave is the only AED with patented technology that confirms electrodes are in the device and ready for use. This exclusive feature minimizes the possibility of arriving at the rescue scene without electrodes or with electrodes that are unusable.

### **Ease of Use**

Its exclusive ease-of-use features make FirstSave the AED of choice for people with minimal medical training. Rescue situations, especially those involving a friend, co-worker or family member, are incredibly stressful and make ease-of-use critical. Although most AEDs are easy to use, a rescue is made even easier with FirstSave through patented features such as pre-connected, non-polarized electrodes and one-button operation.

### **STAR™ Biphasic Technology**

There are a number of ways for an AED to deliver a defibrillation shock. Some devices deliver the same level of energy each time a shock is delivered. Others deliver higher levels of energy with each shock, but still administer the same energy for every patient. Defibrillation threshold, cellular response and charge balancing principles are key to determining which energy level is appropriate for a given patient. These concepts have been used in the implantable defibrillator industry for many years. Survivalink incorporated these factors into external defibrillation to develop its STAR Biphasic technology. Survivalink's proprietary STAR Biphasic technology introduced escalating biphasic energy and developed the concept of customized, variable energy. Unlike conventional biphasic waveforms, which deliver a fixed energy level regardless of patient needs, STAR Biphasic varies the energy delivered to each patient based on the charge balancing principle. This principle states that once a defibrillation charge is given, excess or residual charge on the heart's cells must be neutralized to prevent refrillation. STAR Biphasic is the only defibrillation waveform to successfully address this principle. Delivering energy based on a patient's impedance-the body's opposition to the flow of electrical current-is another critical factor to successful defibrillation. STAR Biphasic technology measures a patient's impedance, adjusts defibrillation parameters, and delivers a waveform and energy level customized to the needs of that patient.



Figure 2. Survivalink FirstSave® AED

- **Defibrillator, External with Audio Feature, NSN 6515-01-459-1041**, Part Number 3005400-300 (LP 500), Medtronic Physio-Control Group, \$2,310,19.

The LIFEPAK 500 automated external defibrillator is designed to be used by first responders to cardiac emergencies. This affordable, rugged device is extremely portable at only seven pounds. Low maintenance requirements and intuitive operation make it the ideal product for infrequent AED users. Features include pre-connected *QUIK-COMBO™ ELECTRODES*; simple 3-button operation; clear, concise voice prompting for defibrillation and CPR; LCD for text messages, shock count, and real-time clock. Automatic self-testing saves time and improves testing consistency. Battery options include a rechargeable lead acid battery and a high capacity extended shelf-life lithium battery that requires no charging and no maintenance.

The 500 utilizes the same field-proven Shock Advisory System™ used in thousands of Physio-Control AEDs over the past ten years. It employs the industry standard *Edmark* defibrillation waveform at energy levels recommended by the American Heart Association and European Resuscitation Council.



Figure 3. Lifepak 500 Automated External Defibrillator

- **Defibrillator/Monitor with AED function, NSN 6515-01-458-3827**, Medtronic Physio-Control, Part Number Lifepak 12, \$6,796.00.

Select from AED, manual defibrillation or both, depending on users' skills and comfort level. Includes noninvasive pacing, pulse oximetry (SpO<sub>2</sub>), 12-lead ECG, EL or LCD display, capnography and noninvasive blood pressure (NIBP). Offers a choice of ADAPTIV Biphasic or industry standard monophasic (Edmark) defibrillation waveforms, with the capability to deliver shocks at energy levels recommended by the American Heart Association in collaboration with the International Committee on Resuscitation. Both monophasic and biphasic devices utilize the same field-proven Shock Advisory System used in Lifepak AEDs since 1986. Configurable options, including AED and manual defibrillation modes, allow standardization across user groups and ease of patient transfer. In AED mode, the Lifepak 12 defibrillator/monitor utilizes the Shock Advisory System with clear, voice prompts to advise the operator when it detects a shockable rhythm with visual and voice prompts. Manual mode features simple 1-2-3 operation.



Figure 4. Lifepak 12 Defibrillator/Monitor with AED

**CONCLUSION.** This list is not all-inclusive but identify AED models that are currently being manufactured and have NSNs. Currently two Defibrillator/Monitors with AED abilities are in the pipeline for Aeromedical Evacuation certification, the Lifepak 12 by Medtronic Physio Control, which has an assigned NSN, and the Zoll Medical M Series CCT. This testing should be completed by early in calendar year 2003. Additionally, the SurvivaLink FirstSave AED has been awarded an Airworthiness Release but still requires Medical Certification.

#### **Comparison of Patient Thermoregulators and Patient Warming System (Bair Hugger Model 505)**

Subject: Comparison of Patient Thermoregulators and Patient Warming System (Bair Hugger Model 505)

In response to an email requesting a comparison between NSN 6530-01-463-6823, Patient Warming System, Bair Hugger model 505 and NSN 6530-01-487-6868 (W), Thermoregulator, Patient, Model 200-73A-RC, et al., the following was identified.

The Bair Hugger patient warming system by Augustine Medical is not the same as the patient thermoregulators. The patient thermoregulators identified under NSN 6530-01-487-6868 are hypo-hyperthermia machines. They regulate patient temperature by circulating water through a pad. The water is either heated or cooled depending on patient needs so the units contain both a compressor for cooling the water as well as a heater for warming. The Bair Hugger model 505 is a forced-air warming unit. It only provides warming.

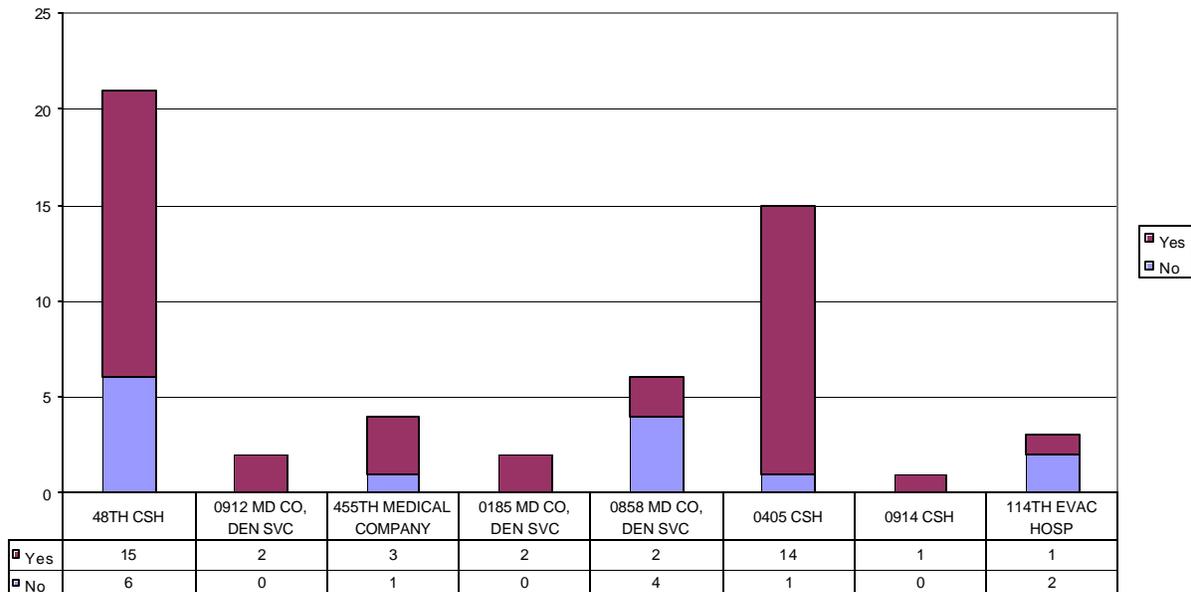
There are other units using forced-air warming technology. Both Cincinnati Sub Zero and Gaymar Industries, manufacturers of the thermoregulators identified under NSN 6530-01-487-6868, also have forced-air patient warming systems available.

#### **Test, Measurement, and Diagnostic Equipment (TMDE) Calibration Verification Survey Results**

A review of TMDE accountability and calibration procedures for eight randomly selected medical organizations was conducted. The units reviewed were the 48<sup>th</sup> Combat Support Hospital; 0912 Medical Company, Dental Services; 455<sup>th</sup> Medical Company; 0185 Medical Company, Dental Services; 0858 Medical Company, Dental Services; 0405 Combat Support Hospital; 0914 Combat Support Hospital; and the 114<sup>th</sup> Evacuation Hospital. The review revealed some discrepancies in the TMDE accountability and calibration procedures. Data collected indicates inconsistencies between the TMDE that organizations have on-hand and those items that are listed on the calibration schedule. The indicators point to the possibility

that there may be MTOE medical organizations with TMDE in an un-calibrated status. Further data collection and review is required to assess the MTOE medical units abilities to ensure medical equipment is properly maintained. Table 1 shows a graphical depiction of the TMDE calibration status. Table 2 is a chart showing some of the same information but also includes the percentage of each unit's TMDE that is within calibration as well as the TMDE the Property Book says should be on-hand.

TMDE Calibration Sampling



**Table 1. Test, Measuring, and Diagnostic Equipment (TMDE) calibration status.** Yes signifies TMDE that is still within its next scheduled calibration date while No identifies equipment items that are past due for calibration.

UIC	UNIT	TMDE Items Within Calibration		Grand Total Calibration Schedule	Property Book Quantity	% within calibration	Diff between Cal Schedule and PB
		No	Yes				
WNBKR1	48TH CSH	6	15	21	10	71.43%	-11
WNBMR1	0912 MD CO, DEN SVC	0	2	2	0	100.00%	-2
WQ28AA	455TH MEDICAL COMPANY	1	3	4	0	75.00%	-4
WQXRAA	0185 MD CO, DEN SVC	0	2	2	1	100.00%	-1
WQZSAA	0858 MD CO, DEN SVC	4	2	6	0	33.33%	-6
WRV8AA	0405 CSH	1	14	15	11	93.33%	-4
WRWAAA	0914 CSH	0	1	1	11	100.00%	10
WSA0AA	114TH EVAC HOSP	2	1	3	10	33.33%	7
<b>Totals</b>		<b>14</b>	<b>40</b>	<b>54</b>		<b>74.07%</b>	

**Table 2. Percentages of TMDE within calibration and property book data.**

# **Sample Data Collection Monthly Report November 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
Information Systems Support Inc.  
Robert Zak MS  
Kevin Culihan  
Report # 010

## Table of Contents

<b>Introduction-----</b>	<b>1</b>
<b>Scope-----</b>	<b>1</b>
<b>Technology Issues from Logistics Assistance Visits 4-20 Nov 2002-----</b>	<b>2</b>
<b>MEOD Logistics Assistance Visits After Actions Report -----</b>	<b>8</b>

### List of Figures

<b>1. Field Operating Table</b>	<b>Page 2</b>
<b>2. Dental Exam Light</b>	<b>Page 2</b>
<b>3. Separating Metal on Exam Light Neck</b>	<b>Page 2</b>
<b>4. Dental Light in Storage Case</b>	<b>Page 3</b>
<b>5. Pulse Oximeter</b>	<b>Page 3</b>
<b>6. Field Dental Unit</b>	<b>Page 4</b>
<b>7. C-Clamp Holding Air Command Case Open</b>	<b>Page 4</b>
<b>8. Pictures of Portable X-Ray Machine Showing Corrosion</b>	<b>Page 4</b>
<b>9. Fiber Optic Light Source</b>	<b>Page 4</b>
<b>10. SIMS Level 1 Fluid Warmer</b>	<b>Page 5</b>
<b>11. Hamilton Scrub Sink</b>	<b>Page 5</b>
<b>12. Scrub Sink Pump Showing Failure Point</b>	<b>Page 5</b>
<b>13. OrthoLav Irrigator</b>	<b>Page 6</b>
<b>14. Serological Water Bath</b>	<b>Page 6</b>
<b>15. Dental Air Compressor</b>	<b>Page 6</b>
<b>16. Dental Amalgamator</b>	<b>Page 7</b>
<b>17. Blood Bank Refrigerator</b>	<b>Page 7</b>
<b>18. Microscope</b>	<b>Page 7</b>

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This document, the tenth Sample Data Collection (SDC) report, provides the results of trips made to gather data and assess the various MTOE units at Fort Bragg, North Carolina; Fort Hood, Texas, and Fort Carson, Colorado. Units visited included the 10<sup>th</sup> Combat Support Hospital (CSH), 21<sup>st</sup> CSH, 28<sup>th</sup> CSH, 32<sup>nd</sup> Medical Logistics Battalion, 261<sup>st</sup> ASMB, 57<sup>th</sup> Medical Company (Air Ambulance), and 257<sup>th</sup> Medical Company (Dental).

**Technology Issues from Logistics Assistance Visits 4-20 November 2002**

The following technology issues were gathered during Logistics Assistance Visits (LAV) to Fort Bragg, Fort Hood, and Fort Carson during November.

1. **Field operating table, NSN 6530007098175** at 261<sup>st</sup> Medical Maintenance shop. The table shown in Figure 1 has a broken part that can no longer be procured from the manufacturer. The table was sent to the Depot for repair but the cost to try and repair the table was too high and it needed to be red lined and replaced.



**Figure 1. Field Operating Table**

2. **Aseptic dental exam light, NSN 6520014464170** (see Figure 2). During examination of equipment at the 257<sup>th</sup> Dental Company, it was observed that the corrugated metal separated where the corrugated metal meets the rigid base (see Figure 3). During subsequent visits, the problem appeared to be the light was being stored improperly. By not putting the light back into its case properly, the neck had to be bent more than it was meant to be causing excessive stress in the area where it eventually broke. The light is still functional but the break could cause the wire to chafe.



**Figure 2. Dental Exam Light**



**Figure 3. Separating Metal on Exam Light Neck**

The photograph in Figure 4 illustrates the proper way to store the dental exam light. It was also noted there was duct tape around the control box of the lamp. It wasn't clear if the boxes don't stay in place or aren't being installed correctly.



**Figure 4. Dental light in storage case**

**3. Pulse Oximeter, BCI International, NSN 6515012935577.** The pulse oximeter itself is the white unit in the back insert in the foam shipping container. There are some provisions that ship with the unit but for the most part, foam makes up the majority of what's shipped with the pulse oximeter. Since several pulse oximeters are part of each assemblage, shipping cube could be saved by working with the manufacturer to possibly ship several pulse oximeters in each shipping case. See figure 5.



**Figure 5. Pulse oximeter**

**4. Aseptico Field Dental Unit, NSN 6520014567170.** 257th Dental Company personnel brought up several concerns about the unit shown in Figure 6. The first is the units do not appear to be designed for continuous use. This may require additional follow-up to determine if continuous use causes excessive breakdowns or it's just not convenient to use over long periods of time. A second issue was the dental units, especially the compressors, require a lot of maintenance by assigned medical maintenance personnel in the field. A third concern is that a large amount of replacement fuses have to be kept on hand. It seems that if the generators power down, all the units plugged into that generator need to be shut down and kept off until the generator is back to operating speed. If the units aren't powered down, the fuses blow, which could be a readiness issue if they run out of fuses. Finally, it was noted that to keep the two sections of the dental unit containing the hoses for the hand pieces, tri-syringe, and suction hose open, a hardware store adjustable C-clamp was employed (See figure 7) rather than designing the shipping crate to be locked into place during operation. Additional follow-up is required to see if these maintenance issues are shared by other dental companies.



Figure 6. Field dental unit



Figure 7. C-Clamp holding Command Air case open

5. **Pictures of Portaray 1200 portable x-ray machine, NSN 6525013253740.** This unit was observed at the 261<sup>st</sup> and it recently returned from deployment to Bosnia. Although the maintainers claimed the unit was never used and remained in its shipping container, the rust and oxidation at least highlight it got moist somewhere in the shipping and storing process. See Figure 8.



Figure 8. Pictures of portable x-ray machine showing corrosion

6. **Pilling Weck fiber optic light source, NSN 6515011539649.** Problem with the light source seen in Figure 9 is it comes without a shipping container so the units are just netted during shipment. The legs break off and, as you can see, the left side connector is connected to the unit but the right-side connector came off. The screw holding the illuminator on is plastic and tends to break off. The units are quite heavy and would be served better if they were shipped inside a hardened shipping container designed for these units.



Figure 9. Fiber optic light source

7. Figure 10 is a photograph of a **SIMS level 1 fluid warmer, NSN 6515014341999**. These units are not very well received by the operating room staff. Their comment is the unit is too bulky for the environment it's being used in and it doesn't come with any shipping container so it has to be netted during shipment. If not secured well, it could be subject to breakage during transport.



Figure 10. SIMS level 1 fluid warmer

8. **Hamilton 30-inch scrub sinks NSN 6530013087740**. Two issues were voiced about these sinks shown in Figure 11. The first is the wheels tend to get bent or broken and maintenance spends a lot of time repairing the wheels and wheel assemblies. The second issue pertains to the Jacuzzi pump that provides water pressure. The 10<sup>th</sup> CSH has had to replace about five or six of the pumps because the metal tends to fracture and leak in cold weather, even if the pump has been winterized with anti-freeze solution. Figure 12 identifies where all the pumps for this CSH tend to fail.



Figure 11. Hamilton scrub sink



Figure 12. Scrub sink pump showing failure point

9. The **Stryker OrthoLav Irrigator** is extremely heavy piece of equipment. It weighs at least 50 pounds. Not sure what the item is used for but if shipping weight is important, this item could be looked at to see if a lighter model is available. There were no complaints about the unit other than the weight. It also didn't come with any shipping container to protect it during shipping.



Figure 13. OrthoLav irrigator

10. There were several **serological water baths, NSN 6640012461989**, in the Laboratory ISO shelter but they were not sure if they were needed. The only reason the lab technician said the water bath might be used for is warming or thawing frozen blood. According to the UDR, this item has an AAC code of X, semi-active, no replacement.



Figure 14. Serological water bath

11. Figure 15 is a photograph of a M5 series **dental air compressor, NSN 6520001391246**, that is being used to power patient ventilators. The problem brought to our attention is that due to the noise of the unit, the compressors are kept outside the ward they are being used in. I was informed there is a plastic sleeve in the piston cylinder that swells and causes the unit to seize up. It wasn't clear and additional follow-up needs to be done to determine if the compressors are being protected and was water getting into the cylinder or was the humidity of the environment it was being used a factor?



Figure 15. Dental air compressor

12. **Dental amalgamator, NSN6520001490123.** The unit functions well but dental personnel asked if there was a smaller unit available that could replace the Vari-mix III.



Figure 16. Dental amalgamator

13. This **Jordan blood bank refrigerator, NSN 4110013523653**, was supposed to replace a broken unit in an ISO. However, it did not have the same dimensions as the unit it was supposed to replace. It was too tall to fit into an ISO and the holes for bolting the unit to the floor did not line up. The 28<sup>th</sup> CSH repaired the original refrigerator and this unit has remained in the warehouse for quite some time. No one wants to assume responsibility for shipping charges to return it to depot stock.



Figure 17. Blood bank refrigerator

14. Microscopes, various makes and models currently found in Clinical Laboratory UAs. Chief complaint is the units are too large for efficient shipping and use in a field environment. Users would like a more compact microscope. Figure 18 shows a Labophot 2 microscope typical of what is found in lab assemblages.



Figure 18. Microscope

**MEOD Logistics Assistance Visits After Actions Report**

1. During November 2002, the Sample Data Collection Team deployed to Fort Bragg, NC; Fort Hood, TX; and Fort Carson, CO to gather data on the effectiveness of Unit Level and Direct/General Support medical equipment maintenance procedures as well as determine the availability of medical equipment in MTOE medical organizations. This was a very brief assessment of each organization's medical maintenance program management procedures and an extremely cursory assessment of the availability of their medical equipment for immediate use.
2. The medical equipment maintenance posture for seven MTOE medical units and the medical maintenance support availability of a Medical Logistics Battalion was briefly assessed. The MEDLOG was evaluated to determine its ability to provide unit level maintenance to organizations without organic medical equipment repairers and its ability to provide direct support maintenance to organizations requiring maintenance services beyond their organic capability.
3. The visit determined that the 28<sup>th</sup> CSH, 261<sup>st</sup> ASMB, and 257<sup>th</sup> Med Co (Dental) are utilizing TAMMIS MEDMAINT to manage their medical equipment maintenance programs. The 21<sup>st</sup> CSH and the 10<sup>th</sup> CSH are utilizing an Access Database. The 57<sup>th</sup> Med Co (Air Ambulance) receives its medical equipment maintenance support from the 32 MEDLOG Bn. The 3<sup>rd</sup> ACR has chosen not to perform medical equipment maintenance. Maintenance operations utilizing TAMMIS MEDMAINT to manage their medical equipment maintenance programs, generally showed signs of better maintenance scheduling and maintenance completion than those that are not. None of the units visited were using ULLS-G.
4. The following is a brief summary of the validity of the medical equipment maintenance program and the condition of the medical equipment at each of the medical treatment facilities assessed.

## Fort Bragg

a. 28<sup>th</sup> Combat Support Hospital

(1) Medical Equipment Maintenance Program. - The 28<sup>th</sup> CSH is effectively utilizing TAMMIS MEDMAINT for managing their scheduled and unscheduled medical equipment maintenance. Although there were several items located in the hospital not properly loaded into the database, the database as a whole appeared to be comprehensive. The maintenance manager is providing the leadership personnel with the appropriate equipment maintenance status to include equipment serviced and equipment mission capability, as well as medical equipment not serviced and necessary actions to ensure the equipment is serviced and fully mission capable. Key personnel need to place more emphasis on equipment accountability; several items of equipment requiring services have been listed as "NL" (not located) in excess of one year.

(2) Operator Maintenance Program - There were several indicators that the operator maintenance program has room for improvement. The unit needs to evaluate their procedures for storing and/or shipping medical equipment items that are not protected by some type of hardened container or case. Numerous items are damaged beyond economical repair that appears to have been caused by inadequate protection during storage and/or shipment. The unit's operator maintenance program does not include battery-operated equipment in a battery maintenance program. This allows opportunity for the battery

charge to decrease below the irreversible charge level, causing the batteries to fail or no longer charge properly when the equipment is plugged into a receptacle. A Lifepack 10, Defibrillator was pulled out of storage at random and the batteries allowed to charge overnight. The batteries did not charge and the defibrillator would not function in the battery mode. A suction unit that had been recently serviced and determined to have no deficiencies by the operator had a blown battery charge indicator light and is not charging the battery properly. Operators need to exert more attention to the functionality of the equipment they may be required to use on the battlefield.

(3) Test, Measurement, and Diagnostic Equipment (TMDE) - All TMDE assessed is within the calibration standard. The 28<sup>th</sup> CSH does not have the appropriate TMDE on hand to service their IMPACT 754 Ventilators.

b. 261<sup>st</sup> Area Support Medical Battalion

(1) Medical Equipment Maintenance Program. - The 261<sup>st</sup> ASMB is utilizing TAMMIS MEDMAINT for managing the battalion's medical equipment maintenance program. A quick review revealed that much of the battalion's medical equipment is loaded into the system for scheduling each company's medical maintenance services and for logging unscheduled maintenance and repairs. The Unassigned Schedule Work Order Register lists 10 medical equipment items that were scheduled for services in Sep 02 and 30 medical equipment items that were scheduled for services in Oct 02 which have not been assigned or completed as of 06 November 2002.

(2) Operator Maintenance Program - There were several indicators that the operator maintenance program has room for improvement. The unit needs to evaluate their procedures for storing and/or shipping medical equipment items that are not protected by some type of hardened container or case. The unit's operator maintenance program does not include maintaining battery-operated equipment in a battery charging condition. This allows the opportunity for the battery charge to decrease below the irreversible charge level, causing the batteries to no longer charge properly when the equipment is plugged into a receptacle. Three patient monitors that had recently been PMCS'd by the operator and the maintainer. All three were reported to have no deficiencies, yet two were missing patient leads that would prohibit these monitors from being used for patient care. The 36th Medical Company, 261<sup>st</sup> ASMB has had a Porta-Ray X-ray Apparatus evacuated for General Support Maintenance to the 32nd MEDLOG due to the requirement for extensive repairs. Discussion with SPC Swan, a medical equipment repairer for the 261<sup>st</sup> ASMB, indicated that it had several inches of water in the shipping container when turned in by the equipment operator. Another Porta-Ray just returned from a deployment covered with rust and with an arcing tube head. Operators need to be more conscientious of their responsibility for properly storing and/or safeguarding medical equipment from the elements. An OR Table has approximately \$4,000 in parts missing that with proper storage practices may have been precluded. Operators need to pay closer attention to the functionality of the equipment they may be required to use on the battlefield.

(3) Test, Measurement, and Diagnostic Equipment (TMDE) - The 261<sup>st</sup> ASMB does not have the appropriate TMDE on hand to service their IMPACT 754 Ventilators. Additionally the 261<sup>st</sup> ASMB has several TMDE items excess to their authorization level that should be turned in.

c. 257<sup>th</sup> Medical Company, Dental

(1) Medical Equipment Maintenance Program - The 257<sup>th</sup> is utilizing TAMMIS MEDMAINT for managing the Company's medical equipment maintenance program. A quick review revealed that much of the Company's medical equipment is loaded into the system for scheduling periodic maintenance services and for logging unscheduled maintenance and repairs. Several items requiring PMCS in June and September have not been completed as of 7 November 2002. Many reportable equipment items listed as on-hand in the property book are not listed in the NMC Summary report. The property book indicates 15 compressors on-hand, but only 6 are listed; only six sterilizers are listed; and only five x-ray units were listed. The unit currently has 8 items of reportable equipment that are listed as NMC. The report also distinguished that one item was NMC for 276 days of the 311 days available, two items were NMC in excess of 6 months, and three others in excess of 90 days; much of the NMC time can be attributed to awaiting man-hours.

(2) Operator Maintenance Program - Assessment was not conducted.

(3) Test, Measurement, and Diagnostic Equipment (TMDE) - Several items of TMDE assessed had expired calibration labels or no calibration label.

d. 57<sup>th</sup> Medical Company, Air Ambulance

(1) Medical Equipment Maintenance Program - The 57<sup>th</sup> Medical Company is not authorized and does not have a medical equipment maintenance capacity. The 57<sup>th</sup> Med Co receives its medical maintenance support from the 32<sup>nd</sup> MEDLOG Bn. Assessment of the Company's equipment revealed the scheduled services completion is far below any acceptable standard. The PMCS completion percentage for defibrillators is 27% and 0% for ventilators. The overall completion percentage for the Air Ambulance unit is 40%.

(2) Operator Maintenance Program - Assessment of the 57<sup>th</sup> Medical Company equipment indicated that the unit's operator maintenance program can be improved upon. The unit's operator maintenance program does not include maintaining battery operated equipment in a battery charging condition. This allows the opportunity for the battery charge to decrease below an irreversible charge level, causing the batteries to no longer charge properly when the equipment is plugged into a receptacle. The overall condition of the medical equipment items on hand is new and appears to be in good condition with the exception of the requirement of the 32<sup>nd</sup> MEDLOG to perform periodic scheduled calibrations.

Fort Hood

e. 21<sup>st</sup> Combat Support Hospital

(1) Medical Equipment Maintenance Program - The 21<sup>st</sup> CSH is utilizing an Access database in lieu of TAMMIS MEDMAINT. Their Access database is very limited and does not provide visibility of scheduled services completions or delinquencies. Additionally, the database does not provide notification of non-mission capable equipment, nor does it provide cumulative non-availability of reportable medical equipment. The medical equipment repairers in both A Co and B Co were unable to provide a list of reportable equipment belonging to their unit. An assessment of a laboratory MMS revealed that the majority of their lab equipment was overdue for calibration and services. With both medical companies operating

independently and the visibility and consolidation of medical equipment non-mission capable status extremely limited without the appropriate automation capability, the leadership does not have a clear picture of their hospital's medical equipment capability or lack thereof. Both maintenance entities can benefit immensely with an intensified maintenance leadership role capable of being provided by the 670A Chief Medical Maintenance Warrant Officer.

(2) Operator Maintenance Program - There were several indicators that the operator maintenance program is non-existent in some areas and that there is room for improvement in others. Several 91D30, OR Technicians stated that it is not in their scope of work to perform operator level PMCS on the medical equipment in the Operating Rooms because they are not the operators. The Staff Sergeants stated that the anesthetist and the doctors are the operators of the OR equipment and should be performing the operator maintenance services. A review of some non-mission capable equipment revealed that equipment is sometimes exposed unnecessarily to the elements (left out in rain) causing equipment failure and condition coding due to excessive costs required to effect repair. The leadership needs to place more emphasis on the requirement for operators to perform operator level maintenance.

(3) Test, Measurement, and Diagnostic Equipment (TMDE) - Several items of TMDE assessed had expired calibration labels. The 21<sup>st</sup> CSH does not have the appropriate TMDE on hand to calibrate their IMPACT 754 Ventilators.

Fort Carson

f. 10th Combat Support Hospital

(1) Medical Equipment Maintenance Program - The 10th CSH is utilizing an Access database in lieu of TAMMIS MEDMAINT. The database is very limited and does not provide visibility of scheduled services completions or delinquencies. Additionally, their Access database does not provide notification of non-mission capable equipment, nor does it provide cumulative non-availability of reportable medical equipment. The hospital currently has numerous items determined to be Non-Mission Capable. Of particular interest is the hospital's x-ray capability. The unit has three portable x-ray units, two are NMC, and the status of the third is unknown. The Picker, VP-4 x-ray apparatus has been inoperative for nine months, since February 2002. The Continental X-ray was due calibration services in April 2002, however, there is no evidence the services were performed. An assessment of a laboratory MMS revealed that the majority of the lab equipment was overdue for calibration and PMCS. Scheduled services are not being completed in accordance with AR 40-61 and the schedule established by the unit. 64% of medical equipment services scheduled for October 2002 were not completed. Further assessment revealed that the repairers are not annotating man-hours utilized to perform any of their services. Without the appropriate automation capability, the visibility and consolidation of medical equipment non-mission capable status is extremely limited.

(2) Operator Maintenance Program - Assessment of the 10<sup>th</sup> CSH's equipment indicated that the unit's operator maintenance program can be improved upon. Assessment of a CMS sterilizer revealed that the chamber was filthy inside. Assessment of a Hamilton Sink revealed that the unit is experiencing problems with the Pump Housing freezing and cracking which can be attributed to not storing the sinks with the proper mixture of recreational vehicle antifreeze.

(3) Test, Measurement, and Diagnostic Equipment (TMDE) - Several items of TMDE assessed had expired calibration labels. The 10<sup>th</sup> CSH does not have the appropriate TMDE on hand to service their IMPACT 754 Ventilators.

g. 3<sup>rd</sup> Armored Cavalry Regiment

(1) Medical Equipment Maintenance Program - Discussion with MED CO, SPT SQDN, 3<sup>rd</sup> ACR First Sergeant, 1SG Lack and the medical equipment repairer, SPC Knighten concluded that the 3<sup>rd</sup> ACR has elected to utilize their assigned 91A, Medical Equipment Repairer, to be the Commander's driver. The unit does not have, and has not had a unit level medical maintenance program in excess of one year.

(2) Operator Maintenance Program - Assessment was not conducted.

5. Medical maintenance support at the Direct Support level within the 44th MEDCOM is uncoordinated and belated. The 32nd MEDLOG Bn, XVIII Airborne Corps' principal DS/GS Medical Maintenance organization does not have a clear understanding of the organizations within the Corps that require medical maintenance support and is unfamiliar with the medical equipment densities of the organizations supported. The limited direct support maintenance capability provided by the 32<sup>nd</sup> MEDLOG Bn is excessively slow and unresponsive. With an expected turn around time of 60 - 90 days, several organizations within XVIII Airborne Corps elect not to utilize the 32<sup>nd</sup> MEDLOG and go directly to the IMSA or USAMMA's maintenance operations depots. The 32<sup>nd</sup> MEDLOG Bn needs to recognize its responsibility to provide MOS training sustainment to the medical equipment repairers within its charge, and to establish an effective maintenance sustainment program for the medical organizations within the XVIII Airborne Corps.

6. There is evidence that the Integrated Logistics Support (ILS) process is not ensuring all logistics support requirements are being met. There are several items of medical equipment currently in our inventory that require a computer to calibrate. The requirement for a computer is not currently documented in the requirements documents for organizations with medical equipment maintenance personnel. Thus, our medical maintenance personnel in many organizations do not have a viable computer to provide this capability. Every organization assessed is lacking the appropriate TMDE to calibrate their IMPACT 754 Ventilators. The 0062<sup>ND</sup> MD TM Eye Surg, (MED TM, EYE SURGERY, SRC 08527LC00), is co-located with the 28<sup>th</sup> CSH. The 28<sup>th</sup> CSH has been assigned the responsibility to provide maintenance yet has not been provided the necessary tools, test equipment, or training to calibrate and service all medical items associated with the Eye Surgery Team; i.e. the Diathermy Apparatus and the Diode Laser System. It was also brought to the attention of the Sample Data Collection Team that there is confusion amongst operators and repairers in the field concerning the Intracranial Pressure Monitor and the requirement to gas sterilize the transducers. Without the necessary tools, test equipment, or training, the expectation for these items to be properly maintained and sustained is unreasonable.

7. With the implementation of the MRI configured Combat Support Hospital, the medical maintenance warrant officer is removed from the command and control of the medical equipment repairers. The warrant officer is assigned to the HHD as an "advisor" while the repairers work directly for the companies. This concept significantly hinders the ability for the hospital to have a centralized and focused medical maintenance operation. It also limits the ability of the maintenance chief to mentor and train junior repairers.

This concept has an adverse effect on the organization's ability to have an effective maintenance sustainment program.

8. Presuming the condition of the entire Army's MTOE medical equipment can be predicted from the extremely limited sampling conducted during the recent visit, an assumption can be made that the Mission Capability of the Army's medical equipment is limited, and the AMEDD's medical equipment maintenance process for MTOE units is not a viable. Currently, there is no means in place to provide overarching responsibility or oversight to ensure adequate sustainment maintenance is being performed for medical equipment. The AMEDD Maintenance Sustainment Initiative has the potential to provide the required overarching responsibility and oversight with a centralized focal point for all maintenance issues. This initiative however, is dependent upon active participation from the FORSCOM leadership to provide personnel support from the MEDLOG Battalions and Companies, as well as to ensure accessibility to each unit's medical equipment. Additionally, without the necessary automation capability to provide connectivity throughout the maintenance support structure (MEDLOGs, USAMMA, MLMC) ensuring visibility of unit medical maintenance requirements and medical equipment status, this initiative too will be subject to failure.

9. The point of contact for additional information is Mr. Kevin B. Culihan @ 301-619-4381.

# **Sample Data Collection Monthly Report December 2002**



**Submitted to:  
U.S. Army Medical Materiel Agency  
U.S. Army Medical Research and Materiel Command  
Fort Detrick, Maryland**



Prepared by:  
Information Systems Support Inc.  
Robert Zak MS  
Kevin Culihan  
Report # 011

## **Table of Contents**

<b>Introduction-----</b>	<b>1</b>
<b>Scope-----</b>	<b>1</b>
<b>Technology Support Issues -----</b>	<b>2</b>
<b>Test, Measurement, and Diagnostic Equipment (TMDE) Review -----</b>	<b>12</b>

### **List of Figures**

<b>1. Sterrad 50</b>	<b>Page 2</b>
<b>2. MS-1 Peripheral Nerve Stimulator</b>	<b>Page 4</b>
<b>3. Dental Compressor-Dehydrator</b>	<b>Page 5</b>
<b>4. Olympus LF-2 Fiberscope</b>	<b>Page 6</b>
<b>5. MPM-1 Intracranial Pressure Monitor</b>	<b>Page 7</b>
<b>6. Otoscope and Ophthalmoscope Set</b>	<b>Page 8</b>
<b>7. Mark 20 Model Wright Spirometer</b>	<b>Page 9</b>
<b>8. Steris 2080MIA Operating Table</b>	<b>Page 11</b>

**Introduction:** The U.S. Army Medical Material Agency (USAMMA) serves as the Army Medical Department's (AMEDD) strategic level medical logistics organization. USAMMA's mission is to enhance the medical material readiness throughout the full range of military health service support missions worldwide. In this role USAMMA develops and implements innovative logistics concepts and technologies as well as promoting military and medical logistics information and knowledge.

The agency's core skills and technologies center on conducting life cycle management for commercial and non-developmental items, sustaining and modernizing the medical force, supporting exercises and contingency operations and disseminating medical logistics information and knowledge. Two of USAMMA's critical groups tasked with this mission are the Maintenance Engineering Operations Directorate (MEOD) and the Technology Support Division (TSD). The MEOD is responsible for the maintenance of all the medical equipment while the TSD is responsible for ensuring the medical technology is sustainable and meets current and future utilization requirements.

In order to enhance the strengths of MEOD and TSD, USAMMA has contracted, (contract # DAMD17-01-D-0004), with McAdams Technologies Inc., (subcontracted to Information Systems Support Inc. March 2001), to develop and implement a sample data collection program for targeted medical devices. The overall focus of this program is to assist USAMMA in supplying medical field equipment, and DEPMEDS facilities with current, and sustainable medical technology in a fiscally efficient manner.

**Scope:** This document, the eleventh Sample Data Collection (SDC) report, provides information on a potential low-temperature sterilization process that may be a suitable substitute for Ethylene Oxide sterilization for medical equipment items and supplies that specify Ethylene Oxide sterilization. Also, several equipment items found in the Operating Room Unit Assemblage (UA) were researched for currency as well as availability of required accessories and consumables. This information will be used to compile a handbook of consumables and accessories for field use. The items researched so far include the Life-Tech MS-1 peripheral nerve stimulator, the Defiance Electronics PAC 6.7 compressor-dehydrator, Olympus LF-2 tracheal intubation fiberscope, Integra NeuroSciences MPM-1 intracranial pressure monitor, Welch Allyn 2.5 volt otoscope and ophthalmoscope set, Ferraris Medical Limited Mark 20 mechanical respirometer, and Steris 2080 MIA operating table.

Also contained in this report is a review of Test, Measurement, and Diagnostic Equipment (TMDE). Medical equipment maintenance requirements were reviewed to determine adequacy of Test, Measurement, and Diagnostic Equipment (TMDE) in the Army inventory. Several items of TMDE were found to be obsolete and/or are being discontinued by the manufacturer. Obsolete, discontinued, and no longer preferred TMDE items and recommended replacement items are listed.

## Technology Support Issues

The following equipment and technology issues were addressed during December.

In regards to a request for supply items for a hydrogen peroxide plasma sterilizer, the following was identified.

### **STERILIZER, HYDROGEN PEROXIDE (H<sub>2</sub>O<sub>2</sub>)**

**Johnson and Johnson, Advanced Sterilization Products Division, STERRAD 50, NSN 6530-01-499-5641**

System Description: The STERRAD 50

Provides a large capacity in low-temperature, point-of-use sterilization. The system's dry, low-temperature hydrogen peroxide gas plasma reliably sterilizes instruments, even those that can't be immersed, without the fear of harmful residuals, offensive odor, and instrument degradation found in the Peracetic Acid Sterilization (PAS). The STERRAD 50 Sterilizer is also a shelf-ready system. Processed instruments are packaged or wrapped for immediate use or shelved for later use. With a rapid cycle time of just 45 minutes, the STERRAD 50 Sterilizer improves instrument utilization, inventory costs, and staff productivity.

**Figure 1. STERRAD 50**



## Johnson and Johnson STERRAD 50 Characteristics

Dimensions	Height, in. (with cart)	58	
	Width, in.	25	
	Depth, in.	33	
Voltage	110-120 VAC/60 Hz/20 AMP/ 1 Phase (dedicated line) NEMA L5-20 Plug		
Weight	500 lbs		
Operational Environment	58-103°F 10% to 80% Relative Humidity (non-condensing)		
Total Cycle Time	45 minutes		
Cycle Temperature	104-131°F		

**2. PERIPHERAL NERVE STIMULATOR****OR Item: Life-Tech, Inc., MS-1, NSN 6515-01-397-5212**

System Description: The MS-1 peripheral nerve stimulator

The use of a peripheral nerve stimulator provides useful information:

- during operations in which non-depolarizing neuromuscular blocking agents are used to indicate the degree of blockade and thus the indication for additional doses of muscle relaxant.
- at the end of the operation to ensure that muscle power is fully restored by appropriate doses of neostigmine and atropine before consciousness is restored. It is very distressing to a conscious patient when neuromuscular blockade is incompletely reversed.
- Clinical indication of reversal of neuromuscular blockade is given by the patient's power in muscles supplied by the cranial nerves e.g. to open his eyes, put out his tongue, hold his head up, as well as to breathe adequately and to cough.

Peripheral nerve stimulation may be helpful in assisting localization during nerve blocks with local analgesia.

**Figure 2. MS-1 Peripheral Nerve Stimulator**

### Life-Tech MS-1 Characteristics

Dimensions	Height, in.	2.5	
	Width, in.	1.25	
	Depth, in.	.875	
Voltage	7.5 VDC (battery)		
Weight	3 ounces		
Output Power	30 milliamperes maximum		
Twitch	2 pulses per second		
Tetanus	50 pulses per second		
Stimulus Pulse	.25 milliseconds, square wave monophasic		

### 3. COMPRESSOR - DEHYDRATOR

**OR Item: Defiance Electronics, PAC 6.7, NSN 6520-01-242-2375 (W), 6520-01-398-4613 (J)**

**System Description:** Model PAC 6.7 Compressor-Dehydrator.

The oil-less piston air compressor (PAC 6.7) is a completely portable unit with an integral drying section which automatically regenerates the drying agent. The unit supplies compressed air, free of oil, moisture, and particulate matter greater than 5 microns, to operate a Dental Operating and Treatment Unit. A transit case is an integral part of the compressor, the cover of which is designed to serve as a sound suppressor and protective device during normal operation. The compressor can be rapidly placed into operation and is easily maintained. These compressors are included as part of the Operating Room assemblage to provide compressed air to run mechanical ventilators.

Figure 3. Dental Compressor-Dehydrator



## Defiance Electronics PAC 6.7 Characteristics

Dimensions	Length, inches	31.5	
	Width, inches	26.5	
	Height, inches	11.75	
Power Requirements	Voltage	115-230 VAC (rewiring required)	
	Frequency	50/60 Hz	
	Current	14 Amps at 115 VAC 7 Amps at 230 VAC	
Ambient Temperature		40°F to 120°F	
Normal Load		6.0 scfm at 60 psi	
Capacity		6.0 scfm at 60 psi	
Site requirements		20 ft. from point of use	
Weight, lbs		158	

## 4. FIBERSCOPE, TRACHEAL INTUBATION

**OR Item: Olympus, LF-2 Tracheal Intubation Fiberscope, NSN 6515-01-397-5258****System Description:** The LF-2 Tracheal Intubation Fiberscope

The LF-2 provides exceptional flexibility and maneuverability for a tracheal intubation fiberscope while still maintaining a thin diameter. The LF-2's insertion tube has a combination of flexibility and stiffness for easier insertion and navigation into the trachea and easier placement of endotracheal/endobronchial tubes. A large 1.5mm channel permits improved aspiration of secretions. Incorporating Olympus' advanced optics along with a 90° field of view, the LF-2 provides excellent image quality and visualization to make it easier to quickly and successfully perform flexible tracheal intubation.

Figure 4. Olympus LF-2 Fiberscope



## Olympus LF-2 Fiberscope Characteristics

Optical System	Field of View	90°	
	Direction of View	0° (forward viewing)	
	Depth of Field	3-50 mm	
	Illumination Method	Light guide system	
Distal End	Outer Diameter	3.8 mm	
Bending Section	Range of tip bending	Up 120°; Down 120°	
Insertion Tube	Outer diameter	4 mm	
Working Length		600 mm	
Total Length		830 mm	
Suction Channel		1.5 mm	

## 5. INTRACRANIAL PRESSURE MONITOR

**OR Item:** Integra NeuroSciences, MPM-1, NSN 6515-01-463-1775

**System Description:** The MPM-1 Intracranial Pressure Monitor

Fiber-optic transducer tipped pressure temperature monitoring system providing:

- Intracranial Pressure
- Intracranial Temperature
- Cerebral Perfusion Pressure

The MPM-1 has an easy to read color display that delivers an ICP waveform, digital CPP, ICP and ICT readouts. Also provides continuous recording and display of ICP and CPP values over the most recent 12- or 24-hour period for trend analysis. The unit can be bedrail or pole mounted and connected to bedside monitoring systems for added functionality. A built-in rechargeable battery permits monitoring during transport. High ICP and low CPP alarms detect a rise in intracranial pressure or a decrease in cerebral

perfusion pressure according to user-selected values and facilitate early recognition and intervention. RS232 serial and ICP analog output connectors enable computer data collection.

**Figure 5. MPM-1 Intracranial Pressure Monitor**



**Integra NeuroSciences MPM-1 Characteristics**

Dimensions	Height, in.	10.8	
	Width, in.	8.5	
	Depth, in.	3.5	
Voltage	100-230 VAC, 50/60 Hz		
Battery (backup)	Rechargeable sealed lead acid		
Weight, lbs	9.8		
Operating Limits	Temperature Humidity Pressure	59°F to 104°F 20% to 95% 20.67 to 31.30 inHG	
Storage/Shipping Limits	Temperature 32°F to 122°F Humidity Pressure	32°F to 122°F 20% to 95% non-condensing 14.76 to 31.30 inHG	

**6. OTOSCOPE AND OPHTHALMOSCOPE SET**

**OR Item: Welch Allyn, NSN 6515-00-550-7199**

System Description: 2.5volt diagnostic set with ophthalmoscope, operating otoscope, and “D” size battery handle.

Basic medical diagnostic set, complete with power handle and case. The diagnostic instruments feature a standard halogen lamp for better illumination, resulting in a better examination. The set includes a 2.5 volt

Ophthalmoscope providing 28 lenses and 6 standard apertures. Operating Otoscope with an open system and rotatable lens and speculum for convenient procedures. 2.5 volt D size battery handle, with chrome-plated brass knurled finish, is ideal for situations where standard outlets are not available.

**Figure 6. Otoscope and Ophthalmoscope Set**



Diagnostic Set Characteristics

Dimensions	Height, in.		
	Width, in.		
	Depth, in.		
Voltage	2.5 VDC (“D” cell battery)		
Weight	2 lbs		

**7. RESPIROMETER, MECHANICAL**

**OR Item: Ferraris Medical Limited, Mark 20, NSN 6515-01-332-4778**

System Description: The Model Mark 20 mechanical respirometer

Feature push button on/off and reset, and are supplied complete with two circuit adapters and safety harness in a fully padded carrying/storage case.

**Clinical applications include:**

Respirometers are used to perform routine checks of patient's tidal volumes to guarantee accurate ventilator performance during mechanical ventilation. When blood gas analysis indicates weaning can be attempted, respirometers are ideal instruments to determine the success of weaning by measuring tidal and minute volume levels. Respirometers are also ideal instruments to insure the level of the patient's lung function before leaving the recovery area.

Placed in the expiratory circuit, respirometers are used to measure tidal and minute volumes to insure adequate ventilation on both spontaneously breathing and mechanically ventilated patients.

**Features of Wright Respirometers:**

- **FAST RESPONSE.** No warm up time needed. Instant evident response to the controls.
- **SENSITIVE.** An initial flow not greater than 2.5 liters per minute enables monitoring of patients having a body weight as low as 10 kg and accurate measurement above 20 kg.
- **ACCURATE.** On continuous flow at 16 liters per minute, the volume is held within +/- 2% while at 60 liters per minute it is between +5% and +10% of absolute.
- **WIDE RANGE.** Adequate for all values of Tidal and Minute Volume in one display.
- **REPEATABLE.** On any one occasion within +/- 1%.
- **PNEUMATIC RESISTANCE.** Negligible in circuit with the patient.
- **DEAD SPACE.** Small in comparison with that in the patient.
- **FAILS SAFE.** Interference with the functioning of the instrument will not cause optimistic readings.
- **DURABLE.** The basic design, in use for over 40 years, has proved reliable and a source of long working life when properly handled and maintained.
- **STERILIZABLE.** Designed for repeated use. Easily purged. Gas sterilization recommended (EtO)
- **PRINCIPLE OF OPERATION.** The mechanism comprises a miniature air turbine with moving parts of very low inertia. Revolutions of the rotor are recorded by a gear train and watch-type dial on which the number of liters of gas, which have passed between two successive readings, is indicated. Respiratory flow alone operates the instrument and no external power is required. The instrument responds to flow through it in one direction only; reverse flow is ignored.

**Figure 7. Mark 20 Model Wright Respirometer**



## Mark 20 Characteristics

Dimensions	Height, in	2.85	
	Depth, in	2.75	
	Dial Diameter, in	2.25	
Large Scale	Minute Volume		
Small Scale	Tidal Volume		
Weight, ounces	6		
Accuracy	Tidal Volumes	+/- 3% for minute volumes exceeding 5LPM +/- 4% for minute volume of 4LPM	
Accuracy	Continuous Flow	+/- 2% at 16 LPM +5% to +10% @ 60LPM	
Sensitivity	Starts volume registration at not more than 2.5 LPM		
Resistance	Proportional to square of the flow rate and not more than 2 cm H <sub>2</sub> O @ 100 LPM		
Dead Space	22 ml		
Max Accept. Flow Rate	300 LPM continuous flow for short periods		

## 8. TABLE, OPERATING

**OR Item: Steris, 2080MIA Operating Table, NSN 6530-01-459-1326 (W), 6530-01-353-9883 (J)**

**System Description:** Model 2080MIA operating table.

The 2080MIA, (Manual Control, Image Amplification), is a manually operated pedestal-style operating table. Table has an articulating top section and adjustable foot and head sections for superior patient positioning with maximum convenience for the surgical team. Designed to accommodate patients weighing up to 300 pounds. Includes foot pedal operated conductive casters and locks designed to compensate for uneven floor surfaces.

Figure 8. Steris 2080MIA Operating Table



Steris 2080MIA Characteristics

Dimensions	Length, inches	52	
	Width, inches	32.5	
	Height, inches	44.5	
Weight, lbs		800	

## Test, Measurement, and Diagnostic Equipment (TMDE) Review

1. Reviewed medical equipment maintenance requirements to determine adequacy of Test, Measurement, and Diagnostic Equipment (TMDE) within Army inventory. Review revealed that several items of TMDE are obsolete and/or are being discontinued by the manufacturer. Obsolete, discontinued, and no longer preferred TMDE items and recommended replacement items are listed below.

a. The UNFORS, Model 710L, Mult-O-Meter X-Ray Verification System, NSN 6525015020504, LIN C05856 has been identified as a replacement TMDE for the Frank Barker, PMX III, Radiographic Multimeter, NSN 6525013870212, LIN C05856. The PMX III remains viable for performing X-Ray calibration and verification, however Frank Barker has discontinued manufacturing the PMX III.

1) The UNFORS, Model 710L, Mult-O-Meter X-Ray Verification System is a pocket-sized, non-invasive kVp & dose rate (mr) meter. The Mult-O-Meter 710 provides a rapid way of checking kVp, dose, mAs and time of a wide range of x-ray machines. The 710 utilizes a new built-in circuitry for invasive ma and mas measurements, while an external or internal detector is used for kVp and dose measurements in the x-ray field. For maximum ease of use, only two push-buttons are used to control the mult-o-meter; on/off and parameter. The external detector is firmly connected with a flexible cable to avoid common problems with breaking connectors.



2) The 710L, Mult-O-Meter specifications include:

Range kVp R/F	45 - 155 kV, w/Al
Inaccuracy	2 % 45-125; 4% 125-155kVp
Minimum exposure	3 mA at 70 kVp, 50 cm
Range dose R/F	8 $\mu$ Gy - 9999 Gy, (1 mR - 9999 r)
Inaccuracy	8 $\mu$ Gy/s - 80 mGy/s, (55 mR/min - 550 R/min)
Calibration point	$\pm$ 5 %
Energy dependence	70 kV, 2.5 mm Al
Range time	< 5 % between 50 - 150 kVp
Inaccuracy	1 ms - 9999 s
Range ma	0.5 % or 3 digits
Inaccuracy	0.30 - 2000 mA
Range mas	2 % or $\pm$ 0.05 mA
Inaccuracy	0.10 - 9999 mAs
Bandwidth selectable	2 %
Voltage protection limit	5 Hz (F) or 500 Hz (R), 3 dB
	75 V

b. The Fluke Biomedical, 454A, Electrosurg App Analyzer, NSN 6515014382409, LIN T90883 has been identified as a replacement TMDE for the BIO-TEK, RF302, Electrosurgical App Analyzer, NSN 6625010428213, LIN T90883. The RF302 remains a viable TMDE asset until replaced through the modernization process. BIO-TEK has discontinued manufacturing the RF 302.

1) The Fluke Biomedical, 454A, Electrosurg App Analyzer is a dependable Electrosurgical Analyzer to meet both current and future ESU testing requirements. The 454A performs generator output power and RF leakage measurements on a wide range of electrosurgical devices. Data actively displayed during output power measurement includes peak-to-peak voltage, crest factor, selected test load value, RF current and RF power. With the large 4-line X 42 character vacuum fluorescent display, you see it all on one bright screen! The "HOLD" key will freeze the readings on the display to make it even easier to view your test results. To facilitate inspecting your ESU's with the factory-specified test load, the standard 454A test load range is 50 ohm to 1550 ohm (50 ohm steps). You can use optional modules to selectively extend the 454A test load range from 10 ohm up to 5000 ohm. Additionally, these optional modules can perform contact quality monitor (CQM) and ValleyLab Force 4B™ return fault tests.

2) Model 454A Specifications:

**RMS CURRENT**

±5.0% of Reading (100 mA-2000 mA)

±5.0% of Reading (30 mA-100mA) for Crest Factor < 16.0

**RMS POWER**

±10% of Range (watts)

**PEAK TO PEAK VOLTAGE**

±10.0% of Reading (0-10 kV)

**CREST FACTOR**

±10.0% of Reading (1.4<sup>3</sup> CF £ 15.9)

**BANDWIDTH**

3 dB (30 Hz - 7 MHz for instrumentation)

3 dB - 2.5 MHz for loads of 100W to 500W current & power readings

**LOAD RESISTANCE**

50 - 1550 Ohms (50 Ohms steps)

± 3.0% of Selected Load (@ DC)

Optional Auxiliary Test Load Modules provide additional loads

**OSCILLOSCOPE OUTPUT**

~/= 2.5 Volt/Amp (uncalibrated)

**TEMPERATURE RANGE**

15° C to 35° C Operating

0° C to 50° C Storage

**POWER REQUIREMENTS**

< or = 0.75 Amps,

115 VAC 50/60 Hz or 240 VAC 50/60 Hz



c. The Fluke Biomedical, INDEX 2 M<sub>FE</sub>, Pulse Ox Analyzer, NSN TBD, LIN Z14582 has been identified as a replacement TMDE for the BIO-TEK, CARDIOSAT EF, Pulse Ox Analyzer, NSN 6515014491422, LIN Z14582. The CARDIOSAT EF remains a viable TMDE asset until replaced through the modernization process. BIO-TEK has discontinued manufacturing the CARDIOSAT EF.

1) The Fluke Biomedical, INDEX 2 M<sub>FE</sub>, Pulse Oximeter Analyzer is a dependable full-featured simulator in a compact size. The Index 2M simulates arterial oxygen saturation from 35-100% oxygenation. Heart rate can be varied from 30 to 250 bpm. In addition, plethysmographic waveforms can be set from

0-20% signal strength, simulating the range from no pulse to a very strong pulse. These basic features allow Index 2M to simulate several different patient conditions such as:

- Normal patient
- Normal/Tap, Normal Shiver
- Patient with a weak pulse
- Weak/Tap, Weak Shiver
- Geriatric patient
- Obese patient
- Bradycardia
- Brad/Shiver
- Tachycardia
- Hypox, Hypox/Tap, Hypox/Shiver, Neonate, Neonate/Shiver



The Index 2M test simulations verify the pulse oximeters SpO2 and heart rate alarms for response time. The Index 2M comes with full computer control, a built-in RS-232, and a printer port. Features include:

- Portability
  - 10 preloaded manufacturer's R-curves
  - User-definable "makes" for most other manufacturers
  - 6 downloadable R-curve spaces available
  - Physiological finger for a complete SPO2 test
  - Simultaneous simulation of motion and arterial oxygen levels
  - Ability to vary the 50 and 60 Hz artifacts frequency by +4 Hz in steps of 0.3 Hz
  - New arterial wave amplitude scale, calibrated in units of perfusion
  - New Masimo® R-curve
  - Electrical probe test and oximeter test
  - RS-232 port
  - New tap/shiver motion simulations let you discover for yourself the impact of motion
- Index 2M<sub>FE</sub> promotes both the optical finger and electrical simulations/probe testing with new motion artifacts.

2) The INDEX 2 M<sub>FE</sub>, Pulse Ox Analyzer specifications include:

<p><b>%O2</b>                  Range: 35-100%                  Resolution: 1%                  Accuracy: 100-75% ±2%, ± accuracy of the pulse oximeter under test                  74-50% ±3% ± accuracy of the pulse oximeter under test                  Less than 50% unspecified                  Repeatability: ±1 standard deviation</p>	<p><b>Rate</b>                  Range: 30 - 250 bpm                  Resolution: 1 bpm</p> <p><b>Pulse Amplitude</b>                  Range: 0-100% of nominal pleth amplitude                  Resolution: 1%</p>	<p><b>Display</b>                  2-line x 24-character super twist LCD</p> <p><b>Dimensions</b>                  18" x 16" x 9" (45.7 x 40.6 x 22.9 cm)</p> <p><b>Weight</b>                  10 lb (4.5 kg)</p>
--	--	--

d. The Fluke Biomedical, VT-Plus, Gas Flow Analyzer, NSN 6630014916615, LIN C61523 has been identified as a replacement TMDE for the Allied, RT-200, Calibrator-Analyzer, NSN 6695012552855, LIN C61523. The RT-200, unless modified to include an RS 232 port computer interface, does not support the IMPACT 754 Ventilator. The RT-200 is no longer produced and Allied has discontinued modification of the tester.

1) The Fluke Biomedical, VT-Plus Gas Flow Analyzer is a small, lightweight, rugged gas flow analyzer that quickly and accurately measures pressure, flow, volume, oxygen concentration, and barometric pressure. It is compatible with ventilators utilizing bias flow, peep, cpap, pressure support and volume support technologies. Features include: onboard trending for continuous ventilator analysis; bi-directional flow measurement; vacuum pressure measurement; liquid pressure measurement; 18 secondary calculations; RS-232 and printer ports; user accessible O<sub>2</sub> concentration sensor; min/max/average/absolute and graph for all parameters; software-driven opvs for popular ventilators; all in a stand alone unit with carrying case.



2) Model VT-Plus specifications include: Low Flow, Range:  $\pm 25$  lpm, Accuracy: 2.0% of reading or  $\pm 0.04$  lpm, Frequency response:  $>25$  Hz, Low flow dropout: 0.010 lpm, Breath detect threshold: 0.10 lpm, Maximum flow rate: 50 lpm, Volume range:  $\pm 1$  L, Accuracy:  $\pm 3\%$  of reading or  $\pm 2$  ml, Fittings: 15 mm OD, 1:40 conical male; 1/4" NPT ID per ASTM F-1054, Volume accuracy tested to 1 L. High Flow, Range:  $\pm 300$  lpm, Accuracy:  $\pm 2.0\%$  of reading or  $\pm 0.1$  lpm, Frequency response:  $>25$  Hz, High flow dropout: 1 lpm, Breath detect threshold: 5.0 lpm, Maximum flow rate: 500 lpm, Volume range:  $\pm 7$  L, Accuracy:  $\pm 3\%$  of reading or  $\pm 10$  ml, Fittings: 22 mm OD, 1:40 conical male; 15 mm ID, 1:40 conical female per ASTM F-1054, Volume accuracy tested to 7 L. Low Pressure, Range:  $\pm 120$  cmH<sub>2</sub>O, Accuracy:  $\pm 0.75\%$  of reading or  $\pm 0.5$  cmH<sub>2</sub>O, Frequency response:  $>10$  Hz, Resolution: 0.1 cmH<sub>2</sub>O, Fittings: Luer loc. High Pressure, Range:  $\pm 100$  psi, Accuracy:  $\pm 1\%$  of reading or  $\pm 0.1$  psig, Frequency response:  $>10$  Hz, Resolution: 0.1 psi, Fittings: DISS connector, stainless steel. Airway Pressure, Range:  $\pm 120$  cmH<sub>2</sub>O, Accuracy:  $\pm 0.75\%$  of reading or  $\pm 0.5$  cmH<sub>2</sub>O, Frequency response:  $>25$  Hz, Resolution: 0.1 cmH<sub>2</sub>O, Fittings: Internally connected at the transducer distal end. Oxygen Measurement, Range: 0 - 100%, Accuracy:  $\pm 2\%$  FSO, Resolution: 0.1 %O<sub>2</sub>, Transducer location: Internal. Gas compatibility, Air, O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub>, N<sub>2</sub>O, mixtures or custom, Gas reference units ATP, STP, and BTPS. Output ports, RS-232 serial port, and parallel printer port. Power, 120 / 240 VAC, auto-switching 50-60 Hz. Display, LCD with CFL backlight

e. The Fluke Biomedical, UW-4, Ultrasound Wattmeter, NSN **TBD**, LIN R95994 has been identified as a replacement TMDE for the UMA Inc, UMR-3C & (3D)Radiometer, NSN 6625011417357 & 6625014876986, LIN R95994. The UW-4 has been determined to provide a wider operating range and higher level of accuracy as well as capable of operating on battery power.

1) The UW 4 is a portable, battery-operated device that measures output of therapeutic ultrasound devices in the range of 1-10 MHz. The UW 4 comes with a transducer head clamp and support center rings for various ultrasound transducers up to 3 inches in diameter. It utilizes a simple and accurate strain gauge to measure ultrasound. The strain gauge, in conjunction with an open tank design, yields a wattmeter that is reliable, accurate, linear, easy to calibrate, and affordable. It is designed with a port for easy draining after use, a sight bubble and adjustable feet for leveling, and draft protection for accurate readings. The operating temperature range is between 50-85 degrees F; the frequency response range is 0.5 to 10 MHz; the power range is 0.1 to 30 watts; with a system repeatability of 3% +/- .2 W of reading and includes push button zeroing. Test media is de-ionized/distilled and degassed water. **Note: Must be kept from freezing.**

