

# CRANE DIVISION

## NAVAL SURFACE WARFARE CENTER

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Distribution Statement A – Approved for public release; distribution unlimited.

# **WEAPON SHOT COUNTER**

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**PROVIDING MORE THAN JUST ROUND COUNT**

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**Naval Surface Warfare Center Crane**

**(NSWC Crane)**

**NDIA Small Arms Symposium**

**21 May 2009**

# Background

- **2003: Weapon Shot Counter (WSC) initiated as congressional add**
- **2003: WSC contract awarded**
- **Jul 2004: WSC-Carbine (WSC-C) DT/OT I**
- **Aug 2005: WSC-C DT/OT II**
- **Jul 2006: WSC-C LRIP**
- **2006: USMA develops algorithms for WSC Enhanced Arms Repair (WEAR) Software**
- **Jan 2007: WSC-C FRP**
- **Sept 2007: WSC-C fielded in low numbers**
- **May 2008: WSC contract expires**
- **Apr 2009: Release of WSC synopsis for MK16/MK17**

# M4A1 Carbine WSC System

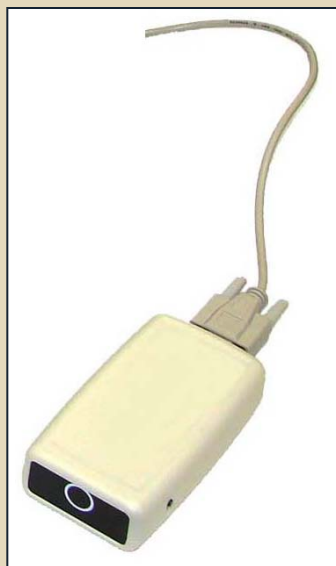
- **Weapon Shot Counter (WSC)**
  - Fits in standard pistol grip
  - Weighs approximately 2.0 oz (56.7 g)
  - Uses a 3.6V lithium battery
  - Electrical components permanently potted
  - Records cumulative round count and number of rounds in a burst of fire
  - No date/time stamp



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# M4A1 Carbine WSC System

- **Data Collection Device (DCD)**
  - Transfers data via infrared communication
  - Requires PC, software, and RS-232 serial cable to download data



# WSC Limitations

- **Primary limitation: Tracking of individual weapon parts**
- **Discernment of ammunition type**
- **Suppressed/unsuppressed fire**
- **Modular weapon systems**



# Overcoming Limitations

- **WSC Enhanced Arms Repair (WEAR) Maintenance Software was developed to overcome the primary limitation of tracking individual parts**
- **WEAR uses USMA-developed algorithms based on weapon reliability data to predict part failure**

# WEAR Login Screen

## WEAR

WSC ENHANCED ARMS REPAIR Maintenance System



User Name:

Password:

OK

Cancel

version 1.0



# WEAR Weapon Selection Screen



## WEAR

### WSC ENHANCED ARMS REPAIR Maintenance System

Choose Your Weapon Class




MK47



M4A1 Carbine



MK11



MK12



MK46 & MK48



MK16 & MK17

Log Out

User Administration

Resources


# WEAR Current Status Screen

**WEAR** ?

Current Status | 
 Maintenance Log | 
 Overall Weapon Health | 
 Maintenance Resources | 
 Burst Info | 
 Acknowledgements

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**Weapon:**  
 ▼  
[Select Serial No.](#)



Shot Counter S/N:  
**411060144**

Total Shots Fired: **5000**  
as of Last Scan: **05/20/2008**

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Part	Rounds to Replacement	Hazard Rate 1.0%
Barrel (Standard)	1393	0.70%
Bolt	2137	0.42%
Gas Rings	-300 <span style="color: red;">Overdue</span>	1.25%
Hammer Spring	4657	0.18%
Extractor Assy	5640	0.15%
Ejector Assy	4370	0.21%

Click Part Name to View Part Image

Log Out

Scan Weapon

Change Weapon


# WEAR Maintenance Log

**WEAR** ?

Current Status | 
 **Maintenance Log** | 
 Overall Weapon Health | 
 Maintenance Resources | 
 Burst Info | 
 Acknowledgements

**Weapon:**

Select Serial No. to Jump to Maintenance Log



**Maintenance Functions**

**Maintenance History**

Weapon S/N	Shot Counter S/N	Shots Fired to Date	Date of Last Scan	Part	Round Count	Date of Maintenance	Result of Maintenance	User
W359013	411060044	3981	01/30/2008	Barrel (Standard)	3981	02/15/2008	Replaced (Failure)	admin
W456777	411060150	10	01/30/2008	Bolt	10	02/15/2008	Replaced (Failure)	admin
				Barrel (Standard)	10	02/15/2008	Replaced (Failure)	admin
W456778	411060174	519	01/30/2008	Hammer Spring	519	02/15/2008	Replaced (Prevention)	admin
				Gas Rings	519	02/15/2008	Replaced (Failure)	admin
				Bolt	519	02/15/2008	Replaced (Failure)	admin
				Barrel (Standard)	519	02/15/2008	Replaced (Prevention)	admin

Log Out

Scan Weapon

Change Weapon

# WEAR Overall Weapon Health

**WEAR**
?

Current Status
Maintenance Log
**Overall Weapon Health**
Maintenance Resources
Burst Info
Acknowledgements

**Weapon:**

Select Serial No. to Jump to Weapons Overall Health

	No attention needed
	Action may be required
	Maintenance suggested

**Health Functions**

Part Weight

Weapon S/N	Barrel	Bolt	Gas Rings	Hammer Spring	Extractor Assy	Ejector Assy	Overall Weapon Health
Q222222	Standard						96.57 ▲
W111111	Standard						67.47
W350833	Standard						73.26
W358623	CQB						73.00
W358888	Standard						72.41
W358894	Standard						98.60
W359013	CQB						73.59
W456777	Standard						98.59 ▼

Log Out


Scan Weapon

Change Weapon

# WEAR Maintenance Resources

**WEAR**
?

Current Status
Maintenance Log
Overall Weapon Health
**Maintenance Resources**
Burst Info
Acknowledgements



**Resource Functions**

Upload

Remove

Document Number	Title	Date Uploaded
EB/4081/C06/1515	Engineering Bulletin, M4A1 Carbine	10/18/2007
M4A1 IPB	Illustrated Parts Breakdown M4A1 5.56 Carbine	01/09/2008
IMWR/4081/C03/1334	Intermediate Maintenance Work Requirements for M4A1 5.56MM Carbine	01/09/2008
SW370-BUJ-OPI-010	Operator's Manual for Carbine, 5.56mm M4A1	10/18/2007
EB/4081/C06/1503	SOPMOD Engineering Bulletin	01/09/2008
SOPWEP-86-G10-00006-01	Technical Manual for Carbine, 5.56mm M4A1	10/18/2007

Double-Click Title to View Resource

Log Out

Scan Weapon

Change Weapon

# Future of WSC

- **Wireless technology / USB upgrades**
- **Automatic detection of weapon type**
- **Detection of weapon accessories**
- **Un-tethered DCD**
- **Discernment of ammunition type**
- **Suppressed/unsuppressed fire**



## WSC for MK16/MK17

- **Synopsis released April 22, 2009**
  - Tracking Number: N00164-09-S-NB03
- **Contains draft performance specification for industry/academia comment**



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# Contact Information

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