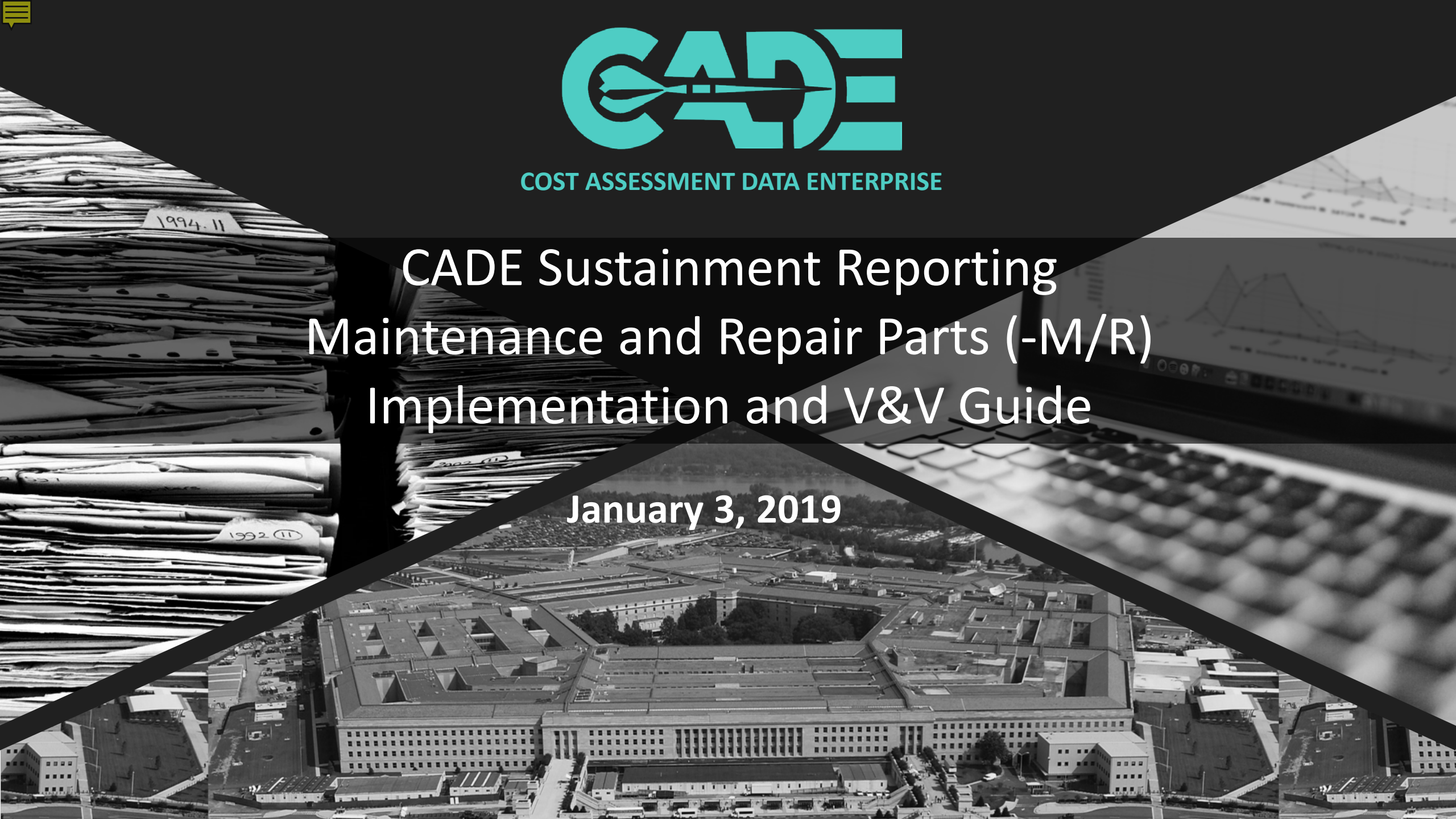

COST ASSESSMENT DATA ENTERPRISE

CADE Sustainment Reporting Maintenance and Repair Parts (-M/R) Implementation and V&V Guide

January 3, 2019

Outline

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  - Where to go for more information?
- -M/R Verification & Validation (V&V)
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Purpose of the –M/R Implementation and V&V Guide

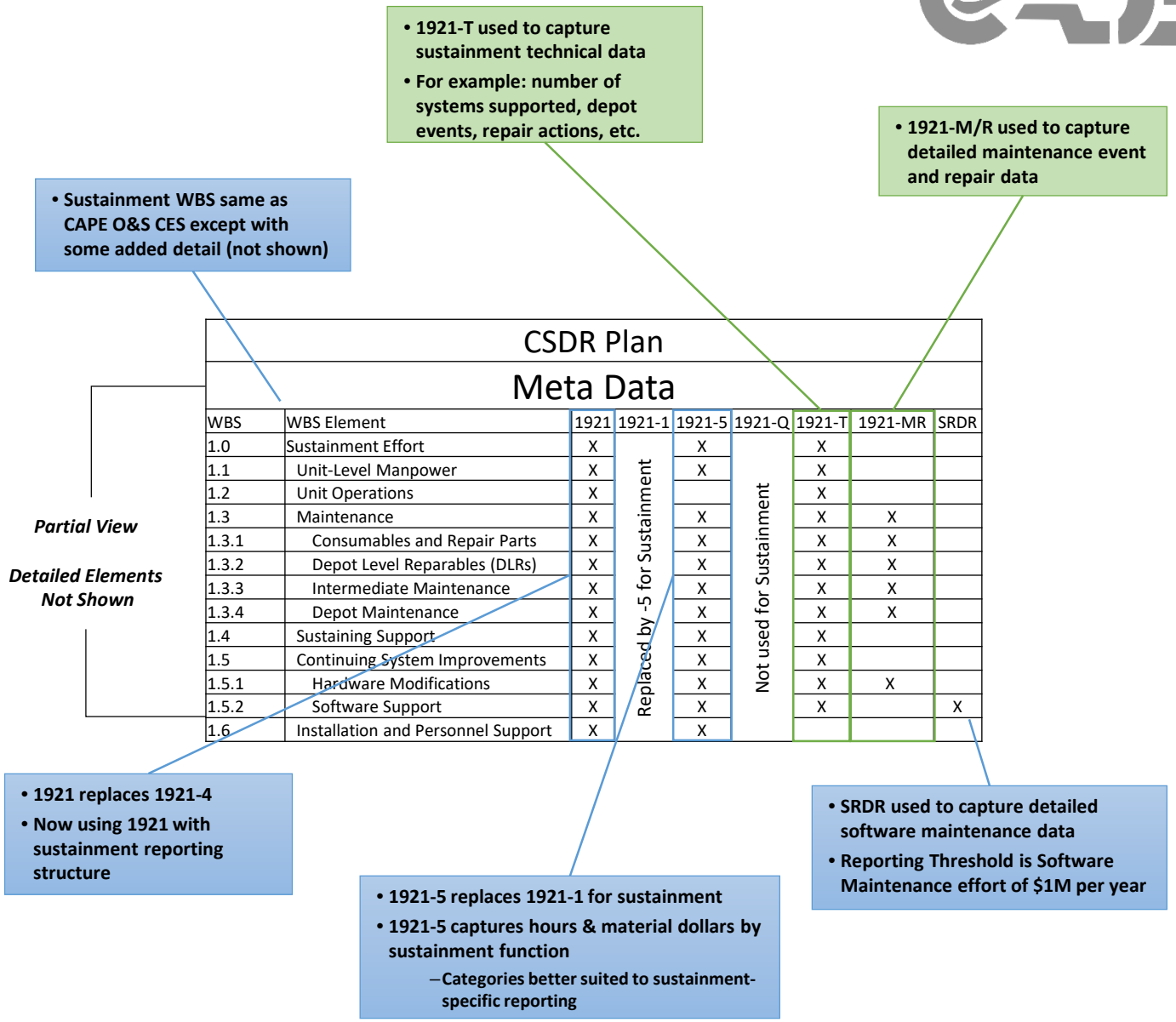
- The purpose of the –M/R (Maintenance and Repair Parts Data Report) Implementation and Verification & Validation (V&V) Guide is to assist DCARC and cost community members tasked with:
  1) Making –M/R reporting requirement decisions
  2) Reviewing –M/R data submissions for completeness, consistency, and usability (i.e., quality)

-M/R Objective

- The –M/R is the Department of Defense (DoD) reporting requirement for collecting actual maintenance event and repair part data as part of the Cost, Software, and Data Report (CSDR) system
- The CSDR serves as the primary source for contract cost, software, and technical data for many DoD resource analysis efforts; including cost database development, applied cost estimating, cost research, program reviews, Analysis of Alternatives (AoA), and life cycle cost estimates
- The objective of the -M/R Report is to institutionalize the requirement to ensure analysts have same level of data from contractor supported systems as compared to organically repaired systems
- The –M/R will be used by DoD Component staff, including program managers, systems engineers, cost estimators, and financial management personnel to:
    1) Review and evaluate maintenance event and LRU and/or repair part cost and failure data
    2) Determine cost drivers and root cause of comparison differences
    3) Understand reasons for incurred cost and availability performance
    4) Develop improved cost estimating techniques

Sustainment Reporting Overview

- For background and detailed requirements related to Cost, Software, and Data Reporting (CSDR), refer to DoD 5000.04-M-1 (or latest version), “Cost and Software Data Reporting (CSDR) Manual” (or latest version).
- The 1921 and 1921-5 are the current formats used for collecting contractor cost data. These formats will be replaced by FlexFile reporting with the hopes of providing deeper insights, while reducing contractor costs.
- Figure 1 below provides an overview of the many sustainment related reports. The newest report types (highlighted in green) include the 1921 –T or Technical Data Report (TDR) and the 1921 –M/R.



Establishing –M/R Reporting Requirements

COST, SOFTWARE, & TECHNICAL DATA REPORTING/EARNED VALUE MANAGEMENT CO-PLAN														
11. WORK BREAKDOWN STRUCTURE (WBS)				12. FLEXFILE		13. IPMR	14. TECHNICAL DATA							
							a. QUANTITY		b. SOFTWARE					
a. PROGRAM/ CONTRACT/ SUBCONTR	b. WBS CODE	c. WBS LEVEL	d. WBS ELEMENT NAME	a. ACTUALS TO DATE (ATD)	b. FORECAST AT COMPLETION (FAC)	a. FORMAT 1 ALIGNMENT WITH FAC	i. QUANTITY DATA	ii. GFE QUANTITY	i. SRDR DEV.	ii. SRDR MAINT.	iii. SRDR ERP	c. TECHNICAL DATA	d. MAINT. & REPAIR
1.0	1.0	1	Sustainment Effort	X	X					X		X	
1.1	1.1	2	Unit-Level Manpower (System Level Cost Only)	X	X								
1.1.1	1.1.1	3	Operations Manpower	X								X	
1.1.2	1.1.2	3	Unit-Level Maintenance Manpower	X								X	
1.1.3	1.1.3	3	Other Unit-Level Manpower (Specify In Remarks)	X								X	
1.2	1.2	2	Unit Operations (System Level Cost Only)	X	X								
1.2.1	1.2.1	3	Operating Material	X									
1.2.1.1	1.2.1.1	4	Energy	X								X	
1.2.1.1.1	1.2.1.1.1	5	Fuel	X									
1.2.1.1.2	1.2.1.1.2	5	Petroleum, Oil and Lubricants (POL)	X									
1.2.1.1.3	1.2.1.1.3	5	Electricity	X									
1.2.1.2	1.2.1.2	4	Training Munitions/Expendable Stores	X								X	
1.2.1.2.1	1.2.1.2.1	5	Ammunition	X									
1.2.1.2.2	1.2.1.2.2	5	Bombs	X									
1.2.1.2.3	1.2.1.2.3			X									
1.2.1.2.4	1.2.1.2.4			X									
1.2.1.2.5	1.2.1.2.5			X									
1.2.1.2.6	1.2.1.2.6			X									
1.2.1.2.7	1.2.1.2.7			X									
1.2.1.3	1.2.1.3	4	Other Operating Material (Specify In Remarks)	X									
1.2.2	1.2.2	3	Support Services (Including Non-Maintenance FSRs)	X									
1.2.2.1	1.2.2.1	4	Non-Maintenance Field Service Reps	X									
1.2.2.2	1.2.2.2	4	Communication Services	X									
1.2.2.3	1.2.2.3	4	Facility/Storage Services	X								X	
1.2.2.4	1.2.2.4	4	Transportation Services	X								X	
1.2.2.5	1.2.2.5	4	Other Support Services	X									
1.2.3	1.2.3	3	Temporary Duty	X									
1.3	1.3	2	Maintenance	X	X							X	X
1.3.1	1.3.1	3	Consumables and Repair Parts	X								X	X
1.3.1.1	1.3.1.1	4	Airframe/Hull/Vehicle Consumables and Repair Parts	X									
1.3.1.2	1.3.1.2	4	Propulsion Consumables and Repair Parts	X									
1.3.1.3	1.3.1.3	4	Electronics/Avionics Consumables and Repair Parts	X									
1.3.1.4	1.3.1.4	4	Other Major Subsystem Consumables and Repair Parts 1..n (Specify)	X									
1.3.1.5	1.3.1.5	4	Other Consumables and Repair Parts	X									
1.3.2	1.3.2	3	Depot Level Reparables (DLRs) / Repair of Reparables (RORs)	X								X	X
1.3.2.1	1.3.2.1	4	Airframe/Hull/Vehicle DLRs	X									
1.3.2.2	1.3.2.2	4	Propulsion DLRs	X									
1.3.2.3	1.3.2.3	4	Electronics/Avionics DLRs	X									
1.3.2.4	1.3.2.4	4	Other Major Subsystems DLRs 1..n (Specify)	X									
1.3.2.5	1.3.2.5	4	Other DLRs	X									
1.3.3	1.3.3	3	Intermediate Maintenance	X								X	X
1.3.3.1	1.3.3.1	4	Intermediate Maintenance Consumable Materials and Repair Parts	X									
1.3.3.2	1.3.3.2	4	Intermediate-Level Government Maintenance	X									
1.3.3.3	1.3.3.3	4	Intermediate-Level Contractor Maintenance	X									
1.3.3.4	1.3.3.4	4	Other Intermediate-Level Maintenance	X									
1.3.4	1.3.4	3	Depot Maintenance	X								X	X

WBS Reporting Structure

FlexFile

TDR

MR

Partial View

-M/R Description (Reports and Data Elements)

The –M Collects information related to each maintenance event such as the specific system being repaired, location where the repair activity occurred, reason for failure, day failure was identified and day repair activity was completed

Maintenance Event Report

Maintenance Event Number

System/End Item Data:
- End Item or DLR NIIN
- Serial Number
- Variant
- Oder Name

Failure Data:
- Non-Mission Capable
- Scheduled Event
- Failure Code
- Failure Code Description

Repair Data:
- Start/Completion Date
- Org/Location
- Maintenance Event Type
- WBS ID
- Labor Hours

FORMAT 3 (1921-M, PART B)

Repair Part Report

Maintenance Event Number

Repair Action Data:
- Repair Action Code
- Repair Action Description

Repair Part Data:
- LRU or Part Name
- 881 Reference
- Reparable or Consumable
- Quantity
- LRU or Part Number
- NSN (or NIIN)
- WUC/LCN
- FWG
- Replacement Cost
- Repair Cost

FORMAT 3 (1921-R, PART C)

The –R Identifies the LRUs and/or repair parts associated with each maintenance event

During the post award conference the CWIPT will identify the maintenance and repair elements that will be reported. A minimum set of data elements is required to use the data. Elements chosen are dependent on the scope of the CLS contract.

-M/R Description (Data Element Detail and Context)

Data Element	-M/R	Definition	Purpose/Value	Reporting Standard	Reporting Considerations	Reporting Relationships	Service Uniqueness
Start Date	-M	The date when failure occurred.	Required to understand when the failure and/or maintenance event occurred. Needed for analyzing reliability and availability.	Start Date info reported for each maintenance event. Start Date info appears logical (i.e., within contracting period and before Completion Date).			
Completion Date	-M	The date when the repair was completed and the unit was available for use.	Used in conjunction with Start Date to understand availability and various Maintenance Event Type durations.	Completion Date info reported for each maintenance event. Date info appears logical (i.e., within contracting period and after Start Date). Maintenance Event durations appear reasonable based on consistency for similar Maintenance Event Types.	May be left blank if Maintenance Event in-process at end of contracting period. Use comments to state "In-Process".		
Repair Org/Location	-M	The location where the repair was performed (use the CAGE code if identified).	Used to identify the performing organization and location. May be useful in identifying efficiencies.	Repair Org/Location info reported for each maintenance event. If possible, a valid CAGE Code was used.			
Maintenance Event Type	-M	Identifies the type of maintenance event (e.g., Scheduled Depot Event, Unscheduled Depot Event, Inspection, DLR Repair, etc.)	Allows maintenance event data to be identified and analyzed by type.	Maintenance Event Type info reported for each maintenance event. Maintenance Event Type can be matched from an agreed upon list of valid Maintenance Event Types.	To the degree possible, Maintenance Event Types should be relatable to the 1921 maintenance related WBS elements.	Should be relatable to the WBS ID.	
WBS ID	-M	The corresponding O&S WBS Element Code related to the maintenance event.	Allows maintenance event data to be related to the 1921 WBS.	WBS ID reported for each maintenance event. WBS ID can be matched to the 1921 WBS.	To the degree possible, the 1921 WBS Elements should be relatable to the established Maintenance Event Types.	Relates to the 1921 WBS	
Labor Hours	-M	The total labor hours associated with the repair event.	Allows for improved understanding and estimating of effort associated with various Maintenance Event Types and Failure Codes	Labor Hours reported for each maintenance event. Assessment of Labor Hours related to Maintenance Event Types and WBS IDs appear reasonable.	Labor Hours captured may not include all hours reported on the 1921-5 due to different reporting methods.	Using the WBS ID, hours can be compared to the 1921-5 with the understanding that some difference may exist due reporting methods.	

Data Element	-M/R	Definition	Purpose/Value	Reporting Standard	Reporting Considerations	Reporting Relationships	Service Uniqueness
Comments	-M	Any comments which would clarify or complete the maintenance event data entered.	Allows for improved understanding of maintenance event reporting	Comments provided where necessary			
Maintenance Event Number	-R	The event number associated with the maintenance activity.	Allows multiple parts to be linked to a single maintenance event	Should be a unique number that represents a single maintenance event. -M and -R reported Maintenance Event Numbers should match.		Maintenance Event Number relates -M maintenance event data to the -R repair parts data.	
Repair Action Code	-R	The code identifying the repair action.	Allows understanding of what effort was performed.	Repair Action Code reported for each maintenance event. Repair Action Code can be matched from a list of valid Repair Action Codes.		Related to Repair Action Description	For Army, this might be referred to as an "Action Taken" Code
Repair Action Description	-R	The description of the repair action.	Describes the Repair Action Code.	Repair Action Description reported for each Repair Action Code. Repair Action Description can be matched using a list of valid Repair Action Codes and Descriptions.		Related to Repair Action Code	For Army, this might be referred to as an "Action Taken" Code
Repair Part Name	-R	The name of the LRU (Line Replaceable Unit), SRU (Shop Replaceable Unit) or part.	Used to identify the specific type of part being inspected, replaced or repaired.	Repair Part Name reported and appears correct (i.e., consistent) based on its reported NSN.	The level of parts reporting (i.e., LRU, SRU or part) may vary depending on contract characteristics and value/cost community needs.	Related to Repair Part NSN. Mappable to 881, WUC/LCN and FWG.	
881 Reference	-R	The corresponding MIL-STD-881 WBS related to the LRU, SRU or part.	Used to relate parts data to a specific 881 WBS element. Useful for analyzing data via the 881 WBS.	881 Reference reported and appears correct/consistent based on available mapping tables and/or comparing same/similar Repair Part Names/NSNs to their 881 reported elements.	Use of Repair Part NSN, WUC/LCN and FWG to 881 mapping tables would be beneficial to assist reporting and validation efforts.	Related to Repair Part NSN, WUC/LCN and FWG.	

-M/R Description (Data Element Detail and Context)

Data Element	-M/R	Definition	Purpose/Value	Reporting Standard	Reporting Considerations	Reporting Relationships	Service Uniqueness
Reparable or Consumable	-R	Indicate whether the part is a reparable (R) or consumable (C). If the maintenance event includes repairing (not replacing) a reparable item and it was returned to use put yes (Y) in parenthesis. If the reparable item was not able to be repaired, put no (N) in parenthesis. Additional information can be provided in Comments Column L.	Used to identify reparables (i.e., DLRs) and consumable parts. For DLR repair actions, identifies whether or not the DLR was successfully repaired or not.	Reparable or consumable part identified with an "R" or a "C". If DLR repair action, reparable denoted as "R (Y)" if successfully repaired and returned to inventory, "R (N)" if not.	Depending on the contracting scenario and level of detail requested, Consumables might not be included in the -M/R Report. For Reparables, both a Replacement Cost and a Repair Cost should be reported.	When reporting DLR repair actions, the Reparable identifier should also include "R (Y)" if successfully repaired or "R (N)" if it was not able to be repaired.	
Repair Part Quantity	-R	The quantity of same LRU, SRU or part required to complete the maintenance action.	Used to identify how many of the same part was required to complete the repair action.	Repair Part Quantity info reported and appears reasonable.	In most cases this value will be 1. If no part was used or if more than one part was needed to accomplish the repair the Replacement Cost reported should still reflect the cost of a single part.	For Consumables, multiplying the Repair Part Quantity by the Replacement Cost and summing provides an estimate of the direct material costs associated with consumables.	
Contractor Part Number	-R	The Contractor Part Number. This is a number used to identify an item of production or a range of items of production by the manufacturer controlling the design, characteristics, and production of the item by means of its engineering drawings, specifications, and inspection requirements.	Used to identify the specific type of part being inspected, replaced or repaired.	Contractor Part Numbers were reported for each part and appear reasonable based on comparing same part names and part numbers.	Contractor Part Numbers may vary/change over time.		
Repair Part NSN	-R	National Stock Number (NSN) preferred, and/or, National Item Identification Number (NIIN)	Used to identify the specific type of part being inspected, replaced or repaired.	Repair Part NSNs were reported for each part and appear reasonable based on comparing same part names and part numbers. The NSNs can be verified using an appropriate NSN list.	NSN provides a more formal identifier for the part versus contractor part numbers which can vary/change over time.	Related to Repair Part Name. Mappable to 881, WUC/LCN and FWG.	

Data Element	-M/R	Definition	Purpose/Value	Reporting Standard	Reporting Considerations	Reporting Relationships	Service Uniqueness
Repair Part WUC/LCN	-R	The repair part Work Unit Code (WUC) or Logistics Control Number (LCN).	Used to identify the area of the end item related to the part being inspected, replaced or repaired.	Repair Part WUC/LCNs were reported for each part and appear reasonable based on comparing same part names and/or NSNs and WUC/LCN codes. The WUC/LCN codes can be verified using an appropriate WUC/LCN list.	Where mapping tables exist relating WUC/LCN to the NSN and the 881, this field could eventually be auto-populated. Depending on the Service, WUC, LCN or FWG may not be the preferred reporting method.	Related and mappable to 881.	May be preferred by some Services.
Repair Part FWG	-R	The Functional Working Group (FWG) that identifies to which particular system, subsystem, component, or assembly the item belongs to.	Used to identify the area of the end item related to the part being inspected, replaced or repaired.	Repair Part FWGs were reported for each part and appear reasonable based on comparing same part names and/or NSNs and FWG codes. The FWG codes can be verified using an appropriate FWG list.	Where mapping tables exist relating FWG to the NSN and the 881, this field could eventually be auto-populated.	Related and mappable to 881.	May be preferred by some Services.
Replacement Cost	-R	The replacement cost associated with the LRU, SRU or Part. Replacement cost should be identified/entered for all items. If cost data represents cost to contractor, please provide a nominal contractor cost to government price cost factor in comments.	Provides the current estimated cost to replace the part. Is useful for understanding cost drivers and conducting cost analysis studies.	Replacement Costs were reported for all parts and appear consistent/reasonable based on comparing same parts.		Should capture and reflect a portion of the material cost reported on the 1921.	
Repair Cost	-R	The repair cost associated with the LRU, SRU or Part. Repair cost should be identified/entered for all repairable items. If cost data represents cost to contractor, please provide a nominal contractor cost to government price cost factor in comments.	Provides the current estimated cost to repair the reparable item (i.e., DLR). Is useful for understanding cost drivers and conducting cost analysis studies.	Repair Costs were reported for all reparables (i.e., DLRs) and appear consistent/reasonable based on comparing same parts.	Repair Costs should be reported for all DLRs if possible. Repair Costs might not capture the total cost reported on the 1921.	Should capture and reflect a portion of the material cost reported on the 1921. In general, Repair Cost should be some percentage of the Replace Cost.	
Comments	-R	Any relevant information that could be used in the interpretation of the data provided in this report by repair part.	Provides additional information needed in some instances to more accurately understand and use the information.	Where needed comments were provided, add value and are fully understood.			

-M/R Description (-M/R Example)

Maintenance Event Data

1) Maintenance Event Number 5 resulted in the replacement of five parts.

2) Maintenance Event Number 4 is associated with repairing a DLR, vice related to a specific aircraft failure event.

3) Maintenance activities related to two variants are being captured in the –M/R.

4) Maintenance activities related to three Maintenance Event Types are being captured in the –M/R. Each Maintenance Event Type is related to a WBS ID.

5) Labor Hours are captured for each Maintenance Event.

Maintenance Event Date Report - Example

MAINTENANCE EVENT DATA															
	SYSTEM/END ITEM DATA				FAILURE DATA				REPAIR DATA						
MAINTENANCE EVENT NUMBER	SYSTEM/END ITEM or DLR NIIN	SYSTEM/END ITEM SERIAL NUMBER	END ITEM (VARIANT)	ORDER NAME	NON-MISSION CAPABLE	SCHEDULED EVENT	FAILURE CODE	FAILURE CODE DESCRIPTION	START DATE	COMPLETION DATE	REPAIR ORG/LOCATION	MAINTENANCE EVENT TYPE	WBS ID	LABOR HOURS	COMMENTS
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	100000004	170004	A	-	N	Y	804	Removed for scheduled maintenance	9/1/18	9/3/18	I-Level Activity	Inspection	1.3.3.3	34	
2	100000014	170014	A	-	Y	N	805	Removed for Safety of Flight Msg/use/analysis	9/3/18	9/6/18	I-Level Activity	Inspection	1.3.3.3	46	
3	100000027	170027	B	-	N	Y	804	Removed for scheduled maintenance	9/6/18	9/8/18	I-Level Activity	Inspection	1.3.3.3	29	
4	012639440	-	-	-	-	-	-	DLR Repair	9/9/18	9/12/18	DLR Facility	DLR	1.3.2	31	
5	100000006	170006	A	-	N	Y	804	Removed for scheduled maintenance	9/10/18	12/29/18	Depot Facility	Depot Repair	1.3.4.1	2,110	
6	100000016	170016	B	-	N	Y	804	Removed for scheduled maintenance	10/31/18	1/20/19	Depot Facility	Depot Repair	1.3.4.1	1,275	
7	100000024	170024	B	-	N	Y	804	Removed for scheduled maintenance	12/31/18	1/3/19	I-Level Activity	Inspection	1.3.3.3	44	
8	010540042	-	-	-	-	-	-	DLR Repair	1/1/19	1/3/19	DLR Facility	DLR	1.3.2	15	
9	100000019	170019	B	-	N	Y	804	Removed for scheduled maintenance	1/4/19	3/17/19	Depot Facility	Depot Repair	1.3.4.1	1,454	
10	100000012	170012	A	-	N	Y	804	Removed for scheduled maintenance	1/16/19	1/19/19	I-Level Activity	Inspection	1.3.3.3	48	
11	012355249	-	-	-	-	-	-	DLR Repair	1/16/19	1/17/19	DLR Facility	DLR	1.3.2	9	
12	100000030														
13	010394983														
14	100000022														
15	100000011														
16	100000001														
17	100000002														
18	100000028														
19	100000029														

Repair Part Data Report - Example

MAINTENANCE EVENT NUMBER	REPAIR ACTION CODE	REPAIR ACTION DESCRIPTION	REPAIR PART DATA											COMMENTS
			REPAIR PART NAME	881 REFERENCE	REPARABLE or CONSUMABLE	REPAIR PART QUANTITY	CONTRACTOR PART NUMBER	REPAIR PART NSN (OR NIIN)	REPAIR PART WUC/LCN	REPAIR PART FWG	REPLACEMENT COST	REPAIR COST		
A	B	C	D	E	F	G	H	I	J	K	L	M		N
1	B	Adjusted	BRACKET,MOUNTING	1.2.3	C	0	666070	003437458	23	-	138.04			
2	A	Replaced	LIGHT ASSEMBLY,INDICATOR	1.2.4.3	C	1	1271986	012480953	44	-	21,364.00			
3	B	Adjusted	NUT,TUBE COUPLING	1.2.4.8	C	0	168467	002032821	45	-	2.74			
4	N	Checked not reparable	POWER UNIT,GAS TURBINE ENGINE	1.2.4.3	R(N)	1	1038871	012639440	24	-	24,607.00	6,915.28		
5	A	Replaced	NUT,RTNR-ASSY	1.2.4.2	C	1	1842566	012700518	14	-	697.58			
5	A	Replaced	TERMINAL JUNCTION BLOCK,SECTIONAL	1.2.4.3	C	1	527541	014500409	44	-	97.70			
5	A	Replaced	BOOT,DUST AND MOISTURE SEAL	1.2.4.2	C	1	1259249	011752032	14	-	842.01			
5	A	Replaced	WHEEL ASSEMBLY,AIRCRAFT	1.2.4.9	C	1	1233173	012982516	13	-	76,101.90			
5	A	Replaced	PIN,RETAINING	1.2.4.4	C	1	438689	002236112	45	-	21.71			
6	B	Adjusted	PIN,RETAINING	1.2.4.4	C	0	438689	002236112	45	-	21.71			
6	A	Replaced	BUTTON,BEARING,THRO	1.2.3	C	1	254863	011020531	23	-	2.40			
6	B	Adjusted	NUT,RTNR-ASSY	1.2.4.2	C	0	1842566	012700518	14	-	697.58			
6	A	Replaced	TRANSPARENCY,CANOPY,FORWARD	1.2.2.2	R	1	140822	011950673	12	-	6,526.00	1,077.65		
6	A	Replaced	PANEL,POWER DISTRIBUTION	1.2.5.5	R	1	974960	010510534	74	-	886.00	155.22		
7	A	Replaced	ANTENNA ASSEMBLY	1.2.5.2	C	1	1580945	013513710	63	-	4,800.51			
7	A	Replaced	DUCT ASSEMBLY,AIR CONDITIONING-HEATING,AIRCRAFT	1.2.4.7	C	1	1754422	010467687	41	-	1,094.34			
8	C	Repaired	STEERING UNIT,AIRCRAFT NOSEWHEEL	1.2.4.9	R(Y)	-	294365	010540042	13	-	1,916.01	631.73		
8	A	Replaced	WICK	1.2.4.7	C	1	1850775	012130942	41	-	139.50			
9	A	Replaced	HOSE,AIR BREATHING	1.2.4.7	C	1	472661	007622336	47	-	209.84			
9	A	Replaced	WASHER,FLAT	1.2.4.2	C	1	596046	006557219	14	-	6.20			
9	A	Replaced	COVER,DUST	1.2.4.7	C	1	1751989	010681461	41	-	15.95			
9	A	Replaced	SWITCH,SENSITIVE	1.2.4.9	C	1	1600696	014685473	13	-	793.24			
9	A	Replaced	RECEIVER-TRANSMITTER,RADAR	1.2.5.5	C	1	1579419	013499175	74	-	27,865.00			
10	A	Replaced	COUPLING,CLAMP,GROOVED	1.2.4.5	C	1	55132	003434276	42	-	970.12			
10	A	Replaced	BEARING,SLEEVE	1.2.2	C	1	2043907	010761467	11	-	320.88			
11	C	Repaired	GEARBOX,ACCESSORY DRIVE,TURBINE ENGINE	1.2.4.3	R(Y)	-	1267041	012355249	24	-	47,582.00	13,268.18		
11	B	Adjusted	COUPLING ASSEMBLY,TUBE,FLEXIBLE	1.2.3	C	0	453099	011636997	23	-	566.93			
12	A	Replaced	BATTERY,STORAGE	1.2.5.5	R	1	1672470	010550435	74	-	29,900.53	5,238.53		
12	A	Replaced	PLUG,MACHINE THREAD	1.2.4.7	C	1	989922	008370856	41	-	2.20			

Repair Part Data

6) Replacement/Repair of multiple parts can be related to a single Maintenance Event.

7) 881 Reference reflects how each part is related to the 881-MIL STD WBS. Each Part is identified as a consumable (C) or a reparable (R).

8) R(Y) reflects a reparable part that is successfully repaired and returned to inventory. If R (N), reparable part could not be repaired.

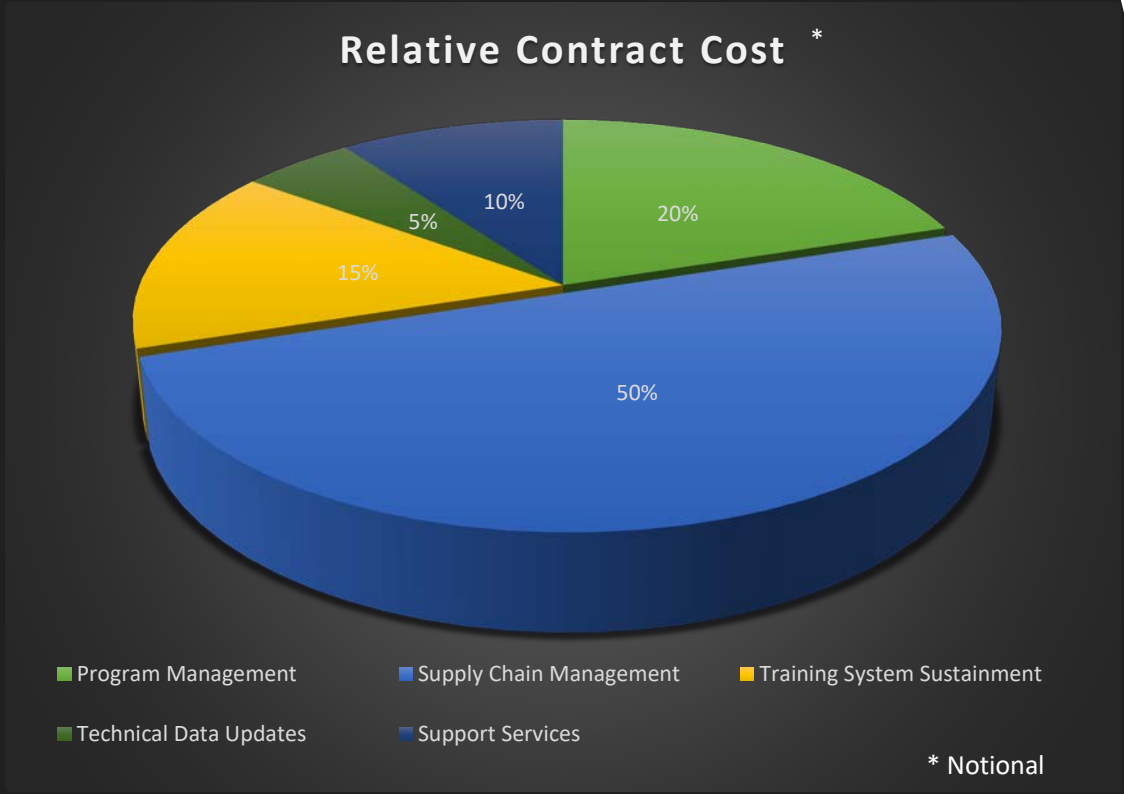
9) For Maintenance Event Number 3, the part was adjusted and therefore no Quantity was used.

10) Each Part can also be related to the Work Unit Code (WUC). This results in a mapping between the WUC and the 881.

11) For every part, a Replacement Cost can be captured.

12) For reparable parts (i.e., DLR), the current Repair Cost can also be captured.

When Should I Request a –M/R?



- When a significant portion of contract cost is tied up in parts related maintenance activities
  - Supply Chain
  - Heavy Maintenance
  - Recurring Spares
  - Repair
- When Flex File reporting eliminates insight into what is driving maintenance activities
- This figure shows that maintenance or supply chain management can represent a significant portion of a sustainment contract. Prior to the development of a –M/R report, there was no efficient reporting approach in place for collecting detailed maintenance and part data.

Implementation / When Should I Request a –M/R? (cont.)

- During the DCARC (Defense Cost & Resource Center) CSDR (Cost and Software Data Reporting) planning process, the CWIPT (Cost Working Group Integrated Product Team) is tasked with identifying and determining which various reporting requirements would be useful to the cost community to implement for a specific contract
- With respect to sustainment related contracts, the make-up of a CWIPT may include representatives from DCARC, the program office, the Service Cost Agencies, the VAMOSC community and other sustainment-focused government organizations
- The CWIPT is in charge of identifying high-risk, high-cost, and high-technical interest WBS elements; as well as determining which WBS elements require various reports, and advisory services regarding cost analysis and software and other technical data requirements
- The decision to implement a –M/R for a given contract is discussed below (see next slide)
- More detailed information regarding the DCARC CWIPT CSDR Planning Process can be found on the CADE website

Implementation / When Should I Request a –M/R? (cont.)

- The following questions are provided below **<u>to help the CWIPT decide whether to require a –M/R</u>:**
  - Does the contract include maintenance related activities and are 1921 Sustainment WBS maintenance related costs being collected?
  - Are a significant portion of contract cost tied up in parts related maintenance activities (e.g., supply chain, heavy maintenance, recurring spares, and/or repair activities)?
  - Does the contract value meet the reporting threshold?
  - Does the contract have special/unique interest characteristics where maintenance reporting visibility would benefit the cost community?
  - Is Flex File reporting planned? If so, would it eliminate insight into what is driving maintenance activities (i.e., -M/R information)?
  - Are Sustainment TDR maintenance related data elements being collected? If so, can the TDR satisfy the level of maintenance related technical data needed by the cost community?
  - Is -M/R like data collection already planned using other reporting processes such as a maintenance-focused Contract Data Requirements List (CDRL)? If so, will the CDRL capture all needed –M/R information?

- If another reporting format (i.e., CDRL) exist and will be used to collect –M/R like data then it should be included (i.e., documented) during the DCARC/CSDR Planning Phase
- Additionally, the –M/R like CDRL reports should be submitted to CADE as defined and documented during the planning phase

Sustainment Technical Data Report (TDR)

- Sustainment TDR captures higher-level technical data elements needed to better understand and use collected cost data
- Depending on cost data elements reported, related TDR data elements can be requested

Sustainment
Number of Combat Air Patrols (CAPs)
Number of Squadrons
System Use (OPTEMPO) by year
Total Number of Systems

Readiness
Availability (Ao)
Mission Capability
Affordability incentive for reducing maintenance costs
Monetary Incentive for meeting performance goal
Period of Performance or Option Award Incentive
Penalty for not meeting performance goal
Scheduled Price Renegotiation

Manpower
Maintainers Assigned - FTEs
Operators Assigned - FTEs
Other Unit-Level Personnel Assigned - FTEs

Energy
Energy Consumption

Training Expendables
Number of Training - Weapon Items Expended

Storage
Floor Space Utilized
Number of Storage/Maintenance Sites
Volume of Items Stored

Transportation
Transportation Quantity - Air
Transportation Quantity - Ground
Transportation Quantity - Sea

Maintenance
Customer Wait Time (CWT)
Useable Parts Delivered
MTBF - Contracted Target
MTBF - Actual
MTTR - Contracted Target
MTTR - Actual
Number of Consumable Parts Used
Number of DLRs Replaced
Number of Failures - Design Controllable
Number of Failures - Induced
Number of Repair Actions
Payment Frequency

Depot Maintenance
Scheduled Depot Events
Scheduled Maintenance Cycle
Unscheduled Depot Events

Maintenance Inspections
Visual Inspections, Surveillance

Hardware Modifications
Hardware Modification Cycle
Hardware Modification Events
Number of Hardware Modification - Kits Procured

Program Management
Program Management - FTEs

Sustaining Engineering
Systems Engineering - FTEs

Technical Data
Technical Data Number of Updates

Information Systems
Data Storage
IS Tech Refreshes
Number of Concurrent Users
Number of Sites
Number of Users
System Throughput

Support Equipment
Support Equipment Repair Actions
Support Equipment Unscheduled Failures
Support Equipment Updates

Simulators
Simulator Failures
Simulator Hardware Updates
Simulator Repairs
Simulator Sites
Simulator Software Updates
Simulator Training Hours
Simulator Units

System Training
Number of Students
Training Days
Training Events

Other Sustaining Support
Number of Firings, Aging Program
Number of Re-preservations

Software Support
Software Changes
Software Support - FTEs

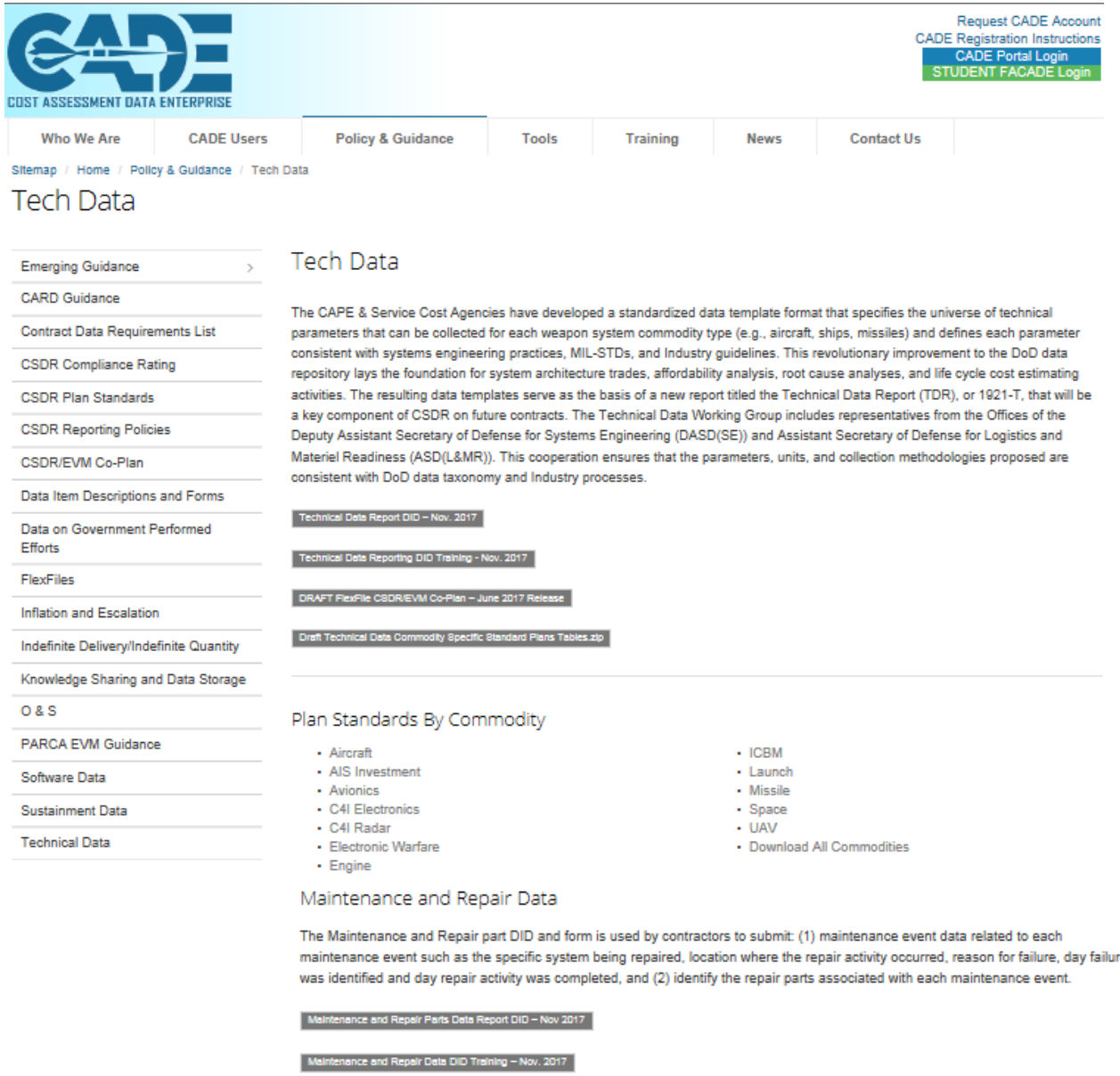
-M/R DID References

- DoD Instruction 5000.02, “Operation of the Defense Acquisition System,” (current version). This instruction contains mandatory CSDR requirements.
- DoDI 5000.73, “Cost Analysis Guidance and Procedures,” (current version).
- DoD 5000.04-M-1, “Cost and Software Data Reporting (CSDR) Manual,” (current version).
- “Operating and Support Cost-Estimating Guide”, (current version).
- MIL-STD-881, “Work Breakdown Structure for Defense Materiel Items”, (current version).
- DD Form 2794 Template and Process (current publication date).
- Department of the Army Pamphlet 750-8, Army Maintenance Management System (TAMMS) User’s Manual.
- Naval Aviation Maintenance Program (NAMP) CNAFINST 4790.2C.
- Air Force Instruction AFI 63-101/20-101, Integrated Life Cycle Management.
- Maintenance/Repair Data Exchange Instructions (DEI) (current version).
- Maintenance/Repair Data File Format Specifications (FFS) (current version).
- Maintenance/Repair Data Implementation Guide (current version).
- USMC Ground Equipment Maintenance Policy (GEMP), MCO 4790.25, dated 12 Jan 2014.

- Additionally, -M/R specific resource information is located at http://cade.osd.mil/policy/techdata; see next slide.

Where to go for more information?

http://cade.osd.mil/policy/techdata



-M/R Verification & Validation (Approach)

- The main approach used for establishing V&V criteria includes the development of a number of questions for each data element. These questions increase in complexity and are to be used as a standard to measure overall reporting quality.

- The basic theme of these V&V questions cover the following characteristics:
  - Does the data exist? Was it reported?
  - Are any data elements and/or data element inputs missing, if so, why?
  - Was the data reported in the correct format consistently?
  - Does the data appear reasonable from a variety of cross-checks?
  - For the numerous data element codes, can the inputs be validated?
  - For other quantity type data elements, can the inputs be compared for consistency within the same report and/or via a comparison with other reporting/data sources or analyses?

- Many of the data elements represent various codes containing mapping relationships within one another. Due to this, it may be possible to validate these code-type data elements by comparing relationships within the data itself and by using standardized mapping tables. Over time it may be possible to better establish and standardize these code-type mapping tables so that the V&V process can not only be more automated but could serve to populate the –M/R where needed during the post processing phase.

-M/R Verification & Validation (Approach) cont.

- Other quantity-type data elements such as Start Date/Completion Date and Labor Hours for each maintenance event, Replacement Cost, and Repair Cost can be validated using other approaches
  - Days-to-Complete and Labor hours can be compared for similar maintenance event types
  - Replacement Cost and Repair Cost can be compared for same-parts to check for consistency
  - Repair Cost to Replacement Cost Ratios could be assessed at some point by comparing to previous –M/R reports submitted by same contractor for similar efforts

- In addition, the –M/R information can also be cross-checked with other sustainment reporting information
  - Labor Hours are associated with a WBS ID and could therefore be crosschecked with 1921-5 Functional Hour report
  - Other –M/R information such as Depot Events, Number of Repair Actions, Number of Consumable Parts Used and Number of DLRs Replaced could be calculated and compared with requested Sustainment TDR information for consistency

- In the near-term, it is assumed that many of the V&V questions (shown in the table on the next slides) be used (i.e., answered) to assist with validating (to the degree possible) the -M/R reports

- In the future, it is envisioned that the V&V process will evolve, becoming more efficient via the use of automation and the leveraging of more data and implementation experiences

Sustainment Reporting (-M/R Guidance)

-M/R Verification and Validation Checklist

Data Element	Report	Definition	Reporting Standard	Question #1	Question #2	Question #3
Maintenance Event Number	-M	The event number associated with the maintenance activity.	Should be a unique number that represents a single maintenance event	Were Maintenance Event Numbers reported?	Are the Maintenance Event Numbers unique, not repeated and sequential in order?	Do the Maintenance Event Numbers on the -M match the ones on the -R?
System/End Item or DLR NIIN	-M	The National Item Identification Number (NIIN) of the system or end item (i.e., aircraft, tank, ship, etc.). Also used for the DLR NIIN for depot work on DLRs (e.g., overhaul of engines, transmissions).	NIIN reported if known and can be validated (i.e., matches a list of valid NIINs)	Were NIINs reported?	Do the reported NIINs appear reasonable based on required number of digits and format?	Were the reported NIINs able to be validated using a NIIN list?
System/End Item Serial Number	-M	The contractor issued serial number of the end item or system receiving maintenance.	Serial Number reported if known and can be validated (i.e., matches a list of valid serial numbers)	Were Serial Numbers reported?	Do the reported Serial Numbers appear reasonable based on required number of digits and format?	Were the reported Serial Numbers able to be validated using a Serial Number list?
End Item (Variant)	-M	The End Item or variant, consistent with Data Group B (Government Furnished Information), which applies to the reported maintenance event. The End Item shall be the same as Block 20, referenced from the current Co-Plan.	Variant info reported when supporting multiple variants within a single contract. Variant info can be validated (i.e., matches a list of valid variant codes)	If multiple variants were supported, were variant codes reported?	Do the reported Variant Codes appear reasonable based on required number of digits and format?	Were the reported Variant Codes validated using a Variant Code list?
Order Name	-M	Enter the Order Name, consistent with Data Group B (Government Furnished Information), which applies to the reported maintenance event. The Order Name shall be the same as Block 19b, referenced from the current Co-Plan.	TBD			
Non-Mission Capable	-M	Y if the fault caused the equipment to be Non-Mission Capable or N if the fault did not cause the equipment to be Non-Mission Capable.	Non-Mission Capable info is reported for each maintenance event involving a system/end item.	Were Non-Mission Capable info reported? For DLR repair actions, this field might not be applicable.	Do the Non-Mission Capable info reported match the required format ("Y" or "N")?	
Scheduled Event	-M	Y if the maintenance was a scheduled event or N if the maintenance was an unscheduled event.	Scheduled (Y) or Unscheduled (N) info should be reported for each maintenance event.	Were Scheduled Event identifier info reported?	Do the Scheduled Event identifier info match the required format ("Y" or "N")?	Do the Scheduled Event identifier info appear reasonable based on Maintenance Event Types?

Data Element	Report	Definition	Reporting Standard	Question #1	Question #2	Question #3
Failure Code	-M	The failure code associated with the maintenance event. If Army, enter the Army's three (3) digit numeric failure code for the part. See DA Pamphlet 750-8, Table B-2 for a complete list of failure codes and their descriptions. If Navy, refer to Naval Aviation Maintenance Program (NAMP) CNAFINST 4790.2C. If Air Force, refer to AFI 63-101/20-101, Integrated Life Cycle Management.	Failure Code reported for each maintenance event. Failure Code can be matched from a list of valid Failure Codes.	Were Failure Codes reported?	Do the Failure Codes appear reasonable based on required number of digits and format?	Were the reported Failure Codes validated using a Failure Code list?
Failure Code Description	-M	A brief description of the failure code. If Army, see DA Pamphlet 750-8, Table B-2 for a complete list of failure codes and their descriptions. If Navy, refer to Naval Aviation Maintenance Program (NAMP) CNAFINST 4790.2C. If Air Force, refer to AFI 63-101/20-101, Integrated Life Cycle Management.	Failure Code Description reported for each Failure Code. Failure Code Descriptions can be matched using a valid Failure Code Description list.	Were Failure Code Descriptions reported?	Were the reported Failure Code Descriptions validated using a Failure Code and Description list?	
Start Date	-M	The date when failure occurred.	Start Date info reported for each maintenance event. Start Date info appears logical (i.e., within contracting period and before Completion Date).	Were Start Date info reported?	Do the Start Dates appear reasonable based on required format and contract period?	Do the reported maintenance event timeframes/durations seem consistent based on analyses of similar Maintenance Type Events?
Completion Date	-M	The date when the repair was completed and the unit was available for use.	Completion Date info reported for each maintenance event. Date info appears logical (i.e., within contracting period and after Start Date). Maintenance Event durations appear reasonable based on consistency for similar Maintenance Event Types.	Were Completion Date info reported?	Do the Completion Dates appear reasonable based on required format and contract period?	Do the reported maintenance event timeframes/durations seem consistent based on analyses of similar Maintenance Type Events?
Repair Org/Location	-M	The location where the repair was performed (use the CAGE code if identified).	Repair Org/Location info reported for each maintenance event. If possible, a valid CAGE Code was used.	Were Repair Org/Location info reported?	Were Repair Org/Location info reported using CAGE codes?	If so, were Cage Codes able to be validated using a Cage Code list?

-M/R Verification and Validation Checklist (cont.)

Data Element	Report	Definition	Reporting Standard	Question #1	Question #2	Question #3
Maintenance Event Type	-M	Identifies the type of maintenance event (e.g., Scheduled Depot Event, Unscheduled Depot Event, Inspection, DLR Repair, etc.)	Maintenance Event Type info reported for each maintenance event. Maintenance Event Type can be matched from an agreed upon list of valid Maintenance Event Types.	Were Maintenance Event Type info reported?	Were the reported Maintenance Event Types able to be validated using an agreed upon list of Maintenance Event Types?	
WBS ID	-M	The corresponding O&S WBS Element Code related to the maintenance event.	WBS ID reported for each maintenance event. WBS ID can be matched to the 1921 WBS.	Were WBS ID info reported?	Do the reported WBS ID info match the 1921 WBS?	
Labor Hours	-M	The total labor hours associated with the repair event.	Labor Hours reported for each maintenance event. Assessment of Labor Hours related to Maintenance Event Types and WBS IDs appear reasonable.	Were Labor Hours reported for each Maintenance Event?	Do the reported Labor Hours appear reasonable when comparing same/similar Maintenance Event Types?	Do the sum of reported Labor Hours by WBS ID appear reasonable when compared to the 1921-5?
Comments	-M	Any comments which would clarify or complete the maintenance event data entered.	Comments provided where necessary	If requested, were comments included in the reports?	Were all comments understandable?	
Maintenance Event Number	-R	The event number associated with the maintenance activity.	Should be a unique number that represents a single maintenance event. -M and -R reported Maintenance Event Numbers should match.	Were Maintenance Event Numbers reported?	Are the Maintenance Event Numbers unique, not repeated and sequential in order?	Do the Maintenance Event Numbers on the -R match the ones on the -M?
Repair Action Code	-R	The code identifying the repair action.	Repair Action Code reported for each maintenance event. Repair Action Code can be matched from a list of valid Repair Action Codes.	Were Repair Action Codes reported?	Do the Repair Action Codes appear reasonable based on required number of digits and format?	Were the reported Repair Action Codes validated using a Repair Action Code list?
Repair Action Description	-R	The description of the repair action.	Repair Action Description reported for each Repair Action Code. Repair Action Description can be matched using a list of valid Repair Action Codes and Descriptions.	Were Repair Action Descriptions reported?	Were the reported Repair Action Descriptions validated using a Repair Action Code and Description list?	
Repair Part Name	-R	The name of the LRU (Line Replaceable Unit), SRU (Shop Replaceable Unit) or part.	Repair Part Name reported and appears correct (i.e., consistent) based on its reported NSN.	Were Repair Part Names reported?	Do the Repair Part Names appear consistent based on the reported NSN?	
881 Reference	-R	The corresponding MIL-STD-881 WBS related to the LRU, SRU or part.	881 Reference reported and appears correct/consistent based on available mapping tables and/or comparing same/similar Repair Part Names/NSNs to their 881 reported elements.	Were 881 references reported?	Were the reported 881 Reference codes validated using a valid 881 element list?	Do the 881 Reference codes appear reasonable based the reported WUC/LCN or FWG?

Data Element	Report	Definition	Reporting Standard	Question #1	Question #2	Question #3
Reparable or Consumable	-R	Indicate whether the part is a reparable (R) or consumable (C). If the maintenance event includes repairing (not replacing) a reparable item and it was returned to use put yes (Y) in parenthesis. If the reparable item was not able to be repaired, put no (N) in parenthesis. Additional information can be provided in Comments Column L.	Reparable or consumable part identified with a "R" or a "C". If DLR repair action, reparable denoted as "R (Y)" if successfully repaired and returned to inventory, "R (N)" if not.	Were Reparable or Consumable info reported?	Were the Reparable or Consumable identifier data reported using the correct formats (i.e., "C" or "R")?	For DLR repairs, were the reparables additionally identified as either being successfully repaired or not?
Repair Part Quantity	-R	The quantity of same LRU, SRU or part required to complete the maintenance action.	Repair Part Quantity info reported and appears reasonable.	Were Repair Part Quantity info reported?	If the repair did not require the part to be replaced (i.e., 0), was a replacement cost for the part still provided?	If more than 1 of the same part was needed to accomplish the repair action, does the replacement cost reported still represent a single part?
Contractor Part Number	-R	The Contractor Part Number. This is a number used to identify an item of production or a range of items of production by the manufacturer controlling the design, characteristics, and production of the item by means of its engineering drawings, specifications, and inspection requirements.	Contractor Part Numbers were reported for each part and appear reasonable based on comparing same part names and part numbers.	Were Contractor Part Numbers reported for each part?		
Repair Part NSN	-R	National Stock Number (NSN) preferred, and/or, National Item Identification Number (NIIN)	Repair Part NSNs were reported for each part and appear reasonable based on comparing same part names and part numbers. The NSNs can be verified using an appropriate NSN list.	Were NSNs reported for each part?	Do the reported NSNs appear reasonable based on comparing same part names and part numbers?	Were the reported NSNs validated using an appropriate NSN List?
Repair Part WUC/LCN	-R	The repair part Work Unit Code (WUC) or Logistics Control Number (LCN).	Repair Part WUC/LCNs were reported for each part and appear reasonable based on comparing same part names and/or NSNs and WUC/LCN codes. The WUC/LCN codes can be verified using an appropriate WUC/LCN list.	Were Repair Part WUC/LCNs reported for each part?	Do the reported WUC/LCNs appear reasonable based on comparing same part names and, part numbers and/or NSNs?	Were the reported WUC/LCNs validated using an appropriate WUC/LCN List?

-M/R Verification and Validation Checklist (cont.)

Data Element	Report	Definition	Reporting Standard	Question #1	Question #2	Question #3
Repair Part FWG	-R	The Functional Working Group (FWG) that identifies to which particular system, subsystem, component, or assembly the item belongs to.	Repair Part FWGs were reported for each part and appear reasonable based on comparing same part names and/or NSNs and FWG codes. The FWG codes can be verified using an appropriate FWG list.	Were Repair Part FWGs reported for each part?	Do the reported FWGs appear reasonable based on comparing same part names and, part numbers and/or NSNs?	Were the reported FWGs validated using an appropriate FWG List?
Replacement Cost	-R	The replacement cost associated with the LRU, SRU or Part. Replacement cost should be identified/entered for all items. If cost data represents cost to contractor, please provide a nominal contractor cost to government price cost factor in comments.	Replacement Costs were reported for all parts and appear consistent/reasonable based on comparing same parts.	Were Replacement Costs reported for each part?	Do the reported Replacement Costs appear consistent/reasonable based on comparing same parts?	
Repair Cost	-R	The repair cost associated with the LRU, SRU or Part. Repair cost should be identified/entered for all repairable items. If cost data represents cost to contractor, please provide a nominal contractor cost to government price cost factor in comments.	Repair Costs were reported for all reparables (i.e., DLRs) and appear consistent/reasonable based on comparing same parts.	Were Repair Costs reported for each Reparable part (i.e., DLR)?	Do the reported Repair Costs appear consistent/reasonable based on comparing same parts?	Do the reported Repair Costs to Replacement Cost ratios appear consistent/reasonable based previously collected information?
Comments	-R	Any relevant information that could be used in the interpretation of the data provided in this report by repair part.	Where needed comments were provided, add value and are fully understood.	Were comments provided where needed?		

Backup

-M/R Reporting, Example Scenario #1

Contractor Managed Repair with Contractor IT System

- Effort includes scheduled and unscheduled events and DLR management/repair activities
- Contractor would have knowledge of most all required information

MAINTENANCE EVENT REPORT

MAINTENANCE EVENT NUMBER	SYSTEM/END ITEM DATA				FAILURE DATA				REPAIR DATA						COMMENTS
	SYSTEM/END ITEM or DLR NIIN	SYSTEM/END ITEM SERIAL NUMBER	END ITEM (VARIANT)	ORDER NAME	NON-MISSION CAPABLE	SCHEDULED EVENT	FAILURE CODE	FAILURE CODE DESCRIPTION	START DATE	COMPLETION DATE	REPAIR ORG/LOCATION	MAINTENANCE EVENT TYPE	WBS ID	LABOR HOURS	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0001	432	12345	XXXX	XXXX	Y	N	7A	020 Worn Excessively	4/9/16	4/9/16	XXXX	Unscheduled Overhaul	1.3.4.2	12	
0002	4325	100012	XXXX	XXXX	N	N	R45	020 Worn Excessively	4/9/16	4/17/16	XXXX	DLR Repair	1.3.2	2	DLR repaired and returned to inventory

REPAIR PART REPORT

MAINTENANCE EVENT NUMBER	REPAIR ACTION CODE	REPAIR ACTION DESCRIPTION	REPAIR PART NAME	881 REFERENCE	REPARABLE or CONSUMABLE	REPAIR PART QUANTITY	CONTRACTOR PART NUMBER	REPAIR PART NSN (OR NIIN)	REPAIR PART WUC/LCN	REPAIR PART FWG	REPLACEMENT COST	REPAIR COST	COMMENTS
A	B	C	D	E	F	G	H	I	J	K	L	M	N
0001	8881	Replace Main Blade 1	Main Blade 1	XXXX	R	2	7000	XXXX	XXXX	19XL 199	$ 4,000	$ 350	
⋮	⋮	⋮	Balance Shaft Cover	XXXX	C	2	7001	XXXX	XXXX	19XL 199	$ 200		
			Balance Block	XXXX	C	2	7002	XXXX	XXXX	19XL 199	$ 40		
			Flybar Rod	XXXX	C	1	7003	XXXX	XXXX	19XL 199	$ 75		
			Flybar Joint	XXXX	R	1	7004	XXXX	XXXX	19XL 199	$ 3,000	$ 250	
0002	8881A	Repair Flybar Joint	Flybar Joint	XXXX	R (Y)	1	7004	XXXX	XXXX	19XL 199	$ 3,000	$ 250	DLR repaired and returned to inventory
			Replace pins	XXXX	C	1	70236	XXXX	XXXX	19XL 199	$ 10		

-M/R Reporting, Example Scenario #2

Repair Only Contract

- Contractor is required to repair components but lack knowledge of what happened before receiving them
- Specific system/end item may be unknown (i.e., serial number and variant)
- Non-Mission Capable data item would not apply
- Components may have been unscheduled removals or scheduled removals

MAINTENANCE EVENT DATA																
MAINTENANCE EVENT NUMBER	SYSTEM/END ITEM DATA				FAILURE DATA				REPAIR DATA						COMMENTS
	SYSTEM/END ITEM or DLR NIIN	SYSTEM/END ITEM SERIAL NUMBER	END ITEM (VARIANT)	ORDER NAME	NON-MISSION CAPABLE	SCHEDULED EVENT	FAILURE CODE	FAILURE CODE DESCRIPTION	START DATE	COMPLETION DATE	REPAIR ORG/LOCATION	MAINTENANCE EVENT TYPE	WBS ID	LABOR HOURS	
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0001	4325	?	?	XXXX	NA	?	R45	020 Worn Excessively	4/9/16	4/17/16	XXXX	DLR Repair	1.3.2	2	DLR repaired and returned to inventory

REPAIR PART REPORT													
MAINTENANCE EVENT NUMBER	REPAIR ACTION CODE	REPAIR ACTION DESCRIPTION	REPAIR PART NAME	881 REFERENCE	REPARABLE or CONSUMABLE	REPAIR PART QUANTITY	CONTRACTOR PART NUMBER	REPAIR PART NSN (OR NIIN)	REPAIR PART WUC/LCN	REPAIR PART FWG	REPLACEMENT COST	REPAIR COST	COMMENTS
A	B	C	D	E	F	G	H	I	J	K	L	M	N
0001	8881A	Repair Flybar Joint	Flybar Joint	XXXX	R (Y)	1	7004	XXXX	XXXX	19XL 199	$ 3,000	$ 250	DLR repaired and returned to inventory
			Replace pins	XXXX	C	1	70236	XXXX	XXXX	19XL 199	$ 10		

-M/R Relationships to TDR

CSDR Plan						
WBS	WBS Element	1921	1921-5	TDR	-M/R	SRDR
1.0	Sustainment Effort	X	X	X		
1.1	Unit-Level Manpower	X	X	X		
1.2	Unit Operations	X		X		
1.3	Maintenance	X	X	X	X	
1.3.1	Consumables and Repair Parts	X	X	X	X	
1.3.2	Depot Level Reparables (DLRs)	X	X	X	X	
1.3.3	Intermediate Maintenance	X	X	X	X	
1.3.4	Depot Maintenance	X	X	X	X	
1.3.5	Other Maintenance	X	X	X	X	
1.4	Sustaining Support	X	X	X		
1.5	Continuing System Improvements	X	X	X		
1.5.1	Hardware Modifications	X	X	X	X	
1.5.2	Software Support	X	X	X		X
1.6	Installation and Personnel Support	X	X			

TDR

1. WBS ELEMENT CODE	2. WBS ELEMENT NAME	3. ITEM TYPE
1.3	Maintenance	Maintenance
1.3.1	Consumables and Repair Parts	Maintenance
1.3.2	Depot Level Reparables (DLRs) / Repair of Reparables (RORs)	Maintenance
1.3.3	Intermediate Maintenance	Maintenance
1.3.4	Depot Maintenance	Depot Maintenance
1.3.4.1	Scheduled Overhaul	Depot Maintenance
1.3.4.2	Unscheduled Overhaul	Depot Maintenance
1.3.5	Other Maintenance	Maintenance Inspections
1.5	Continuing System Improvements	
1.5.1	Hardware Modifications	Hardware Modifications

-M/R

MAINTENANCE EVENT REPORT															
MAINTENANCE EVENT NUMBER	SYSTEM/END ITEM or DLR	SYSTEM/END ITEM SERIAL	END ITEM (VARIANT)	ORDER NAME	NON-MISSION	SCHEDULED EVENT	FAILURE CODE	FAILURE CODE DESCRIPTION	START DATE	COMPLETION DATE	REPAIR ORG/LOCATION	MAINTENANCE EVENT TYPE	WBS ID	LABOR HOURS	COMMENTS
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

REPAIR PART REPORT													
MAINTENANCE EVENT NUMBER	REPAIR ACTION CODE	REPAIR ACTION DESCRIPTION	REPAIR PART NAME	881 REFERENCE	REPARABLE or CONSUMABLE	REPAIR PART QUANTITY	CONTRACTOR PART NUMBER	REPAIR PART NSN (OR NIIN)	REPAIR PART WUC/LCN	REPAIR PART FWG	REPLACEMENT COST	REPAIR COST	COMMENTS
A	B	C	D	E	F	G	H	I	J	K	L	M	N

1. ITEM TYPE	a. PARAMETER NAME	b. UNIT OF MEASURE
Maintenance	MTBF - Actual	Hours
Maintenance	MTBF - Contracted Target	Hours
Maintenance	MTTR - Actual	Hours
Maintenance	MTTR - Contracted Target	Hours
Maintenance	Number of Failures - Design Controllable	Quantity
Maintenance	Number of Failures - Induced	Quantity
Maintenance	Number of Repair Actions	Quantity
Maintenance	Number of Consumable Parts Used	Quantity
Maintenance	Number of Repair Actions	Quantity
Maintenance	Number of DLRs Replaced	Quantity
Depot Maintenance	Scheduled Maintenance Cycle	Quantity in Months, Hours, or Miles (specify)
Depot Maintenance	Scheduled Depot Events	Quantity
Depot Maintenance	Unscheduled Depot Events	Quantity
Maintenance Inspections	Visual Inspections, Surveillance	Percentage
Hardware Modifications	Hardware Modification Cycle	Quantity in Months, Hours, or Miles (specify)
Hardware Modifications	Hardware Modification Events	Quantity
Hardware Modifications	Number of Hardware Modification - Kits Procured	Quantity

-M/R vs Sustainment TDR

-M/R captures more detailed-level maintenance event and repair parts metrics similar to organically supported programs

Maintenance Event Report

Maintenance Event Number

System/End Item Data:
- End Item or DLR NIIN
- Serial Number
- Variant
- Oder Name

Failure Data:
- Non-Mission Capable
- Scheduled Event
- Failure Code
- Failure Code Description

Repair Data:
- Start/Completion Date
- Org/Location
- Maintenance Event Type
- WBS ID
- Labor Hours

FORMAT 3 (1921-M, PART B)

Repair Part Report

Maintenance Event Number

Repair Action Data:
- Repair Action Code
- Repair Action Description

Repair Part Data:
- LRU or Part Name
- 881 Reference
- Reparable or Consumable
- Quantity
- LRU or Part Number
- NSN (or NIIN)
- WUC/LCN
- FWG
- Replacement Cost
- Repair Cost

FORMAT 3 (1921-R, PART C)

VS

TDR captures higher-level metrics

1. WBS ELEMENT CODE	2. WBS ELEMENT NAME	3. ITEM TYPE
1.3	Maintenance	Maintenance
1.3.1	Consumables and Repair Parts	Maintenance
1.3.2	Depot Level Reparables (DLRs) / Repair of Reparables (RORs)	Maintenance
1.3.3	Intermediate Maintenance	Maintenance
1.3.4	Depot Maintenance	Depot Maintenance
1.3.4.1	Scheduled Overhaul	Depot Maintenance
1.3.4.2	Unscheduled Overhaul	Depot Maintenance
1.3.5	Other Maintenance	Maintenance Inspections
1.5	Continuing System Improvements	
1.5.1	Hardware Modifications	Hardware Modifications

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Maintenance	MTBF - Contracted Target	Hours
Maintenance	MTTR - Actual	Hours
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Maintenance	Number of Failures - Induced	Quantity
Maintenance	Number of Repair Actions	Quantity
Maintenance	Number of Consumable Parts Used	Quantity
Maintenance	Number of Repair Actions	Quantity
Maintenance	Number of DLRs Replaced	Quantity
Depot Maintenance	Scheduled Maintenance Cycle	Quantity in Months, Hours, or Miles (specify)
Depot Maintenance	Scheduled Depot Events	Quantity
Depot Maintenance	Unscheduled Depot Events	Quantity
Maintenance Inspections	Visual Inspections, Surveillance	Percentage
Hardware Modifications	Hardware Modification Cycle	Quantity in Months, Hours, or Miles (specify)
Hardware Modifications	Hardware Modification Events	Quantity
Hardware Modifications	Number of Hardware Modification - Kits Procured	Quantity

Sustainment TDR Example

Sustainment TDR captures higher-level maintenance related technical data. More detailed maintenance and repair part data can be collected using the –M/R.

CSDR Plan

WBS	WBS Element	1921	1921-5	TDR	-M/R	SRDR
1.0	Sustainment Effort	X	X	X		
1.1	Unit-Level Manpower	X	X	X		
1.2	Unit Operations	X		X		
1.3	Maintenance	X	X	X	X	
1.3.1	Consumables and Repair Parts	X	X	X	X	
1.3.2	Depot Level Reparables (DLRs)	X	X	X	X	
1.3.3	Intermediate Maintenance	X	X	X	X	
1.3.4	Depot Maintenance	X	X	X	X	
1.3.5	Other Maintenance	X	X	X	X	
1.4	Sustaining Support	X	X	X		
1.5	Continuing System Improvements	X	X	X		
1.5.1	Hardware Modifications	X	X	X	X	
1.5.2	Software Support	X	X	X		X
1.6	Installation and Personnel Support	X	X			

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1.3.3	Intermediate Maintenance	Maintenance
1.3.4	Depot Maintenance	Depot Maintenance
1.3.4.1	Scheduled Overhaul	Depot Maintenance
1.3.4.2	Unscheduled Overhaul	Depot Maintenance
1.3.5	Other Maintenance	Maintenance Inspections
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