



## RAM Scored Vs. Unscored data

**CLEARED**  
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# Overview



- What is raw data?
- What is scored data?
- Why score data?
- Raw Vs. Scored Data
- Man-in-the-loop scoring
- Impacts of scored data to Army Aviation





# What is Raw data?

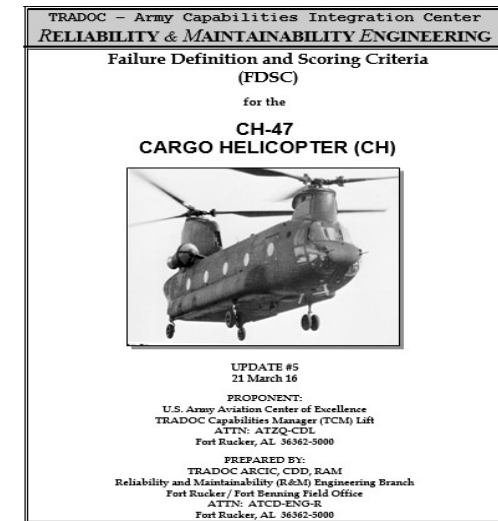
- Data in the most basic form
- Primary source of data ( 2408-13-1's/-2's, 2410's)
- Collected directly from the flightline
- Contains errors and inconsistencies





# What Is Scored Data?

- Man in the loop Scoring
  - Former maintainers & Engineers
- Failure Definition and Scoring Criteria
  - Developed by the user and TRADOC
- 2-part review process
  - Two sets of eyes on every record
- Assigns Maintenance Actions to Hardware
  - Finds the root cause of the issue
- Corrects Mistakes
  - Maintenance Man Hours, Incorrect WUC's, Etc.....





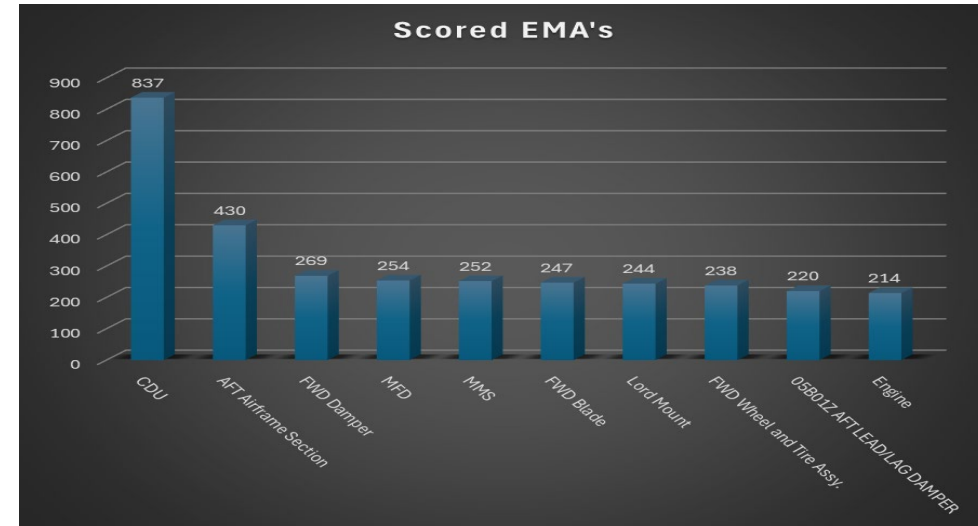
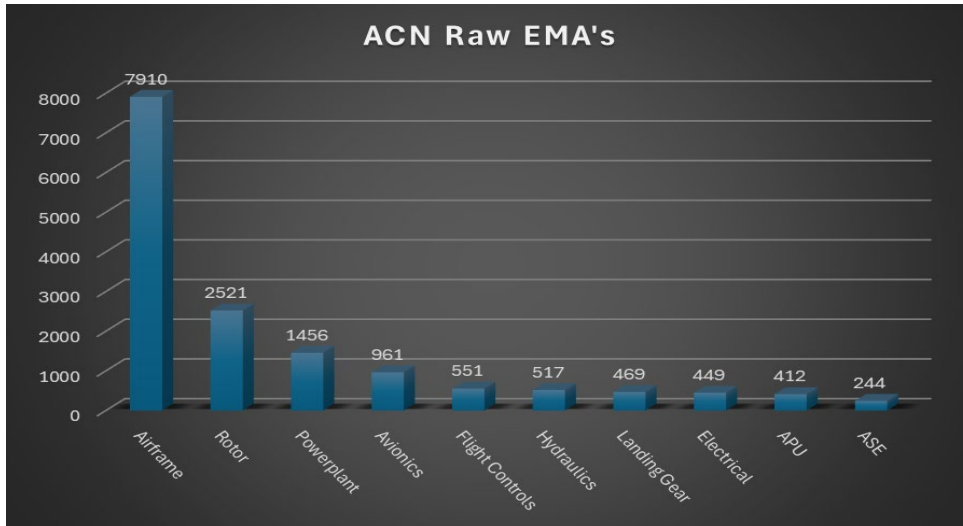
# Why Score data?

- Data validation at the soldier level
- Verified data integrity throughout the scoring and assessment process
- Identifies and eliminates erroneous entries, including duplicate records and input errors
- Mapped correlated failure events to the appropriate subsystem or component





# Raw Vs. Scored Example



- Top 10 Essential Maintenance Actions (EMA) Drivers
  - Soldier-entered Logbook Data (Raw) vs ASAP (Scored) events
- “Airframe” is #1 EMA Driver in Raw Logbook Data... Aft Section of Airframe only in Top 10
  - Multiple faults bucketed to wrong WUC (02 Airframe) instead of (19E12A CDU)
- Rotor System recoded events in CAN
  - Scored data breaks Rotor System down to the component level in ASAP. 3 Rotor subcomponents identified above



# Man-in-the-loop scoring



**Supply Demand ≠ Failures**  
Repairs are not counted

**Raw Logbook Data ≠ Failures**  
Fault isolation/Follow-on  
Maintenance  
will distort findings

**Aircraft Data**

- 2408-13-1 Maintenance event data
- Aircraft Status
- Corrective Actions

**Life Limited / Critical Safety Item Data**

**Failure Definition and Scoring Criteria**

**Work Unit Code (WUC) List**



## ASAP Analysis

Automated Input	Automated Output
ASAP Software <ul style="list-style-type: none"> <li>• Converts Raw Data to Usable Format</li> <li>• Correct blatant errors</li> </ul>	ASAP Software <ul style="list-style-type: none"> <li>• Tailored Reports               <ul style="list-style-type: none"> <li>• Top drivers</li> </ul> </li> <li>• Comparative Analysis</li> </ul>
<b>Manual Scoring</b> <b>RAM Engineer and SME</b>	
RAM Engineer reads and analyzes each maintenance event to assign WUC and Mission Affect	
<ol style="list-style-type: none"> <li>1. #1 ENG PTIT SPIKED AND STAYED STEADY UP TO 1200 DEGREES WHILE AT A HOVER. NO CHANGE IENGINE NOISE, NG, AND NP WERE OBSERVED. DURING SPIKE NO.1 REV LIGHT ILLUMINATED AND STAYED ON. DURING TAXI WHILE #1 ENG WAS STOPPED WAS STILL OBSERVED SPIKING. #1 DECU DISPLAYED MULTIPLE FAULT CODES. <u>Engine Replaced</u></li> <li>2. #1 ENG PTIT DROPPED TO -250 WHILE IN FLT PRIOR TO PAT CHECKS. RECIEVED A #1 REV FAIL LIGHT. AFTER A FEW MINUTES PTIT CAME BACK TO NORMAL OPERATING RANGE AND LIGHT STAYED ON. PTIT DROPPED AGAIN AND RECIVED A #1 FADEC FAIL LIGHT. <u>DECU Replaced</u></li> <li>3. #1 ENG REV LIGHT ILLUMINATED AT A HOVER AND STAYED ON ENTIRE FLIGHT. PTIT SPIKES UP TO 1200 DEGREES AND DOWN TO -245 DEGREES. NO CODES ON SHUTDOWN BUT AFTER CYCLING THE B/U POWER SWITCH CODES A3, A5, B2, B3, B4, B5, B6, B7, AND FF WERE DISPLAYED. <u>HMA Replaced?</u></li> </ol>	
<ul style="list-style-type: none"> <li>• Without the RAM input, the Engine, DECU, and HMA could all be considered as individual failures, skewing RAM metrics.</li> <li>• Following ASAP scoring and analysis, continuous maintenance actions are correctly charged to the sole source failure component.               <ul style="list-style-type: none"> <li>• <b>In this case, HMA was the component that failed.</b></li> </ul> </li> </ul>	



# Impacts of scored data to Army Aviation



- Transforms maintenance records into operational RAM information/metrics to support and enhance fleet management activities
- Provides a guide for Program/Fleet Managers to identify system/subsystem maintenance burdens centered on reliability and maintainability of platform systems and components
- More accurate Maintenance Metrics
  - Maintenance Man Hours, Scheduled Maintenance Man Hours
- Better ability to quantify special inspection impacts
  - New Phase maintenance task, Removal of AOAP
- Determine excessive or insufficient maintenance
  - Recreational Maintenance
- Data used to increase reliability and maintainability through design changes
  - RAM RIP program
- Incorporates scored RAM data to guide Artificial Intelligence model training and validation
- Furnishes fielded operational data to support RAM modeling and evaluation of aircraft.
- Feeds into LORA, FMECA, FRACAS Etc....



# Questions?

