




Life Cycle Maintenance in a War-Time Environment

2010 DOD Maintenance Symposium

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AMERICA'S ARMY: THE STRENGTH OF THE NATION

Purpose

- To examine how the Army's maintenance operations have evolved since the start of the war; discuss strategies, including retrograde and reset, for balancing emergent repair for near-term force capability and long-term materiel condition.
- Relationships between maintenance funded by base and contingency operations
- How OCO resource levels are matched to planned and projected force levels
- Specific contributions of in-theater and field / Sustainment level reset
- Capital investment initiatives to support evolution

The Army's overarching Maintenance Evolution

Four Level Maintenance System
The past

Depot | General Support | Direct Support | Unit




Sustainment (National)

Field

Two Level Maintenance System
The present

Army's maintenance capabilities evolved & transformed in response to a dynamic operational environment

Two-level Maintenance works because…

- …It reduces logistics footprint in the battlespace
- …It enables a rapid return of equipment to the fight
- …It decreases equipment evacuation requirements.
- …It increases productivity of maintainers, and therefore increases combat power

"A simpler, two-level maintenance system is the right way to go for the future. It will yield the more efficient, rapid maintenance response that the Army of the 21st century requires."
- LTG Mitchell Stevenson

Evolving Army Maintenance Operations

Maintenance Ops at the Start

- Theatre & CONUS repair infrastructure
- 2-level Maintenance

Maintenance Ops Now

- Retrograde, Reset, Redistribution synchronized
- Automatic Reset Induction (ARI) , Intensively Managed items
- Theatre Aviation Maintenance Program (TAMP)
- Intermediate-level Maintenance
  - Theater Repair
  - Equipment Refurbishment
- Special Repair Teams (SRTs)
- JSS/RTF

Maintenance Funding

Base vs Contingency Ops (OCO)

Base ($):

- Normal Cyclical Maintenance Requirements
- Overhaul
- RECAP

Contingency Ops (OCO) ($):

- Restore Readiness/Equip for Re-Deployment (to 10/20 3D) Condition
- Incremental Costs related to War-time OPTEMPO & Wear and Tear on Equipment
- Operational Needs of Combat Commanders

Restoring Fiscal Balance

The Army's budget continues to balance near-term force capability and long-term materiel condition through equipment assessments, modernization, prioritization and fiscal budgeting by recognizing enduring peacetime requirements vice incremental costs of war

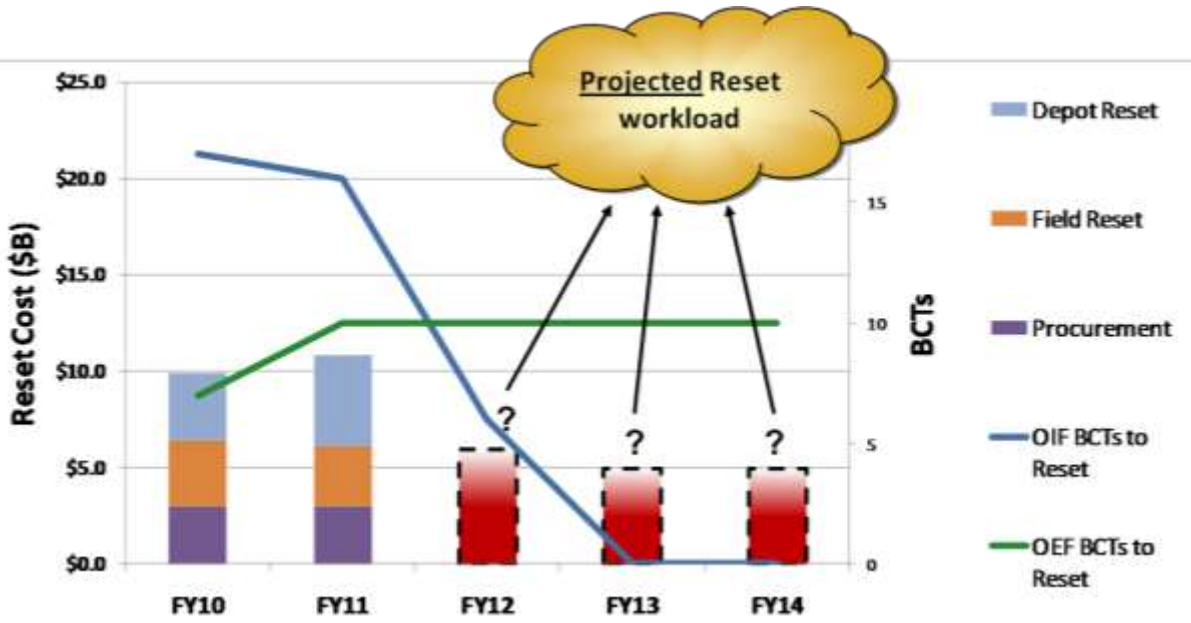
Example: Reset Maintenance Cost – Estimate by Unit Type

Unit Type	Scenario	CONUS Field Reset ($M)[1]	CONUS Depot Reset ($M)[1]	Total CONUS Reset ($M)[1]
IBCT[2]	Historical	30	10	**40**
SBCT	Historical	35	105	**140**
HBCT	Std Equipment / no recap	25	325	**350**
	Std Equipment / Abrams/Bradley recap	25	520	**545**
	50% of Abrams/Bradley; no recap	25	185	**210**
CAB(M)[3]	Historical	100	20	**120**
CAB(H)[3]	Historical	115	25	**140**
SUST BDE	Historical	25	40	**65**

Notes:
1. All costs in FY10 Dollars, based on active units, 1-year deployment to OIF
2. Does not include intermediate maintenance / refurb centers maintenance of MRAP, up-armored HMMWV, etc.
3. Aviation Field costs based on 67% of aircraft inducted into Aviation Reset per rotation

Notional MAR 10 Data

What will the Future Reset Requirement be?



FY11 O&M Reset

Current Projection (OCT 10):

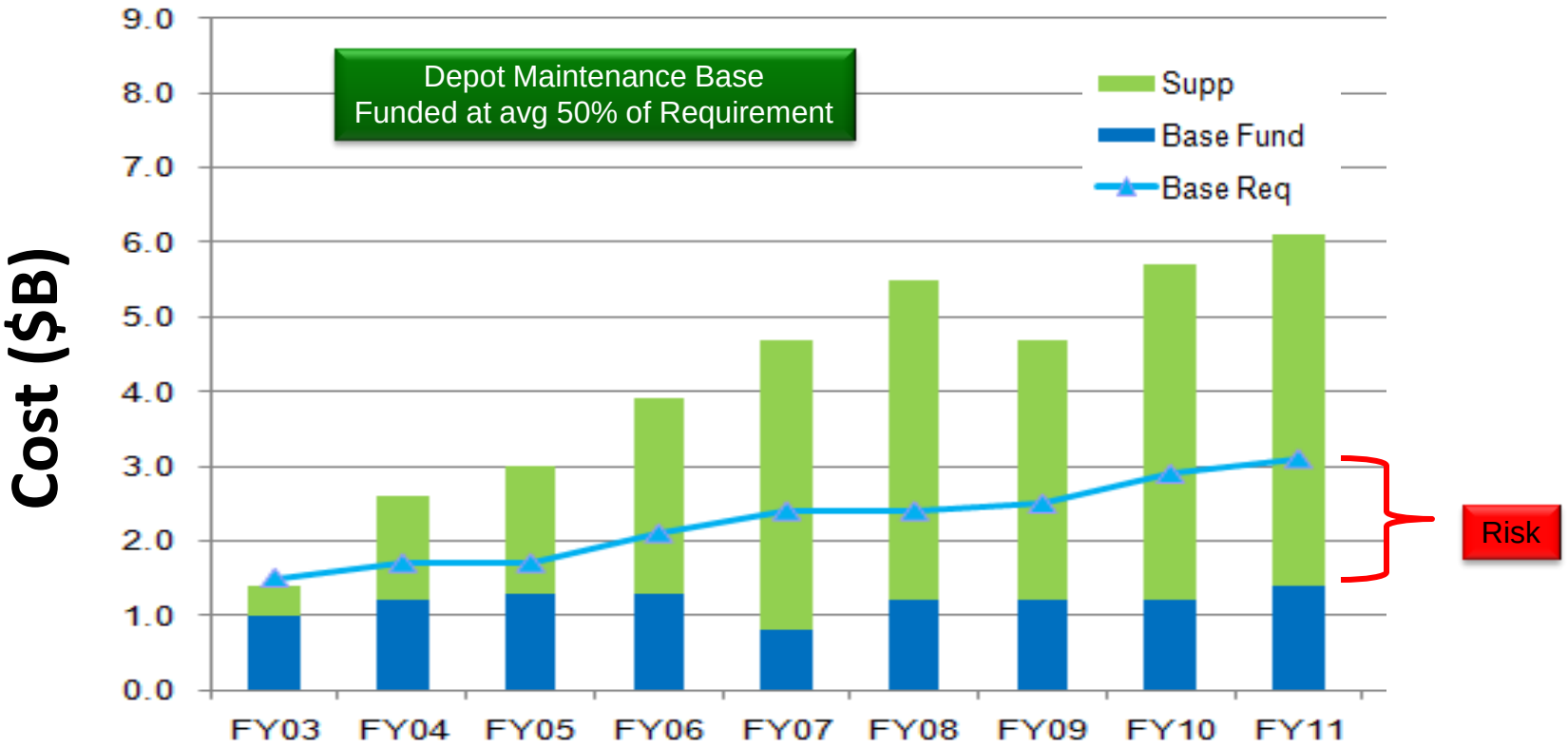
~$6.3B

~$3.5B Depot Level

~2.8B Field Level and Other

- **Challenges for Estimating O&M Reset Liabilities in FY 12 and Beyond**
  - ***Pace & Priority for Equipment Retrograde: What systems return in which FY?***
  - ***Non-Standard Equipment: What will the Army Keep and what will it cost to maintain it?***
  - ***OPTEMPO in Afghanistan***
    - Rougher terrain & poorer infrastructure
    - Poor GLOCs means TPE may remain in country for longer/multiple rotations
  - Transition timelines for Programs from KTR to Organic Support (e.g. MRAP and Stryker)
  - Speed of Retrograde and Industrial Capacity for more complex systems (e.g. helicopters) will require ***Reset Funding for 2-3 years beyond cessation of current conflicts***.
  - ***Balancing all requirements during transition from Supplemental to Base Funding***

Depot Maintenance O&M Funding Over Time



Supplemental funding since 2003 has allowed the Army to assume risk among its Base-funded Depot Maintenance Programs.

- Future investment strategy restores depot base funding to required levels
- POM 12-16 aligns Depot Maintenance base budget with ARFORGEN to sustain capabilities and readiness
- Fully meets ARFORGEN, Core and known non-standard equipment requirements
- Fleet Management principles better integrates acquisition strategies with life-cycle Sustainment Plans

Contributions of In-theater and Field / Sustainment Level Reset

- Reset of over 1.7M items since 2003.
- Doubled Depot production since 9/11; highest output since Vietnam.
- For the last 5 years Reset has enabled deployed forces to restore capability to 90% or greater for ground equipment and 75% or greater for aviation assets.
- Restore a BDEs equipment to Mission Capable Status within 180 days of return from the CENTCOM AOR for AC and 365 days for the RC.
- Developed a comprehensive Depot Level Reset Strategy to synchronize all requirements with ARFORGEN and integrate core depot maintenance requirements, fleet management strategies and emerging requirements.

Capital investment initiatives to support evolution

Example: The Joint National Maintenance Facility (JNMF)

***Capabilities** ~ **three single story pre-engineered metal buildings in complex:**

- 2 Vehicle Maintenance Facilities (VMF) with 104 (20' X 40') maintenance bays,
- 1 Facility including; Mechanized Handling Equipment (MHE) shop ~ 20 (32' x 40') bays, Joint Robotics shop and Tire Assembly Repair Program (TARP) shop
- Multi point wash rack designed to support the facility.

A Smart Investment

The JNMF will allow the Army to:

- Retain Equipment in Afghanistan…..Rapid unit Transfer of Authority (TOA)!
- Maintain/refurbish equipment in-country…..reduced stress on Lines of Communication (LOC)!
- Minimized use of contracted capabilities….saved dollars!
- Compliment the Army Pre-positioned Stock (APS) Site in Bagram
- Support all U.S. Military Requirements
- Respect Kuwait's desire to shift away from AF support

The JNMF provides Joint Forces with unprecedented in-theatre repair capabilities for vital equipment which ultimately results in increased readiness

Summary

As the operational environment changes, sustainment capabilities must evolve to continually support our Army at war through:

- Development and improvement of maintenance capacities to meet identified capability gaps – Reset (repair, recap or procurement)

- Continuously modernizing equipment repair methods to meet current and future capability needs (displace capability forward, refurbishment, tech insertions)

- Continuously meet evolving force requirements in the current operational environment by fielding and distributing capabilities in accordance with Army priorities and ARFORGEN (Ex. TAMP)

Questions?

Back-up

Sustainment as a Component of Overall Force Modernization

Sustainment is an innate component of Modernization

Why the Army Modernizes:

•The Army modernizes for our Soldiers in response to the ever-changing threat and dynamic capability of enemies abroad

"We must continue to transform into a force that is versatile, expeditionary, agile, lethal, sustainable and interoperable to give our Soldiers an decisive advantage in any fight."

- LTG Lennox

Why Army Maintenance must evolve:

• To fulfill our mission to sustain our Soldiers and maintain readiness of the world's strongest, most capable and strategically modernized Army.

Army Modernization will require the ability to deploy &sustain powerful forces without a large logistics footprint.

Indications of the Army Maintenance Evolution

Evolutionary changes in several ways

1. Improvement of a current capability:

- Improved Automatic Reset Induction (ARI):
  - Lean Six Sigma re-evaluation of the process which has resulted in:
    1. Improved accountability.
    2. Improved visibility.
    3. A single process.
    4. Maximized use of automation.
    5. Elimination of multiple touch points.
    6. Increased speed to the rear. (This refers to velocity—the need to return ARI items to CONUS as soon as possible for repair or rebuild to support Army Force Generation.)

Indications of the Army Maintenance Evolution, Cont.

2. Expanding a provisional capability made into an enduring capability:

- Theatre Aviation Maintenance Program (TAMP) as an enduring capability:
  - TAMP was previous mission was to address an immediate Army requirement of:
    - Organizational, intermediate, and limited depot-level maintenance of aircraft and their engines and components
    - Forward Presence for Maintenance & Limited Depot Repair
  - TAMP has been recommended to become an enduring organizational capability by the CDRT 10 Council of Colonels

Indications of the Army Maintenance Evolution, Cont.

3. Planning for a Future capability:

- The Joint National Maintenance Facility (JNMF):
  - A sustainment level refurbishment facility capable of repairing wheeled vehicles, construction equipment, Mechanized Handling Equipment (MHE) and Robotics for Joint Forces in Afghanistan (AF). This facility will also fulfill a US Central Command (CENTCOM) US Forces – Afghanistan (USFOR-A) requirement for a sustainment capability for Army and USMC equipment

  - Benefits of this future capability:
    - Retain Equipment in Afghanistan…..Rapid unit Transfer of Authority (TOA)
    - Maintain/refurbish equipment in-country…..reduced stress on Lines of Communication (LOC)
    - Minimized use of contracted capabilities….saved dollars
    - Compliment the Army Pre-positioned Stock (APS) Site in Bagram
    - Support all U.S. Military Requirements
    - Respect Kuwait's desire to shift away from AF support

Other Maintenance Evolved Strategies

- Sync of Retrograde with Production - DOM's and Depots
- RESET Scope Related to Condition of Equipment & Army's Future Requirements

Snapshot of Reset Since 2008

- **OIF/OEF Fleet Readiness:** Maintained at ≥ 90% Ground and ≥75% Aviation
- **Sustainment Level Reset:** Depot production doubled since 9/11 -- highest output since Vietnam
  - FY08: Completed 121,176 items
  - FY09: Completed 98,367 items
  - FY10: Plan to complete 103,251 items
- **Special Repair Teams (SRT):** Conducting depot level repairs at unit location, significantly reducing repair time and costs (Over 600K items in FY09)
- **Field Level Reset:**
  - FY08: 24 BDEs completed (12 carry-over to FY09)
  - FY09: 29 BDEs completed (18 carry-over to FY10)
  - FY10: 25 BDEs to be completed (22 carry-over to FY11)

Reset will continue **as long as we have** ***forces deployed and several years thereafter*** **to ensure the Army's readiness for the future**

Lessons Learned

- Timely and adequate funding is extremely important in purchasing Long Lead Repair Parts, maintaining skilled workforce at depots, and return of equipment to deployed/next to deploy units.

- Optempo in harsh desert environment with added weight requires more detail inspections and potentially a higher level of repairs.

  - Majority of Tactical Wheel Vehicles will require depot level repair
  - 1/3 of aircraft had problems that would have gone undetected with routine phase maintenance.

- Established in-theater repair capability for Up Armored HMMWVs and Armored trucks in order to maintain equipment operational availability above 90%.

- Recapitalization
  - Primarily addresses operational capability gaps / lessons learned:
    - Target acquisition (Q36)
    - Force protection (Frag kits)
    - Counter IEDs
  - Helps standardize equipment fleets.

Top-Down . . .

Reset Cost Model – Overview

- Army G4's Reset Cost Model is an analytical tool that enables Army analysts to better predict future Reset maintenance cost based on:
  - Force structure and equipping scenarios (HBCT, IBCT, CAB, etc.)
  - Maintenance and Reset Policy
  - 7+ years of historical data
- Used to:
  - Provide input to OCO O&M budget requests
  - Respond to Army and OSD Reset studies
  - Show impact of force structure / equipment / maintenance policy decisions on Reset resource requirements

Synchronizing Responsible Retrograde with Reset

Army Challenges

- Army Force Generation (ARFORGEN): Approximately 60 Brigades to be Reset over FY10-11
- Theater Provided Equipment (TPE): Over 450K pieces
- Reconstitution of Army Prepositioned Stocks (APS): Over 100K items currently short
- Key Variables:
  - Precise Demands for Equipment in Afghanistan
  - Equipment To Be Transferred To Iraqi Security Forces (ISF)
  - Non-Standard Equipment (NS-E) to be retained in the Army Inventory, candidates for Reset In FY 10-11

Army Solutions

- ARCENT Support Elements in Iraq (ASE-I) and Afghanistan (ASE-E) ensure Drawdown in Iraq and Build-up in Afghanistan are Synchronized according to timelines set by commanders in Theater.
- HQDA Reset Planning Factors Synchronize CONUS Retrograde and Reset through:
  - Data Sets and Information:
    - Supply of Equipment coming out of Iraq
    - Global Army Demands for Reset Equipment
  - Precise Instructions for Coordination among all Army Stakeholders
- AMC Responsible Reset Task Force (R2TF)
  - Heightens Visibility of Retrograding Equipment
  - Accelerates Equipment Movement to meet ALL demands (CONUS, OEF, APS, etc.)
  - Lets Depots plan for equipment arriving.

ARMY FORCE GENERATION (ARFORGEN): ARMY UNIT ROTATIONS AND OPERATIONAL TEMPO (OPTEMPO)

- Summary:
  - Brigade-Sized Units Redeploying from SWA in FY 10 and FY11
    - FY10: 31 Brigade-Sized Units
      -8 X IBCT, 8 X HBCT, 2 X SBCT, 6 X SECFOR , 5 X CABs, 2 X FiB
    - FY11: 33 Brigade-Sized Units
      -11 X IBCT, 5 X HBCT, 4 X SBCT, 6 X SECFOR, 6 X CABs, 1 X FiB
  - Brigade-Sized Units Deploying to SWA in FY 10 through FY12
    - FY10: 33 Brigade-Sized Units
      -11 X IBCT, 5 X HBCT, 4 X SBCT, 6 X SECFOR, 6 X CAB, 1 X FiB
    - FY11: 18 Brigade-Sized Units
      -5 X IBCT 5 X HBCT, 2X SBCT, 6 X CAB, 1X FiB
    - FY12: 9 Brigade-Sized Units
      - 4 X IBCT 1 X HBCT, 1X SBCT, 2 X CAB, 1X FiB
- Source: ARFORGEN Synch Tool

FORSCOM RESET Support and Resourcing Conferences (RSRC) Synchronizing Demand Signals

UNCLASSIFIED

FY10 Unit Reset Start Schedule

As of 2 FEB 10

FY10 Plan – 47 BDEs and 6 Separate Pilots start/continue Reset (16/3 carry-in from FY09)
– Complete 25 BDEs and 6 Separate Pilots (22/0 carry-over to FY10)

	FY09 Carry-In	1st QTR	2nd QTR	3rd QTR	4th QTR
Active: 33	2/1 AD / 170 IN BDE 4/1 CD HBCT 1/25 SBCT 3/1 ID IBCT 3 ESC 4 CAB 2/4 HBCT 1/4 HBCT 42 MP BDE 75 FiB 101 DIV HQ	2/1 ID HBCT 3/25 IBCT 172 HBCT 3/82 IBCT 3/1 CD HBCT 159 CAB 10 MTN CAB	2/1 CD HBCT 1/1 CD HBCT 4/25 IBCT 3/10 IBCT	4/1 AD HBCT 1 CD CAB 4/4 ID IBCT 82 AB CAB	1/82 IBCT 4/1 ID IBCT 4/2 SBCT 17 FIB 25 ID CAB 2/2 SBCT 4/82 IBCT 3/2 SBCT 2/10 IBCT 1/1 HBCT
ARNG: 15	261 SC BDE (DE) 34 ID CAB 76 IBCT (IN) 39 IBCT (AR) 27 IBCT (NY) 45 IBCT (OK)	56/28 SBCT	30 HBCT 32 IBCT 155 HBCT 28 ID CAB	115 FIB 41 IBCT 48 IBCT	72/36 IBCT
USAR: 2	129 TC CO (HET) 445 CA BN				
START	13/6	8/0 (21/6)	8/0 (29/6)	7/0 (36/3)	11/0 (46/3)

(C) – Unit Complete (≥ 97)

Pilot Units

FY10 Field Level Reset – Completion Schedule

As Of: 2 FEB 10

FY10 Plan – Complete 25 BDEs and 6 Separate Pilots (22/0 carry-over to FY10)

	1st QTR	2nd QTR	3rd QTR	4th QTR	Carryover to FY11
Active: 21	2/1 AD / 170 IN BDE 4/1 CD HBCT 75 FiB 2/4 HBCT 1/4 HBCT	1/25 SBCT 3/1 ID IBCT 3 ESC 4 CAB 42 MP BDE 101 DIV HQ	2/1 ID HBCT 3/25 IBCT 172 HBCT 3/82 IBCT 3/1 CD HBCT	159 CAB 2/1 CD HBCT 1/1 CD HBCT 4/25 IBCT 3/10 IBCT 10 MTN CAB	4/1 AD HBCT 1 CD CAB 4/4 ID IBCT 82 AB CAB 1/82 IBCT 4/1 ID IBCT 4/2 SBCT 17 FIB 25 ID CAB 2/2 SBCT 4/82 IBCT 3/2 SBCT 2/10 IBCT 1/1 HBCT
ARNG: 7	76 IBCT (IN) 39 IBCT (AR) 34 ID CAB 45 IBCT (OK)	27 IBCT (NY)		261 SC BDE (DE) 56/28 SBCT	30 HBCT 32 IBCT 155 HBCT 28 ID CAB 115 FIB 41 IBCT 48 IBCT 72/36 IBCT
USAR: 2			129 TC CO (HET)	445 CA BN	
START	9/0	4/3 (13/3)	5/1 (18/4)	7/2 (25/6)	22/0 (47/6)

(C) – Unit Complete (≥ 97)

Pilot Units

Why The Army Needs Reset

The prolonged length and demanding pace of combat operations in SWA have strained Army equipment. Our Reset Program leverages a host of industrial capabilities at our depots and installations throughout the world to repair and replace damaged and worn systems, ensuring a ready reliable force for the current as well as the next mission.

RADIATORS: Dust clogs cooling fins; this leads to higher engine coolant temperatures, higher oil temperatures, overheating and greater engine strain.

ENGINES: Contaminants are sucked in by the negative pressure in the crankcase. Dust and sand mix with the oil, accelerating bearing, block and piston wear.

ALTERNATORS: Debris penetrates windings causing higher temperatures and premature alternator failure leaving equipment unusable.

FUEL SYSTEMS: Dust, biological growth and other contaminants collect in fuel tanks. This clogs fuel filters and damages engine fuel system components.

ELECTRONICS :Fine dust penetrates almost all sealed components; causes heat build up, switch and relay failures, and consequently less reliable electronic components.