



ALLEN S. COMFORT  
RDECOM-TARDEC  
Force Projection Technologies  
Fuels and Lubricants Tech. Team



**TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.**

# Now Is the Time for an Axle Lubricant Efficiency Standard

UNCLAS: Dist A. Approved for Public Release

April 15, 2008

| Report Documentation Page                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |                                     | Form Approved<br>OMB No. 0704-0188       |                                                          |                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-------------------------------------|------------------------------------------|----------------------------------------------------------|---------------------------------|
| Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. |                                    |                                     |                                          |                                                          |                                 |
| 1. REPORT DATE<br><b>15 APR 2008</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                    | 2. REPORT TYPE<br><b>N/A</b>        |                                          | 3. DATES COVERED<br><b>-</b>                             |                                 |
| 4. TITLE AND SUBTITLE<br><b>Now Is the Time for an Axle Lubricant Efficiency Standard</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |                                     |                                          | 5a. CONTRACT NUMBER                                      |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                          | 5b. GRANT NUMBER                                         |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                          | 5c. PROGRAM ELEMENT NUMBER                               |                                 |
| 6. AUTHOR(S)<br><b>Allen S. Comfort</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |                                     |                                          | 5d. PROJECT NUMBER                                       |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                          | 5e. TASK NUMBER                                          |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                          | 5f. WORK UNIT NUMBER                                     |                                 |
| 7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)<br><b>US Army RDECOM-TARDEC 6501 E 11 Mile Rd Warren, MI 48397-5000</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                    |                                     |                                          | 8. PERFORMING ORGANIZATION REPORT NUMBER<br><b>18830</b> |                                 |
| 9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                    |                                     |                                          | 10. SPONSOR/MONITOR'S ACRONYM(S)<br><b>TACOM/TARDEC</b>  |                                 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     |                                          | 11. SPONSOR/MONITOR'S REPORT NUMBER(S)<br><b>18830</b>   |                                 |
| 12. DISTRIBUTION/AVAILABILITY STATEMENT<br><b>Approved for public release, distribution unlimited</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                    |                                     |                                          |                                                          |                                 |
| 13. SUPPLEMENTARY NOTES<br><b>Presented at SAE 2008 World Congress, April 14-17, 2008, Detroit, MI, USA, The original document contains color images.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |                                     |                                          |                                                          |                                 |
| 14. ABSTRACT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                    |                                     |                                          |                                                          |                                 |
| 15. SUBJECT TERMS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                    |                                     |                                          |                                                          |                                 |
| 16. SECURITY CLASSIFICATION OF:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                    |                                     | 17. LIMITATION OF ABSTRACT<br><b>SAR</b> | 18. NUMBER OF PAGES<br><b>5</b>                          | 19a. NAME OF RESPONSIBLE PERSON |
| a. REPORT<br><b>unclassified</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | b. ABSTRACT<br><b>unclassified</b> | c. THIS PAGE<br><b>unclassified</b> |                                          |                                                          |                                 |

- Establishing The Need - Military
  - “Overall, the military consumes about 1.2 million barrels, or more than 50 million gallons of fuel, each month in Iraq...” ArmyTimes -The Associated Press, Posted : Thursday Apr 3, 2008
  - In 2006 military ground vehicles consumed over 215 million gallons of fuel, excluding Abrams M1 main battle tank. Recent economic analysis performed by TACOM



Stryker Combat Vehicles on patrol in Iraq.

UNCLAS: Dist A. Approved for Public Release

**TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.**

At the current cost of JP-8, \$3.04/gallon, a 1% efficiency gain represents a savings of \$7.6M annually!

- Defense Energy Supply Center (DESC) buys fuel on the open market paying from \$1.99/gallon to \$5.30/gallon.  
ArmyTimes -The Associated Press, Posted : Thursday Apr 3, 2008
- Fuel comprises 70% of the Army tonnage shipped. Of the top 10 battlefield fuel consumers, 4 are supply transport vehicles (#1, 3, 4, and 8). The Defense Science Board Task Force On Improving Fuel Efficiency of Weapons Platforms, January 2001

Vehicles of the 1st Battalion, 118th Field Artillery, Georgia National Guard, returned to al-Asad Air Base, Iraq, after a three-day mission guarding a convoy of fuel tankers through the western Iraqi desert.



UNCLAS: Dist A. Approved for Public Release

**TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.**



- Establishing The Need – Commercial
  - Corporate Average Fuel Economy (CAFE)
  - Emissions Standards
  - Climate Change
  - Customer Demand and Satisfaction
  - Increasing Fuel Demands from China, India, and Others

UNCLAS: Dist A. Approved for Public Release

**TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.**



The Army is interested in working with SAE TC-3 membership to develop an axle lubricant efficiency test for light-duty and heavy-duty applications which can be implemented as part of SAE J2360.

UNCLAS: Dist A. Approved for Public Release

**TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.**