

# **ATTACHMENT 12**

## **FUTURE TACTICAL TRUCK SYSTEMS (FTTS)**

### **Operational Effectiveness Analysis Data**

**18 November 2003**

## Operational Models Vehicle System Input Data

NOTE – The following represents the typical data set required for an Operational Effectiveness Analysis. Some items are not applicable to tactical vehicles. Please indicate any items that are not applicable with “NA”. All other items shall be completed for each MSV and UV variant as defined in the SOW. Data that is common among all variants should be provided once only, with subsequent data sets indicating the item as “Common”. Surrogate values will be used for all items left blank, therefore it is in the contractor’s best interest to fill out all applicable items to insure that their vehicles are accurately characterized.

### Data Requirements:

1. Vehicle dimensions:
  - a. Crew compartment length (m)
  - b. Crew compartment Width (m)
  - c. Crew compartment Height (m)
  - d. Overall Length (m)
  - e. Overall Width (m)
  - f. Overall Height (m)
  - g. Frontal Area (ft<sup>2</sup>)
2. Target Acquisition Sensors
3. Tire width (m)
4. Weapon systems on board (i.e. 7.62 machine gun, OCSW, 120mm Gun, Missiles)
5. Munition storage capacity on vehicle (number of rounds by type of round carried)

6. Vehicle storage capacity (Load capacity – weight (kgs) and volume (cubic meters))
7. Vehicle contrast. Array of 8 columns and 12 rows. Columns are for the aspect angles of: 0,30,60,90,120,150,180 and the vehicle top. Rows correspond to visual contrast fully exposed, visual contrast in hull defilade, TV contrast fully exposed, TV contrast hull defilade, thermal fully exposed in summer day, thermal in hull defilade in summer day, thermal fully exposed in summer night, thermal in hull defilade in summer night, thermal fully exposed in winter day, thermal in hull defilade in winter day, thermal fully exposed in winter night, thermal in hull defilade in winter night. Visual and TV contrast is expressed on a linear scale of 0 to 1; 0 is black on black, 1 is black on white. All thermal contrast is expressed in delta t in °C. (Note: if there is a fighting position which corresponds to hull defilade, both sets of numbers are needed. If not, hull defilade contrast equals fully exposed contrast.)
8. Reflectivity of light. On a linear scale of 0 to 1.
9. Reflectivity of Radar. On a linear scale of 0 to 1.
10. Road speed slope array. Max speed (km/hr) on road with the following 5 slopes:
  - Steep upgrade - slope > 5 percent
  - Moderate upgrade - slope between 2 and 5 percent
  - Flat - slope between 2 percent and -2 percent
  - Moderate downcline - slope between -2 and -5 percent
  - Steep upgrade - slope < -5 percent
11. Cross country speed slope array. Max speed (km/hr) cross country with the same slopes.
12. Maximum slope that the vehicle can traverse (percent).
13. Maximum acceleration (m/s<sup>2</sup>). An array of acceleration factors for each slope and rolling resistance can be determined using the following inputs.
  - a. gross engine horsepower
  - b. grade resistance factor
  - c. gross vehicle weight (lbs)
  - d. horsepower at the wheels
  - e. tractive effort

- f. wind resistance factor
- g. ride limiting speed vs. surface roughness curves.

14. Maximum deceleration (m/s<sup>2</sup>).
15. Fuel type.
16. Fuel capacity (liters).
17. Fuel usage cross country (l/km).
18. Fuel usage on road (l/km).
19. Definition of short and long range for round selection (m).

For each type round fired:

- (a) Maximum range (m).
- (b) Minimum range (m).
- (c) Maximum rate of fire (rounds/min).
- (d) Sustained rate of fire (rounds/min).
- (e) Maximum velocity (m/s).
- (f) Mean lay load time (sec).
- (g) Standard deviation of lay load.
- (h) Mean lay load time for subsequent rounds.
- (i) Standard deviation of lay load for subsequent rounds.
- (j) Dispersion by range bands (usually 3 bands). Each range band has 5 elements: maximum limit of range band, aiming dispersion for range, aiming dispersion for deflection, round-to-round dispersion for range, round-to-round dispersion for deflection. All elements are in meters.
- (k) Maximum time of flight (sec).
- (l) Seeker details; turn on range(m)
- (l) P(H), P(K), P(sspk)

18. Armor protection level relative to vehicle system for:
  - (a) Crew compartment front.
  - (b) Crew compartment rear.
  - (c) Crew compartment left side.
  - (d) Crew compartment right side.
  - (e) Crew compartment top.

19. Countermeasure Devices

- a. Warning Receivers (Laser, Missile, Radar)
- b. Grenade Smoke Launcher
- c. False Target Generators( Laser, MMW)
  - Effective probability
- d. Jammers
  - Min effectiveness range(m)
  - Probability of jamming
- e. Active Protection System
  - degree of coverage( 360, top, etc)
  - number of sectors
  - number of rounds
  - P(defeat) fully exposed & hull defilade

20. Load Handling Arm Cycle Times.

- Load and Unload times for the arm to move a piece of cargo.
- Delay or processing time to send the Arm commands.

21. Radio communication suites defined.

22. NBC protection? If so, how long does it take to pressurize crew compartment?

23. Performance data on any peculiar sensors. i.e. FCLAS radar, Ground or proximity sensors.

24. Delay times and action times for any peculiar actions they define.