



# **WEARABLE POWER PRIZE COMPETITION**

## **Instructions and Guidelines for Developing and Submitting the Fuel Plan**

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## **1.0 INTRODUCTION**

### **1.1 Background**

In accordance with the Wearable Power Prize (WPP) rules document, each registered individual or team is required to deliver a Fuel Plan by March 7, 2008. The Fuel Plans will be used as first part of the Safety Evaluation process that will also include an analysis of the system descriptions and physical inspections of the systems during the final event at the Marine Corps Air-Ground Combat Center (MCAGCC). The Fuel Plans will also be used to ensure that the proper material safety, storage and emergency handling procedures are in place during the final event.

The WPP staff reviewing the Fuel Plans will consist of engineers and scientists from a wide spectrum of disciplines throughout the Department of Defense (DoD).

The next phase of the safety evaluations will be the review of the System Descriptions due by June 3, 2008.

### **1.2 Objective**

This document is intended to provide registered WPP individuals and teams with instructions and guidelines for developing and submitting the Fuel Plan.

## **2.0 INDIVIDUAL OR TEAM DISQUALIFICATION FOR NON-COMPLIANCE**

Registered Individuals/Teams that fail to submit a Fuel Plan in accordance with the format and content requirements by the required date will be disqualified and removed from the WPP Competition.

If needed, individuals/teams may be asked for additional information or clarification of information. Failure to provide this information will result in the individual or team being disqualified from competing in the Wearable Power Prize competition.

## **3.0 FUEL PLAN GUIDELINES**

### **3.1 Technical Scope**

The focus of the WPP competition is to showcase promising wearable power systems for Dismounted Warfighter use. The power system will be required to attach to a Modular Lightweight Load-carrying Equipment (MOLLE) Vest and provide 20W average power for 96 hours with peak power requirements of up to 200W for periods of 5 minutes. All

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components, including the generation, storage, electronics and connections must weigh 4kg or less.

Registered individuals and teams shall submit the Fuel Plan on or before 4:00 pm EDT on March 7, 2008 per section 4.0 below that addresses the following areas:

1. Introduction and Overview
2. Liquid Fuels
3. Solid Fuels
4. Gaseous Fuels
5. Primary Battery
6. Rechargeable Battery
7. System Emissions

Guidance on acceptable **Fuels/Energy Storage Material List** can be found at [http://www.dod.mil/ddre/prize/doc/Fuel\\_List\\_111607.pdf](http://www.dod.mil/ddre/prize/doc/Fuel_List_111607.pdf).

### 3.2 Required Fuel Plan Format and Content

#### 3.2.1 Format

- Paper Size – 8.5 x 11 inch Paper
- Margins – 1” on all sides
- Spacing – Single or Double Spaced
- Font – Times New Roman, 12 point
- Number of pages – No more than 5 single –sided pages in length, not including cover page
- Cover Page – This should include the words “Wearable Power Prize Fuel Plan” and the following: Team Name, Team Leader Name, and contact information (address, phone #, email) and Date
- Page Header/Footer – Header on each page should contain Team Name and the words “Fuel Plan”. Footer on each page should contain a page number and any assertions of data rights or proprietary information associated with the prototype or system.

#### 3.2.2 Content

If your team is proposing the use of a fuel or chemistry that is **NOT** on the WPP Fuels/Energy Storage Material List, the title and header should be marked with **team name/Fuel Plan/Request for Fuel or Chemistry**.

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Requests for a Fuel or Battery Chemistry not in the current approved list must be very clearly marked with “**Request for ...**” within the appropriate section of the Fuel Plan.

For the level of detail required for fuels and batteries, teams can refer to the WPP Fuels/Energy Storage Material List. If a mixture of fuels is used, the exact mixture ratio is not required at this time. It is not required that fuels be listed in multiple sections if they fit into more than one category. Pick the category that best fits the fuel. It is not required to list the chemical compound when using a fuel listed in the WPP Fuels/Energy Storage Material List such as kerosene, gasoline, etc. It is not required at this time to submit Material Safety Data Sheets (MSDS) on the Fuels/Energy Storage Materials used in the power system. Material Safety Data Sheets shall be delivered with the System Description due on June 3, 2008. The Fuel Plan should be structured as following:

- Section 1 – Introduction and Overview
  - The section should describe the overall approach used in the power generation and storage of the system or prototype
- Section 2 – Liquid Fuels
  - Use this section to identify the fuel(s) that are in a liquid form.
  - If no liquid fuels are used then mark Section 2 with; No Liquid Fuels to be Used
- Section 3 – Solid Fuels
  - Use this section to identify the fuel(s) that are in a solid form.
  - If no solid fuels are used then mark Section 2 with; No Solid Fuels to be Used
- Section 4 – Gaseous Fuels
  - Use this section to identify the fuel(s) that are in a gas form.
  - If no gaseous fuels are used then mark Section 2 with; No Gaseous Fuels to be Used
- Section 5 – Primary Battery
  - Use this section to identify the primary battery chemistries used in the power system
  - This section should include a brief description of the cathode, anode and electrolyte compounds
- Section 6 – Rechargeable Battery
  - Use this section to present information about the rechargeable battery chemistries used in the power system

- This section should include a brief description of the cathode, anode and electrolyte compounds
- Section 7 – System Emissions
  - Use this section to list the exhaust gases and/or liquids that are emitted from the power system

### **3.3 Proprietary Information**

Any proprietary information disclosed to the government in writing and so marked will be protected in accordance with government laws and regulations. Proprietary assertions should be contained in the footer section of each page.

### **4.0 Fuel Plan Submission and Deadlines**

Each registered individual or team is required to electronically submit one Fuel Plan no later than 4:00 PM EDT, March 7, 2008 to [wearablepower@osd.mil](mailto:wearablepower@osd.mil). The Fuel Plan can be sent as a Microsoft Word or PDF file attached to an email sent from the team leaders' email. Emails from team members will not be accepted. Team leaders will receive receipt confirmation by email. If a team leader submitted a Fuel Plan before the deadline and does not receive a receipt confirmation by March 14, 2008, it is his/her responsibility to send an email to [wearablepower@osd.mil](mailto:wearablepower@osd.mil) by March 18, 2008. The email subject line shall be the following: “**MISSING FUEL PLAN RECEIPT FOR TEAM** (fill in team name).”

If safety issues are identified with a particular system or if clarifications or additional information is needed, the WPP staff will notify the individual or team leader by April 4, 2008.

Minor changes to the Fuel Plan will be accepted until the system description due date of June 3, 2008.