SAE Formula 1 Multifunction Display Project: Functional Description

Mark Tarvin & Scott Ogrin
Steve Gutschlag, Advisor

System Inputs

Analog Sensors

- The analog inputs to the present dashboard will be the sensor inputs to the system
- Tachometer, Oil Pressure, Temperature, and Gear Select sensors will be the inputs to the system

Display Controls

- Several momentary switches will allow the user to select the display mode or select from on-screen menus (see next page)

Bi-directional Data Interface

- Possible parallel I/O connections to the Data Acquisition System and the Fuel Injection System

System Outputs

LCD Display

- An LCD will display vehicle information and warnings to the driver:
  - **Vehicle Information:** Engine RPM, Engine Oil Pressure, Engine Oil Temperature, Transmission Gear Indicator
  - **Warning Indicators:** Maximum RPM, Maximum and Minimum Oil Pressure, Maximum Temperature

LED Indicators

- Helmet-mounted LEDs:
  - Warning Indicators (same as on LCD display)
  - Transmission Gear Indicator

The LCD will have several modes of operation. The primary screen configurations will be:

Racing Screen	- large tachometer, warning and gear indicators
Practice Screen	- tach, temperature, oil pressure, gear indicator
Test Screen	- To Be Determined; will interface with Data Acquisition System
Demo Screen	- demos all previously mentioned screen modes

Inclusion of the Test Screen is a secondary goal and dependent upon the progress made by the Data Acquisition System Project Team. Consideration will be given to future upgrade options, such as a speedometer or rear-view video display, when designing the main subsystems. The on-screen menu options mentioned above will allow the driver to customize the location of displays and indicators on the LCD.

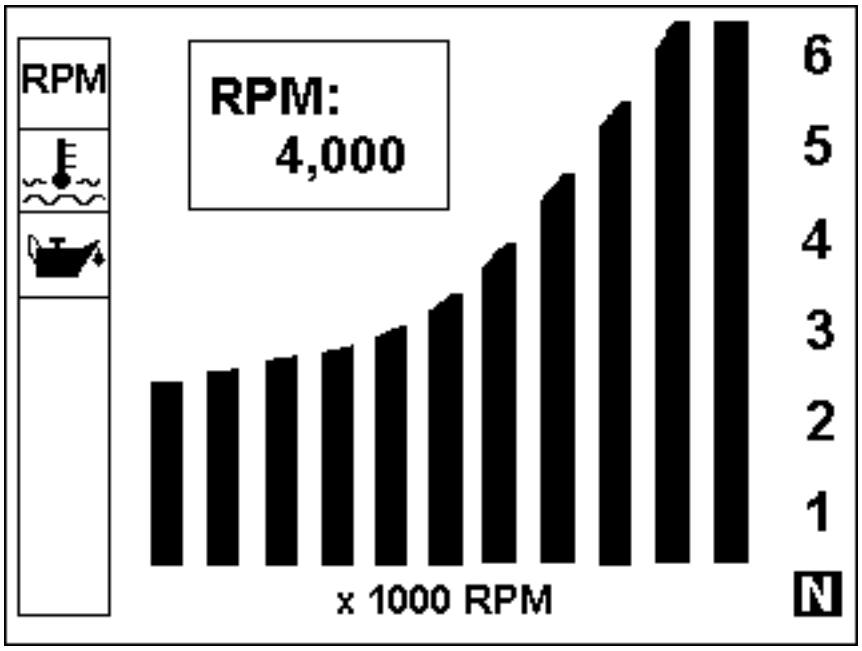

Image 1: Racing Screen

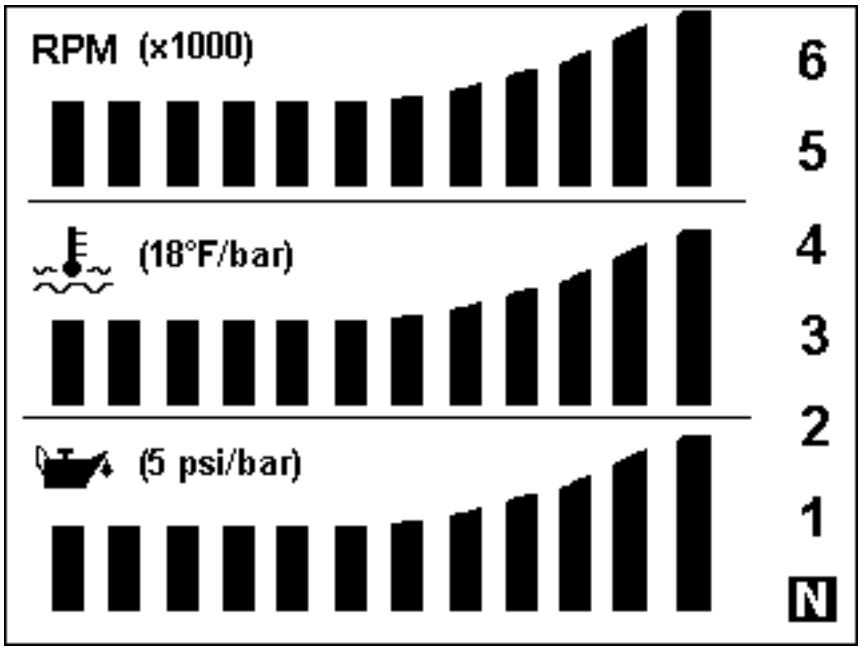

Image 2: Practice Screen

The Test Screen will depend greatly on the accomplishments of the Data Acquisition Team, and therefore its appearance will be determined at a later time. Also, the Demo Screen will simply cycle through the other screens and demonstrate the functionality of each display mode.